VALUATION OF THE MILITARY RETIREMENT FUND

SEPTEMBER 30, 2022

DoD Office of the Actuary
January 2024

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SUPPLEMENTARY INFORMATION

ACTUARIAL CERTIFICATION

This report on the valuation of the Military Retirement Fund as of September 30, 2022, has been prepared in accordance with all applicable Actuarial Standards of Practice. In preparing this report, we have relied upon information maintained by other Department of Defense activities. The purpose of the actuarial valuation documented in this report is to calculate actuarial liabilities and funding amounts to meet the requirements of Chapter 74, Title 10, United States Code. Use of this report for other purposes may not be appropriate.

We have performed the valuation using methods and assumptions approved by the DoD Board of Actuaries. The annual, long-term economic assumptions include a 2.50% rate of inflation, a 2.75% across-the-board salary increase, and a 4.00% interest rate.

Actuarial methods and assumptions used in the preparation of this report are reasonable, and the valuation results present a fair picture of the financial condition of the Military Retirement Fund.

Underlying data, methods, and assumptions used to calculate actuarial liabilities and funding amounts are provided in an associated document. We are available to answer questions concerning the results presented in this report.

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USE OF THIS REPORT

Intended Audience: Those seeking actuarial or financial information about the Military Retirement Fund (MRF or Fund).

Report Limitations:

- Actual experience might differ significantly from the valuation assumptions.
- Refer to the *General Information and Key Results* section for a high-level summary.
- The data and assumptions used to determine actuarial liabilities and funding amounts are provided in the "Technical Reference to the FY 2022 Military Retirement Fund Valuation Report - Data, Methods, and Assumptions" (Technical Reference).
- In various places throughout this report, figures may not add exactly due to rounding.
- References to "active duty" personnel throughout the report also include full-time support reservists. Similarly, references to "reservists" or "selected reservists" exclude full-time support reservists.

Abbreviations

Board	DoD Board of Actuaries
BRS	Blended Retirement System
COLA	Cost-of-Living Adjustment
CSB/REDUX	Career Status Bonus Retirement System combined with the REDUX System
DFAS	Defense Finance and Accounting Service
DMDC	Defense Manpower Data Center
DoD	U.S. Department of Defense
FY	Fiscal Year
GORGO	Actuarial Projection Model used by DoD OACT
MRF	Military Retirement Fund
NCP	Normal Cost Percentage
OACT	DoD Office of the Actuary
OMB	U.S. Office of Management and Budget
P.L.	Public Law
SBP	Survivor Benefit Plan
SOA	Society of Actuaries
UFL	Unfunded Liability
U.S.C.	United States Code
VA	U.S. Department of Veterans Affairs

GENERAL INFORMATION AND KEY RESULTS

Military Retirement Fund – For Fiscal Year ending September 30, 2022

1. **Name of Plan:**
   Military Retirement Fund

2. **Name and Address of Plan Sponsor:**
   Department of Defense
   1400 Defense Pentagon
   Washington, DC 20301-1400
   Website: https://www.defense.gov/

3. **Type of Plan:**
   Defined Benefit

4. **Establishment of Funding Arrangement:**
   Chapter 74 of Title 10, U.S.C.

5. **Administrative Costs:**
   Not borne by the Plan

6. **Funding Arrangement:**
   Trust Fund

7. **Actuarial Cost Method:**
   Aggregate Entry-Age Normal

8. **Oversight:**
   DoD Board of Actuaries. The Board advises the Secretary of Defense on actuarial matters needed to make budgetary determinations to finance liabilities of the MRF on an actuarially sound basis. The current members of the Board (as of this valuation report date) are:

   Marcia A. Dush, Chairperson
   John H. Moore
   Michael E. Clark

9. **Plan Participant Information:**

	Participants (in 000s)	Annualized Pay ($ in billions)
Active Duty and Full-time Reservists:	1,433	$71.98
Selected Drilling Reservists:	682	$8.62
Non-Selected Reservists – w/ 20 years:	181	-N/A-
Non-disabled Retirees:	1,907	$62.13
Disabled Retirees:	136	$2.23
Survivors:	319	$4.91

