UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1976

November 24, 1976

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PURPOSE AND SUMMARY

The purpose of this report is to set forth the results of our actuarial valuation of the University of Minnesota Supplemental Benefits Plan as of June 30, 1976 in accordance with Chapter 356 of the Minnesota Statutes (including 1975 revisions).

In summary, our valuation reveals a Chapter 356 requirement of $674,000, well short of the annualized benefits payable to retirees as of the valuation date ($1,101,600).

The plan is essentially one for a "closed group" of participants; namely, existing retirees and a diminishing group of active participants soon to retire. Since appropriate projections would substantiate the diminishing nature of benefits payable under this program, any attempt to fund it strictly in accordance with the Statutes would prove to be meaningless. That is, normal anticipated attrition of the covered group, absent further modification of plan provisions which would reverse this result will in itself indirectly fund the unfunded accrued liability at a rate more rapid than those prescribed under the Statutes.

Thus, for the present plan, a funding posture following that of current disbursement (meeting current disbursements as they become due) would seem to be indicated.

EMPLOYEE DATA

We received complete data covering 72 active participants presently eligible for supplements. In addition, we were furnished a listing for the 362 retirees, survivors, and widows presently receiving benefits under the plan. The data utilized for purposes of this valuation is summarized in Table 2 of this report.

PLAN VALUED

Since in fact benefits under this program are directly dependent on the level of benefits payable under the University's Faculty Retirement Plan, in addition to summarizing the pertinent provisions of the Supplemental Benefits Plan in Table 3(a) of this report, we have set forth a complete description of the principal provisions of the FRP plan in Table 3(b).

ACTUARIAL ASSUMPTIONS AND METHODS

The actuarial assumptions and methods employed in this valuation are outlined in Table 4 of this report. These assumptions and methods are identical to those used in last year's valuation and conform to those provisions of Chapter 356 of Minnesota Statutes.

Costs of the plan have been computed according to the entry-age-normal cost method (as presecribed by Statutes). Under this method, the normal cost is determined as the level dollar amount which would be required to be paid from each member's date of employment to retirement in order to provide the benefits under the plan. The accrued liability under the method is equal to the present value of all benefits payable under the plan less the present value of future normal costs calculated in accordance with the actuarial cost method. Since in fact this plan has not been funded, the accrued liability and unfunded accrued liability are identical in amount.

The Statutes call for annual normal costs (under the entry-age-normal cost method) to be provided in addition to the amortization of unfunded accrued liabilities by the end of the fiscal year occurring in 1997.

As indicated, the amount of benefits under this plan are directly dependent on those benefits provided under the FRP plan. Thus, in order to appropriately determine projected benefits payable, advance assumptions were made in regard to future projections under the FRP itself; namely, that contribution levels would continue at the same percentage of increasing covered payroll in accordance with the salary scale assumption set forth in item 5 of Table 4. For this purpose, fund balances were projected assuming a return of 5% per annum with accumulated values converted to annuity benefits on the basis of guaranteed purchase rates presently utilized.

It should be noted that the combined salary/investment return assumptions of 3½%/5% are prescribed by Statute and do not anticipate future increases of an inflationary nature. In fact, to the extent that salaries increase more than 3½% and basic FRP accumulations take place at a rate in excess of 5%, the increased level of FRP benefits would serve to diminish supplemental benefits payable from the plan. This in fact has generally been the case in the past thus reducing substantially the number of active participants actually eligible for supplemental benefits hereunder.

VALUATION RESULTS

The results of our valuation are set forth in Table 1. Section A of the table sets forth basic data items relative to active and retired (including survivors and widows) participants.

Section B sets forth the determination of the accrued liability, annual normal cost, and annual cost provision all in accordance with Chapter 356 as of June 30, 1976, with the provision amounting to $674,000.

In Section C of the table, we have set forth the determination of a funding requirement on two alternative bases corresponding to suggested alternatives offered by the University's prior actuary. These requirements have been set forth for illustrative purposes only.

COMPARISON OF 1975 and 1976 VALUATION RESULTS

In Table 5, we set forth a comparison of the principal values underlying the 1975 and 1976 valuations. Item 1(c)(i) is of interest in that it notes the attrition of the active group attributable for the most part to retirements during the year and additional "ineligibilities" on account of increasing FRP projections.

The progression of the accrued liability (item 3(c)) is of interest, in that most of the increase would be attributable to retirements taking place at an age earlier then that assumed. In fact, our valuation assumes an average retirement age of 68 whereas experience has dictated a comparable assumption somewhere between 65 and 66. Appropriate reflection of the average assumed age experienced might serve to increase the Chapter 356 requirement and current disbursement amount by $100,000 to $150,000.

