Tariff Development and Ratemaking Process (cont'd)

Purpose of depreciation, asset record keeping, calculating depreciation, asset monitoring

Guy Gilbert

- Today 9-22-10
- Introduction to depreciation: history, purpose, rules and records.
- DEPRECIATION HISTORY
- Early industrial enterprises failed due to lack of replacement or planning beyond the original purveyor.
- PURPOSE
- However DEPRECIATION is NOT a REPLACEMENT accrual.
- **DEFINITIONS**
- Depreciation, as applied to depreciable electric 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.
- This IS the definition sited to in the Commission rules.

FACTORS WHICH AFFECT THE RETIREMENT OF PROPERTY

The sole reason for concern about depreciation is that all plant devoted to the pursuit of a business enterprise will ultimately reach the end of its useful life. Several factors cause property to be retired. They include:

•Physical Factors

•Wear and tear

•Decay or deterioration

•Action of the elements and accidents

•Functional Factors

•Inadequacy

•Obsolescence

•Changes in the art and technology

•Changes in demand

•Requirements of public authorities

•Management discretion

•Contingent Factors

•Casualties or disasters

•Extraordinary obsolescence

RECORDS

Property

PUC (Property Unit Catalog) What are the units of plant/equipment we are studying? CPR (Continuing Property Record) When did it go into service and for how long?

Property Unit Catalog

General

Company, as a regulated public utility, is required to maintain records of its annual property additions and retirements in accordance with "The Uniform System of Accounts". Further, there are normal business requirements to be aware of the value of property owned for such purposes as paying property taxes, insuring property, determining rates of depreciation, etc. As it would be impractical to keep records of each small piece of property owned, companies are permitted to use a property accounting and records system that avoids such undue refinement. But are compelled, however, to meet certain minimum detail requirements and also to maintain consistency in accounting policy.

Purpose and Scope

This catalog is compiled to further a better understanding of property accounting and records system and is issued as a guide to persons concerned with the requirements and use of this system. Specifically the purposes of this catalog are:

a) To define, or distinguish between the terms used in property accounting.

b) To describe the various classifications of property and the accounting requirements applicable to each.

c) To aid in the consistent identification of property.

d) To provide a basis for the consistent assignment of costs to construction, retirement and maintenance.

Continuing Property Record

The Continuing Property Record (CPR) is a perpetual record of essential records showing the detailed original costs, quantities, and locations of plant in service. These records vary in detail depending upon the kind of plant. CPRs are required by most systems of accounts. Generally, a CPR should contain

1) an inventory of property record units which can be readily checked for proof of physical existence,

2) the association of costs with such property record units to ensure accurate accounting for retirements, and

3) the dates of installation and removal of plant to provide data for use in connection with depreciation studies.

<u>**Transaction Code</u>** Numeric codes which identify the type of transaction or plant balance. The valid transaction codes are as follows (refer to 'Transaction Code Descriptions" for more detailed explanations):</u>

- 0- -Regular Retirement
- 1. -Reimbursed Retirement
- 2· Sale
- 3 -Transfer
- 4 -Beginning-of-Interval Transfer
- 5- Acquisition
- 6 Adjustment
- 7 -Outlier Retirement
- 8 Ending Balance
- 9 Beginning Balance or Gross Addition

Transaction Year. Year the accounting transaction was recorded to the plant account.

Installation Year. Year the property item was first placed in public service, not necessarily the year it was placed in its present location (not required for "Simulated" data, except for the optional beginning aged balance).

Transaction Amount or Plant Balance. Transaction amount recorded to the plant account, or the surviving plant balance at a specific date. If the amount is a credit entry to the plant account, a minus sign over the units position (column 28) is required (refer to "Recommended Sign Convention" for further explanation).

<u>Adjusted Transaction Year.</u> Only used for entries correcting a previous entry. The year entered is the transaction year of the original entry being corrected.

