

Preparing for an Actuarial Valuation

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Actuarial Valuation Cycle

- Preliminary review
- Data preparation
- Asset preparation
- Valuation specifications
- Valuation run and summary
- Final report and presentation

Data Preparation

- Key component of valuation
- Most time-consuming step

Critical Data Fields

Actives

- Salary
- Service
- Date of Birth
- Employment Date

Critical Data Fields

Retirees

- Current Payable
- Date of Birth
- Retirement Option
- Post81 (reimbursable) COLA

Record Layout

- Why are there 2 fields related to service and 2 fields related to the date of employment?

Credited Service vs. Total Credited Service

- Credited Service reflects service in the current board only
- Total Credited Service reflects all service
 - Other boards
 - Military Buyback

Employment Date vs. Adjusted Employment Date

- Employment Date is the date of hire at the current board

Employment Date vs. Adjusted Employment Date

Adjusted Employment Date

- Artificial date
- Takes into account circumstances that increase or decrease Total Credited Service
 - Transfers
 - Service purchases
 - Part-time service
 - Breaks in service

Error Report

Questionable

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Wrong

Types of Questions

- Missing values
- Extreme values
- Internal inconsistencies

Extreme Values

- Salary greater than \$100,000
- Salary less than \$5,000
- Total Credited Service greater than 50 years
- Annual Annuity less than \$50

Internal Inconsistencies

- Total Credited Service does not match Adjusted Employment Date
- Contributions do not match salary and Contribution Rate
- Current Payable less than the original amount plus COLAs

Data Letters from PERAC

- Two different types
- PERAC performing valuation
 - Return reports with detailed comments
 - May request new data file
- In other circumstances
 - Letter not as detailed
 - No need to return reports

Impact of Bad Data

- Group 1 member
- Will retire at age 60
- Currently age 50
- Assume pay increases 5% annually

Impact of Bad Data

	Incorrect Data	Correct Data
Salary at age 50	\$30,000	\$50,000
Total Credited Service (TCS)	10 years	25 years

Impact of Bad Data

	Incorrect Data	Correct Data
3-year average salary age 60	\$46,500	\$77,600
TCS age 60	20 years	35 years
Annual benefit age 60	\$18,600	\$54,320
Present value of benefit	\$186,000	\$543,200
Difference		\$357,200

Helpful Hints

- If PERAC is performing a valuation, do not write "fixed" or "corrected" on error reports
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- Keep the reports from the year before
 - No need to check the same people again

Appendix

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Active File Fields

Field Name	Description
BoardNum	Board Number
SSN	Social Security Number
LastName	Last Name
FrstName	First Name
MidName	Middle Name
Suffix	Name Suffix
Sex	Sex
DOB	Date of Birth
DataDate	Date of Data
JobGroup	Job Group
Married	Marital Status
SpDOB	Spouse (or Beneficiary) Date of Birth
NumChild	Number of Children
Dept	Department
EmplDate	Employment Date
AdjEmplDate	Adjusted Employment Date
ASFBalance	Annuity Savings Fund Balance
ASFContr	Annuity Savings Fund Contributions
ASFIntrst	Annuity Savings Fund Interest
YrSalary	Last year received salary
AmtSalary	Annual Salary
FullPart	Full or Part time Fraction
MkupBal	Makeup Balance
MkUpCurr	Makeup Current Contribution
MkUpIntr	Makeup Interest
MkupAnnpay	Makeup Annual Payment
PrevBrd1	Previous Board #1
PrevStrt1	Previous Board # 1 Start Date
PrevEnd1	Previous Board #1 End Date
PrevBrd2	Previous Board #2

Field Name	Description
PrevStrt2	Previous Board #2 Start Date
PrevEnd2	Previous Board #2 End Date
PrevBrd3	Previous Board #3
PrevStrt3	Previous Board #3 Start Date
PrevEnd3	Previous Board #3 End Date
CredServ	Creditable Service (current board)
VetCode	Veteran Code
Status	Status Code (Active, Inactive, etc.)
StatDate	Status "as of" Date
MiltServ	Military Service Years
ContRate	Contribution Rate
IncrRate	Increment Rate (2% over \$30,000)
XtraCont	Extra Contributions
XtraCurr	Extra Current Contributions
XtraInt	Extra Contributions Interest
	Extra Contributions Rate
Refunds	Money Refunded
TCredServ	Total Creditable Service (all boards)
GovUnit	Governmental Unit (Counties only)

