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PBGC CALCULATIONS

Teaching Session

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Description of steps in performing the calculations for a Section 4044 asset allocation; - Determining and Valuing Guaranteed Benefits (ERISA Section 4022). Assignment to Priority Categories (ERISA Section 4044) - Actuarial Assumptions - Example of Calculations - Special Situations.

The leaders of this learning session are Mary S. Riebold, F.S.A., Vice President and Consulting Actuary with William M. Mercer, Inc.; and John P. Morgan, F.S.A., Actuary with PBGC Division of Actuarial Services. His comments are made individually, and do not necessarily represent official PBGC policy. The information which follows was developed individually by the two leaders, and is not always entirely consistent. We considered editing both versions so that they did agree. In the real world, however, there are indeed many different interpretations of this subject matter; accordingly, we believe it preferable to present this information utilizing both viewpoints. This is in fact much more representative of the "State of the Art" as it is practiced in today's environment.

There are four sources of information on the subject of PBGC calculations. These are as follows:

1. Title IV of ERISA.
2. Final, temporary, or proposed regs of PBGC.
3. Private ruling letters and interpretations of PBGC.
4. Opinions rendered individually by PBGC case officers and actuaries.

We have utilized each of these to the extent possible in the information presented.

The essential and underlying difficulty in all PBCG calculations and determinations of asset sufficiency is an underlying inconsistency between guaranteed benefits (Act Section 4022) and the priority categories (Act Section 4044). The plan is sufficient if, usually and only if, its assets are adequate to provide all benefits through priority category 4. The underlying problem, however, is that both non-guaranteed benefits or both guaranteed and non-guaranteed benefits occur in each of the categories 1, 2, 3 and 4. Thus the "street Knowledge" that a plan is sufficient if its assets are greater than its guaranteed benefits is clearly not reliable.

Basic Benefits

Why Important - Basic benefits define the type of benefits guaranteed. Basic benefit is that which would be guaranteed if there were no amount limits on guaranteed benefits.

Requirements for Basic Benefits (Final and Proposed Reg. 2605.1-2605.8)

1. Payable in periodic installments (not necessarily level).

2. Designed to provide income for the life of the participant and beneficiaries (but includes annuities certain).

3. Non-forfeitable, on date of Plan termination.

4. Return of mandatory employee contributions upon pre- or post-retirement death.

5. Common benefits usually not basic (often these depend on the special circumstances of the plan):

    a) Temporary supplements (other than level income options).

    b) Lump sum death benefits (unless derived from a reduction in normal pension amount, or derived from mandatory employee contributions).

Guaranteed Benefits

Why Important - Plan is sufficient if assets are adequate to provide all guaranteed benefits. There is no one-to-one correspondence between Priority Categories and Guaranteed Benefits. First step in defining Guaranteed Benefits is to define the type of benefits guaranteed. These are called Basic Benefits, and are described above.

Requirements on Amounts of Benefit Guaranteed (Final Reg. 2609.1-2609.8)

1. Determine "$750 - 100% Maximums":

    a) $750 component updated to date of Plan termination by SS-TWB. Ignore the accelerated TWBs legislated by December 1977 amendments to OASDI. The $750 continues to be updated using Social Security's previous technique to determine the TWB.

    b) 100% component based on highest average salary.

    c) "$750-100% Maximum" is based on Life Annuity payable at Age 65 or later. It must be reduced for any participant to reflect his Expected Retirement Age (if $<$ 65) and the Normal Retirement Form at date of termination.

       -For those already retired, these are the actual age at termination and what remains of the elected form.

       -Maximum is not increased if retiree is over age 65.

2. Phase-in Benefit Improvements during last 5 years (after applying $750-100% Maximum to each year's benefit). Use earlier of 20% or $20/month. Phase-in applies to such items as eligibility for vesting and early retirement, as well as benefit amounts.

Non-Guaranteed Benefits

Why Important - These are the benefits which are not payable by PBGC, unless assets are allocated to them according to the Section 4044 Priority Categories. They can arise in all Priority Categories. Thus, they can serve to "drain away" assets from Guaranteed Benefits of a lower Priority Category, and cause a Plan to be Insufficient.