108 Accumulated provision for depreciation of electric utility plant

c. For general ledger and balance sheet purposes, this account shall be regarded and treated as a single composite provision for depreciation. For purposes of analysis, however, each utility shall maintain subsidiary records in which this account is segregated according to the following functional classification for electric plant:

- (1) Steam production,
- (2) Nuclear production,
- (3) Hydraulic production,
- (4) Other production,
- (5) Transmission,
- (6) Distribution,
- (7) Regional Transmission and Market Operation, and
- (8) General.

These subsidiary records shall reflect the current credits and debits to this account in sufficient detail to show separately for each such functional classification:

- (a) The amount of accrual for depreciation,
- (b) The book cost of property retired,
- (c) Cost of removal,
- (d) Salvage, and
- (e) Other items, including recoveries from insurance.

Separate subsidiary records shall be maintained for the amount of accrued cost of removal other than legal obligations for the retirement of plant recorded in Account 108, Accumulated provision for depreciation of electric utility plant.

USOA Electric Plant Chart of Accounts

a. steam production	b. nuclear production	c. hydraulic production	d. other production
310 Land and land rights.	320 Land and land rights (Major only).	330 Land and land rights.	340 Land and land rights.
311 Structures and improvements.	321 Structures and improvements (Major only).	331 Structures and improvements.	341 Structures and improvements.
312 Boiler plant equipment.	322 Reactor plant equipment (Major only).	332 Reservoirs, dams, and waterways.	342 Fuel holders, producers, and accessories.
313 Engines and engine- driven generators.	323 Turbogenerator units (Major only).	333 Water wheels, turbines and generators.	343 Prime movers.
314 Turbogenerator units.	324 Accessory electric equipment (Major only).	334 Accessory electric equipment.	344 Generators.
315 Accessory electric equipment.	325 Miscellaneous power plant equipment (Major only).	335 Miscellaneous power plant equipment.	345 Accessory electric equipment.
316 Miscellaneous power plant equipment	326 Asset retirement costs for nuclear production plant (Major only).	336 Roads, railroads and bridges.	346 Miscellaneous power plant equipment.
317 Asset retirement costs for steam production plant.			347 Asset retirement costs for other production plant. 7

312 Boiler plant equipment.	This account shall include the cost installed of furnaces, boilers, coal and ash handling and coal preparing equipment, steam and feed water piping, boiler apparatus and accessories used in the production of steam, mercury, or other vapor, to be used primarily for generating electricity.	Items
1. Ash handling equipment, including hoppers, gates, cars, conveyors, hoists, sluicing equipment, including pumps and motors, sluicing water pipe and fittings, sluicing trenches and accessories, etc., except sluices which are a part of a building.	2. Boiler feed system, including feed water heaters, evaporator condensers, heater drain pumps, heater drainers, deaerators, and vent condensers, boiler feed pumps, surge tanks, feed water regulators, feed water measuring equipment, and all associated drives.	 Boiler plant cranes and hoists and associated drives.
4. Boilers and equipment, including boilers and baffles, economizers, superheaters, soot blowers, foundations and settings, water walls, arches, grates, insulation, blow-down system, drying out of new boilers, also associated motors or other power equipment.	5. Breeching and accessories, including breeching, dampers, soot spouts, hoppers and gates, cinder eliminators, breeching insulation, soot blowers and associated motors.	6. Coal handling and storage equipment, including coal towers, coal lorries, coal cars, locomotives and tracks when devoted principally to the transportation of coal, hoppers, downtakes, unloading and hoisting equipment, skip hoists and conveyors, weighing equipment, magnetic separators, cable ways, housings and supports for coal handling equipment.
7. Draft equipment, including air preheaters and accessories, induced and forced draft fans, air ducts, combustion control mechanisms, and associated motors or other power equipment.	8. Gas-burning equipment, including holders, burner equipment and piping, control equipment, etc.	9. Instruments and devices, including all measuring, indicating, and recording equipment for boiler plant service together with mountings and supports.
10. Lighting systems.	11. Oil-burning equipment, including tanks, heaters, pumps with drive, burner equipment and piping, control equipment, etc.	12. Pulverized fuel equipment, including pulverizers, accessory motors, primary air fans, cyclones and ducts, dryers, pulverized fuel bins, pulverized fuel conveyors and equipment, burners, burner piping, priming equipment, air compressors, motors, etc.
13. Stacks, including foundations and supports, stack steel and ladders, stack brick work, stack concrete, stack lining, stack painting (first), when set on separate foundations, independent of substructure or superstructure of building.	14. Station piping, including pipe, valves, fittings, separators, traps, desuperheaters, hangers, excavation, covering, etc., for station piping system, including all steam, condensate, boiler feed and water supply piping, etc., but not condensing water, plumbing, building heating, oil, gas, air piping or piping specifically provided for in account 313.	15. Stoker or equivalent feeding equipment, including stokers and accessory motors, clinker grinders, fans and motors, etc.
16. Ventilating equipment.	17. Water purification equipment, including softeners and accessories, evaporators and accessories, heat exchangers, filters, tanks for filtered or softened water, pumps, motors, etc.	18. Water-supply systems, including pumps, motors, strainers, raw-water storage tanks, boiler wash pumps, intake and discharge pipes and tunnels not a part of a building.

