UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation
as of June 30, 1990

March 15, 1991

TABLE OF CONTENTS

TABLES

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1990

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, 1990 in accordance with Chapter 356 of the Minnesota Statutes. The valuation has been based on employee census data as of June 30, 1990 and plan provisions in effect as of June 30, 1990. In summary, our valuation reveals a Chapter 356 requirement of $451,000, well short of the $2,051,000 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 Faculty Retirement 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 Faculty Retirement 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.

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), resulted in a reduction of the unfunded accrued liability under the plan from $3,509,500 as of June 30, 1989 to $3,204,200 as of June 30, 1990. Post-retirement benefit increases granted during the year increased the unfunded accrued liability to $6,117,000.

EMPLOYEE AND FINANCIAL DATA

We received complete data covering 197 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 one member of this group would receive benefits from the Supplemental Benefits Plan. In addition, we were furnished a listing for the 577 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 June 30, 1990. All of this data as utilized for valuation purposes is summarized in Table 2 of this report.

Assets of $12,831,600 as of June 30, 1990 were reported to us by the University, including fiscal 1989 contributions, in addition to current disbursements made from general funds, totalling $496,700.

PLAN VALUED

Since 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 Faculty Retirement 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 costs 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 the portion of total current disbursements representing these additional payments.

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 2018.

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 are based on an assumed interest rate of 9% as of June 30, 1990) applied to determine offsetting FRP benefits are more favorable than those used in 1975 (which are based on an assumed interest rate of 6-1/4%). 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 3-1/2%/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 3-1/2% 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 $451,000 and the current disbursement requirement of $2,051,000.

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 $580,100 in the June 30, 1990 unfunded accrued liability when compared to that expected. This increase resulted primarily from an actuarial loss due to the inclusion in the valuation of prior retirees not previously reported to us and an actuarial loss attributable to earnings in excess of 5% on female participants' account balances subject to unisex adjustment. These losses were partially offset by actuarial gains resulting primarily from earnings in excess of 5% on supplemental plan assets.

COMPARISON OF 1989 and 1990 VALUATION RESULTS

In Table 6, we set forth a comparison of the principal values underlying the 1989 and 1990 valuations. The unfunded accrued liability decreased from $3,509,500 to $3,204,200 before recognition of the benefit increases granted during the year. The benefit improvements increased the unfunded accrued liability to $6,117,000.

* *

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, F.S.A.
Consulting Actuary

Thomas F. Del Fiacco
Consultant

Minneapolis/St. Paul
March 15, 1991

Table 1

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Actuarial Valuation as of June 30, 1990
(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)	197
		(b)	Total projected to receive supplemental benefits	
			(i) Number	1
			(ii) Average annual projected supplement [1]	597
	2.	Estimated Account Balance for Female Participants at July 1, 1990		27,917,583
	3.	Retirees, Survivors and Widows		
		(a)	Number receiving or entitled to receive benefits	577
		(b)	Average annual benefit being paid	3,555
B.	DETERMINATION OF ANNUAL REQUIREMENTS IN ACCORDANCE WITH CHAPTER 356 (MINNESOTA STATUTES)			
	1.	Accrued Liability as of June 30, 1990		
		(a)	Actives	6,000
		(b)	Retirees	12,787,300
		(c)	Widows	166,400
		(d)	Survivors	2,989,700
		(e)	Female unisex increase 7/1/82	2,999,200
		(f)	Total	18,948,600
	2.	Assets as of June 30, 1990		12,831,600
	3.	Unfunded Accrued Liability as of June 30, 1990 (1(f) less 2)		6,117,000
	4.	Annual Normal Cost		60,000

Table 1 (cont.)

5. Annual Requirement to Fund Normal Cost and Amortize the Unfunded Accrued Liability by June 30, 2018

(a)	Amortization of Unfunded Accrued Liability by June 30, 2018	391,000
(b)	Normal cost	60,000
(c)	Total	451,000

6. Annual Rate of Benefit Payment 2,051,000

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

Page 2 of 2

Table 2

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Distribution of Participants as of June 30, 1990

A. ACTIVE PARTICIPANTS (Pre-1963 FRP Participants)

Age Group Last Birthday	Males	Females	Total
55 - 59	28	1	29
60 - 64	92	2	94
65 & Over	70	4	74
Total	190	7	197

B. WIDOWS OF PRE-1956 RETIREES

Age Group Last Birthday	Number (All Females)	Annual Benefit Being Paid
80 - 84	3	$ 14,112
85 - 89	0	0
90 & Over	5	24,984
Total	8	$ 39,096

C. SURVIVORS

Age Group Last Birthday	Number (All Females)	Annual Benefit Being Paid
60 - 64	6	$ 15,789
65 - 69	10	33,887
70 - 74	13	47,413
75 - 79	25	119,486
80 - 84	26	139,786
85 - 89	6	27,012
90 & over	1	6,867
Total	87	$ 390,240