GENERAL INFORMATION AND KEY RESULTS (Continued)

Military Retirement Fund – For Fiscal Year ending September 30, 2022

10. Valuation Input Data:

Extracts from files maintained by the Defense Manpower Data Center (DMDC), and files submitted by the Defense Finance and Accounting Service (DFAS)

11. Retirement Criteria:

A. Nondisabled Retirement from Active Duty – Immediate, after 20 years of service

B. Disabled Retirement – Immediate, generally with no years of service requirement

C. Nondisabled Retirement from Reserve Duty – Age 60 (or earlier in some cases) after 20 years of creditable service

12. Actuarial Assumptions:

A. Economic:
(Annual Rates)

1) Inflation – 2.50%
2) Salary – 2.75%
3) Interest – 4.00%

B. Demographic:

1) Mortality and other assumptions: Based on MRF experience.
2) Percent of a Typical New Entrant Cohort Serving 20 Or More Years:
Full-time (FT) personnel: 19% Part-time (PT) personnel: 18%

13. Accounting Results During Fiscal Year 2022:

($ in billions)

A. Benefits paid to participants	$71.5
B. Contributions from Services	$26.0
C. Contributions from Treasury	$125.0
D. Investment Income	$93.1

14. Actuarial Results at End of Fiscal Year 2022:

($ in billions)

A. Present Value of Future Benefits	$2,526.8
B. Actuarial Accrued Liability	$2,108.4
C. Actuarial Value of Assets	$1,279.1
D. Unfunded Accrued Liability	$829.3
E. Funded Ratio (C/B)	61%

15. NCPs Applied to Fiscal Year 2024 Basic Pay:

	DoD	Treasury	Total
Full-time	30.0%	27.9%	57.9%
Part-time	23.1%	8.5%	31.6%

SUMMARY OF CHANGES

FOR THE SEPTEMBER 30, 2022, VALUATION

At the June 2022 meeting, the DoD Board of Actuaries approved the following changes for the September 30, 2022, valuation. For access to the official transcript of the meeting, follow this link: https://actuary.defense.gov/External-Links/.

Changes in Actuarial Assumptions

VA Offset Parameters

The Board approved updated VA offset parameters. For nondisabled retirees from active duty, the update was from FYs 2008-2009 to the average of FYs 2004-2005, and 2018-2019 experience (for DoD NCP only); for nondisabled retirees from the reserves, the update was from FYs 2008-2009 to FYs 2018-2019; for disabled retirees, the update was to add United States Coast Guard (USCG) data. This resulted in decreases in the FY 2024 DoD NCPs of 4.1% for full-time and 1.5% for part-time, and led to an increase in the September 30, 2022, accrued liability of $58.8 billion (or 2.8%). See Appendix F of the Technical Reference.

Retiree Death and Other Loss Rates

The Board approved updated retiree decrement rates to FYs 2017-2020. For nondisabled retirees, the update was from FYs 2010-2012; for permanent disabled retirees, the update was from FYs 2014-2016; for temporary disabled retirees, the update was from FY 2007-2010. Death rates were combined for nondisabled retirees from active duty and reserves. Death and other loss rates for permanent disabled retirees were used to model temporary disabled retirees. The net effect was a 2.8% decrease to the full-time DoD NCP, a 0.1% decrease to the part-time NCP, and an increase in the September 30, 2022, accrued liability of $1.4 billion (or 0.1%). See Appendix I of the Technical Reference.

