UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation
as of June 30, 1984

November 29, 1984

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UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1984

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, 1984 in accordance with Chapter 356 of the Minnesota Statutes. The valuation has been based on employee census data as of June 30, 1984 and plan provisions in effect as of June 30, 1984. In summary, our valuation reveals a Chapter 356 requirement of $594,800, well short of the $1,293,800 of annual benefits payable to retirees as of the valuation date.

The plan is composed of two distinct groups:

- Employees who began participation in the FRP plan prior to 1963. This is essentially a closed group of participants; namely, existing retirees and a diminishing group of active participants soon to retire.
- Female participants in the FRP plan for whom contributions to FRP were made at any time prior to July 1, 1982. A few of these participants are already retired, however, most are still active. This is also a closed group.

Significant benefit improvements were made during the plan year:

- A benefit increase of $600 per year for retirees and survivors receiving payment on a life annuity basis ($480 if joint and survivor) with certain exceptions for widows, some vice presidents and deans, and those who retired after June 30, 1983.
- A cost-of-living increase for widows of pre-1956 retirees from $4,020 per year to $4,176 per year.

A detailed description of plan benefits is presented in Tables 3(a), 3(b) and 3(c).

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, a funding approach in strict accordance with Chapter 356 would result in a negative cash flow since current disbursements exceed resulting Chapter 356 contribution requirements.

As noted in prior reports, normal anticipated attrition of the covered group, combined with payment of current benefits from external sources, will indirectly fund the unfunded accrued liability at a rate more rapid than that prescribed under the Statutes. As set forth later in Table 6 of the report, the indirect method of funding through payment of current benefits, in conjunction with additional contributions to the plan (total amounts are substantially in excess of Chapter 356 requirements), would have resulted in a reduction of the unfunded accrued liability under the plan from $7,507,200 as of June 30, 1983 to $6,134,900 as of June 30, 1984. Benefit increases granted during the year as previously discussed have increased the unfunded accrued liability to $8,183,500.

EMPLOYEE AND FINANCIAL DATA

We received complete data covering 439 active pre-1963 participants under the Faculty Retirement Plan. Based on current account balances and the actuarial assumptions set forth below, it is projected that 6 members of this group would receive benefits from the supplemental plan. In addition, we were furnished a listing for the 475 retirees, survivors and widows presently receiving or eligible to receive benefits under the plan. We also received a summary by age grouping of account balances under the Faculty Retirement Plan for female participants at October 1, 1984. From this data we estimated the total account balances as of June 30, 1984 subject to unisex adjustment. All of this data as utilized for valuation purposes is summarized in Table 2 of this report.

Assets of $4,864,800 as of June 30, 1984 were reported to us by the University, including 1984 plan year contributions, in addition to current disbursements made from general funds, totalling $900,300.

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 (pre-June 30, 1977 and post-June 30, 1977 in Tables 3(a) and 3(b) respectively) we have set forth a complete description of the principal provisions of the FRP plan in Table 3(c).

In brief, effective for retirement on or after June 30, 1977, the University adopted the revised "50%" formula as the target for supplemental benefits (as outlined in Table 3(b)) while at the same time retaining the prior formula as a "minimum" measure of benefits payable.

This report continues to reflect the revised early retirement provision that became effective on June 30, 1978 to coordinate with the current treatment of early retirees under the FRP plan (FRP benefits are currently payable immediately upon early retirement between ages 62 and 65, and the University no longer continues to make FRP contributions to an early retiree). Thus, on early retirement, benefits are payable immediately from the supplemental plan and are determined as follows:

(i) the 1-2/3% "target benefit" is projected to age 65

(ii) the FRP annuity equivalent and Social Security are both determined as payable immediately.

(iii) the benefit payable immediately is the difference between (i) and (ii).

This approach introduces an additional cost over what had been recognized in years prior to June 30, 1978 primarily attributable to the entire benefit being payable from this plan up to age 65 (previously these were charged back to the member's department outside the plan).

Recognizing these additional costs which emerge as participants retire early (we assume that members retire at age 66, on the average), the plan funds are reimbursed for these by the portion of total current disbursements representing these additional payments.

