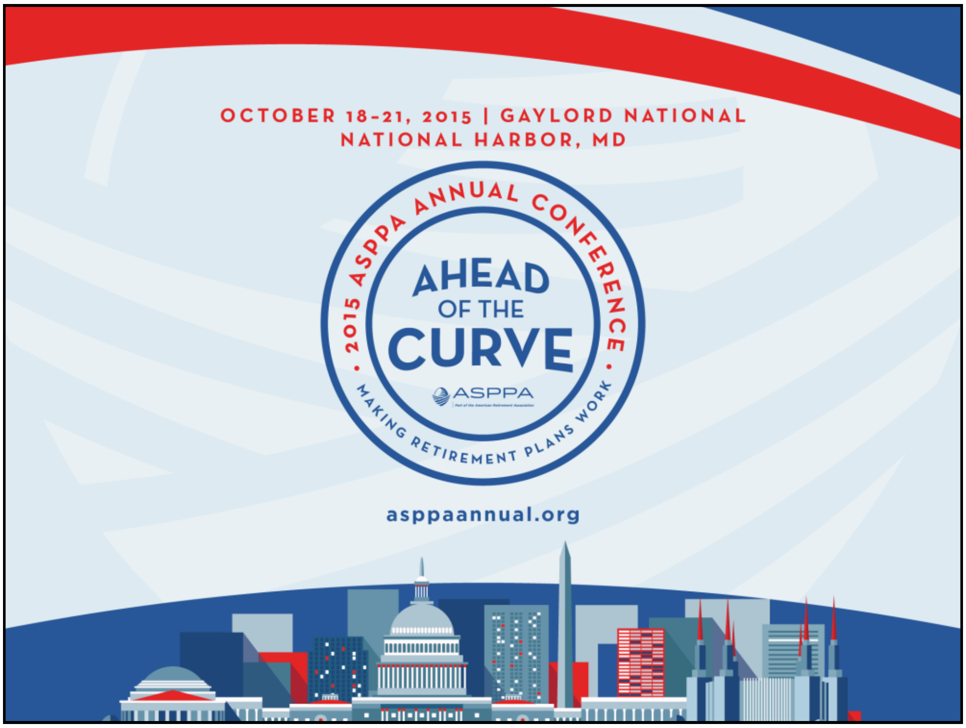

WS 66
Actuarial 101 for Non-Actuaries

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AGENDA

- Intro
- Traditional DB Plan
  - Benefits
  - Funding
  - AFTAP
  - PBGC AFN
- Cash Balance DB Plan
  - Benefits
  - Funding
  - AFTAP

INTRO

- Both sample plans are 'DB/DC combo plan' and covered by PBGC.
- 'Combo Plan' means the employer sponsors both a Defined Benefit (DB) and a Defined Contribution (DC) plan.
- In today's world our DC plans are usually Profit Sharing Plans.

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INTRO

- The DB plan typically provides maximum benefits to owner(s) while minimizing the benefits to the employees.
- The DB plan is aggregated with the DC plan for 401(a)(4) non-discrimination testing.
- The employees are allocated enough in the PS plan to pass non-discrimination testing.
- Actuary will provide DB/DC Testing Reports

INTRO

- Both the Traditional and Cash Balance are 2014 plan years with an End of Year Valuation Date (EOY).
- That means that benefits and liabilities are valued on 12/31/14.
- If this was a Beginning of Year Valuation the assets and liabilities would be valued on 1/1/14.

Traditional DB Plan

- Traditional DB Plan - open your Handout#1
- The Plan Document will have a Benefit Formula that defines how much each participant will receive as a monthly annuity payable at Normal Retirement Age (NRA).
- Once earned, a participant's Accrued Benefit cannot be reduced.
  - Unlike DC Plans, the sponsor bears the risk of investment returns.

Traditional DB Plan

- A traditional DB benefit formula is usually based on some percentage of pay multiplied by some definition of Average Monthly Compensation ("AMC") multiplied by some definition of Years of Credited Service ("YOCS").

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Benefits

- Page #1 - ‘Individual Class’ Unit Credit Formula:

Average Compensation: Highest 3 consecutive years of participation

Top Heavy Minimum Benefit - Highest 5 consecutive top heavy years of participation

Plan Benefits: Retirement - Derived from the graded benefit formula below:

Employee Classification	Benefit Formula
1	not less than 8% of average monthly compensation per year of participation
2	not less than 0.5% of average monthly compensation per year of participation

Accrued Benefit - Unit credit based on participation

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Traditional DB Plan

- Page #1 and #2 – Plan Specifications
  - Eligibility: 21/1 dual prospective entry.
  - Accrual hours: 1000
  - NRD: 1st of month = or following Age 62 / YOP
  - Average Comp: Highest 3 consecutive YOP
  - Unit Credit Accrual
  - NRA Age 62 & 5.
  - Normal Form: Single Life Annuity (SLA)

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Benefits

- Normal Form tells us how that the benefit is going to be valued at NRA.
- This is different than what the plan says the automatic form is for a married Participant.