XtraRate

Retiree File Fields

Field Name	Description
BoardNum1	Board Number
SSN	Social Security Number
LastName	Last Name
FrstName	First Name
MidName	Middle Name
Suffix	Name Suffix
Sex	Sex
DOB	Date of Birth
DataDate	Date of Data
RetDate	Retirement Date
SurvCode	Survivor Code (indicates whether the original member or a beneficiary is receiving the benefit)
OptCPopUp	Option C Factor
Status	Status Code (superannuation, disability, death)
RetOption	Retirement Option
JobGroup	Job Group
FASalary	Final Average Salary
AccumDed	Accumulated deductions
CredServ	Creditable Service
Dept	Department
BeneSex	Beneficiary Sex
SpDOB	Spouse (or Beneficiary) Date of Birth
BeneType	Beneficiary Relationship
NumChild	Number of Children
YoungDOB	Birthdate of Youngest Child
VetCode	Veteran Code
PayStatus	Payment Status (currently being paid, returned to work, discontinued)
DoDeath	Date of Death
BeneDOD	Beneficiary Date of Death
OrigAmt	Original Retirement Amount
Annuity	Annual Annuity

Field Name	Description
OrigPension	Original Pension Amount
OrigDepend	Original Dependent Amount
AnnReserve	Annuity reserve
Pre82COLA	Pre FY82 COLA
Post81COLA	Post FY81 COLA (reimbursable)
CurPayable	Current Payable Amount
YrsLstBrd	Years last Board
PrevBrd1	Previous Board #1
PrevYrs1	Previous Board #1 Years Worked
PrevBrd2	Previous Board #2
PrevYrs2	Previous Board #2 Years Worked
PrevBrd3	Previous Board #3
PrevYrs3	Previous Board #3 Years Worked
WCompW	Workers Compensation Weekly Amount
WCompLS	Workers Compensation Lump Sum Amount
Post97COLA	Post 97 COLA
GovUnit	

Governmental Unit (Counties only)

Active Data Tests

Error Message on Report	Description
AmtSalary Missing	
AmtSalary Questionable	Greater than \$100,000 (Tests annualized salary: Salary/Full Part)
AmtSalary Questionable	Less than \$5,000
ASFBalance Missing	
ASFBalance Questionable	Greater than \$200,000
ASFContr Missing	
ASFContr Questionable	Differs from expected by more than 20% (Expected contributions are set equal to the salary times the contribution rate, with an adjustment for the additional 2%.)
ContRate Missing	
ContRate Questionable	Does not equal 12 for EmplDate >= 7/1/96, JobGroup = 3
ContRate Questionable	Not 5 for EmplDate before 1/1/75
ContRate Questionable	Not 7 for EmplDate between 1975 and 1984
ContRate Questionable	Not 8 for EmplDate between 1984 and 7/1/96
ContRate Questionable	Not 9 for EmplDate after 6/30/96
DataDate Missing	
DataDate Questionable	Does not equal 12/31/xxxx (xxxx is the year before the one the data is sent to us)
DOB Missing	
DOB Questionable	Age greater than 80
DOB Questionable	Age less than 16
EmplDate Missing	
EmplDate Questionable	Hire age greater than 65
EmplDate Questionable	Hire age less than 16
FullPart Invalid	Part time code is less than 0.4 or greater than 1.0
FullPart Missing	
IncrRate Invalid	Not 0 for ContRate 05
IncrRate Invalid	Not 2 for ContRate 8
IncrRate Invalid	Not 2 for ContRate 9
IncrRate Missing	
IncrRate Questionable	Not 0, ContRate = 7, EmplDate before 1979
IncrRate Questionable	Not 2, ContRate = 7, EmplDate after 1978
JobGroup Missing	
Sex Missing	

Active Data Tests

Error Message on Report	Description
SSN Missing	
Status Invalid	(status=4 (non-vested termination))
Status Missing	
TCredServ Invalid	Actives Total Credited service less than credited service
TCredServ Missing	
TCredServ Questionable	(expected service is the difference between the datadate and the adjusted employment date, then we give one year on each side before questioning)
TCredServ Questionable	Greater than 50
TCredServ Questionable	Greater than (expected + 1) Less than (expected - 1)
VetCode Missing	