We continue to recognize increases granted to existing retirees ($600 per year on a life annuity basis) effective July 1, 1981, cost of living increases granted to widows of pre-1956 retirees (increased from $3,330 per year to $4,020 per year) effective July 1, 1981, and supplemental benefits granted female participants in the FRP plan based on contributions made prior to July 1, 1982.

An additional increase has been granted to those who retired on or before June 30, 1983 effective July 1, 1984 of $600 per year on a life annuity basis ($480 per year on a joint and survivor basis). Also, an additional cost-of-living increase for pre-1956 widows has been granted effective January 1, 1984 (increased from $4,020 per year to $4,176 per year).

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 conform to those provisions of Chapter 356 of the Minnesota Statutes.

The actuarial method utilized is the entry-age-normal cost method as prescribed by Statutes. Under this method, the normal cost is determined as the level percentage of future covered payroll 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 this 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. The unfunded accrued liability is then determined by subtracting the assets on the valuation date from the accrued liability. Minnesota

Statutes call for annual normal costs to be provided in addition to the amortization of unfunded accrued liabilities as of the first valuation made after June 1, 1979 by the end of the fiscal year occurring in 2009. The amortization of the additional unfunded accrued liability generated by benefit improvements is determined by first computing the amortization over 30 years. The amount of this amortization is added to the amortization of the June 1, 1979 amount and a determination is made of the fiscal year when this combined payment will have fully funded the total unfunded accrued liability. Due to the increases in benefits which have occurred since 1979, all unfunded accrued liabilities are being amortized by the end of the fiscal year occurring in 2011.

Actuarial assumptions were identical to those used in the prior year and reflect the current Social Security Law. As indicated, the amount of benefits provided under the supplemental plan are directly dependent on those benefits provided under the FRP plan. Thus, in order to appropriately determine projected benefits payable, advance assumptions were also made in regard to future projections under the FRP itself; namely, that contribution levels would continue 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 a continuation of purchase rates utilized in 1975. This maintains a degree of conservatism in the valuation, since current annuity purchase rates (which, effective July 1, 1984 are based on an assumed interest rate of 11%) applied to determine offsetting FRP benefits are more favorable than those used in 1975 (which are based on an assumed interest rate of 6¼%). Utilization of this more conservative basis for valuation purposes is consistent with the salary/investment return described below.

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. Any future increases in offsetting Social Security benefits will also serve to reduce supplemental benefits payable from the plan under the post June 30, 1977 formula.

With regard to the account balances for female participants which are subject to unisex adjustment it should be noted that any interest earnings in excess of the assumed rate of 5% will serve to increase the liability for this group.

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 accrued liability, unfunded accrued liability, annual normal cost, and annual cost provision all in accordance with Chapter 356, with the Chapter 356 annual cost provision amounting to $594,800, and the current disbursement requirement of $1,293,800.

GAIN AND LOSS ANALYSIS

In Table 5 we reconcile the unfunded accrued liability over the past year and set forth a gain and loss analysis. This analysis denotes an increase of some $217,800 in the June 30, 1984 unfunded accrued liability when compared to that expected. Actuarial losses resulted primarily from the addition of female account balances subject to unisex adjustment for terminated participants not included in the previous valuation. This was offset somewhat by actuarial gains resulting from changes in projected Social Security benefits and favorable investment income pertaining to supplemental plan assets and offsetting FRP benefits. The net increase in the unfunded accrued liability from that expected is attributable to the following:

(a)	Increase due to early retirement subsidy for retirement prior to 65	29,900
(b)	Increase due to other actuarial losses, primarily as a result of female account balances for additional terminated participants	429,200
(c)	Decrease due to increases in Social Security	21,900
(d)	Decrease due to supplemental plan asset earnings in excess of 5%	219,400
(e)	Total Increase ((a) + (b) - (c) - (d))	217,800

COMPARISON OF 1983 and 1984 VALUATION RESULTS

In Table 6, we set forth a comparison of the principal values underlying the 1983 and 1984 valuations. The unfunded liability has increased due to benefit improvements made during the year. If these improvements had not been made the unfunded accrued liability would have decreased to $6,134,900 rather than increasing to $8,183,500 as shown.