* * * * * * * * * *

If, in connection with this valuation of the plan, any further investigations are indicated, we will be happy to proceed as directed.

Respectfully submitted,

THE WYATT COMPANY

Allan J. Grosh, F.S.A.
Member, American Academy of Actuaries

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Minneapolis/St. Paul
November 24, 1976

Table 1

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1976
(Valuation determinations rounded to nearest $100)

A. BASIC DATA

1.	Active Participants			
	(a)	Total active participants under Faculty Retirement Plan (FRP)		3,465
	(b)	Ineligible for Supplemental Benefits		
		(i)	Hired after 1963	2,752
		(ii)	Basic FRP benefit exceeds minimum	641
		(iii)	Total ineligible	3,393
	(c)	Eligible for Supplement		
		(i)	Number	72
		(ii)	Average annual projected Supplement 1/	1,278
2.	Retirees, Survivors and Widows			
	(a)	Number receiving benefits		362
	(b)	Average annual benefit being paid		3,043

B. DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE WITH CHAPTER 356 (MINNESOTA STATUTES)

1.	Accrued Liability as of June 30, 1976		
	(a)	Active participants	690,800
	(b)	Retirees, survivors and widows 2/	8,179,100
	(c)	Total	8,869,900
2.	Annual Normal Cost		13,100
3.	Annual Requirement to Fund Normal Cost and Amortize the Accrued Liability by July 1, 1997		674,000

C. DETERMINATION OF ALTERNATE PROVISIONS

1.	Current Disbursement Requirement	1,101,600
2.	Normal Cost Plus Amortization to the Year in which Youngest Active Participant Presently Eligible will Retire (1985)	1,205,200

1/ Per salary scale assumption of Table 4.
2/ Including adjustment for future early retirement adjustments at age 65.

Table 2

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Disbribution of Participants as of June 30, 1976

A. ACTIVE PARTICIPANTS ELIGIBLE FOR SUPPLEMENT

Age Group Last Birthday	Male	Female	Total	Covered Payroll
Under 60	--	--	-	--
60 - 64	27	13	40	$ 786,297
65 - 69	29	3	32	803,165
Total	56	16	72	$1,589,462

B. WIDOWS OF PRE-1956 RETIREES

Age Group Last Birthday	Number(All Females)	Annual Benefit Being Paid
85 - 89	8	$ 19,136
90 - 94	19	45,448
95 - 99	8	19,136
100 and over	6	14,352
Total	41	$ 98,072

C. SURVIVORS

Age Group Last Birthday	Number(All Females)	Annual Benefit Being Paid
45 - 49	1	$ 3,710
50 - 54	-	--
55 - 59	-	--
60 - 64	1	2,464
65 - 69	2	4,339
70 - 74	3	5,233
75 - 79	3	7,633
80 - 84	1	4,020
Total	11	$ 27,399

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D. RETIREES

Age Group Last Birthday	Male	Female	Total	Annual Benefit Being Paid
60 - 64	2	6	8	$ 55,657
65 - 69	65	13	78	195,252
70 - 74	69	14	83	205,456
75 - 79	47	12	59	170,555
80 - 84	35	13	48	181,477
85 - 89	11	8	19	83,448
90 - 94	12	2	14	78,261
95 - 99	1	-	1	6,056
Total	242	68	310	$ 976,162

E. RECONCILIATION

	Number
1. Actives	
(a) Actives eligible for Supplement last year	104
(b) Retirement during year	18
(c) Turnover (death/termination) and new ineligible on account of basic Faculty Retirement Plan benefit exceeding Minimum	14
(d) Actives eligible for Supplement this year	72
2. Retirees/Widows/Survivors	
(a) Number receiving benefit last year	348
(b) Deaths during year where no continuing benefits payable	14
(c) Number receiving benefits this year	362*

* as follows:

Widows	41
Survivors	11
Retirees	310
Total	362

Table 3(a)

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Summary of Principal Provisions of Supplemental Plan
(based on present provisions)

1. Eligibility:

Generally applicable to employees who first began participation in the Faculty Retirement Plan prior to 1963, and who retire on or after the June 30, next following the 65th birthday. Special early retirement provisions are available (see below).

2. Amount of Supplement:

Supplement (annual) is computed as follows:

(a) Determine 2% of final five year average salary for each year of actual service (maximum 30), but not to exceed the following:

(i)	Professor	$8,500
(ii)	Associate Professor	8,000
(iii)	Assistant Professor or Instructor	7,500

(b) Convert Faculty Retirement Plan net accumulations to fixed dollar life annuities using fixed annuity factors under FRP. Note that variable accumulations are converted on fixed basis for this purpose. Prior endowment accumulations are treated as annuity in this computation.