3. Transmission Plant	4. Distribution Plant
350 Land and land rights.	360 Land and land rights.
351 [Reserved]	361 Structures and improvements.
352 Structures and improvements.	362 Station equipment.
353 Station equipment.	363 Storage battery equipment.
354 Towers and fixtures.	364 Poles, towers and fixtures.
355 Poles and fixtures.	365 Overhead conductors and devices
356 Overhead conductors and devices.	366 Underground conduit.
357 Underground conduit.	367 Underground conductors and devices
358 Underground conductors and devices.	368 Line transformers.
359 Roads and trails.	369 Services.
359.1 Asset retirement costs for transmission plant.	370 Meters.
	371 Installations on customers' premises
	372 Leased property on customers' premises.
	373 Street lighting and signal systems.
	374 Asset retirement costs for distribution plant.

5. Regional Transmission and Market	6. General Plant
Operation Plant	
380 Land and land rights.	389 Land and land rights.
381 Structures and improvements.	390 Structures and improvements.
382 Computer hardware.	391 Office furniture and equipment.
383 Computer software.	392 Transportation equipment.
384 Communication Equipment.	393 Stores equipment.
385 Miscellaneous Regional Transmission and Market Operation Plant.	394 Tools, shop and garage equipment.
386 Asset Retirement Costs for Regional Transmission and Market Operation Plant.	395 Laboratory equipment.
387 [Reserved]	396 Power operated equipment.
5. Regional Transmission and Market Operation Plant	397 Communication equipment.
380 Land and land rights.	398 Miscellaneous equipment.
381 Structures and improvements.	399 Other tangible property.
	399.1 Asset retirement costs for general plant.

Gas Plant Accounts

1. Intangible Plant	2. Production Plant	b. natural gas production plant
301 Organization.	a. manufactured gas production	B.1. Natural Gas Production and
	plant	Gathering Plant
302 Franchises and consents.	304 Land and land rights.	325.1 Producing lands.
303 Miscellaneous intangible	305 Structures and	325.2 Producing leaseholds.
plant	improvements.	
1. Intangible Plant	306 Boiler plant equipment.	325.3 Gas rights.
301 Organization.	307 Other power equipment.	325.4 Rights-of-way.
302 Franchises and consents.	308 Coke ovens.	325.5 Other land and land rights.
303 Miscellaneous intangible	309 Producer gas equipment.	326 Gas well structures.
plant		
1. Intangible Plant	310 Water gas generating	327 Field compressor station
	equipment.	structures.
301 Organization.	311 Liquefied petroleum gas	328 Field measuring and
	equipment.	regulating station structures.
302 Franchises and consents.	312 Oil gas generating	329 Other structures.
	equipment.	
303 Miscellaneous intangible	313 Generating equipment—	330 Producing gas wells—Well
plant	Other processes.	construction.
	314 Coal, coke, and ash handling	331 Producing gas wells—Well
	equipment.	equipment.
	315 Catalytic cracking equipment.	332 Field lines.
	316 Other reforming equipment.	333 Field compressor station
		equipment.
	317 Purification equipment.	334 Field measuring and
		regulating station equipment.
	318 Residual refining equipment.	335 Drilling and cleaning
		equipment.
	319 Gas mixing equipment.	336 Purification equipment.
	320 Other equipment.	337 Other equipment.
		338 Unsuccessful exploration and
		development costs. 10