* *

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

Respectfully submitted,

THE WYATT COMPANY

Jerome J. McKoskey
Fellow, Society of Actuaries

David C. Reynolds
Associate, Society of Actuaries

Minneapolis/St. Paul
November 29, 1984

Table I

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1984
(Valuation determinations rounded to nearest $100)

A. BASIC DATA

1.	Active Pre-1963 Participants	
	(a) Total active pre-1963 participants under Faculty Retirement Plan (FRP)	439
	(b) Total projected to receive supplemental benefits	
	(i) Number	6
	(ii) Average annual projected supplement 1/	1,328
2.	Estimated Account Balance for Female Participants at July 1, 1984	25,325,106
3.	Retirees, Survivors and Widows	
	(a) Number receiving or entitled to receive benefits	475
	(b) Average annual benefit being paid	2,724

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

		July 1, 1983 Benefits	July 1, 1983 through July 1, 1984 Benefit Increases	Total Benefits July 1, 1984
1.	Accrued Liability as of June 30, 1984			
	(a) Actives	78,200	0	78,200
	(b) Retirees	7,019,700	1,867,300	8,887,000
	(c) Widows	477,100	18,500	495,600
	(d) Survivors	883,600	162,800	1,046,400
	(e) Female unisex increase 7/1/82	2,541,100	0	2,541,100
	(f) Total	10,999,700	2,048,600	13,048,300
2.	Assets as of June 30, 1984			4,864,800
3.	Unfunded Accrued Liability as of June 30, 1984 (1(f) less 2)			8,183,500
4.	Annual Normal Cost			61,500

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5. Annual Requirement to Fund Normal Cost and Amortize the Unfunded Accrued Liability by June 30, 2011

(a)	Amortization of Unfunded Accrued Liability by June 30, 2011	533,300
(b)	Normal cost	61,500
(c)	Total	594,800

6. Annual Rate of Benefit Payment $1,293,800

1/ Per investment earnings, salary scale, and Social Security assumptions summarized in Table 4.

Table 2

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Distribution of Participants as of June 30, 1984

A. ACTIVE PARTICIPANTS (Pre-1963 FRP Participants)

Age Group Last Birthday	Males	Females	Total
45 - 49	2	1	3
50 - 54	51	2	53
55 - 59	117	5	122
60 - 64	162	16	178
65 & Over	77	6	83
Total	409	30	439

B. WIDOWS OF PRE-1956 RETIREES

Age Group Last Birthday	Number (All Females)	Annual Benefit Being Paid
75 - 79	5	$ 20,880
80 - 84	4	16,704
85 - 89	2	8,352
90 & Over	14	58,464
Total	25	$ 104,400

C. SURVIVORS

Age Group Last Birthday	Number (All Females)	Annual Benefit Being Paid
55 - 59	2	$ 5,598
60 - 64	2	5,880
65 - 69	5	11,543
70 - 74	11	34,722
75 - 79	12	30,518
80 - 84	9	28,452
Total	41	$ 116,713

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D. RETIREES

Age Group Last Birthday	Males	Females	Total	Annual Benefit Being Paid
55 - 59	-	1	1	$ 479
60 - 64	13	4	17	16,449
65 - 69	66	21	87	135,152
70 - 74	94	34	128	274,073
75 - 79	72	14	86	258,782
80 - 84	43	8	51	197,294
85 - 89	16	5	21	96,759
90 & Over	10	8	18	93,697
Total	314	95	409	$1,072,685

E. RECONCILIATION OF RETIREES/WIDOWS/SURVIVORS

		Number
1.	Number receiving benefits last year	412
2.	Deaths during year with no continuing benefits payable	15
3.	New retirees this year	78
4.	Number receiving or entitled to receive benefits this year (1 - 2 + 3 = 4)	475 *

* as follows:

Widows	25
Survivors	41
Retirees	409
Total	475

F. ESTIMATED FACULTY RETIREMENT PLAN ACCOUNT BALANCES FOR FEMALE PARTICIPANTS AS OF JUNE 30, 1984 ATTRIBUTABLE TO CONTRIBUTIONS MADE PRIOR TO JULY 1, 1982

Age	Number Of Participants	Total Account Balance
25	0	$ 0
26	0	0
27	0	0
28	2	4,817
29	1	3,147
30	5	4,946
31	12	63,219
32	11	62,470
33	24	93,161