Mortality Improvement Factors

The Board approved updated mortality improvement factors for retirees and survivors. Improvement scales for retirees from active/reserves/permanent disability were combined. The male/female adjustment factors were simplified. The long-term rates of mortality improvement (after 20 years) for retirees were based on military-specific data; previously, they were based on SOA rates. The temporary impact of COVID was reflected by applying loads to the scales' underlying mortality rates for FYs 2021-2023. This led to increases in the FY 2023 DoD NCPs of 0.3% for full-time and 0.3% for part-time, and increased the September 30, 2022, accrued liability by $7.5 billion (or 0.4%). See Appendix J of the Technical Reference.

Plan Amendment (adding USCG to MRF)

The National Defense Authorization Act for FY 2021 (NDAA 2021) added the USCG to the MRF effective FY 2023. The USCG increased the liability by $59.7 billion (or 3%) in the September 30, 2022, valuation. The USCG began making normal cost payments in FY 2023. The Board approved a three-year amortization period for the USCG unfunded liability starting in FY 2024.

SUMMARY OF ANTICIPATED CHANGES
FOR THE SEPTEMBER 30, 2023, VALUATION

At the July 2023 meeting, the DoD Board of Actuaries approved the following changes for the September 30, 2023, valuation. For access to the official transcript of the meeting, follow this link: https://actuary.defense.gov/External-Links/.

Changes in Actuarial Assumptions

Reserve Rates

The Board approved updates to the reserve model, eliminating ad hoc increases to the reserve retirement rates; using actual rates of retirement for ages 63 and over; and eliminating the career points adjustment factors. This results in no change (to the 3rd decimal place) in the FY2025 full-time DoD NCP, a 0.1% decrease in the part-time NCP, and an estimated decrease in the September 30, 2022, accrued liability of $17.8 billion (or 0.8%). See Appendix H of the Technical Reference.

Mortality Improvement Factors

The Board approved the use of updated mortality improvement factors for retirees and survivors. The mortality projection scales added 2021 data with 0% weight and 2022 data with 25% weight, and the COVID loads were eliminated. The long-term rates of mortality improvement for survivors were updated using the average of officer and enlisted long-term rates. This results in a decrease in the FY2025 DoD NCPs of 0.1% for full-time and 0.2% for part-time, and leads to an estimated decrease in the September 30, 2022, accrued liability of $35.5 billion (or 1.7%). See Appendix J of the Technical Reference.

SBP Parameters

The Board approved updates to SBP parameters. New retiree SBP election rates and premium reduction factors were updated from FYs 2007-2009 to FY 2021. Continuing retiree SBP parameters were updated from FY 2008 to FY 2021. This results in an increase in the FY 2025 DoD NCPs of 0.4% for full-time and 0.4% for part-time, and an estimated decrease in the September 30, 2022, accrued liability of $1.5 billion (or 0.1%). See Appendix F of the Technical Reference.

VA Offset Parameters/Disability rates

The Board approved adjustments to VA offset parameters (for DoD NCPs only) and disability rates to reflect the anticipated impact of the Promise to Address Comprehensive Toxics (PACT) Act. VA offset parameters were increased for new non-disabled retirees to result in a 10% increase in Concurrent Receipt outlays after many years. Permanent and temporary disability retirement rates were also increased by 10%. This results in a decrease in the FY 2025 DoD NCPs of 3.3% for full-time and 1.4% for part-time, and an estimated decrease in the September 30, 2022, accrued liability of $0.2 billion (or 0.01%). See Appendices F, G and H of the Technical Reference.

VALUATION OF THE MILITARY RETIREMENT FUND

Introduction

The MRF provides payments for retirement from active duty and reserves, disability retirement, and survivor benefits. A detailed description of benefits can be found in Appendix A.

Chapter 74 of Title 10, U.S.C. established an aggregate entry-age normal cost funding method for the MRF starting October 1, 1984. Under this law, DoD pays the normal cost and the Department of Treasury (Treasury) makes payments from general revenues to amortize the unfunded liability and any gains or losses. Treasury's total contribution also includes the normal cost for Concurrent Receipt benefits.