B.2. Products Extraction Plant	3. Natural Gas Storage and Processing Plant	b. other storage plant
340 Land and land rights.	a. underground storage plant	360 Land and land rights.
341 Structures and improvements.	350.1 Land.	361 Structures and improvements.
342 Extraction and refining equipment.	350.2 Rights-of-way.	362 Gas holders.
343 Pipe lines.	351 Structures and improvements.	363 Purification equipment.
344 Extracted product storage equipment.	352 Wells.	363.1 Liquefaction equipment.
345 Compressor equipment.	352.1 Storage leaseholds and rights.	363.2 Vaporizing equipment.
346 Gas measuring and regulating equipment.	352.2 Reservoirs.	363.3 Compressor equipment.
347 Other equipment.	352.3 Nonrecoverable natural gas.	363.4 Measuring and regulating equipment.
	353 Lines.	363.5 Other equipment.
	354 Compressor station equipment.	
	355 Measuring and regulating equipment.	
	356 Purification equipment.	
	357 Other equipment.	

c. base load liquefied natural gas terminaling and processing plant	4. Transmission Plant	367 Mains.	
364.1 Land and land rights .	365.1 Land and land rights.	368 Compressor station equipment.	
364.2 Structures and improvements.	365.2 Rights-of-way.	369 Measuring and regulating station equipment.	
364.3 LNG processing terminal equipment.	366 Structures and improvements	370 Communication equipment.	
364.4 LNG transportation equipment.	4. Transmission Plant	371 Other equipment.	
364.5 Measuring and regulating equipment.	365.1 Land and land rights.		
364.6 Compressor station equipment.	365.2 Rights-of-way.		
364.7 Communication equipment.	366 Structures and improvements		11
364.8 Other equipment.			

5. Distribution Plant	6. General Plant	
374 Land and land rights.	389 Land and land rights.	
375 Structures and improvements.	390 Structures and improvements.	
376 Mains.	391 Office furniture and equipment.	
377 Compressor station equipment.	392 Transportation equipment.	
378 Measuring and regulating station equipment—General.	393 Stores equipment.	
379 Measuring and regulating station equipment—City gate check stations.	394 Tools, shop and garage equipment.	
380 Services.	395 Laboratory equipment.	
381 Meters.	396 Power operated equipment.	
382 Meter installations.	397 Communication equipment.	
383 House regulators.	398 Miscellaneous equipment.	
384 House regulatory installations.	399 Other tangible property.	
385 Industrial measuring and regulating station equipment.		
386 Other property on customers' premises.		
387 Other equipment.		

NOW the Mechanics of the Depreciation computation:

Method: <u>*How*</u> are we going to compute the depreciation rate?

Procedure: <u>Who</u> (for what group) are we going to determine the depreciation

rate?

Technique: <u>What</u> basis will be used to determine the depreciation rate?

<u>When</u> is the period being studied? Placement Band, Experience Band

<u>Why</u> is USOA, technical or engineering attributes, and revenue requirements?

Summary

- A logical basis for the age-life methods of depreciation is the fact that depreciable property has a finite life.
- ➢ It is universally accepted that the value and usefulness of depreciable property relates in some manner to its age or the passage of time.

This is particularly true of the physical plant invested by public utilities and industrial manufacturers to produce their products and services.

> As a corollary, providing for the depreciation of those assets should be **related to age**.

Although a number of depreciation methods that do not directly consider the age of property have been

discussed, they are of rather limited use in public utility practice, where the age-life methods dominate.

Lastly, is the account a **LIVING** Account or a **Dying Account**?