(c) Deduct $1,524 (estimate of 1963 Social Security level) from (a).

(d) Determine supplement as equal to (a) less (b) after adjustment for (c).

(NOTE: Dividends payable for coverage prior to 1963 are not included in (b) above. 1963 and later coverage dividends are included by direct reflection in interest credited on accumulations).

3. Early Retirement Provision:* (NOTE: that any reference to age 65 in this description implies the June 30 next following the 65th birthday, including references to Social Security benefits payable at age 65).

As early as age 62, although total funding is continued by the University to age 65 (i.e. University funds member contribution as well), member would receive a benefit for life (supplement and annuity) which in total would be level during both the pre-65 and post-65 periods. The determination, however, recognizes effective replacement of annuity (at age 65 assuming continuation of funding to that date) and Social Security benefit differential (age 65 vs age 62) based on 1972 law. Simplification of computation is as follows;

(a) Increase maximum limitation in 2.(a) above (i.e., $8,500, $8,000, $7,500) by difference between projected Social Security benefit at age 65 (assuming continuation of present salary level to such age) under 1972 law, and $1,524.

(b) Using estimate of actual Social Security benefit payable commencing on early retirement date under 1972 law, determine total benefit payable to age 65 [equal to (a) less (b)], representing supplement from early retirement age to age 65.

(c) By deducting fixed income benefit (as in 2(b) above) based on continued funding to age 65, difference would represent supplement payable after age 65.

(NOTE: In fact, it is contemplated that in practice, should the computation in (c) above yield a projected annuity at 65, which when combined with the $1,524 Social Security estimate would exceed the limitation prior to 65 for an early retirement, Faculty Retirement Plan would commence earlier than age 65.

Table 3(b)

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Summary of Principal Provisions of Plan
(based on plan in effect in December 1975)

1. Eligibility: All full time staff members (with certain civil service member exclusions) participating in $20,000 Group Life program, eligible to participate as follows:

Classification	Date of Participation
(a) Associate professor or higher.	(i) If hired between October 1 and April 2, on date of hire. (ii) If hired between April 2 and September 30, On October 1 next following date of hire.
(b) Assistant professor or research associate	On October 1 following two years of service. If hired between October 2 and March 1, service is credited back to prior October 1.
(c) Instructor or research fellow	On October 1 following three years of service. If hired between October 2 and March 1, service is credited back to prior October 1.
(d) Eligible civil service member	(i) If salary less than $18,552, same as (c). (ii) If salary greater or equal to $18,552, but less than $22,316, same as (b). (iii) If salary greater than or equal to $22,316, same as (a).

2. Financing: Staff member contributes 2½% of gross annual salary, with University making indirect contributions of 2½% of the first $5,000 of gross annual salary, plus 13% of such gross annual salary in excess of $5,000. Certain additional compensation has been included in this computation since 1972.

3. Mandatory Retirement Age: June 30 following 68th birthday.

4. Date to which University contributions are made: For staff member beginning participation on October 2, 1974 and later, contributions are continued until the June 30 next following the 65th birthday; otherwise continued during eligible employment until June 30 next following 68th birthday.

5. Investment medium (pre-retirement): Net contributions (gross less front end load) are accumulated through the medium of insured funding contracts as follows:
(i) Fixed dollar: accumulate at rate of interest declared by insurers, but never less than minimum stipulated. Only future accumulations transferable to variable in pre-retirement period.
(ii) Variable Income: Net contributions are immediately converted to accumulation units which are valued each month. Unit values reflect earnings of separate account less the fixed investment charge stipulated (subject to guaranteed maximum charges). Past and future accumulations are transferable to fixed in pre-retirement period.
(NOTE: Variable contributions cannot exceed 50%, or alternatively 75% of total contributions, including employees' contributions).

6. Types of annuities available at retirement (post-retirement): Either guaranteed fixed retirement annuities or non-guaranteed variable annuities are provided (see (7) for conversion). Fixed funds cannot be converted to variable annuity basis at retirement although variable fund conversion to fixed annuity is allowed in which case, accumulation units would be cancelled and transferred to the general assets of the insurer to be applied to provide guaranteed retirement annuity coverage.