Benefits

- Page #4 Employee Census

Key	Percent Owner	SVC PS	SVC FS	Gender	Ages PA	Ages AA	Ages ARA	Dates Birth	Dates Hire	Dates Part	Dates Retire	Compensation
Tempe B.												
		7	5	F	50	57	62	01/01/58	01/01/00	01/01/08	01/01/20	$260,000.00
Angela M.												
		7	33	F	22	29	62	01/01/86	01/01/07	01/01/08	01/01/48	$42,000.00

Benefits

- Page #5 – Schedule Of Benefits

	Beg Year Acc Ben Monthly Compensation	End Year Acc Ben Monthly Compensation	Monthly Benefit	Lump Sum @ Ret	Accrued Benefit	Vest Pct	Vested Accrued Benefit	Present Value of Vested Accrued Benefit
Tempe B.								
	20,833.33	21,250.00	17,500.00	2,613,190	11,900.00	100	11,900.00	1,421,427
Angela M.								
	2,861.11	3,194.44	700.00	106,510	111.81	100	111.81	3,400

Benefits

- Group 1 defined as Tempe B. in the Plan Document.
- Benefit Formula = 8% of AMC x YOP
- Tempe's Hi 3 Avg Comp = $21,250
  - $260,000 + $255,000 + $250,000 ÷ 3 ÷ 12
- Monthly Accrued Benefit (page 5) = $21,250 x .08 x 7 = **$11,900**

Benefits

- Group 2 defined as 'All Other Eligible Participants'.
- Benefit Formula = .50% (½ %) of AMC x YOP
- Angela's Hi 3 Avg Comp = $3,194.44
  - $42,000 + $38,000 + $35,000 ÷ 3 ÷ 12
- Monthly Accrued Benefit =

  $3,194.44 x .005 x 7 = **$111.81**

Benefits

- Why is Angela receiving a .50% benefit?
- 401(a)(26) is a rule only applicable to DB plans, referred to as the 40% rule.
- A two prong test that mandates:
  - A DB Plan must benefit the lesser of
    - 50 employees
    - 40% of non-excludable employees
      - But in no event less than 2 employees
  - The benefit must be meaningful

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Benefits

- Meaningful is not defined in law or regulations.
- In 2002 there was an IRS memo referred to as the 'Paul Schultz' memo.
- It established that a person is 'benefitting' for this rule if they have at least a .50% of pay annuity benefit at NRA for the current Plan Year.

Benefits

- Page # 6 'Present Value of Accrued Benefits" provides three 'pieces' that go into calculating the PVAB shown on page #5 Benefits.

	Accrued Benefit	#1 PVAB Based on Plan Assumptions	#2 PVAB Based on 417(e) Assumptions	#3 PVAB Based on IRC Section 415	Greater of Plan or 417(e) Assumptions as Limited by 415
Tempe B.					
	11,900.00	1,418,709	1,433,332	1,421,427	1,421,427
Angela M.					
	111.81	3,400	2,616	348,920	3,400

Benefits

- Present Value Accrued Benefit (PVAB) means the current lump sum value of the monthly annuity benefit at NRA.
- The PVAB is determined under the Actuarial Equivalent (AEQ) assumptions defined in the Plan Document.
- Actuarial Equivalent means two things are considered equal in value.
- The PVAB is considered to be 'actuarially equivalent' to the annuity benefit using the plan's AEQ assumptions.

Benefits

- Plan assumptions are found in the Plan Document under the definition of Actuarial Equivalence (AEQ).
- Page #2 Plan Provisions:

Actuarial Equivalence:

Pre-Retirement -	Interest -	5%
	Mortality Table -	None
Post-Retirement -	Interest -	5%
	Mortality Table -	G94 - 1994 Group Annuity Reserving Proj 2002, Scale AA (unisex)

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Benefits

- Angela's plan 'PVAB' on 12/31/14.
- Angela is exactly age 29 and her NRD is exactly age 62 (from page #4).
- Angela is exactly 33 years away from NRD.
- Plan PVAB = monthly benefit at NRD x Annuity Purchase Rate (APR) at NRD, discounted 33 years.

Benefits

- The APR represents the cost of a $1 per month benefit payable at NRD.
- APR at age 62 = 152.1573
  - Using 94 GAR / 5%
- $111.81 x 152.1573 = $17,013 (LS at NRD)
- Discount from NRA to AA (interest only) = $17,103 ÷ (1.05)^33 = **$3,400**

Benefits

- But…Angela's PVAB/Lump sum cannot be less than the minimum present value calculated under§417(e)(3)(D)*.
- 417(e) rates are mandated by the IRS and considered a minimum threshold on the 'Plan' PVAB.
- The lump sum payable to a terminated Participant is the <u>greater of</u> the 'Plan' or the '417(e)' calculation.

*We will refer to §417(e)(3)(D) as 417(e).

Benefits

- 417(e) says to use the <u>Applicable Mortality Table</u> and the <u>Applicable Interest Rates.</u>
- <u>Applicable Mortality Table</u> is the IRS issued table for each Calendar Year.
- Applicable interest rates are based on <u>three</u> segment rates.
  - Segment 1 rate applies to benefit payments in the first 5 years.
  - Segment 2 rate applies to benefit payments in the next 15 years.
  - Segment 3 rate applies to benefit payments more than 20 years.

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Benefits

- The Plan Document defines which assumptions to use for 417(e) by defining a Stability Period and a Lookback Month.
- Stability Period is the length of time during which the plan will use the same Applicable Interest Rates.
- Lookback Month defines which IRS monthly 417(e) segment rates will be used during the Stability Period.

Benefits

- The plan document can define these terms in the following possible ways:
  - Stability Period
    - One Month
    - One Plan Quarter
    - **One Plan Year**
    - One Calendar Quarter
    - One Calendar Month
  - Lookback Month
    - 1st month
    - 2nd month
    - 3rd month
    - 4th month
    - 5th month
    - Averaging of any number (2-5) of any consecutive Lookback Months if document specifies

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Benefits

- Our plan defines Stability Period as 1 Year and Lookback month is 1.
- The 12/31/14 417(e) PVAB is valued using:
  - 2014 Applicable Mortality Table
    - Table in effect on 1st day of Stability Period.
  - December 2013 417(e) segment rates
    - 1 month prior to the Stability Period that started on 1/1/14.