SALVAGE

- 1. What is salvage and how does it affect the depreciation rate?
- 2. Retirement costs are known as Cost of Removal or **COR**. Cost of removal is the cost to remove a retired asset. **Salvage** is the money received from any sale of the retired asset. **Net Salvage** is **Salvage** minus **COR**.
- 3. So if our **Net Salvage** is -10% for the particular account above, the account is still 10% under accrued. If the **Net Salvage** had been +10% the account would be 10% over accrued.
- 4. Next we need to consider whether the account is a **living** or **dying account**. If it is a living account, assets are still being added. If it is a dying account, assets are not being added. The vast majority of accounts are living accounts.
- 5. Generally depreciation may be adjusted downward or slowed. Rarely is it discontinued, due to the possible extended period of time between ordering of depreciation rates.
- 6. Now having considered any retirement costs and whether it is an ongoing living account or dying account, a decision of what to do with the account can be made.
- 7. If it is a dying account, periodically re-evaluate the account to verify that the reserve is enough to cover any retirements and the retirement costs. Use a Remaining Life Technique for computing the depreciation rate.
- 8. If it is a living account, there are a number of options that can be undertaken.

Each depreciation study is based on a method, a procedure and a technique.

- I. Method produces a pattern of cost allocation.
- A. Straight Line
- B. Declining Balance
- C. Sum of the years Digits
- D. Sinking Fund
- E. Units of Production
 - II. Procedure defines level of grouping.
- A. Item
- B. Equal Life Group
- C. Vintage Group
- D. Broad Group
- E. Total Company

III. Technique - describes the life statistic

A. Whole Life

USING: Straight Line Method - The straight-line method ratably charges a like amount to each accounting period over the service life of a plant item or plant group. Thus, it directly meets the depreciation objective, which perhaps accounts for its wide acceptance in utility practice. The basic formula is:

Annual Depreciation Accrual = <u>Depreciable Costs</u> Service Life

Average service life or whole life technique

D= Plant Balance-Salvage Dollars

Average Service Life

where D = annual depreciation accrual

B. Remaining Life

C. Equal Life Group Procedure – (whole life technique, straight-line method)

Each life group takes each previously established vintage group and separates that group into the dollar amount that will retire each year.

All assets within a vintage year which are expected to live one year make up one equal life group. All assets expected to live two years make up another equal life group, and so on.

The total depreciation reserve accrual in any year for the entire vintage is simply the sum of the straight-line accruals for each of the equal life groups. The annual depreciation rate is then determined by dividing the annual accruals by the average annual investment.

Example: Ten poles are installed in one vintage year. Each year, for the next ten years, one pole is retired. The initial cost of each pole is \$100.

For this example, \$100 is retired each year. The \$100 retired the first year is all retired in one year.

The \$100 retired the second year is spread over two years, at \$50 per year, and so on,

until the tenth year, when \$100 is spread over ten years, at \$10 per year.

MORTALITY CONCEPTS

Introduction

An estimate of the life of property is essential to most of the common methods of computing depreciation accruals. Estimates may range from somewhat arbitrary assumptions of average life by management to informed judgment based upon highly technical mathematical models derived from actuarial science.

Through observation and classification of peoples' ages at death, actuaries have developed mortality tables. These tables reveal the death rate and life expectancy for people at different ages as a basis for determining life insurance premiums and reserves.

Mortality tables reflect the various risks affecting groups of people. While many people die purely from chance, the great majority of deaths are related to age. This age relationship is shown by the increasing death rate as age increases.

Although the life of an individual cannot be predicted with surety, the number of people of a given age who will die in any year can be predicted fairly accurately.

Analogously, physical property is subject to forces of retirement. These forces include those related to the property's physical condition:

- (e.g., wear and tear, accident),
- functional obsolescence or
- inadequacy, or
- termination of the need or enterprise.

For life analysis purposes, the ages at retirement are usually expressed in the form of retirement or survivor curves.

The graph of the number of retirements at each age is termed the *retirement frequency curve*.