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Age	Number Of Participants	Total Account Balance
34	25	224,046
35	29	269,524
36	34	218,387
37	35	389,246
38	33	449,234
39	36	563,333
40	25	479,275
41	29	580,392
42	39	943,894
43	34	737,063
44	32	817,714
45	32	862,095
46	29	942,835
47	24	760,836
48	30	1,447,706
49	23	699,177
50	22	775,866
51	19	710,627
52	21	960,051
53	19	517,437
54	24	621,965
55	15	843,145
56	16	635,833
57	19	645,363
58	24	1,200,577
59	20	1,153,385
60	20	1,059,859
61	21	1,323,555
62	20	1,518,189
63	14	675,741
64	9	556,326
65	7	514,818
66	5	221,216
67	3	121,151
68	4	391,177
69	2	192,576
70	2	62,938
71	1	6,794
Total:	851	$25,325,106

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Table 3(a)

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN (PRE-JUNE 30, 1977)

Summary of Principal Provisions of the Supplemental Plan
(provisions in effect for pre-June 30, 1977 retirees)

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: (Note: Any reference to age 65 in this description means the June 30th following the 65th birthday).

A member may retire as early as age 62 in which case his FRP accounts are used to purchase an annuity commencing immediately. Supplemental benefits payable are determined as follows:

(a) Determine 2% of final five year average salary for each year of service (projected to age 65 but subject to a maximum of 30) 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 payable at early retirement using annuity factors under FRP. Note that variable accumulations are converted on a fixed basis for this purpose.

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

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

Table 3(b)

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN (JUNE 30, 1977)

Summary of Principal Provisions of the Supplemental Plan
(provisions in effect for June 30, 1977 and later retirees)

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: Greater of benefit as determined under Supplemental Benefits Plan (Pre-June 30, 1977) or benefit computed as follows:

   (a) Determine final five year average salary subject to following maximums for indicated retirement years:

Year	Amount	Year	Amount	Year	Amount
1976-77	$37,200	1981-82	$45,300	1986-87	$55,100
1977-78	38,700	1982-83	47,100	1987-88	57,300
1978-79	40,300	1983-84	49,000	1988-89	59,600
1979-80	41,900	1984-85	51,000	1989-90	62,000
1980-81	43,600	1985-86	53,000	1990-91	64,500

   (b) Determine 1-2/3% of final five year average salary for each year of actual service (maximum 30).

   (c) 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.

   (d) Determine 100% of estimated primary Social Security benefit payable based on continuous coverage from date of University hire (or January 1, 1955, if later), to the date of retirement.

   (e) Determine supplement equal to the excess of (b) over the sum of (c) plus (d).

3. Early Retirement: (Note: Any reference to age 65 in this description means the June 30th next following the 65th birthday).	A member may retire as early as age 62 in which case his FRP accounts are used to purchase an annuity commencing immediately. Supplemental benefits payable are determined as follows:

(a) Determine final five year average salary subject to the following maximums based on the year of early retirement:

Year	Amount	Year	Amount	Year	Amount
1978-79	$40,300	1982-83	$47,100	1986-87	$55,100
1979-80	41,900	1983-84	49,000	1987-88	57,300
1980-81	43,600	1984-85	51,000	1988-89	59,600
1981-82	45,300	1985-86	53,000	1989-90	62,000

(b) Determine 1-2/3% of final five year average salary for each year of actual service, including projected service to age 65 (maximum 30).

(c) Convert Faculty Retirement Plan net accumulation to fixed dollar annuities using fixed annuity factors under FRP and reflecting early retirement. Note that variable accumulations are converted to the fixed basis for this purpose.

(d) Determine 100% of estimated primary Social Security benefit payable at early retirement based on continuous coverage from date of University hire (or January 1, 1955 if later) to the date of retirement.

(e) Determine supplement equal to the excess of (b) over the sum of (c) plus (d).

4. Unisex Adjustment Policy Established July 1, 1982:	Periodic retirement benefits paid pursuant to the Faculty Retirement Plan shall be equalized for similarly situated males and females effective July 1, 1982. To the extent that benefits in addition to those which are available from the annuity contracts shall be required, such amounts shall be paid through the University of Minnesota Supplemental Benefits Plan.

The equalization shall be accomplished in the following manner:

For Individuals Not Yet Retired:

1. All contributions to the faculty retirement plan after the effective date shall be applied to purchase annuities under sex-neutral (unisex) rates.