Benefits

- From page 2 these are the 417(e) AEQ:

417(e):

Interest Rates -

Segment #	Years	Rate %
Segment 1	0 - 5	1.25
Segment 2	6 - 20	4.57
Segment 3	> 20	5.60

Mortality Table - 14E - 2014 Applicable Mortality Table for 417(e) (unisex)

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Benefits

- Because Angela is 33 years away from (greater than 20) all her benefits valued under Seg 3.
- Seg 1 Factor (5 years) = -0-
  - no payments under 1.25% segment 1 rate
- Seg 2 Factor (15 years) = -0-
  - No payments under 4.57% segment 2 rate
- Seg 3 Factor (remaining years) = 24.5090
  - PV at **5.60%** of deferred annuity payable at age 62
- 417(e) factor* = 0 + 0 + 24.5090 = 24.5090
- 417(e) PVAB = 111.81 x 24.5090 = **$2,740**

*without pre-ret mortality

Benefits

- Page #5- Schedule of Benefits reflects the greater of the Plan PVAB ($3,400) vs the 417(e) PVAB ($2,740).
- Our sample case was exactly age 29 to make it easy to demonstrate, but people not always born on 1/1.
- For payout purposes we don't use rounded ages.

Benefits

- Valuation reports are often approximations.
- NEVER use a valuation report to pay out a terminated Participant Lump Sum.

Benefits

- When does a lump sum value change?
  - the Lump Sum values can change daily, weekly or monthly!
- Administratively not feasible
- Actuary will calculate a specific "as of' date, then lock the lump sum for a 60 or 90 administratively delay period.

Benefits

- The lump sum will also change when you move from one Stability Period to another.
- So Angela's PVAB shown on the valuation report will expire on the next Stability Period that starts on 1/1/15.
- On 1/1/15 the plan has a new set of 417(e) Assumptions.

Benefits

- What is Angela's PVAB on 1/1/15?
- The plan PVAB, which has static AEQ assumptions, will be on the same on 1/1/15 (1 day later).
- On 1/1/15 the Applicable Mortality changes to the 2015 Applicable Table
- Applicable interest from December 2014:
  - Seg 1: **1.48%**; Seg 2: **3.77%** and Seg 3: **4.79%**

Benefits

- On 1/1/15 Angela's 417(e) PVAB changes to **<u>$3,813</u>** which is greater than $3,400 'Plan PVAB'.
- It's important to know when a benefit calculation 'expires'.
- The actuary should include that information when providing terminated participant calculations.

Benefits

- Interest discounting - lower interest rates mean higher present values and higher interest rates mean lower present values.

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Benefits

- Tempe's PVAB's, Page #6
- Tempe is exactly age 57, her NRD is exactly age 62 and she is exactly 5 years away from NRD.
  - From Census Page #4
- Plan PVAB = monthly benefit at NRD x Annuity Purchase Rate (APR) at NRD, discounted 5 years.

Benefits

- APR = 152.1573
- \$11,900 x 152.1573 = \$1,810,672 (LS at NRD)
- Discounted to AA = \$1,810,672 ÷ $(1.05)^{5}$ = **\$1,418,709**. (Plan PVAB)

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Benefits

- Tempe is 5 years away from NRD
- Seg 1 Factor (5 years) = -0-
  - no payments under 1.25% segment 1 rate
- Seg 2 Factor (15 years) = 97.8900
  - PV at **4.57%** of Temporary Deferred annuity payable from age 62 – 77
- Seg 3 Factor (remaining years) = 25.0477
  - PV at **5.60%** of deferred annuity payable from 77
- 417(e) factor* = 0 + 97.89 + 25.0477 = 122.9377
- 417(e) PVAB = $11,900 x 122.9377 = <u>$1,462,959</u>

*without pre-ret mortality

Benefits

- Why does the PVAB shown on Page #5 - $1,421,427?
- DB plan 415 Limits define the maximum monthly annuity benefit payable at any time.
- 415 also limits the PVAB/Lump Sum that can be paid.

Benefits

- IRC 415 maximum benefit is the lesser of
  - 415 Dollar Limit at Annuity Starting Date
    - reduced for 1/10th for each **YOP** less than 10
  - 415 High 3 consecutive Year Average Compensation Limit
    - Reduced by 1/10th for each **YOS** less than 10

Benefits

- The 415 lump sum limit is calculated using 5.50% interest and Applicable Mortality Table.
  - This only applies to plans with no more than 100 employees who receive compensation =>5,000 and Plans that don't have actuarial 'conversion factors' defined in the Plan (different from AEQ factors)
- Cannot use rounded ages.

Benefits

- Tempe has over 10 YOS - 415 Comp Limit
  - $21,250
- The unreduced 2014 415 Dollar Limit at age 62-65 = $210,000 annually or $17,500 monthly.
- Tempe's 415 Dollar Limit:
  - $17,500 x 7/10 = $12,250/mo payable at age 62

Benefits

- Tempe's 415 Max monthly benefit at 12/31/14 will be the AEQ of the age 62 $12,250 maximum payable at age 57 using the Plan AEQ.