Placement Bands

Placement bands show, for a group of vintages, the composite retirement history from the property's placement in service to the present. Placement bands allow the analyst to isolate the effects of changes in technology and materials that occur in successive generations of plant. For example, consider a telephone company that installed air-core buried cable before a given year and jelly-filled cable thereafter. In order to identify the differences in service life and retirement dispersion between the two types of cable, one might want to look at a placement band consisting of all vintages prior to the changeover and a second band of all vintages after the changeover.

An advantage of placement bands is that they generally yield smooth curves when based on fairly narrow bands. Unfortunately, placement bands yield fairly complete curves only for the oldest vintages. The newest vintages, presumably of greater interest in forecasting, yield the shortest stub curves.

Experience Bands

Experience bands show the composite retirement history for all vintages during a select set of activity years. These bands allow the analyst to isolate the effects of the operating environment over time.

Experience bands yield the most complete curves for the recent bands because they have the greatest number of vintages (ages) included. However, they may require significant smoothing because the data for each age is independent of the data for other ages. This independence can result in an erratic retirement dispersion.

Experience bands require that during the experience band, in order to construct an observed life table, at least one vintage in the band must be at age zero.

Types of Bands

There are several ways to select placement and experience bands. Rolling bands and shrinking bands may be useful in identifying trends in the data. These bands, along with fixed bands, are discussed below.

Rolling. To set up rolling bands, the analyst selects beginning and ending years for the initial band. The second band has beginning and ending points x years (usually one year) later than those of the first band; the third band has beginning and ending points each x years (usually one year) later than those of the second band; and so on. The result is a series of "rolling" bands of identical width as shown in the sample three-year rolling bands below:

Band 1:	1990	1991	1992		
Band 2:		1991	1992	1993	
Band 3:			1992	1993	1994





Conducting the Depreciation Study: <u>AUTHORITY</u> REQUEST AND REVIEW

Company's Depreciation Study Property Unit Catalog General Purpose and Scope Correctness of Records Additions and Revisions Property Catalog Definitions Property Catalog General Provisions Continuing Property Record ACCOUNTING FOR RETIREMENT UNITS Document Requests Generic Document Requests

REVIEW WORK ORDER SYSTEM

Audit Continuing Property Record

INTERVIEW MANAGERS OF OPERATIONAL AREAS

Visit Operational Areas Production Transmission Distribution General Planning & Engineering

CONDUCT DEPRECIATION STUDY **DEPRECIATION ACCOUNTING DEPRECIATION PROCEDURES** Verify Data by repeating Company's Study Results Conduct Staff Salvage Study Verify Depreciation Reserve **Theoretical Reserve For Depreciation** Conduct Staff Depreciation Study LIFE ESTIMATION FORECAST OR LIFE-SPAN STUDIES ACTUARIAL METHOD OF LIFE ANALYSIS SIMULATED ANALYSIS COMPUTED MORTALITY SIMULATED PLANT RECORD **OTHER SIMULATED METHODS GENERATION ARRANGEMENT**

Schedule of Staff Recommended Depreciation Rates

PRODUCE WRITTEN TESTIMONY

Direct Schedule of Staff Recommended Depreciation Rates Rebuttal Supporting Schedules and Analysis Comparative Schedules and Analysis Valuation of Issue Impact to Case Surrebuttal Supporting Schedules and Analysis Comparative Schedules and Analysis Valuation of Issue Impact to Case

Theoretical Reserve For Depreciation

Objective:

To test the adequacy of the reserve for depreciation.

Description:

Theoretical reserve studies consist of two procedures.

The first is called the retrospective method in the calculation of theoretical reserve. It consists of applying prescribed or estimated depreciation rates to period (annual, monthly) plant balances to arrive at the amount of accrued depreciation. Its application is limited to special cases such as extraordinary retirement where there may be reserve deficiency requiring amortization.

In the second prospective method the reserve requirement as of the date of study is equal to the plant balance minus the future accruals minus the estimated net salvage. Future accrual ratio is the depreciation rate times the remaining life expectancy. For most reserve requirement studies, the theoretical reserve ratio is determined for each vintage of property investment utilizing the remaining life of the vintage. Summation of the ratios times the vintage investment yields the Theoretical Reserve Ratio.