Types of Non-Guaranteed Benefits -

- Benefits of Non-Basic Type

- Benefits in excess of Limitations on Amount

SUMMARY OF PBGC PRIORITY CATEGORIES

Category	General Description	Value Benefits as Follows: Valuation Age	Value Benefits as Follows: Commencement Age	Calculated Benefits Using: Age	Calculated Benefits Using: Service to	Calculated Benefits Using: Plan	Benefit Types Possible	Problems
1	Benefits from Voluntary Employee contributions: Accrued Pension Benefits; Pre-Retirement Death Benefits; Valuation Surplus	VD	NRA	–	–	VD	Non-basic only	
2	Benefits from Mandatory Employee contributions: Accrued Pension Benefits; Pre-Retirement Death Benefits; Valuation Surplus	VD	XRA	–	–	VD	Non-basic: Valuation Surplus Basic, Not Guaranteed: $750-100% Maximum Guaranteed: Accrued Benefit at NRA; Lump Sum Death	
3	Benefits payable as an annuity which have been or could have been in pay status for at least 3 years. The amount of benefits are computed using the Plan provisions in effect during the 5 years ending on the termination date under which the benefit would be the smallest.	VD	VD	VD-3	VD-3	VD-5, if lowest	Non-basic: Temporary Supplements Basic, Not Guaranteed: $750-100% Maximum Guaranteed: But only based on service to VD-3 and Plan at VD-5	
4	All Guaranteed Benefits not in prior categories. Also includes those benefits which would be guaranteed to substantial owners if they were not substantial owners.	VD	XRA	XRA	VD	VD-5 to VD	Basic, Not Guaranteed: Substantial owner excess. Guaranteed: To participants w/o Category 3. -To participants with Category 3, but including service to VD and Phased-in portions of Plans to VD.	
5	All Non-forfeitable benefits not in prior categories	VD	XRA	XRA	VD	VD	Non-basic: Vested temporary supplements and lump sum. Basic, Not Guaranteed: $750-100% Maximum and Not yet phased-in.	
6	All other benefits	VD	NRA	NRA	VD	VD	Non-basic: Non-vested annuities; Non-vested temporary supplements; Non-vested lump sums	

Actuarial Assumptions - There are four actuarial assumptions utilized in these calculations, each of them of extreme importance.

1. Interest: PBGC Interest Rates:

Dates of		Annuity Rates						
Term	Final Reg.	Immediate	K_1	K_2	K_3	N_1	N_2	Death Benefits
9/2/74-9/30/75	11/03/76	8.00%	7.25%	5.75%	4.25%	7	8	5.00%
10/1/75-12/31/75	1/13/77	7.75%	7.25%	5.75%	4.25%	7	7	5.00%
1/1/76-2/29/76	1/13/77	8.00%	7.25%	5.25%	4.00%	7	10	5.00%
3/1/76-5/31/76	1/13/77	7.25%	7.00%	5.00%	4.00%	7	10	5.00%
6/1/76-8/31/76	1/13/77	7.25%	6.75%	4.75%	3.50%	7	10	5.00%
9/1/76-11/30/76	6/28/77	7.00%	6.00%	4.75%	3.50%	8	10	5.00%
12/1/76-2/28/77	8/19/77	7.00%	6.25%	4.75%	3.75%	7	10	5.00%
3/1/77-5/31/77	11/21/77	7.00%	6.00%	4.75%	3.50%	8	10	5.00%
6/1/77-11/30/77	3/14/78	6.75%	6.25%	4.50%	3.75%	8	10	5.00%
12/1/77-2/28/78	6/12/78	6.75%	6.25%	4.50%	3.75%	8	10	5.00%
3/1/78-5/31/78	11/27/78	7.00%	6.25%	4.75%	3.75%	7	10	5.00%
6/1/78-8/31/78	1/19/79	7.25%	6.75%	4.75%	3.50%	7	10	5.00%
9/1/78-2/28/79	4/16/79	7.25%	6.75%	4.75%	3.50%	7	10	5.00%

The annuity rate shown as immediate is applicable at annuity commencement date.