2. Total benefits (annuities plus supplement) from contributions to the faculty retirement plan which are made prior to the effective date shall be determined by using male mortality rates for all University employees and female mortality rates for all joint annuitants under the joint and survivor option.

For Individuals Already Retired:

The amount of the total periodic benefit (annuity plus supplement) being paid shall be recalculated using male mortality rates for all University employees and female mortality rates for all joint annuitants under the joint and survivor option. In those instances where the application of such mortality rates provides for increased benefits, such increased benefits shall be paid through the University supplement on a retroactive and prospective basis.

5. Post-Retirement Benefit Increase Established July 1, 1984:

Increases granted to certain retired faculty in the amount of $600 for a full share and $480 for an 80% share with full shares being paid to those retirees who are receiving single life annuities and 80% shares paid to retirees, or surviving spouses of retirees, who elected the survivorship option. Those retired faculty eligible to receive the increase shall be determined as follows:

1. Exclude Vice Presidents, Widows of Vice Presidents, and those with Dean status for retirement purposes.

2. Include only pre-1963 participants, who retired on or before June 30, 1983 and who are not specifically excluded, whether or not they are currently receiving a Supplement payment. 1969 and later surviving spouses currently receiving a Supplement are considered participants.

Table 3(c)

UNIVERSITY OF MINNESOTA
FACULTY RETIREMENT PLAN

Summary of Principal Provisions of the Faculty Retirement Plan

1. Eligibility:

All full time academic staff members (including certain civil service staff members) 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 to 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) Professional and Administrative	(i) If salary less than $30,500, same as (c).* (ii) If salary greater or equal to $30,500 but less than $37,388, same as (b). (iii) If salary greater than or equal to $37,388 same as (a). * Salary ranges July 1, 1984 to June 30, 1985.

2. Financing:

Staff member contributes 2½% of gross annual salary, with University making contributions of 2½% of the first $5,000 of gross annual salary, plus 13% of such gross annual salary in excess of $5,000. Effective in 1973, summer research and training grants have been included for nine-month appointees for the purposes of determining compensation for contributions.

3. Mandatory Retirement Age: June 30 following 70th 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): Contributions 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, or value of accumulation units under variable, is applied to provide "life only" retirement income on the basis of stipulated income conversion factors as listed below. In the determination of the monthly income on the "fixed income" basis, a $200 set-up charge is deducted from the proceeds prior to application of the "fixed income" factor. Account balances resulting from contributions made prior to July 1, 1982 will be applied on a male employee and female joint annuitant basis. Account balances resulting from contributions made subsequent to July 1, 1982 will be applied on a unisex basis.

7/1/82 Conversion Basis	Monthly Income for Each $1,000 of Proceeds			
	Fixed Income (11% interest net)		Variable Annuity (4% interest net)	
Pre-7/1/82 contributions:	Age 65	Age 68	Age 65	Age 68
Male	11.38	12.11	7.18	7.95
Female	10.49	10.99	6.37	6.95
Contributions 7/1/82 and later:				
Unisex:	10.80	11.38	6.47	7.08

(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. Early Retirement: Participants may retire early, with annuity equivalents payable immediately.

9. 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).

10. Death Benefits:

(a) Pre-retirement: Named beneficiary would receive total termination value of retirement annuity as in (9). 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 100% survivor annuity with 120 monthly payents guaranteed payable in any event.
- (iv) joint and 66-2/3% to survivor annuity with 120 monthly payments guaranteed payable in any event.

11. 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 0.6 for males and 4.6 years for females.
2.	Turnover:	None assumed.
3.	Expenses:	None assumed. To be met directly.
4.	Interest Rate:	5% per annum.
5.	Salary Scale:	3½% per annum.
6.	Assumed Retirement Age:	June 30th following 66th birthday.
7.	Actuarial Cost Method:	Individual entry-age-normal cost method, with normal cost determined as a level percentage of future covered payroll.
8.	Amortization of Unfunded Accrued Liability:	As a level dollar amount by June 30, 2011.
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 6¼% factors (monthly income for each $1,000 of proceeds). Male 8.65 Female 7.64 Unisex 8.55
10.	Social Security:	Based on present law and 3½% salary scale applicable to current salaries. No wage base or cost of living increases are projected.