Benefits

- AEQ of age 62 415 Dollar Limit at age 57:
- Plan APR's (1994 GAR / 5%):
  - Age 62 = 152.1573
  - Age 57 = 168.7738
- $12,250 x 152.1573 ÷ 1.05^5 ÷ 168.7738 =
- Maximum 415 Dollar Limit age 57 = **$8,653.21**

Benefits

- Tempe's 415 Lump sum Limit is the lump sum determined by 2014 Applicable Table / 5.50%
- Age 57 APR = 164.2659
- $8,653.21 x 164.2659 = **$1,421,427**
- Tempe's PVAB on Page #5 limited by 415.

Funding

- The Actuary typically provides several numbers after the valuation is performed.
- The Minimum Required Contribution (MRC)
  - Calculated under IRC 430
- The Maximum Deductible Contribution
  - Calculated under IRC 404
- The 'Recommended' Contribution
  - Usually the amount that makes the plan PVAB's whole.

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Funding

- MRC and Maximum Deductible calculations based on three segment interest rates mandated by the IRS we'll call PPA rates.
- Not the same as 417(e).
- Without regard to MAP-21 and HATFA rules, the interest rates are issued for each month.
- The default (no employer election) is to use the rates in effect on the valuation date.
- The sponsor can elect a 1, 2, 3 or 4 month lookback.

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Funding

- IRS passed rules that established different (higher) interest rates (MAP-21) in 2012 then amended by HATFA in 2013, to be used for MRC.
  - Maximum Deductions (404) are calculated under original PPA segment rates.
- IRS issues one set of segment rates under HATFA for each Calendar Year.
- The plan will use the HATFA rates for the calendar year that contains the 1st day of the Plan Year.

Funding

- Page #3 shows both our PPA rates for 404 (Max Deduction) and 430 (MRC)

Used for Maximum Deductible

Segment rates for the Valuation Date as permitted under IRC 430(h)(2)(C)

Segment #	Year	Rate %
Segment 1	0 - 5	1.20
Segment 2	6 - 20	4.10
Segment 3	> 20	5.20

Used for Minimum Required Funding:
The same rates used for all PYB in 2014:

Segment rates as of September 30, 2013 As permitted under IRC 430(h)(2)(C)(iv)(II) - HATFA

Segment #	Year	Rate %
Segment 1	0 - 5	4.99
Segment 2	6 - 20	6.32
Segment 3	> 20	6.99

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Funding

- Definitions for MRC:
- Target Normal Cost (TNC) is the Present Value of the increase in accrued benefit (AB) for the current plan year using the 430 segment rates.
  - Represents the benefit earned during the year.
  - EOY AB minus BOY AB.

Funding

- Funding Target (FT) is the Present Value of the benefit accrued on the 1st day of Plan Year using the 430 segment rates.
- Actuarial Assets – the DB trust valued on the valuation date, excluding rollovers accounts and any current year contributions.
- For some purposes AA are reduced by any Prefunding Balances.

Funding

- Prefunding Balance (PFB): When a sponsor contributes more than the MRC for any given plan year (excess).
- An election can be made (in writing) to 'add' the excess to a PFB.
  - can be used in future years to apply against the MRC just like a contribution, provided certain conditions are met.

Funding

- Another type of funding balance 'Carryover Balance' (COB) that would only apply if a Plan existed prior to 2008 and had a credit balance as defined in the pre-PPA rules.
- **Prefunding balances are a pain and should only be created in situations where the actuary feels it is necessary.**

Funding

- Shortfall. If the FT is greater than the Adjusted Assets the difference is called a Shortfall
  - this indicates the plan is underfunded
- Shortfall charge. The shortfall amortized over 7 years.

Funding

- Effective Interest Rate (EIR) – a single rate that if used, would produce the same FT and TNC liabilities as calculated as using the 430 funding segment rates.
- EIR is used for discounting contributions (in some cases) and certain adjustments to funding balances.

Funding

- Minimum Funding Charges
  - Target Normal Cost
  - Shortfall Amortizations
  - Prior unpaid Minimums
- Minimum Funding Credits
  - Contributions discounted to valuation date.
  - Surplus of Adjusted Asset over FT, not to exceed TNC.
  - Funding Balance elections discounted to val date.

Funding

- Page 7 – FT and TNC

BOY AB before 2014 Accruals-->>	Accrued Benefit	Funding Target	Benefit Increase	Target Normal Cost
Tempe B.				
	10,000.00	1,120,000	1,900.00	212,800
Angela M.				
	85.83	1,405	25.98	425
Totals:	$10,085.83	$1,121,405	$1,925.98	$213,225

- 430 Funding liabilities lower than the PVAB due to higher segment rates under 430.

Funding

- Page 9C – Funding Shortfall

Funding Shortfall

14. Reduced Funding Target (C9)	1,121,405
15. Applicable Assets (IRC 430(f)(4)(B)(i) (C5))	1,123,500
16. Funding Shortfall (IRC 430(c)(3) (C14-C15, not less than 0)	0
17. Shortfall Amortization Charge (C25a)	0

- Assets on 12/31/14 without 2014 ctb's.
- No shortfall since assets are greater than the FT.

Funding

- Page 9D – Minimum Required Contribution

D. Minimum Required Contribution

1. Target Normal Cost (A2)	213,225
2. Funding Surplus (C5-A1, not less than 0)	2,095
3. Reduced Target Normal Cost (D1-D2, not less than 0)	211,130
4. Shortfall Amortization Charge (C17)	0
5. Waiver Amortization Charge	0
6. Minimum Contribution (D3+D4+D5)	211,130

- Line D2 'Funding Surplus' = Assets – FT =
- $1,123,500 – $1,121,405 = $2,095
  - Reduces the TNC to $211,130

Funding

- $211,130 MRC represents the amount of contribution that would need to be deposited on the valuation date (12/31/14) to meet minimum funding.
- Contributions are discounted with interest from the date of deposit to the valuation date to credit against the MRC 'charges'.