Caution must be exercised in making judgments regarding theoretical reserve ratios in that they are very approximate.

Procedures:

- 1. Tabulate a history of Commission prescribed depreciation rates by primary plant account beginning with the earliest year of available information.
- 2. Tabulate investment balances by primary plant and vintage at the date of study.
- 3. Determine by study, the average life, remaining life expectancy and retirement dispersion by primary plant account.
- 4. Determine net salvage values by primary plant account.

5. Tabulate the book depreciation reserve by primary plant account at the date of study and compare to the theoretical reserve.

SCHEMATIC FLOW OF DEPRECIATION ANALYSIS SOFTWARE



SCHEMATIC FLOW OF DEPRECIATION ANALYSIS SOFTWARE



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OVERVIEW OF DEPRECIATION ANALYSIS SOFTWARE

Executable Acronym	<u>Purpose</u>	
SORTIT	Sorts basic data records into the order required for input to other programs; generally, the sort hierarchy is the default which is transaction year within transaction code within installation year within group and account.	
DATLIST	Produces a formatted listing (print file) of basic aged data records, including subtotals and totals at selected levels. There are options to summarize the detailed basic data and to develop aged plant balances.	
AUDIT	Checks aged data for obvious discrepancies and develops gross annual statistics related to the additions, retirements, and balances. The annual statistics output is a useful adjunct in the selection of life table experience and placement bands. Produces the input to STATS and STPLOT.	
STATS	Plots display screen charts of the annual statistics resulting from AUDIT. There are options to plot additions, retirements, and balances in terms of either dollars, percents of the beginning balance, or average ages. The preferred procedure is to use STPLOT.	
STPLOT	Plots hard copy charts of the annual statistics resulting from AUDIT.	,
RETRATE	Applies the Retirement Rate Method of Life Analysis to property groups for which aged retirement data are available. The resulting original survivor curves are referred to as "life tables". Produces the input to EMATCH.	;
EMATCH	Plots display screen charts of the life tables resulting from RETRATE and enables an interactive process of matching these <u>original</u> survivor curves with Iowa type <u>smooth</u> survivor curves. Produces the input to LTPLOT.	l
LTPLOT	Plots hard copy charts of the life tables resulting from RETRATE and the selected smooth survivor curves. Generally, the LTPLOT input file results from a saved output file during an EMATCH session.	
SIMLATE	Applies the Simulated Plant Record Method of Life Analysis to property groups for which analyses of aged retirement data are not possible or are not desired. There are options to apply the simulation procedure to plant balances, annual retirements or a three-year moving average of the annual retirements. Produces the input to SIMPLOT.	ł
SIMPLOT	Plots hard copy charts of the comparison of book plant balance, or retirement, amounts and the corresponding selected simulated plant record amounts resulting from SIMLATE.	ļ

Executable

Acronym

Purpose

- SIMMORT Applies a variation of the Simulated Plant Record Method of Life Analysis to property groups for which analyses of aged retirements are preferable, but aged retirement data are not available. In the so-called Computed Mortality Procedure, aged plant balances and relirements are computed for each year based on a given type survivor curve. An output file of the computed aged retirements and ending aged plant balance can be used as input to RETRATE for life analysis by the Retirement Rate Method.
- SALVEIST Produces a formatted listing (print file) of basic salvage data records including subtotals and totals at selected levels. There is an option to summarize the detailed basic data for use as input to SALVAGE.
- SALVAGE Summarizes annual retirement, cost of removal, and gross salvage amounts and expresses the resulting cost of removal, gross salvage, and net salvage amounts as percents of the related retirement amounts. There is an option to also perform these percentage calculations on a three-year or five-year moving average basis. Produces the input to STATSAL and SALVPLOT.
- STATSAL Plots display screen charts of the annual and moving average percentages and linear regression lines resulting from SALVAGE. The preferred procedure is to use SALVPLOT.
- SALVPLOT Plots hard copy charts of the annual and moving average percentages and linear regression lines resulting from SALVAGE.
- DEPRATE Calculates annual and accrued depreciation based on either the straight line or compound interest methods of depreciation. There are options for applying the average service life, equal life group, and probable life procedures for the grouping of mass property accounts. There are also options for calculating remaining life accruals at either the vintage or composite group levels.
- Distributes book reserve amounts to account subgroups in cases where it is BOOKLDS desirable to calculate remaining life accruals for subgroups for which book accumulated depreciation is not maintained. The book reserve distributions are based on the "calculated" accrued depreciation amounts resulting from DEPRATE for the corresponding subgroups.
- AGEIT Projects aged plant balances and retirements based on a given beginning aged balance and type survivor curve. 25