7. Amount of benefits:

At retirement, cash value (representing accumulation of contributions under insured funding contracts, net of front end load - presently 2%), or value of accumulation units under variable, is applied to provide retirement income on a "life only" basis in accordance with stipulated income conversion factors as follows:

Current Conversion Basis	Monthly Income for Each $1,000 of Proceeds			
	Fixed Income (6¾% interest net)		Variable Annuity (4% interest net)	
	Age 65	Age 68	Age 65	Age 68
Male	8.42	9.17	7.18	7.95
Female	7.48	8.00	6.37	6.95

(NOTE: In the past, when fixed income conversion factors proved to be too conservative, excess interest credits were being accorded to benefits in payment status via year-end dividends. Certain prior retirees are still being credited with excess interest dividend increases).

8. Vesting (termination value):

Immediate 100% vested right in accumulations to date of termination. Disposition is as follows:

(i) If initial participation is December 15, 1972 or earlier, or after December 15, 1972 and has less than five years of participation, entitled to receive total net accumulation to date of termination.

(ii) If initial participation is after December 15, 1972 and has more than five years participation, entitled to sum of:

(a) His own contributions plus interest, and

(b) paid-up annuity for remainder of total net accumulation, providing for death benefits prior to income commencement of remaining paid-up values

(NOTE: Variable portion of net accumulation, if $2,000 or more, may be applied to provide variable retirement annuity, or alternatively placed in paid-up status to provide variable retirement annuity at later date. In addition, terminating member can continue retirement annuity accumulations by paying total premiums directly to the insurer).

9. Death benefits:

(a) pre-retirement:

Named beneficiary would receive total termination value of retirement annuity as in (8). Optional forms of payment as may be elected by beneficiary must be approved by the University.

(b) post-retirement:

In accordance with optional form of payment elected, as follows:

(i) life annuity with no post-retirement death benefit.

(ii) life annuity with 60, 120, 180, or 240 monthly payments guaranteed in any event.

(iii) joint and survivor annuity payable until the death of the last survivor of the annuitant and his designated beneficiary, with 120 monthly payments guaranteed payable in any event.

10. Disability:

In the event of total and continuous disability for a period of at least four months, all contributions are waived with future credits being accorded on the basis of a continuation of contribution levels in effect at time of disability.

Table 4

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Summary of Actuarial Assumptions and Methods

1.	Mortality:	Progressive Annuity Mortality Table set back six years for males and 4.6 years for females.
2.	Turnover:	None assumed.
3.	Expenses:	None assumed. To be met directly. 2% front-end load utilized for purposes of converting FRP accumulations.
4.	Interest rate:	5% per annum.
5.	Salary scale:	3½% per annum.
6.	Assumed retirement age:	June 30th following 68th birthday.
7.	Actuarial cost method:	Individual entry-age-normal cost method.
8.	Amortization of unfunded accrued liability:	As a level dollar amount by July 1, 1997.
9.	Faculty Retirement Plan Accumulations:	Accumulated at 5% per annum assuming a continuation of present contribution percentages on increasing covered payroll (per salary scale assumption). Net accumulations converted to fixed dollar life annuities using following factors (monthly income for each $1,000 of proceeds) after 2% front end load adjustment.

Male	9.17
Female	8.00

Table 5

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Comparison of 1975 and 1976 Valuation Results

		1975	1976
1.	Active Participants		
	(a) Total active participants under FRP	3,247	3,465
	(b) Ineligible for Supplemental benefits	3,143	3,393
	(c) Eligible for Supplemental benefits		
	(i) Number	104	72
	(ii) Average annual Supplement 1/	1,578	1,278
2.	Retirees, Survivors and Widows		
	(a) Number - Retirees	298	310
	- Survivors	8	11
	- Widows	42	41
	- Total	348	362
	(b) Average annual benefit being paid	2,973	3,043
3.	Accrued Liability on Valuation Date		
	(a) Active participants	1,159,900	690,800
	(b) Retirees, survivors and widows	7,505,100	8,179,100
	(c) Total	8,665,000	8,869,000
4.	Annual Normal Cost	23,000	13,100
5.	Chapter 356 Minimum Provision (Normal Cost Plus Amortization by 1997)	649,900	674,000
6.	Alternate Provisions		
	(a) Current disbursement	1,034,700	1,101,600
	(b) Normal cost plus amortization to 1985	1,091,700	1,205,200

1/ Per salary scale assumption of Table 4.

THE UNIVERSITY OF MINNESOTA FACULTY SUPPLEMENTAL PLAN

VALUATION AS OF JUNE 30, 1976

The purpose of this memorandum is to discuss the valuation report of the University of Minnesota Faculty Supplemental Plan as of June 30, 1976. The 1975 valuation was prepared by Jenean C. Nelson of the Minnesota Mutual Life Insurance Company, and the 1976 report by Allan J. Grosh of The Wyatt Company.