Funding

- If contributions are deposited during the year they are increased with interest when the plan has an EOY valuation date.
  - Results in higher 'credit' toward minimum funding.
- If contributions are deposited after the valuation date they are discounted back to the valuation date.
  - Results in lower credit towards minimum funding.

Funding

- If a sponsor wants to know the absolute minimum funding we need to know the date the deposit will be made.
- Difficult to manage.
- One solution is to assume the deposit will be made on the latest possible date
  - 9 ½ months after the plan year end.

Funding

- In this plan* it's easy to show how to adjust the 12/31/14 MRC for a 9/15/15 deposit date.
- Number of days between 9/15/15 - 12/31/14 = 258 days.
- Project the 12/31/14 MRC to 9/15/15 to determine amount of ctb necessary.
- \$211,130 x 1.0633^(258/365) = **\$220,491**
  - In real life would round up to \$220,500 for 'wiggle room'.

*Some plans have quarterly contribution requirements that result in more complex discount rules.

Funding

- If sponsor is desperate to fund the absolute minimum ask for the expected deposit date (or dates) so actuary can give the contribution required as of that date.

Funding

- Page #11, SB Assets, 430 FT, EIR & 430 TNC.

1	Enter the valuation date: Month 12 Day 31 Year 2014				
2	Assets:				
	a Market value			2a	1,123,500
	b Actuarial value			2b	1,123,500
3	Funding target/participant count breakdown:	(1) Number of participants	(2) Vested Funding Target		(3) Total Funding Target
	a For retired participants and beneficiaries receiving payment	0	0		0
	b For terminated vested participants	0	0		0
	c For active participants	2	1,121,405		1,121,405
	d Total	2	1,121,405		1,121,405
4	If the plan is in at-risk status, check the box and complete lines (a) and (b) ☐				
	a Funding target disregarding prescribed at-risk assumptions			4a	
	b Funding target reflecting at-risk assumptions, but disregarding transition rule for plans that have been in at-risk status for fewer than five consecutive years and disregarding loading factor			4b	
5	Effective interest rate			5	6.33 %
6	Target normal cost			6	213,225

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Funding

- Page #12, SB line 18 shows exact date and amount of employer contribution.
- Line 19 is the discounted value.

09/15/2015	220,491				
		Totals ►	18(b) 220,491	18(c)	0

19 Discounted employer contributions -- see instructions for small plan with a valuation date after the beginning of the year:

a Contributions allocated toward unpaid minimum required contributions from prior years	19a	0
b Contributions made to avoid restrictions adjusted to valuation date	19b	0
c Contributions allocated toward minimum required contribution for current year adjusted to valuation date	19c	211,130

Funding

- Page #13 –430 Segment rates & Miscellaneous

Part V Assumptions Used To Determine Funding Target and Target Normal Cost

21 Discount rate:

a Segment rates:	1st segment: 4.99 %	2nd segment: 6.32 %	3rd segment: 6.99 %	☐ N/A, full yield curve used
b Applicable month (enter code)			21b	0
22 Weighted average retirement age			22	62

23 Mortality table(s) (see instructions) ☒ Prescribed - combined ☐ Prescribed - separate ☐ Substitute

Part VI Miscellaneous items

24 Has a change been made in the non-prescribed actuarial assumptions for the current plan year? If "Yes," see instructions regarding required attachment ☐ Yes ☒ No

25 Has a method change been made for the current plan year? If "Yes," see instructions regarding required attachment ☐ Yes ☒ No

26 Is the plan required to provide a Schedule of Active Participants? If "Yes," see instructions regarding required attachment ☒ Yes ☐ No

Funding

- Page #13, SB MRC Charges and Credits.
- Contribution is discounted value.

31 Target normal cost and excess assets (see instructions):				
a Target normal cost (line 6)			31a	213,225
b Excess assets, if applicable, but not greater than line 31a			31b	2,095
32 Amortization installments:		Outstanding Balance		Installment
a Net shortfall amortization installment		0		0
b Waiver amortization installment		0		0
33 If a waiver has been approved for this plan year, enter the date of the ruling letter granting the approval (Month______ Day______ Year ______) and the waived amount			33	0
34 Total funding requirement before reflecting carryover/prefunding balances (lines 31a - 31b + 32a + 32b - 33)			34	211,130
	Carryover balance	Prefunding Balance		Total balance
35 Balances elected for use to offset funding requirement	0	0		0
36 Additional cash requirement (line 34 minus line 35)			36	211,130
37 Contributions allocated toward minimum required contribution for current year adjusted to valuation date (line 19c)			37	211,130
38 Present value of excess contributions for current year (see instructions)				
a Total (excess, if any, of line 37 over line 36)			38a	0

Funding

- A <u>good</u> actuary will usually give you a range with Minimum, Maximum and Recommended.

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Funding

- Page #10 – Maximum Deductible .