This law also established an independent three-member DoD Retirement Board of Actuaries that is required to review valuations of the MRF; determine the method of amortizing unfunded liabilities; report annually to the Secretary of Defense; and report to the President and the Congress on the status of the MRF at least once every four years. DoD OACT provides all technical and administrative support to the Board. The current Board members, as of this valuation report date, are Marcia Dush (Chairperson), John Moore, and Mike Clark. The DoD Chief Actuary is the Executive Secretary for the Board.

Valuation Data and Procedure

The valuation input data was extracted from files maintained by DMDC. Data on individual retirees and survivors comes from files submitted by DFAS. Active duty data comes from the Active Duty Military Personnel Master File, and reserve data comes from the Reserve Component Common Personnel Data System Master File. OACT reviews the data for reasonableness and consistency against figures provided by the DoD Comptroller but does not audit the data and relies on the file suppliers for accuracy and comprehensiveness.

Where applicable, dollar amounts include the subsequent January 1st increase in basic pay. These totals are summarized in Table 1.

TABLE 1

INITIAL ACCOUNTING FIGURES AS OF SEPTEMBER 30

($ in billions)

	2022*	2021
Total Active Duty Personnel + Full-Time Reservists	1,433,234	1,425,020
Total Annualized Basic Pay	$71.98	$67.78
Non-BRS	685,998	739,965
Total Annualized Basic Pay	$44.24	$43.93
BRS	747,236	685,055
Total Annualized Basic Pay	$27.74	$23.85
Total Selected Drilling Reservists	681,979	702,629
Total Annualized Basic Pay	$8.62	$8.40
Non-BRS	385,823	434,854
Total Annualized Basic Pay	$5.98	$6.13
BRS	296,156	267,775
Total Annualized Basic Pay	$2.63	$2.27
Total Non-Selected Reservists (with 20 years)	180,712	182,944
Total Annualized Basic Pay	-N/A-	-N/A-
Total Number of Non-disabled Retirees	1,907,227	1,866,453
Total Annualized Retired Pay	$62.13	$56.92
Total Number of Disabled Retirees	136,468	130,024
Total Annualized Retired Pay	$2.23	$1.96
Total Number of Surviving Families	319,238	317,764
Total Annualized Survivor Annuities	$4.91	$4.60

* 2022 Figures include USCG.

Population and pay projections are generated by an actuarial projection model (GORGO[1]). GORGO is a deterministic model, which assumes the average outcome will occur annually.

The data on active duty personnel and drilling reservists is grouped into cells by age nearest birthday and number of years of service. Each cell contains the counts and average basic pay.

[1] GORGO was named after a monster featured in a 1961 British science fiction movie based on a variation of *Godzilla*.

Data on retirees and survivors is grouped into cells by age, and each cell contains the counts and annualized retired pay or survivor annuity. The data arrays are shown in Appendix C of the Technical Reference.

In GORGO, the starting populations are projected into the future. Each year, personnel are moved from one population category to another (e.g., from active to retired, or dropped from the system altogether) by means of decrements such as withdrawal, nondisability retirement, temporary disability, permanent disability, transfer, death with and without survivors, etc. The basic pay scale is increased at the valuation across-the-board salary increase assumption. Basic pay is also increased by individual promotion and merit increases. Retired pay and survivor annuities are increased by the valuation COLA assumption each year for retirees and survivors who receive a full COLA. At the end of each year, the counts and the amounts paid in basic pay and benefits are saved, and the population is aged. After 100 years, the present values of the series of basic pay and benefit payments are calculated using the valuation interest rate. Because no new entrants come into the system, the projection is said to be "closed group."

There is also an option in GORGO for an "open group" projection in which new entrants are added each year to meet DoD projected endstrengths. Results of an open group projection of the MRF are in Appendix K of the Technical Reference.