Overview - Planning Scope of Review	adequate study. Determine if Staff resources and time requirements allow
A. Gather and compile information for determination	for discretionary examination. Finalize the scope of the accounts to be
of the scope of Staff's depreciation review.	reviewed.
	6. Extract any schedules, databases, studies, etc. that will be useful in the
1. Acquire the Company's depreciation study and work papers that apply	current study.
to the current rate case or project.	7. Identify the specific work that must be performed by account to
2. Submit all necessary Data Requests to gather additional data and other	complete Depreciation review with specific deadlines for work to be
information. (Example Data Requests are attached as schedule1.)	completed.
3. Acquire and familiarize yourself with Company's Accounting Manual	8. Consult with management to get approval of work scope and
regarding property accounting for plant additions and retirements	requirements of work scope.
Develop Data Requests to the Company to submit records showing that	
all retirements were recorded per the Company's Property Unit Catalogue	D. Meetings, plant tours and conferences.
(PUC).	
5. Develop Data Requests to the Company to submit its current Continuing	1. Attend Pre-hearing conference.
Property Records.	2. Schedule meetings as needed with Company staff. Discuss the quality
	of the retirement data and other aspects as needed.
B. Review the Company's current filing and work papers.	3. Schedule tours of the Company's capital plant. Discuss and record
	maintenance activity, lives, etc. Photograph plant assets recording the
1. Verify and document the Technique, Procedure and Method used in the	associated account number on each photograph.
Company's current depreciation study.	4. Schedule meetings with other Staff members as necessary. Discuss
2. Verify and document the Company's plant balances.	questions, problems and/or special circumstances included in the
3. Compare the Company's current study to Department's existing	Company s filing that the depreciation engineer needs to be aware of to
Summary documentation for the Company's phor study to identify changes in Technique Presedure, Method, etc.	
Vorify and document the submission of surrent Property Unit Catalogue	E Travel (if pagagan)
and Continuing Property Pecord	E. Traver (Il flecessary)
5 Varify and document that the Company is using the Commission's	1 If travel outside the state of Missouri may be necessary, submit a
assigned account numbering system	request for out of state travel to the necessary locations
assigned account numbering system.	2 Coordinate travel for all meetings and plant tours with other
C Review the work papers recommendation and testimony from the	Commission departments as needed
previous rate case.	3 Arrange travel schedules for meetings and plant tours with the
1. Review the ordered depreciation rates from the previous rate case.	appropriate Company personnel.
2. Review the ordered depreciation rates for similar companies of similar	4. To review Company documents that are retained at an office outside
size.	the State of Missouri, ask the Company it the Company prefers to ship the
3. Prepare schedule comparing the impact of current ordered depreciation	documents to MO-PSC Staff or it the Company prefers to pay for MO-PSC
rates to requested depreciation rates. Identify items that cause these	Staff's travel expenses to the Company's office. (An example of this letter is
differences.	in the Administrative Staff Procedures Manual.)
4. Contact any staff personnel assigned to the previous rate case that can	
provide insight to the decisions and order of that case.	
5. Identify the specific accounts that must be examined to have an	
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Thank You All for Your attention.

I hope you found this lecture useful. Please feel free to call or visit if you have any questions or thoughts on how I may better present these materials in the future or if there are additional topics or concentrations you would like to see discussed.

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