Maximum Contribution

1) Funding Target	1,285,005
2) Target Normal Cost	214,504
3) 50% of the Funding Target	642,503
4) Increase in Funding Target Due to Salary Increases	51,853
5) Cushion Amount (3+4)	694,356
6) Total (1+2+5)	2,193,865
7) Funding Target as if At-Risk	1,332,791
8) Target Normal Cost as if At-Risk	253,544
9) Total (7+8)	1,586,335
10) Greater of 6 and 9	2,193,865
11) Assets	1,123,500
12) Undeducted Contributions	0
13) Maximum Contribution (IRC 404(o) (10-(11-12)))	1,070,365

Funding

- The FT and TNC used for maximum deduction are different that MRC
  - MAP-21/HATFA rates for MRC only.
- The maximum amounts shown on valuation not always accurate due to limitation is valuation systems.
  - If the plan had any amendment increasing the plan benefit for HCE's in the prior 2 plan years those increases are excluded in the max deduction calcs.

Funding

- We don't always quote the true Maximum Deductible.
- Could lead to the plan having assets too much in excess of the owner's 415 lump sum maximums.
- The goal is to keep assets and benefit liabilities (on a termination basis) close to the assets.
- A little overfunding may be right for a particular plan.

Funding

- Page #5 reflects total benefit liabilities on a termination basis = $1,424,827.
- The Total DB Assets on 12/31/14 (before ctb) = $1,123,500
- Amount necessary to fully fund on a termination basis:
  – $1,424,827 - $1,123,500 = **$301,327**

Funding

- A good recommended contribution for this plan would be $301,400 (unfunded benefits)
- Because the owner has benefits at the 415 limit the same amount might be quoted as the maximum deductible.
- If client is pushing for the highest deduction the actuary may be comfortable quoting something higher as the maximum deductible.

AFTAP

- Page #14 - what is an AFTAP?
- Adjusted Funding Target Attainment Percentage.
- The actuary certifies it.
- The TPA's job is to make sure it's given to the Plan Sponsor by the last day of the 9th month after the Plan Year.
- The 2015 AFTAP for a PYE 12/31/14 (EOY val) or PYB 1/1/15 (BOY val) was due 9/30/15.

AFTAP

- The AFTAP is very significant to the Plan even though it's not filed with the IRS.
- If the actuary has provided the AFTAP timely but your Annual Admin package is not ready you need to send it to the Plan Sponsor anyway.
- Email is fine.
- Keep actuary happy, don't send confirmations in September for deposits made much earlier in the year.

AFTAP

- The AFTAP can limit operations in the plan.
  - freezing benefit accruals
  - Curtailing or eliminating LS payouts in excess of $5K.
- Your actuary will advise when there is an AFTAP 'issue' what you need to do about it.

AFTAP

- Page # 14 2015 AFTAP (EOY val)
- 2015 AFTAP based on the same FT + TNC that was used in the 2014 430 Valuation.
- 12/31/14 Assets based on discounted contribution receivable.
  - 2015 AFTAP for EOY val on Line 15 of 2015 SB
- Benefit and Assets reflect accruals and funding through the end of 2014.

AFTAP

- Page #14: 2015 AFTAP =

  (1,123,500 + 211,130) ÷ 1,347,976

Certification of Adjusted Funding Target Attainment Percentage (AFTAP) for the 2015 Plan Year

Determination of AFTAP as of **December 31, 2014**

1.	Funding Target plus Target Normal Cost	$1,347,976
2.	a. Market Value of Assets	$1,123,500
	b. Discounted Receivable Contributions, Received by AFTAP Certification date using **6.33%**	211,130
	c. Carryover Balance	0
3.	Funding Target Attainment Percentage (FTAP Exempt) (equals items (2a + 2b) divided by item 1)	99.00%
4.	Adjustment for Annuity Purchases for NHCE's during the last 2 years	$0
5.	Adjusted Funding Target Attainment Percentage (AFTAP) (equals items (2a + 2b - 2f - 2k + 4) divided by items (1 + 4))	99.00%

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AFTAP

- On BOY vals the 2015 AFTAP will be based on 1/1/15 data.
- FT only (benefits at BOY) – no 2014 accruals.
- Assets at BOY excluding any 2015 Funding.
  - 2015 AFTAP reported on line 15 of <u>2016 SB</u>

PBGC AFN

- This Plan is covered by PBGC.
- PBGC covered plans have an different Participant Notice requirement called the Annual Funding Notice (AFN)
- The AFN replaces the Summary Annual Report (SAR) for DB Plans covered by PBGC.

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PBGC AFN

- Page 15 starts the AFN (5 pages!!!).
- Majority of contents are the same for all Plans.
  - blah blah blah…
- Page #15 - 'How Well Funded is Your Plan' is plan specific.
- The last 3 years of Assets and FT Liabilities as of the Beginning of the Plan Year (even for EOY vals), called the FTAP.

PBGC AFN

	2014 Plan Year	2013 Plan Year	2012 Plan Year
1. Valuation Date	12/31/2014	12/31/2013	12/31/2012
2. Plan Assets			
a. Total Plan Assets	1,123,500	977,500	739,904
b. Funding Standard Carryover Balance	0	0	0
c. Prefunding Balance	p	0	0
d. Net Plan Assets (a) – (b) – (c) = (d)	1,123,500	977,500	739,904
3. Plan Liabilities	1,121,405	755,546	532,406
4. At-Risk Liabilities	Does Not Apply	Does Not Apply	Does Not Apply
5. Funding Target Attainment Percentage (2d)/(3)	100.19%	129.38%	138.97%

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PBGC AFN

- Page #16 - another Plan specific item:

Year-End Assets and Liabilities

The asset values in the chart above are measured as of the valuation date for the Plan. As of 12/31/2014, the fair market value of the Plan's assets was $1,334,630. On this same date, the Plan's liabilities were $1,524,038 based on the PBGC interest rates in effect on the last day of the Plan Year. These liabilities were determined as required using PBGC assumptions, which are not the assumptions used for determining the Funding Target Attainment Percentages above.