An open group projection also appears in Table 8. This projection, which shows the past and projected flow of plan assets over the next 30 years, includes the total basic payroll, the normal cost contributions, the payments to amortize the unfunded liability, investment income, fund disbursements, and the fund balance. All these items are discussed in detail throughout the text of this report and the Technical Reference. An overview of the GORGO process is illustrated in Figure 1.

FIGURE 1

GORGO PROCESS OVERVIEW

Long-term annual economic assumptions, i.e., the rate of inflation, the across-the-board pay increase, and the valuation interest rate, were decided upon by the Board after extensive analysis of the current environment and future expectations. A discussion of these assumptions is in Appendix D of the Technical Reference.

The decrement rates and other non-economic assumptions can be categorized as follows:

1. Active duty decrement rates
2. Retiree and survivor decrement rates
3. Drilling and non-drilling (with 20 good years) reserve decrement rates
4. Actuarial projection model parameters
5. Mortality improvement factors

The decrement rates and GORGO parameters are based on military-specific experience. The rates and descriptions of how they were derived are in Appendices G through J of the Technical Reference. The actuarial projection model parameters, dealing with such matters as the survivor benefit elections, premium deductions, and member/beneficiary age differences, are in Appendix F of the Technical Reference.

Valuation results are sensitive to certain assumptions. In general, the valuation results are most sensitive to changes in the long-term economic and retention assumptions. Table 6 provides an analysis of sensitivity to the long-term interest rate and salary increase assumptions.

Assets

The assets of the MRF are invested in special-issue Treasury obligations bearing interest at rates determined by the Secretary of the Treasury, taking into consideration current market yields for outstanding marketable U.S. obligations of comparable maturities. Each security issued to the Fund mirrors a security that has been issued to the public, i.e., it has the same maturity date, coupon rate, and other security-specific characteristics. The "mirrored" security may have been issued recently or at any time in the past. Under current procedures adopted by Treasury, the Fund's investment manager is permitted to redeem long-term special issue securities at any time before maturity for their fair market value, which is based on the public issue bid price with the same maturity date, coupon rate, and other security-specific characteristics. However, Treasury policy encourages a buy-and-hold approach considering the needs of the Fund in determining the maturities of securities purchased.

The investment manager follows the asset investment strategy approved by the DFAS Investment Board at their semiannual meetings. The current strategy is to invest the assets to generate sufficient cash to fund benefit payments and expenses as they come due. An expected average maturity of future investments of 20 years is targeted, taking into consideration current and expected economic conditions. Most purchases are in Treasury Inflation-Protected Securities (TIPS), which hedges most of the inflationary pressures while minimizing liquidity risks to the Fund.

For purposes of determining the unfunded liability, the assets of the Fund are valued using the amortized cost method. Under this method, the yield to maturity of a security valued at any point in time is equal to the yield to maturity at the time of purchase. In the valuation of the MRF, the amortized cost value is referred to as the "actuarial value of assets." The actuarial value of assets is determined by amortizing premium and discount over the life of the securities. The total investment

return includes the interest coupons received, the change in the amortized cost value during the year, and the inflation compensation accrued from the holdings of TIPS. The actuarial value of assets used in the determination of the unfunded liability includes the "accrued interest," which is the amount of the next interest coupon payment that has accrued since the date of the last coupon payment. Table 2 presents a statement of the actuarial value of assets. Table 3 presents a statement of changes in the actuarial value of assets.

TABLE 2

DEPARTMENT OF DEFENSE
MILITARY RETIREMENT FUND
STATEMENT OF ACTUARIAL VALUE OF ASSETS
($ in millions)

	For the Plan Year Ended September 30:	
	2022	2021
Assets		
1) Investments, at book value:		
U.S. Government securities[1]	$1,271,997	$1,100,371
2) Accounts receivable:		
a) Accrued interest[2]	$6,376	$5,893
b) Due from military retirees or their survivors	$160	$160
c) Intragovernmental	$0	$0
3) Cash ('Fund Balance with Treasury')	$611	$75
Actuarial value of assets	1,279,144	$1,106,499

[1] Book value is determined by 1) amortizing premium and discount over the life of the securities using the effective interest method and 2) including additional inflation compensation from TIPS. Additional adjustment made as a result of FY 2011 National Defense Authorization Act (P.L. 111-383) regarding retired pay date as follows:

	2022	2021
Investments, at book value (actual)	$1,267,189	$1,100,371
October Expenditures paid in September	$4,808	$0
Investments, at book value (adjusted)	$1,271,997	$1,100,371

[2] Includes accrued interest receivable and interest purchased.