Actives

Retiree Data Tests

Error Message on Report	Description
Annuity Invalid	Status = 9
Annuity Missing (or 0)	
Annuity Questionable	Greater than Original \$20,000
Annuity Questionable	
BeneSex Missing	
CurPayable less than original + COLAs	
CurPayable Missing	Less than \$50
CurPayable Questionable	Greater than \$75,000
CurPayable Questionable	Less than \$1,500
DataDate Missing	
DataDate Questionable	<> 12/31/xxxx (xxxx is the year before the one the data is sent to us)
DOB Missing	
DOB Questionable	Age greater than 110
DOB Questionable	Age less than 20; Status = 07, 09, 12
DOB Questionable	Age less than 30; Status = 06
DOB Questionable	Age less than 40; Status = 05
NumChild Questionable	Number of children greater than 7
OptCPopUp Invalid	< .19 or > .997 (C factor either too low or too high)
OptCPopUp Missing	
PayStatus Invalid	Not 3, Option A or B, with Date of Death (paystatus of 3 signals "discontinued payment")
PayStatus Missing	
Post81COLA Missing	
Post81COLA Questionable	> \$3210
Post81COLA Questionable	Versus expected from data (an expected COLA is calculated by subtracting the Post97 COLA from the current payable and going backwards to the date of retirement)
Post97COLA Missing	
Post97COLA Questionable	> \$3,492 (this is increased every year to reflect the maximum COLAs paid since 1997)
RetDate Missing	

Retiree Data Tests

Error Message on Report	Description
RetDate Questionable	Ret. age greater than 80
RetDate Questionable	Ret. age less than 20; Status = 07, 09, 12
RetDate Questionable	Ret. age less than 30; Status = 06
RetDate Questionable	Ret. age less than 40; Status = 05
RetOption Invalid	A or B, Status = 09 or 12
RetOption Invalid	C, Status = 09 or 12
RetOption Invalid	D, Status not 09 or 12
RetOption Missing	
Sex Missing	
SpDOB Missing	
SSN Missing	
Status Invalid	Retirees
	(status=0, 3, 11, or 13 (active, transfer, refunded, or inactive))
Status Missing	
SurvCode Invalid	Not 'Y', Option C with date of death
SurvCode Invalid	Not 'Y', Option D
SurvCode Missing	

Active Non-Service Questions

First Last

Name Name SSN Error Message

First Name	Last Name	SSN	Error Message
John	Smith	000-00-0000	AmtSalary = 0 - AmtSalary Missing
John	Smith	000-00-0000	ASFBalance = 0 - ASFBalance Missing
John	Smith	000-00-0000	ASFCContr = 0 - ASFCContr Missing
John	Smith	000-00-0000	AmtSalary = 2,687.33 - AmtSalary Questionable: less than \$5,000
John	Smith	000-00-0000	IncrRate = 0 - IncrRate Invalid: Not 2 for ContRate 9
John	Smith	000-00-0000	DOB = 6/01/2000 - DOB Questionable: Age less than 16
John	Smith	000-00-0000	EmplDate = 6/01/2000 - EmplDate Questionable: Hire age less than 16
John	Smith	000-00-0000	AmtSalary = 3,174.89 - AmtSalary Questionable: less than \$5,000
John	Smith	000-00-0000	IncrRate = 0 - IncrRate Invalid: Not 2 for ContRate 9
John	Smith	000-00-0000	ContRate = 8 - ContRate Questionable: not 9 for EmplDate after 6/30/96
John	Smith	000-00-0000	ContRate = 7 - ContRate Questionable: not 9 for EmplDate after 6/30/96
John	Smith	000-00-0000	AmtSalary = 0 - AmtSalary Missing
John	Smith	000-00-0000	ASFBalance = 0 - ASFBalance Missing
John	Smith	000-00-0000	ASFCContr = 0 - ASFCContr Missing
John	Smith	000-00-0000	AmtSalary = 1,500.00 - AmtSalary Questionable: less than \$5,000
John	Smith	000-00-0000	EmplDate = 6/04/2007 - EmplDate Questionable: Hire age greater than 65
John	Smith	000-00-0000	ContRate = 9 - ContRate Questionable: not 8 for EmplDate between 1984 and 7/1/96
John	Smith	000-00-0000	AmtSalary = 0 - AmtSalary Missing
John	Smith	000-00-0000	AmtSalary = 0 - AmtSalary Missing
John	Smith	000-00-0000	ASFBalance = 0 - ASFBalance Missing