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PBGC AFN

- The end of plan year Liabilities shown on the AFN use different interest rates than all our other calculations.
  - based on PBGC segment rates in effect on the last day of the Plan Year.
- In this Plan year the PBGC Segment rates produce higher liability values.

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- Page #17 is a breakdown of the asset categories by percent of total assets.

Asset Allocations	Percentage
1. Interest-bearing cash	10%
2. U.S. Government securities	
3. Corporate debt instruments (other than employer securities):	
Preferred	15%
All other	
4. Corporate stocks (other than employer securities):	
Preferred	
Common	15%
5. Partnership/joint venture interests	
6. Real estate (other than employer real property)	
7. Loans (other than to participants)	
8. Participant loans	
9. Value of interest in common/collective trusts	
10. Value of interest in pooled separate accounts	
11. Value of interest in registered investment companies (e.g., mutual funds)	60%
12. Value of funds held in insurance co. general account (unallocated contracts)	
13. Employer-related investments:	
Employer Securities	
Employer real property	
14. Buildings and other property used in plan operation	
15. Other:	

Cash Balance DB Plan

- Open Handout #2 - Cash Balance DB Plan val
- What is a cash balance plan?
  - Benefit defined in the document as a current Hypothetical Account Balance (HAB) as opposed to a monthly annuity payable at NRD.
  - The benefit is defined as the PVAB/Lump Sum with the annuity benefit at NRD calculated from that lump sum.
  - For the Participants it looks more like a PS plan.

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Cash Balance DB Plan

- The HAB is credited each year with:
  - Contribution (Pay) Credits
  - Interest Credits at a rate defined in the Plan.
- In most Cash Balance plans there are no 417(e) calculations.
  - There are exceptions not covered here
- Other than the formula and 417(e) issues the Cash Balance Plan is a Defined Benefit Plan!

Benefits

- Page #1 reflects the Plan Document CB Formula:

Plan Benefits: Retirement - Actuarial equivalent of the hypothetical account balance derived from annual Pay Credits and Interest Credits.

	Classification	Pay Credit Formula
Pay Credits -	1	$200,000
	2	1.5% of compensation

- Annual Interest Credit = 5%

Benefits

- All the assumptions including the 'Plan AEQ' are the same as our prior example

Actuarial Equivalence:

Pre-Retirement -	Interest -	5%
	Mortality Table -	None
Post-Retirement -	Interest -	5%
	Mortality Table -	G94 - 1994 Group Annuity Reserving Proj 2002, Scale AA (unisex)

Benefits

- Page #2 – Census – same ages our Traditional DB example:

Key	Percent Owner	SVC PS	SVC FS	Gender	Ages PA	Ages AA	Ages ARA	Dates Birth	Dates Hire	Dates Part	Dates Retire	Compensation
Seeley B.												
		7	5	M	50	57	62	01/01/58	01/01/00	01/01/08	12/31/19	$260,000.00
Jack H.												
		7	33	M	22	29	62	01/01/86	01/01/05	01/01/08	12/31/47	$65,000.00

Benefits

- 2014 Pay credit (benefit) calculation
- Seeley: $200,000 (not pay related)
- Jack: $65,000 x .015 = $975
  - Compensation shown on Page #2
- Total Pay Credits = $200,975

Benefits

- Page #3 – HAB Statement:
- 1) BOY AB = Begin Balance + Interest Credit
- 2) Current Year AB increase = Pay Credit
- 3) EOY AB = sum of 1) and 2)

<--AB increase from here -
EOY Total AB from here-->>

AB BOY comes from here-->>	Beginning Balance	Interest Credit	Pay Credit	Distribution	Adjustments	Ending Balance
Seeley B.						
Cash Balance						
Cash Balance	1,070,286.92	53,514.35	200,000.00	0.00	0.00	1,323,801.27
Jack H.						
Cash Balance						
Cash Balance	5,503.94	275.20	975.00	0.00	0.00	6,754.14
Grand Total:	$1,075,790.86	$53,789.55	$200,975.00	$0.00	$0.00	$1,330,555.41

Benefits

- Page #4 - Schedule of Benefits: EOY AB

	Beg Year Acc Ben Monthly Compensation	End Year Acc Ben Monthly Compensation	Monthly Benefit	Lump Sum @ Ret	Accrued Benefit
Seeley B.					
	21,250.00	21,666.67	17,500.00	2,613,190	11,103.92
Jack H.					
	5,166.67	5,416.67	735.12	111,854	222.09

Benefits

- Seeley's EOY AB = Year End HAB projected to NRA ÷ by the Plan APR
  - 5 years to NRA
  - Age 62 APR = 152.1573
- Total AB = $1,323,801.27 x 1.05^{5} ÷ 152.1573 = $11,103.92
- Same steps for Jack's EOY AB:
- $6,754.14 x 1.05^{33} ÷ 152.1573 = $222.09

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Funding

- Page #3 – FT & TNC for based on the monthly benefits at NRA*.