TABLE 3

DEPARTMENT OF DEFENSE
MILITARY RETIREMENT FUND
STATEMENT OF CHANGES IN ACTUARIAL VALUE OF ASSETS
($ in millions)

	For the Plan Year Ended September 30: 2022	2021
1) Actuarial value of assets at beginning of plan year:	$1,106,499	$979,433
2) Investment income:		
a) Interest/Inflation	$99,489	$62,488
b) Net appreciation (depreciation) in book value of investments[1]	($6,354)	($5,602)
3) Contributions:		
a) From Services	$26,009	$25,200
b) Appropriation to amortize the unfunded liability	$114,463	$98,100
c) Appropriation for Treasury Normal Cost Contribution	$10,569	$9,900
4) Total additions (2 + 3):	$244,176	$190,086
5) Change in Accounts Receivable	$0	$13
6) Benefits paid to participants:	$71,532	$63,033
Actuarial value of assets (1 + 4 + 5 - 6):	$1,279,144	$1,106,499

1. Investments bought, sold and held during the plan year ended September 30 appreciated (depreciated) in value as follows:

	2022	2021
Amortized discount	$911	$897
Amortized premium	($7,265)	($6,498)
Gain (loss) on sale *	$0	$0
	($6,354)	($5,602)

* Gain (loss) on sale is only shown for informational purposes and is not included in the net appreciation (depreciation).

Normal Cost

The aggregate entry-age NCP is the level percentage of basic pay that is contributed over the active career of a typical group of new entrants to pay for the future retirement and survivor benefits of that group. It is determined using a new-entrant cohort as the starting population in a GORGO projection. Their basic pay and benefits are projected for 100 years and then discounted back to the valuation date. Mathematically, an NCP is calculated by dividing the present value of future benefits by the present value of future basic pay for the entire cohort using the assumed interest rate.

P.L. 99-661, enacted in November 1986, mandated that two separate NCPs be used for the valuation of the MRF. One NCP is for active duty personnel and full-time reservists (full-time), and one is for part-time reservists (part-time). Full-time and part-time NCPs are calculated for each of the separate benefit formulas. Only full-time personnel are under the CSB/REDUX benefit formula.

P.L. 108-136 required Treasury to pay into the Fund at the beginning of each year the normal cost due to Concurrent Receipt benefits. The NCPs are disaggregated in Table 4. Table 5 also displays the DoD and Treasury NCPs separately.

The FY 2023 NCPs in Table 4 are calculated using the NCP weighting factors (see Appendix E of the Technical Reference), along with BRS opt-in rates (see Appendix F of the Technical Reference). Due to federal budget deadlines, the NCPs used to determine the actual contributions to the Fund must be established in advance of implementation and may vary from those actually derived in a valuation.

TABLE 4

NORMAL COST AS A PERCENT OF BASIC PAY (NCPs)
(DoD Normal Cost Percentage in Parentheses)

