EQUINITI

InFocus Document

Calculation of PV 1% Salaries

Contents

1 Scope

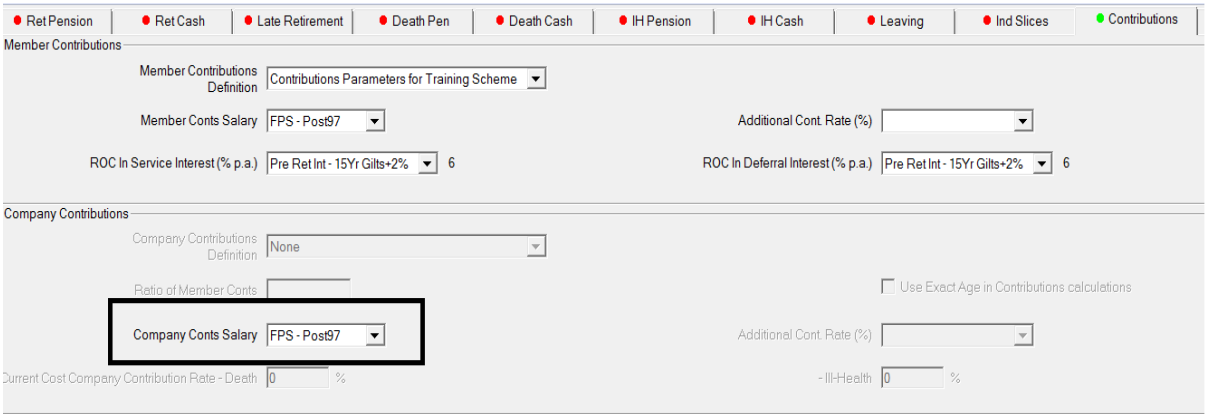
This document covers 'PV 1% Salaries' figures for the Actives Module.

SuperVal will include 'PV 1% Salaries' figures in the results output. Their derivation/calculation is explained in this document.

Note that this document is based on Version V9.25 of SuperVal. Any screenshots which may be included from previous versions of SuperVal are not materially different from those in V9.25.

2 Salary

SuperVal uses the salary that has been defined in the Company Contribution tab to calculate the PV 1% of Salaries.



SuperVal uses all the characteristics specified for the Salary used for calculating the PV 1% of Salaries except for the averaging period. SuperVal ignores the averaging period you have specified for that salary.

3 Worked Example

The example used is based on the following data:

DOB	1st January 1947
NRD	1st January 2012
Salary	30,000 (increasing on the anniversary of the Valuation Date)
Valuation Date	1 January 2008

The valuation basis is as follows:

- Pre-retirement interest rate 9% p.a.
- Salary escalation rate 6% p.a.
- Pre-retirement mortality PA(90)-2

Appendix 1 shows the main page of results using the AAN method for this member. The 'PV 1% Salary' figure for this member is 1,069.

The way that the present value of 1% salaries is calculated looks at the contribution made by the 'enders' (those that make it to the end of each year) and the 'exits' (those that leave during each year). The 'enders' will contribute a full 1% of salary in each year and the 'exits' will be assumed to contribute ½% each year.

Table 1 below shows how the 'PV 1% Salary' figure is arrived at for this member.

Table 1:

Age	**V(MP) (A)**	**V(Q) (B)**	**Enders (C)**	**Exits (D)**	**PV 1% Sal (E)**
61	0.95783	0.97869	283.10	2.14	285.24
62	0.87874	0.89788	270.87	2.23	273.10
63	0.80618	0.82374	258.78	2.33	261.11
64	0.73962	0.75573	246.82	2.42	249.24
65	-	-	-	-	0
Total					**1,068.69***

*Please note that in Appendix 1 (SuperVal output) this number is rounded up to give 1,069.

V(MP) is the discount factor (at 9%) at the mid-point of each year i.e. $V^{½} = 0.95783$, $V^{1½} = 0.87874$, $V^{2½} = 0.80618$, etc. V(Q) is the discount factor for a quarter way through each year i.e. $V^{¼} = 0.97869$, $V^{1¼} = 0.89788$, $V^{2¼} = 0.82374$, etc.

The 'enders' are assumed to be active at the start and the finish of each year. The discounting factor for interest for the value of 'enders' will take account of a half a year, i.e. the figures in the column V(MP). The value of the 'enders' in each year is as follows:

Table 2 ('enders'):

Age	1% Salary (A)	${}_tp_{61}$ (B)	Value (A) x (B) x Table 1(A)
61	300	0.98523	283.10
62	318	0.96934	270.87
63	337.08	0.95227	258.78
64	357.30	0.93396	246.82
65	378.74	-	-

Salaries are assumed to increase by 6% at the end of each year (i.e. 'review date' increases on 31/12 each year). If 'continuous' salary increases had been selected then the figures in the '1% Salary' column above will be increased by a further 3% (½ × 6%).

The 'exits' are assumed to leave active service half way through the year (this could be by death in service, withdrawal, ill health retirement, or early retirement). The discounted factor for interest for the value of 'exits' will take account of a quarter of a year, i.e. the figures in column V(Q) in table 1. The value of the 'exits' in each year is shown below:

Table 3 ('exits'):

Age	½% Salary (A)	${}_tp_{61}$ (B)	q_{age} (C)	Value (A) x (B) x (C) x Table 1(B)
61	150	0.98523	0.01477	2.14
62	159	0.96934	0.01613	2.23
63	168.54	0.95227	0.01761	2.33
64	178.65	0.93396	0.01923	2.42
65	189.37	-	-	-

[Note that in this example the only decrement before NRA is death in service.]