Table 5

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Gain and Loss Analysis (Plan Year Ending June 30, 1984)

1.	Unfunded Accrued Liability as of June 30, 1983	$7,507,200
2.	Normal Cost	54,300
3.	Interest at Valuation Rate (5%) on (1) and (2)	378,100
4.	Contributions During Year	
	(a) Approximate "pay-as-you-go" payments to retirees	1,069,200
	(b) Supplemental contributions	900,300
	(c) Total effective contributions ((a) + (b))	1,969,500
5.	Interest at Valuation Rate (5%) on 4(a) and 4(b)	53,100
6.	Increase in liability due to benefit improvements	2,048,700
7.	Expected Unfunded Accrued Liability as of June 30, 1984 (1 + 2 + 3 - 4 - 5 + 6)	7,965,700
8.	Actual Unfunded Accrued Liability as of June 30, 1984	8,183,500
9.	Decrease During Year (7 - 8)	(217,800)
10.	Gain and Loss Analysis	
	(a) Loss due to early retirement subsidy for retirement prior to 65 *	29,900
	(b) Other actuarial losses **	429,200
	(c) Gain due to increase to offsetting Social Security benefits	21,900
	(d) Gain due to supplemental plan asset earnings in excess of 5%	219,400
	(e) Net loss ((a) + (b)- (c) - (d))	217,800

* It is our understanding that this loss will be offset by annual reimbursements by individual departments, representing the early retirement subsidy paid to each early retiree.

** Due primarily to addition of female account balances subject to unisex adjustment for terminated participants not included in previous valuation.

Table 6

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Comparison of 1983 and 1984 Valuation Results

		1983	1984 2/	1984 3/
1.	Active Pre-1963 Participants			
	(a) Total active pre-1963 participants under FRP	494	439	439
	(b) Total projected to receive supplemental benefits			
	(i) Number	9	6	6
	(ii) Average annual supplemental benefit 1/	1,071	1,328	1,328
2.	Estimated account balance for female participants with account balance prior to July 1, 1982	21,600,254	25,325,106	25,325,106
3.	Retirees, Survivors and Widows			
	(a) Number - Retirees	353	343	409
	- Survivors	35	41	41
	- Widows	24	25	25
	- Total	412	409	475
	(b) Average annual benefit being paid or payable	2,705	2,614	2,724
4.	Accrued Liability on Valuation Date			
	(a) Active participants	86,100	78,200	78,200
	(b) Retirees, survivors and widows	8,860,500	8,380,400	10,429,000
	(c) Female participants with account balances prior to July 1, 1982	2,102,300	2,541,100	2,541,100
	(d) Total	11,048,900	10,999,700	13,048,300
5.	Assets on Valuation Date	3,541,700	4,864,800	4,864,800
6.	Unfunded Accrued Liability	7,507,200	6,134,900	8,183,500
7.	Annual Normal Cost	54,300	61,500	61,500
8.	Chapter 356 Minimum Provision	542,600	467,900	594,800
9.	Alternate Provision-Current Disbursement	1,114,500	1,069,200	1,293,800

1/ Per actuarial assumptions regarding earnings on FRP account balances, salary increases and increases in Social Security. See Table 4 for summary of actuarial assumptions.

2/ Prior to benefit increases granted to retired participants during the year.

3/ Includes benefit increases granted to retired participants during the year.

MEMORANDUM TO: Legislative Commission on Pensions and Retirement

FROM: James R. Bordewick, F.S.A.

RE: June 30, 1984 Actuarial Valuation of the Minnesota Faculty Supplemental Benefits Plan

DATE: December 7, 1984

Chapter 356, Subdivision 2 requires that an actuarial valuation of the fund be conducted each year. An actuarial valuation is a calculation to determine the normal cost and accrued liability of the fund and includes a determination of the payment necessary to amortize the unfunded accrued liability over a stated period of time and a determination of the payment necessary to keep the unfunded accrued liability from increasing.

The actuarial valuation is conducted according to a stated actuarial cost method, Entry Age Normal Cost, and stated actuarial assumptions. The interest assumption of 5% and the salary scale assumption of 3½% are prescribed in Chapter 356, Subdivision 4(4).