FULL-TIME	HIGH-3		CSB/ REDUX*		BRS		FY 2023 Weighted	
Nondisability benefits	57.0	(28.8)	56.2	(28.5)	44.6	(23.2)	50.9	(26.1)
Disability benefits	4.3	(1.1)	4.3	(1.1)	4.3	(1.1)	4.3	(1.1)
Survivor benefits	2.9	(2.9)	2.9	(2.9)	2.5	(2.5)	2.7	(2.7)
Total	64.3	(32.9)	63.5	(32.5)	51.3	(26.7)	57.9	(29.8)
PART-TIME								
Nondisability benefits	27.5	(20.1)	-N/A-		22.0	(16.1)	25.3	(18.6)
Disability benefits	3.4	(1.6)	-N/A-		3.4	(1.6)	3.4	(1.6)
Survivor benefits	3.0	(3.0)	-N/A-		2.5	(2.5)	2.8	(2.8)
Total	33.9	(24.7)	-N/A-		27.9	(20.2)	31.6	(23.0)

* Only full-time personnel are under the CSB/REDUX benefit formula

Based on current active decrement rates, 19 percent of a typical group of new entrants attain 20 years of active duty service and become eligible for nondisability retirement. Specifically, 60 percent of new officers and 16 percent of new enlistees attain 20 years of active duty service.

It should be noted that some military personnel who begin their careers on active duty move to the reserves and retire from there. This is reflected by adding a portion of the reserve benefit to the full-time normal cost (see Appendix F of the Technical Reference). Based on current reserve decrement rates, 18 percent of a typical group of members entering the reserves for the first time (including members with prior active or non-drilling reserve time) become eligible for a nondisability retirement (63% for officers, and 16% for enlisted).

Table 9 lists the past and projected weighted aggregate full-time and part-time NCPs under current law in the normal cost columns. The columns are separated into the DoD and Treasury NCPs due to P.L. 108-136. With the passage of the law on BRS, projected NCPs will converge to the level of the BRS NCPs as all non-retired personnel will eventually have entered the uniformed service on or after December 31, 2017. As indicated in the Table 8 footnote, the Treasury Concurrent Receipt normal cost payments reflect amounts sequestered by fiscal year.

Amortization of Unfunded Liability

Because normal cost contributions for service prior to October 1, 1984, were not made into the MRF, there was an initial unfunded accrued liability of $528.7 billion as of September 30, 1984. The Board determines the amortization methodology for the unfunded liability, and it is expected to be fully amortized in calendar year 2025 (FY 2026).

Changes in the unfunded liability can arise because of modifications to benefit provisions, changes in actuarial assumptions, and deviations in actual experience from expected experience (gains and losses). NDAA 2021 added the USCG to the MRF beginning in FY 2023. A description of the methods and computations used to calculate the payments for changes in unfunded liability can be found in Appendix L of the Technical Reference.

Unfunded Accrued Liability as of September 30, 2022

Table 5 summarizes the calculation of the unfunded accrued liability as of September 30, 2022. The present value of future benefits is obtained by projecting benefits for the total covered population (closed group) and discounting them back to the valuation date using the assumed long-term interest rate.

The present value of future normal cost contributions is obtained by projecting full-time and part-time basic pay for the covered population, multiplying the pay by the total projected full-time and part-time NCPs, and discounting the results back to the valuation date.

To assess system financial risks, certain underlying valuation assumptions were tested for their respective impacts, which are shown in Table 6. The absolute levels of change tested in Table 6 were selected to show directional magnitudes, not necessarily anticipated changes.

In FY 2022, there was a loss of $173.3 billion. The components of this loss are outlined in Table 7.

These changes in unfunded liability were used to calculate the October 1, 2023, unfunded liability payment. The total payment was determined to be $151.521 billion. This total payment includes (1) a payment of $108.303 billion to amortize the original unfunded liability, plus (2) a payment of $20.953 billion to amortize the original unfunded liability for USCG, plus (3) an amount of $21.608

billion to amortize changes in actuarial assumptions, plus (4) an amount of $7.768 billion to amortize benefit changes, less (5) an amount of $8.11 billion to amortize total combined experience gains and losses through FY 2022, plus (6) $0.999 billion to amortize over one year the loss due to sequestration of the October 1, 2022, Treasury Concurrent Receipt normal cost contribution. The detailed calculations of these payment components can be found in Appendix L of the Technical Reference. Tables 10 and 11 show the projection of the unfunded liability payments and unfunded liability balances.