If a member is run under the PUC method, then the 'exits' will still be assumed to occur half way through the year, but the discounted factor for interest for the value of 'exits' will take account of half of a year rather than quarter of a year, i.e. the figures in column V(MP) in table 1.

So please note the difference in discounting between PUC and AAN when dealing with decrements assuming an exit half way through the year.

The present value of 1% figures are assumed to be payable continuously. If you want to allow for contributions payable monthly then you could reflect this by using the loading adjustment field on the Salary Projection.

The results pages in Appendix 1 also show the present value of salary over a number of different periods. These are shown below:

Present Value - Years	**1**	**5**	**10**	**15**	**20**	**25**	**30**	**50**	**3.87**
Present Value 1% p.a	**0.9578**	**4.0609**	**6.7002**	**8.4156**	**9.5305**	**10.2551**	**10.7260**	**11.4443**	**3.8290**
Present Value 1% Sals	**285**	**1,069**	**1,069**	**1,069**	**1,069**	**1,069**	**1,069**	**1,069**	**1,037**

The 'Present Value £1 p.a.' figures are the sum of the V(MP)'s for that number of years. These figures therefore include interest and not mortality.

e.g. 5 years: $V^{½} + V^{1½} + V^{2½} + V^{3½} + V^{4½} = 4.0609$ (using 9% interest)

The 'Pres Value 1% of Sals' figures carry out the same calculations as already set out in the above tables (and so include both interest and mortality) and are summed for that number of years.

The last figure uses average remaining service life. For this member the average remaining service life is 3.87 years. The 'Pres Value 1% Sals' figure is found by summing the PV 1% salary figures in years 1 to 3 and adding 0.87 times the PV 1% salary figure in year 4.

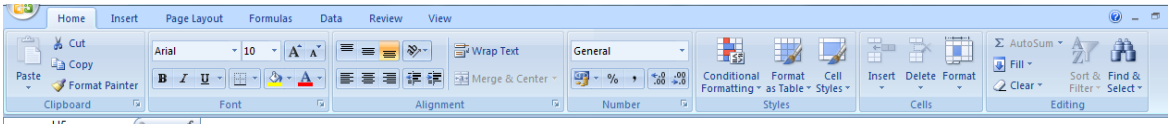
$$\text{i.e. } 285.24 + 273.10 + 261.11 + 0.87 \times 249.24 = 1{,}036.29$$

If the member is starred (has a '*' in the last column of the members data record) then further pages will be produced headed 'Individual Member Listing'. These pages take the values from the VARPRINT (pension amounts times annuities) and apply probabilities and discounting for interest.

The last such page for this member is shown in Appendix 2. There is a column headed 'PV 1% Sals' which shows the figures each year that are also shown in table 1.

4 APPENDICES

4.1 Appendix 1 – Results Excel Output



Valuation Statistics

Valuation Statistics

Client: XC
Valn Method: AAN
Valn Date: 01/01/2008
Basis File: C:\Superval\Infocus\1. PV1% SAL\PV1%SAL.APF

All Members: 1 **Salaries:** 30,000

Weighted Averages

			Past		Future	Total		Age at Entry to	
	Age	Salary	Co. Service	Membership	Membership	Co. Service	Membership	Company	Scheme
by **Number of Members**	61.0	30,000	32.4	32.4	4.0	36.4	36.4	28.6	28.6
by **Member Contribution Salary**	61.0		32.4	32.4	4.0	36.4	36.4	28.6	28.6
by **Company Contribution Salary**	61.0		32.4	32.4	4.0	36.4	36.4	28.6	28.6
by **Past Service Liability**	61.0								

PV 1% of Salaries

Period	1	2	3	4	5	6	7	8	9	10	11	12
PV 1% of Salaries	285	558	820	1,069	1,069							

Weighted Average	by **Number of Members**	by **Memb Contribution Salary**	by **Co Contribution Salary**	by **Projected Salary**
Period	**3.9**	**3.9**	**3.9**	**3.7**
PV 1% of Salaries	1,037	1,037	1,037	1,006

4.2 Appendix 2 - Individual Member Listing

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□                                        Claybrook Computing 8.50     Valuation Date 1 January 2008
Client:  XC                                        TOTAL INDIVIDUAL MEMBER LISTING                                  31 October
Member Details:  Name: m001       Sex: M  DoB:01/01/1947 DJC:01/08/1975 DJS:01/08/1975 GMP's - Pre-88: œ      0  Post-88: œ      0


                        FINAL          FUTURE STERLING VALUES OF BENEFITS ON   PRESENT VALUE OF BENEFITS ON     CONTS
AGE    tPx    SALARY  AVERAGE   (AC)j ---------------------------------------- ---------------------------------  DEATH  MEMB.  P.V.
                       SALARY             RET      DEATH    ILL H.    LEAVING    RET    DEATH  ILL H. LEAVING  IN DEF  CONTS 1% SAL

61  1.00000   30,000   30,000        0         0        0         0          0        0        0        0        0       0    285
62  0.98523   31,800   31,800        0         0        0         0          0        0        0        0        0       0    273
63  0.96934   33,708   33,708        0         0        0         0          0        0        0        0        0       0    261
64  0.95227   35,730   35,730        0         0        0         0          0        0        0        0        0       0    249
65  0.93396   37,874   37,874        0   233,458        0         0    0 154,465        0        0        0        0       0      0

TOTALS                                                          (SUM=   154,465)    154,465        0        0        0       0

                                                                                Present Value of a Contribution of 1% of Salary    1,069
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