The annutiy rate shown as K1 is applicable for N1 years prior to annuity commencement date.

The annuity rate shown as K2 is applicable for an additional N2 years.

The annuity rate shown as K3 is applicable for any years beyond N1 + N2 years.

2. Mortality

3. Retirement age. The PBGC determines a unique age for each employee. This is known as the individuals' expected retirement age (XRA). It is based upon the amount of vested benefit under the employee's current plan; and whether or not future employment can be anticipated after the plan termination. A sample of the PBGC table is shown below, and is representative of the XRA for an employee who has a high benefit amount. All benefit amounts valued are determined for this XRA, utilizing the Plan's early retirement factors.

4. Annuity Form. The annuity form utilized is the final form, under the plan in existence at the date of termination. All other benefits are converted to this form by means of the plan's conversion factors.

EXPECTED RETIREMENT AGES
(High Rates)

Attained Age or earliest age of benefit commencement	60	61	62	63	64	65	66	67	68	69	70
42	48	48	48	48	48	48	x	x	x	x	x
43	49	49	49	49	49	49	49	x	x	x	x
44	50	50	50	50	50	50	50	50	x	x	x
45	51	51	51	51	51	51	51	51	51	x	x
46	51	52	52	52	52	52	52	52	52	52	x
47	52	52	52	53	53	53	53	53	53	53	53
48	53	53	53	53	53	53	53	53	53	53	53
49	54	54	54	54	54	54	54	54	54	54	54
50	54	55	55	55	55	55	55	55	55	55	55
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58	59	59	60	60	60	60	60	60	60	60	60
59	59	60	60	60	60	60	60	60	60	60	60
60	x	60	60	60	60	60	61	61	61	61	61
61	x	x	61	61	61	61	61	61	61	61	61
62	x	x	x	62	62	62	62	62	62	62	62
63	x	x	x	x	63	63	63	63	63	63	63
64	x	x	x	x	x	64	64	64	64	64	64
65	x	x	x	x	x	x	65	65	65	65	65
66	x	x	x	x	x	x	x	66	66	66	66
67	x	x	x	x	x	x	x	x	67	67	67
68	x	x	x	x	x	x	x	x	x	68	68
69	x	x	x	x	x	x	x	x	x	x	69
70	x	x	x	x	x	x	x	x	x	x	x

EXAMPLE OF PBGC PRIORITY CATEGORIES 3, 4, 5, 6

DATE	PLAN DATA					EMPLOYEE DATA	
	ER AGE	ER REDUC	NORM RET BEN Amt.	NORM RET BEN Form	TEMP SUPPL @ ER	AGE	SERVICE
DoPT	60	None	$25/year	10C & C	$300	63	33 years
DoPT-1			$15/year	Life		xx	xx
DoPT-2						xx	xx
DoPT-3						60	30 years
DoPT-4						xx	xx
DoPT-5		5%/year			None	xx	xx

Category 3
(Age 60)

PLAN BENEFIT (Cumulative Basis)

Non-basic type: None, per plan of DoPT-5
Basic type: $15 x 30 years x .75 ER at Age 60 = $337.50

VALUE OF BENEFIT (Cumulative Basis)

$\$337.50 \times 1/\ddot{a}^{(12)}_{63} \quad (7.4850) \times 12 = \$30{,}314$

Assets Allocated to Category

B: $30,314

Category 4
(X RA = 64)

PLAN BENEFIT

$750 - 100% Max:	$750 x .93 PBGC ER at x RA x .925 PBGC Conv. = $645.19
Plan at DoPT-5:	$15 x 33 years x .95 ER at x RA x .925 PBGC Conv. = $434.98
Plan at DoPT-4:	$15 x 33 years x 1.00 ER at x RA x .925 PBGC Conv. = $457.88
Plan at DoPT:	$25 x 33 years x 1.00 ER at RA = $825.00
Guar. Benefit:	$434.98 + Min. [($457.88 - $434.98), Max ($80, 80% ($457.88 - $434.98))] + Min [($645.19 - $457.88), Max. ($0, 0% ($645.19 - $457.88))] = $434.98 + $22.90 + 0 = $457.88