This memorandum contains the following:

1. Statistical and Valuation Data
2. Discussion of Valuation Results
3. Amendments to Plan
4. Conclusion

1. Statistical and Valuation Data

	As of June 30, 1975	As of June 30, 1976
Active Participants Eligible for Supplement	104	72
Retired Participants	298	310
Widows	42	41
Survivors	8	11
Annual Benefits	$1,034,696	$1,101,600
Reserve for Annuitants	$7,505,120	$8,179,100
Accrued Liability for Actives	1,159,914	690,800
Total Accrued Liability	$8,665,034	$8,869,900
Assets	0	0
Unfunded Accrued Liability	$8,665,034	$8,869,900
Normal Cost	$ 23,003	$ 13,100
Amortization by 1997	626,940	660,900
Total	$ 649,943	$ 674,000

2. Discussion of Valuation Results

It is obvious from the above summary that the regular financing procedures for public employee plans in Minnesota will not work for this plan since the current requirement for benefits exceeds the normal cost plus amortization payment.

Therefore, the actuaries have suggested the consideration of three alternative methods of financing this supplemental plan:

1. Continue the present pay-as-you-go method;

2. Contribute a level annual amount which is slightly larger than the benefit payments at the present time and cut off this contribution when the cost is fully-funded;
3. Contribute each year an amount equal to the normal cost plus an amortization contribution which will retire the unfunded liability by 1985, the year of retirement of the last person eligible for a supplemental benefit.

The contributions under the third method were estimated to be as follows:

	1975 Valuation	1976 Valuation
Normal Cost	$ 23,003	$ 13,100
Amortization by 1985	1,068,725	1,192,100
	$1,091,728	$1,205,200

3. Amendments to Plan

At the meeting of the Commission on November 18, 1976, Walter H. Bruning, Vice President for Administrative Operations of the University described improvements in the Faculty Supplemental Plan. The new formula will apply to those who retire on or after June 30, 1977 and who have participated in the Faculty Retirement Plan continuously from a date prior to 1963.

It is the intent of both supplemental benefit formulas to provide a minimum level of total retirement income (Basic Plan + Social Security + Supplement) for each eligible faculty member. Since the benefit from the Basic Plan plus Social Security exceeds the intended minimum in a large number of cases, the number who qualify for a supplemental benefit is relatively small.

The formulas for the old and the new supplement may be summarized as follows:

Old = .02 m (Final Average Salary)* - (Basic Benefit) - 1,524;

New = $\frac{.05}{3}$ m (Final Average Salary)** - (Basic Benefit) - (Social Security Benefit)

where m = years of service up to a maximum of 30; (1,524 was the maximum Primary Social Security Benefit in 1963).

*This product may not exceed $8,500 for a professor, $8,000 for an associate professor and $7,500 for an assistant professor or an instructor.

**The Final Average Salary in the new formula is subject to a $37,200 maximum for the 1976-77 plan year with a 4% annual increase in this maximum thereafter.

The amendment contains a provision that the old formula will still apply in any case where it produces a larger benefit.

Under the old plan, it was estimated that 72 faculty members would qualify for a supplemental benefit in future years. For the new plan, the estimate is 185.

The University proposes to pre-fund the cost of the projected supplemental benefits. Two actuarial valuations were made for this purpose, one based on the assumptions set forth in Chapter 356 and the other based on a 7.5% interest assumption coupled with a 5% salary scale. The results follow:

	Chapter 356	Other
Normal Cost	$ 71,900	$ 28,800
Amortization by 1997	247,000	180,900
Total	$318,900	$209,700

A contribution of $250,000 for the 1976-77 year was budgeted. When this is added to the annual benefits of $1,101,600 being paid to present annuitants, a total of $1,351,600 is obtained.

We wondered whether the whole package could be financed on the usual program of normal cost plus amortization to 1997 and found that the current requirement for annuitants would still exceed the annul contribution. A summary follows:

Reserve for Annuitants	$ 8,179,100
Accrued Liability for Actives	3,414,600
Total Accrued Liability	$11,593,700

Normal Cost	$ 71,900
Amortization by 1997	861,180
	$ 933,080

This compares with a benefit requirement of $1,101,600.

If the whole package were financed by normal cost plus amortization by 1985, the result would be

Normal Cost	$ 71,900
Amortization by 1985	1,553,340
	$1,625,240

From this result, we estimate that annual support at the current level of $1,351,600 would fund the plan by 1988 or 1989.

4. Conclusion

The 1976 report on the University Faculty Supplemental plan complies with the requirements of Chapter 356 insofar as they apply to a plan of this type.

Franklin C. Smith
Associate, Society of Actuaries
STENNES & ASSOCIATES, INC.
Commission Actuaries