Active Service Questions

First Name	Last Name	SSN	Adjusted Employment Date	Error Message
Jane	Smith	999-99-9999	09/02/1998	TCredServ = 5.583 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	07/01/2002	TCredServ = 23.000 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	06/01/2000	TCredServ = 0 - TCredServ Missing
Jane	Smith	999-99-9999	08/29/2006	TCredServ = 3.583 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	04/03/2000	TCredServ = 4.083 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	03/30/1986	TCredServ = 30.667 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	07/01/1997	TCredServ = 13.083 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	07/01/1995	TCredServ = 7.250 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	02/06/2007	TCredServ = - TCredServ Missing
Jane	Smith	999-99-9999	05/02/1983	TCredServ = 9.083 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	09/17/1990	TCredServ = 12.417 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	08/28/1995	TCredServ = 10.500 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	05/02/1981	TCredServ = 27.750 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	06/04/2007	TCredServ = 9.500 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	08/01/1994	TCredServ = 11.833 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	07/01/2000	TCredServ = 15.500 - TCredServ Questionable: greater than (expected + 1)
Jane	Smith	999-99-9999	04/04/1988	TCredServ = 2.250 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	02/06/2007	TCredServ = - TCredServ Missing
Jane	Smith	999-99-9999	05/02/1991	TCredServ = 8.500 - TCredServ Questionable: less than (expected - 1)
Jane	Smith	999-99-9999	03/09/1992	TCredServ = 8.333 - TCredServ Questionable: less than (expected - 1)

Retiree Questions

First Last

Name	Name	SSN	Error Message
Lee	Smith	555-55-5555	OptCPopUp = 0 - OptCPopUp Missing
Lee	Smith	555-55-5555	Post81COLA = 764.04 - Post81COLA Questionable: versus expected from data
Lee	Smith	555-55-5555	Post81COLA = 0.00 - Post81COLA Questionable: versus expected from data
Lee	Smith	555-55-5555	Post97COLA = 4,482.00 - Post97COLA Questionable: > \$3,492
Lee	Smith	555-55-5555	BeneSex = - BeneSex Missing
Lee	Smith	555-55-5555	SpDOB = - SpDOB Missing
Lee	Smith	555-55-5555	CurPayable = 1,050.84 - CurPayable Questionable: Less than \$1,500
Lee	Smith	555-55-5555	Annuity = 1,299.24 - Annuity Invalid: Status = 9
Lee	Smith	555-55-5555	Annuity = 0 - Annuity Missing (or 0)
Lee	Smith	555-55-5555	CurPayable = 101,427.36 - CurPayable Questionable: Greater than \$75,000
Lee	Smith	555-55-5555	SpDOB = - SpDOB Missing
Lee	Smith	555-55-5555	OptCPopUp = 0 - OptCPopUp Missing
Lee	Smith	555-55-5555	BeneSex = - BeneSex Missing
Lee	Smith	555-55-5555	CurPayable = 101,314.44 - CurPayable Questionable: Greater than \$75,000
Lee	Smith	555-55-5555	CurPayable = 100,977.72 - CurPayable Questionable: Greater than \$75,000
Lee	Smith	555-55-5555	CurPayable = 806.52 - CurPayable Questionable: Less than \$1,500
Lee	Smith	555-55-5555	Post81COLA = 8,627.28 - Post81COLA Questionable: > \$3210
Lee	Smith	555-55-5555	Post81COLA = 8,627.28 - Post81COLA Questionable: versus expected from data
Lee	Smith	555-55-5555	PayStatus = Member or Survivor In Receipt - PayStatus Invalid: not 3, Option A or B, with Date of Death
Lee	Smith	555-55-5555	CurPayable = 683.28 - CurPayable less than original + COLAs