VALUE OF BENEFIT

$\$457.88 \times 1/\ddot{a}^{(12)}_{63:\overline{10|}} \quad (8.2174) \times 12 = \$45{,}151$

Assets Allocated to Category

B: $14,837

Category 5
(X RA = 64)

PLAN BENEFIT

Basic type: $825.00, based on Plan at DoPT
Non-basic type: $300 temporary supplement, based on Plan at DoPT
(Note: if assets are exhausted in Category 5 it is necessary to determine benefits under Plans at DoPT-5 to DoPT-1 as well)

VALUE OF BENEFIT

$\$825.00 \times 1/\ddot{a}^{(12)}_{63:\overline{10|}}\ (8.2174) \times 12 = \$81,352$

$\$300 \times 1/\ddot{a}^{(12)}_{63:\overline{1|}}\ (.8735) \times 12 = \$3,145$

Assets Allocated to Category

B: $36,201

NB: $ 3,145

Category 6
(X RA = 64)*

PLAN BENEFIT

None

SPECIAL SITUATIONS

1. Cashouts (Sufficient Plans)

   Current PBGC regulation would seem to require that lump sum distributions be made on no less conservative assumptions than those of the PBGC.

   As an operating procedure, when the Plan Sponsor has been able to obtain more favorable (to the Sponsor) annuity quotes than those of the PBGC, for those participants who opt out of the annuity, lump sums may be calculated on the Insurer's rate basis.

2. Category 2

   Distinguish between voluntary and mandatory employee contributions. See ERISA Section 4044 (b) (5)

   Distinguish between plans which have become subject to minimum vestings standards and those which have not.

* This expected retirement age was not based on the included table of high rates but rather on medium rates.

Determine the value of accumulated mandatory employee contributions at DoPT, value of basic type Category 2 benefits, total value of Category 2 benefits, and value of non-basic type Category 2 benefits, in that order. (PBGC, IRS, and Plan Assumptions may all be involved).

For plans subject to minimum vesting standards, value of basic type Category 2 benefits consists of value of accrued annuity benefit derived from employee contributions and value of pre-retirement death benefit. IRS regulations are used.

For plans not subject to minimum vesting standards, simpler, approximate methods are used.

The preretirement death benefit, when included as a plan provision, is now a guaranteeable benefit.

Pay value of non-basic type Category 2 benefit in cash.

Example - Plan Subject to Minimum Vesting Standards

Given the following:

	Participant 1	Participant 2
Accumulated mandatory EE contributions at DoPT	\$5,000	\$10,000
Value of accrued annuity benefit derived from EE contributions	\$4,800	\$ 6,500
Value of preretirement death benefit	\$ 400	\$ 1,500

Then We Have:

Value of basic type Category 2 benefits	\$5,200	\$ 8,000
Value of total Category 2 benefits	\$5,200	\$10,000
Value of non-basic type Category 2 benefits (pay in cash)	0	\$ 2,000

3. Substantial Owners

Special treatment required for substantial owners, as defined in ERISA Section 4022 (b)(6). Guaranteed benefit and Category 4 benefit need not be the same.

Will be paid larger of guaranteed benefit and benefit produced by 4044 allocation.

Guaranteed benefit phased-in over thirty years participation.

Guaranteed benefit can not exceed twice what it would be had the plan never had any amendments.

Allocation in Category 4 is based on total Category 4 benefit as if the substantial owner were not a substantial owner and not merely on his guaranteed benefit.

May waive benefits in order to reduce Plan Asset Insufficiency.

Example - 10-Year Old Plan (No Amendments)

Plan Formula Benefit	\$300/month
Category 4 Benefit	\$300/month
Present Value of Category 4 Benefit	\$30,000
Assets Allocated to Substantial Owner	\$15,000
Benefit Provided by Asset Allocation	\$150/month
Guaranteed Benefit	\$100/month
Benefit Payable to Substantial Owner	\$150/month