BOY AB using BOY HAB + 2014 Interest Credit------------------------>>	Accrued Benefit	Funding Target	From 2014 Pay Credit->> Benefit Increase	Target Normal Cost
Seeley B.				
	9,426.34	1,055,750	1,677.58	187,889
Jack H.				
	190.03	3,110	32.06	525
Totals:	$9,616.37	$1,058,860	$1,709.64	$188,414

Benefits

- Same method in prior slide to determine benefits for FT & TNC
  - BOY AB based on BOY HAB + 2014 interest credit.
  - 2014 AB Increase based on 2014 Pay Credit
- Seeley BOY AB for FT: (1,070,286.92 + 53,514.35) x 1.05^5 ÷ 152.1573 = **$9,426.34**
- Jack BOY AB for FT: = (5,503.94 + 275.20) x 1.05^33 ÷ 152.1573 = **$190.03**

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Benefits

- Same method is used with the 2014 pay credit to determine the 2014 Accrued Benefit Increase.
  - Or take EOY benefit minus BOY Benefit
- Jacks 2014 increase in AB (Page #3) - $32.06
- As a percent of pay = $32.06 ÷ $5,416.67* = .59%
- This demonstrates we pass the 401(a)(26) the meaningful benefit based on benefit at NRA.

Funding

- Development of MRC:
- Shortfall from Page #7:

Funding Shortfall

14. Reduced Funding Target (C9)	1,058,860
15. Applicable Assets (IRC 430(f)(4)(B)(i) (C5))	1,050,000
16. Funding Shortfall (IRC 430(c)(3) (C14-C15, not less than 0)	8,860
17. Shortfall Amortization Charge (C25a)	1,483

- FT > Assets are < FT produces a Shortfall with a 7 yr amortization charge = $1,483
- Note there are situations where the Assets < FT but there are no amortization charges.

Funding

- Page #7D – Minimum Required Contribution

D. Minimum Required Contribution

1. Target Normal Cost (A2)	188,414
2. Funding Surplus (C5-A1, not less than 0)	0
3. Reduced Target Normal Cost (D1-D2, not less than 0)	188,414
4. Shortfall Amortization Charge (C17)	1,483
5. Waiver Amortization Charge	0
6. Minimum Contribution (D3+D4+D5)	189,897

Funding

- Cash Balance Pay Credits do not equate to Minimum Funding.
- MRC is based on benefit liabilities vs assets.
- MRC can be greater or less than the Pay credits.
- In this plan the pay credits will satisfy MRC.
  – in some plans it will not.

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Funding

- Sponsor funded a $200,975 contribution on 5/15/15.
- Page #6 = 430, 404, CB crediting rate and EIR:

Rates For:	1st Segment	2nd Segment	3rd Segment
IRC 430	4.99%	6.32%	6.99%
IRC 404	1.20%	4.10%	5.20%

Effective Interest Rate:	6.34%	Current Year Actual Rate of Return:	-10.12%	Current Year Projection Rate:	5.00%
Prior Year Effective Interest Rate:	6.77%	Prior Year Actual Rate of Return:	4.25%	Prior Year Projection Rate:	5.00%
				Future Projection Rate:	5.00%

- 6.34% used to discount employer contribution.

Funding

- <u>Discount</u> employer contribution back to 12/31/14 using EIR.
- = 5/15/15 - 12/31/14 = <u>135</u>
- $200,975 ÷ x <u>1.0634</u>^(135/365) = **$196,457**

AFTAP

- Page #8 AFTAP based on EIR discounted ctbs.

Certification of Adjusted Funding Target Attainment Percentage (AFTAP) for the 2015 Plan Year

Determination of AFTAP as of **December 31, 2014**

1.	Funding Target plus Target Normal Cost	$1,247,274
2.	a. Market Value of Assets	$1,050,000
	b. Discounted Receivable Contributions, Received by AFTAP Certification date using **6.34%**	196,457
	c. Carryover Balance	0
3.	Funding Target Attainment Percentage (FTAP Exempt) (equals items (2a + 2b) divided by item 1)	99.93%
4.	Adjustment for Annuity Purchases for NHCE's during the last 2 years	$0
5.	Adjusted Funding Target Attainment Percentage (AFTAP) (equals items (2a + 2b - 2f - 2k + 4) divided by items (1 + 4))	99.93%

- Some plans have 'quarterly contribution' requirements.
  - Applies if plan had a shortfall in prior plan year
- The consequence is a higher interest rate is used to discount the contribution for MRC.
  - EIR + 5%.
  - If deposited after quarterly due date(s) results in a higher contribution to satisfy the MRC.

- This plan has quarterly ctb requirement in 2014.
- Contribution deposited after quarterly dates results in the increased interest discount for purposes of Minimum Required Contribution only.
  - MRC discount based on 6.34% + 5% - 11.34%

- Page #10 – SB lines 19 & 20.

Part IV **Contributions and Liquidity Shortfalls**

18 Contributions made to the plan for the plan year by employer(s) and employees:

(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees	(a) Date (MM-DD-YYYY)	(b) Amount paid by employer(s)	(c) Amount paid by employees
05/15/2015	200,975				
			Totals ►	18(b) 200,975	18(c) 0

19 Discounted employer contributions -- see instructions for small plan with a valuation date after the beginning of the year:

a Contributions allocated toward unpaid minimum required contributions from prior years	19a	0
b Contributions made to avoid restrictions adjusted to valuation date	19b	0
c Contributions allocated toward minimum required contribution for current year adjusted to valuation date	19c	191,789

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- Discounted contribution for Schedule SB = $191,789.
- Discounted contribution for AFTAP and AFN = $196,457
- AFN will follow same steps as the Traditional DB.
  - BOY FTAP for last 3 years
  - Benefit Liablities at year end using PBGC interest rates in effect on last day of Plan Year.