Page 1 of 3

D. RETIREES

Age Group Last Birthday	Males	Females	Total	Annual Benefit Being Paid
50 - 54	-	1	1	$ 338
55 - 59	-	1	1	45
60 - 64	5	10	15	9,574
65 - 69	39	33	72	87,063
70 - 74	109	30	139	287,831
75 - 79	99	34	133	442,427
80 - 84	52	12	64	344,629
85 - 89	33	8	41	312,457
90 & Over	11	5	16	137,316
Total	348	134	482	$ 1,621,680

E. RECONCILIATION OF RETIREES/WIDOWS/SURVIVORS

		Number
1.	Number receiving benefits last year	522 *
2.	Deaths during year with no continuing benefits payable	10
3.	New retirees this year	65
4.	Number receiving or entitled to receive benefits this year (1 - 2 + 3)	577 **

* Adjusted for 3 retirees incorrectly reported last year.

**

Widows	8
Survivors	87
Retirees	482
Total	577

F. ESTIMATED FACULTY RETIREMENT PLAN ACCOUNT BALANCES FOR FEMALE PARTICIPANTS AS OF JUNE 30, 1990 ATTRIBUTABLE TO CONTRIBUTIONS MADE PRIOR TO JULY 1, 1982

Age	Number Of Participants	Total Account Balance
33	1	2,312
35	2	12,587
37	12	72,565

Page 2 of 3

Age	Number Of Participants	Total Account Balance
38	5	47,418
39	18	134,845
40	22	268,685
41	22	331,735
42	29	351,992
43	30	589,316
44	32	508,186
45	30	809,262
46	28	844,045
47	32	1,011,078
48	40	1,340,605
49	34	1,131,015
50	27	997,828
51	32	1,407,119
52	31	1,504,077
53	24	1,258,608
54	31	2,150,522
55	25	1,024,493
56	18	1,205,451
57	22	1,097,684
58	16	838,147
59	21	1,230,987
60	19	693,216
61	15	843,436
62	14	528,645
63	16	695,101
64	18	1,307,209
65	17	993,191
66	12	499,528
67	9	677,199
68	10	782,354
69	7	397,177
70	3	140,503
71	3	92,179
72	1	56,202
90	1	41,081
Total:	729	$27,917,583

Page 3 of 3

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 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 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 Supplemental: 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 Increases Established July 1, 1981 and 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, 1980 (June 30, 1983 for July 1, 1984 increase) 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.

6. Post-Retirement Benefit Increase Established July 1, 1986:

Benefit increases were granted to pre-1963 participants who retired not later than July 1, 1985, excluding those Vice Presidents and Deans who qualified for special benefits, but including surviving spouses of retirees who elected the survivorship option. The amount of increase was $13.00 (single life annuities) or $10.40 (joint and survivor or surviving spouse annuities) per year for each "point," where one point was awarded for each year of service up to 30 years and 1-1/2 points were awarded for each year since retirement. The value of a point was determined by the amount of funds available in the department budget for increases.

7. Cost of Living Increases Granted to Widows of Pre-1956 Retirees:

Effective Date	Revised Annual Benefit	
July 1, 1981	$4,020	(formerly $3,330)
July 1, 1984	4,176	
January 1, 1986	4,464	
January 1, 1988	4,704	

8. Post-Retirement Benefit Increase Established July 1, 1988:

(a) Benefit increases were granted to pre-1963 participants who retired not later than July 1, 1987, excluding those Vice Presidents and Deans who qualified for special benefits, but including surviving spouses of retirees who elected the survivorship option. The amount of increase was $8.00 (single life annuities) or $6.40 (joint and survivor or surviving spouse annuities) per year for each "point," where one point was awarded for each year of service up to 30 years and 1-1/2 points were awarded for each year since retirement. The value of a point was determined by the amount of funds available in the department budget for increases.

(b) A supplemental benefit increase was granted to certain retired faculty in the amount of $600 annually. Those retired faculty eligible to receive the increase were 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, 1987 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.

9. Post-Retirement Benefit Increase Established January 1, 1990

Benefit increases were granted to pre-1963 participants who retired not later than June 30, 1988, excluding those Vice Presidents who qualified for special benefits, but including surviving spouses of retirees who elected the survivorship option. The amount of increase was $20.00 (single life annuities) or $16.00 (joint and survivor or surviving spouse annuities) per year for each "point," where one point was awarded for each year of service up to 30 years and 3 points were awarded for each year since retirement. The amount of increase was limited such that the combination of available Faculty Retirement Plan annuities plus primary Social Security plus the supplement would not exceed $30,000.

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	Date of hire.
(b) Assistant professor or research associate	Immediately following two years of service.
(c) Instructor or research fellow	Immediately following three years of service.
(d) Professional and Administrative	(i) If salary less than $42,303, same as (c).* (ii) If salary greater or equal to $42,303 but less than $50,108, same as (b). (iii) If salary greater than or equal to $50,108, same as (a).

* Salary breakpoints as of July 1, 1990.