The actuarial valuation was conducted by Jerome J. McKoskey and David C. Reynolds of the Wyatt Company.

The plan covers a closed group of members. Members included are those who became participants in the Faculty Retirement Plan prior to 1963 and female members in the Faculty Retirement Plan for whom contributions were made prior to July 1, 1982.

The benefits provided by the plan are supplemental to the benefits provided from the Faculty Retirement Plan and Social Security. A supplemental benefit would be paid if the benefits from the Faculty Retirement Plan and Social Security were less than a target benefit of 1.6667% of final average salary per year of service (maximum 30 years). In addition, a supplemental benefit would be provided to female members to equalize the benefits with a comparable male member.

The Chapter 356 funding requirements are not appropriate for this plan since the method of financing has produced contributions far in excess of Chapter 356 requirements. If Chapter 356 funding requirements were followed for financing, the plan would be in a negative cash flow position each year.

Financing is provided by payment of benefits plus a supplemental contribution.

A summary of the key actuarial results is shown below:

SUMMARY OF KEY ACTUARIAL RESULTS	6-30-84	6-30-83
Members in Payment Status	475	412
Active Members	439	494
Active Members Projected for Supplement	6	9
Accrued Liability	$13,048,300	$11,048,900
Assets	4,864,800	3,541,700
Unfunded Accrued Liability	8,183,500	7,507,200
Chapter 356 Contribution: Amortization by June 30, 2010 in 1983 June 30, 2011 in 1984	594,800	542,600

COMMENT SUMMARY

1. There were no changes in the actuarial methods.

   The actuarial assumptions remained unchanged from the previous year with the exception of a 2% loading on annuity conversion which was removed this year. This loading was no longer applicable.

   There were certain benefit increases reflected in this year's valuation:

   a) The benefit for members who retired on or before June 30, 1983 were increased by a maximum of $600 per month effective July 1, 1984.

   b) The cost-of-living increases for widows of pre-1956 retired members was increased from $4,020 per year to $4,176 per year.

   These changes resulted in an increase in the accrued liability of $2,048,700. In turn, this extended the fund funding period under Chapter 356 from June 30, 2010 to June 30, 2011.

2. Active membership decreased from a year ago, and this is expected with a closed group. There has been a decrease of 90 active members since June 30, 1982.

   Out of the 439 active members on June 30, 1984, only six members were projected to have a supplemental benefit.

3. The unfunded accrued liability increased by $676,300 from a year ago. The elements contributing to this increase were:

Actuarial Losses	$ 217,800
Contribution Sufficiency	(1,590,200)
Increase in Liability for Benefit Improvements	2,048.700
	$ 676,300

A contribution sufficiency is defined as the amount by which the contributions to the fund exceed the amount which will keep the unfunded accrued liability from increasing.

In the last five years, the unfunded accrued liability has decreased by $536,200. This decrease has mainly been the result of contribution sufficiencies which have offset the increased liabilities for benefit improvements over the period.

Contributions have consisted of benefit payments plus supplemental contributions.

4. The net actuarial loss was $217,800 for the year ended June 30, 1984. These losses were primarily due to non-recurring loss for female terminated members subject to a unisex adjustment on account balances. This adjustment had not previously been reflected. If this one time loss of $429,200 had not occurred, there would have been a net actuarial gain of $211,400 for the year ended June 30, 1984.

5. The funding ratio - the ratio of assets to accrued liabilities - was 37.3% on June 30, 1984 as compared to 32.1% on June 30, 1983. Assets do not cover the accrued liabilities for members in a payment status.

6. Assuming a level contribution of $1,969,500 (which approximates last year's contribution), the unfunded accrued liability will be amortized in about five years.

   The contribution required to prevent the unfunded accrued liability from increasing is $470,675 on June 30, 1984.

CONCLUSIONS

The actuarial valuation complies with the requirements of Minnesota Statutes, Chapter 356.

Consideration should be given to removing the Minnesota Faculty Supplemental Benefits Plan from the requirements of Chapter 356 since the method of financing is entirely different from that anticipated under Chapter 356. An actuarial valuation of the plan should still be conducted periodically and should be based on realistic interest and salary increase assumptions.

James R. Bordewick

James R. Bordewick, F.S.A.
Commission Actuary