2. Financing: Staff member contributes 2-1/2% of gross annual salary, with University making contributions of 2-1/2% 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 for tenured faculty and continuous appointment in the Professional and Administrative Class. All others have no mandatory retirement age. Minimum annual distributions are required following attainment of age 70 1/2.

4. Date to Which University Contributions are Made: Contributions are continued until date of retirement.

5. Investment Vehicles (Pre-Retirement): Contributions are accumulated through insured annuity contracts and/or mutual funds, as follows:

   (a) Annuity contracts
      (i) Fixed dollar: accumulate at rate of interest declared by insurers, but never less than minimum stipulated.
      (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.

   (b) Mutual funds: Participants may invest in one or more of a variety of mutual funds offered by the Vanguard Group.

6. Forms of Payment Available at Retirement:

(a) Annuity contracts: 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. Alternatively, rollover of accumulation to IRA is permitted.

(b) Mutual funds: Cash distribution or IRA rollover.

7. Amount of Annuity Benefits: At retirement, the cash value (representing accumulation of contributions under fixed dollar contracts or value of accumulation units under variable contracts) 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.

	Monthly Income for Each $1,000 of Proceeds			
	Fixed Income (9% interest net)		Variable Annuity (4% interest net)	
7/1/89 Conversion Basis				
Pre-7/1/82 contributions:	Age 65	Age 68	Age 65	Age 68
Male	10.12	10.86	7.08	7.83
Female	9.21	9.71	6.13	6.66
Contributions 7/1/82 and later:				
Unisex:	9.53	10.12	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.

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 payments 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:	3-1/2% per annum.
6.	Assumed Retirement Age:	Age 66.
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, 2018.
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

Page 1 of 2

10. Social Security:	Based on present law and 3-1/2% 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, 1990)

1.	Unfunded Accrued Liability as of June 30, 1989	$3,509,500
2.	Normal Cost	65,800
3.	Interest at Valuation Rate (5%) on (1) and (2)	178,800
4.	Contributions During Year	
	(a) Approximate "pay-as-you-go" payments to retirees	605,700
	(b) Supplemental contributions	496,700
	(c) Total effective contributions ((a) + (b))	1,102,400
5.	Interest at Valuation Rate (5%) on 4(a) and 4(b)	27,600
6.	Increase in Unfunded Accrued Liability Due to Benefit Improvements	2,912,800
7.	Expected Unfunded Accrued Liability as of June 30, 1990 (1 + 2 + 3 - 4 - 5 + 6)	5,536,900
8.	Actual Unfunded Accrued Liability as of June 30, 1990	6,117,000
9.	Actuarial Gain (Loss) During Year (7 - 8)	(580,100)
10.	Gain and Loss Analysis	
	(a) Gain due to increase in offsetting Social Security benefits	5,100
	(b) Gain due to supplemental plan asset earnings in excess of 5%	391,500
	(c) Net loss due to other actuarial gains and losses*	(298,000)
	(d) Loss due to inclusion of prior retirees not previously reported	(678,700)
	(e) Net actuarial gain ((a) + (b) + (c) + (d))	(580,100)

* Due primarily to a loss from earnings in excess of 5% on female account balances subject to unisex adjustment.

Table 6

UNIVERSITY OF MINNESOTA
SUPPLEMENTAL BENEFITS PLAN

Comparison of 1989 and 1990 Valuation Results

		1989	1990 [2]	1990 [3]
1.	Active Pre-1963 Participants			
	(a) Total active pre-1963 participants under FRP	227	197	197
	(b) Total projected to receive supplemental benefits			
	(i) Number	1	1	1
	(ii) Average annual supplemental benefit [1]	1,837	597	597
2.	Estimated account balance for female participants with account balance prior to July 1, 1982	29,739,720	27,917,583	27,917,583
3.	Retirees, Survivors and Widows			
	(a) Number			
	- Retirees	460	482	482
	- Survivors	57	87	87
	- Widows	8	8	8
	- Total	525	577	577
	(b) Average annual benefit being paid or payable	3,003	2,874	3,555
4.	Accrued Liability on Valuation Date			
	(a) Active participants	17,500	6,000	6,000
	(b) Retirees, survivors and widows	12,656,800	13,030,600	15,943,400
	(c) Female participants with account balances prior to July 1, 1982	3,145,500	2,999,200	2,999,200
	(d) Total	15,819,800	16,035,800	18,948,600
5.	Assets on Valuation Date	12,310,300	12,831,600	12,831,600
6.	Unfunded Accrued Liability	3,509,500	3,204,200	6,117,000

Page 1 of 2

Table 6 (cont.)

		1989	1990 [2]	1990 [3]
7.	Annual Normal Cost	65,800	60,000	60,000
8.	Chapter 356 Minimum Provision	294,100	272,300	451,000
9.	Alternate Provision-Current Disbursement	1,576,300	1,658,300	2,051,000

[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 recognition of post-retirement benefit increases granted during the year.

[3] After recognition of post-retirement benefit increases granted during the year.