TABLE 5

MILITARY RETIREMENT FUND
ACTUARIAL STATUS INFORMATION
($ in billions)

		For the Plan Year Ended September 30:	
		2022[1]	2021
1.	Present value of future benefits (PVFB)		
	a. Retirees and Survivors	$1,372.1	$1,198.5
	b. Reserves	$248.3	$221.9
	c. Active Duty	$906.5	$795.8
	TOTAL	$2,526.8	$2,216.3
2.	Present value of future normal cost contributions (PVFNC)[2]	$418.4	$364.6
3.	Actuarial accrued liability (1. – 2.)	$2,108.4	$1,851.6
4.	Actuarial value of assets[3]	$1,279.1	$1,106.5
5.	Unfunded accrued liability (3. – 4.)	$829.3	$745.1
6.	Funded Ratio (4. / 3.)	61%	60%
7.	DoD NCP to be applied to basic pay in fiscal year[4]	FY 2024	FY 2023
	a. Full-time	30.0%	36.9%
	b. Part-time	23.1%	24.5%
8.	Treasury NCP to be applied to basic pay in fiscal year[5]	FY 2024	FY 2023
	a. Full-time	27.9%	16.2%
	b. Part-time	8.5%	3.8%

[1] 2022 figures include USCG.

[2] The September 30, 2022, PVFNC reflects a reduction of $960.559 million due to sequestration of the October 1, 2022, Treasury Concurrent Receipt normal cost contribution. The September 30, 2021, PVFNC reflects a reduction of $956.658 million due to sequestration of the October 1, 2021, Treasury Concurrent Receipt normal cost contribution.

[3] The actuarial value of assets is determined using the amortized cost method from Table 2.

[4] Due to the need to establish the NCPs in advance of implementation, the percentages used in a fiscal year may vary from the ones in the valuation.

[5] Treasury pays the normal cost resulting from the increase in benefits due to Concurrent Receipt.

TABLE 6

MILITARY RETIREMENT FUND
SENSITIVITY TESTS*
($ in billions)

Long-Term Real Interest Rate Assumption

[Baseline Real Interest = 1.50%, Appendix D of the Technical Reference]

		Baseline	0.25% Lower	0.25% Higher
1.	Present value of future benefits	$2,527.0	$2,664.9	$2,399.7
2.	Actuarial accrued liability	$2,108.4	$2,204.5	$2,018.4
3.	Unfunded accrued liability	$829.3	$925.3	$739.2
4.a.	FY 2024 FT NCP [DoD + Treasury]	57.9%	63.0%	53.3%
4.b.	FY 2024 PT NCP [DoD + Treasury]	31.6%	34.7%	28.7%

Long term salary scale

[Baseline = 2.75%, Appendix D of the Technical Reference]

		Baseline	1% Lower	1% Higher
1.	Present value of future benefits	$2,527.0	$2,422.8	$2,648.1
2.	Actuarial accrued liability	$2,108.4	$2,073.2	$2,145.7
3.	Unfunded accrued liability	$829.3	$794.1	$866.5
4.a.	FY 2024 FT NCP [DoD + Treasury]	57.9%	51.4%	65.0%
4.b.	FY 2024 PT NCP [DoD + Treasury]	31.6%	25.7%	38.6%

* A sensitivity test measures the impact of a change in an actuarial assumption on an actuarial determination. Baseline figures are from Table 5.

TABLE 7

MILITARY RETIREMENT SYSTEM
FY 2022 CHANGE IN UNFUNDED LIABILITY *
($ in billions)

	For the Plan Year Ended September 30, 2022	
1. Actual unfunded accrued liability (9/30/22)	829.3	
2. Expected unfunded accrued liability (9/30/22)	655.9	
3. Total (gain)/loss **	173.3	8.2%
a. Total experience (gain)/loss	45.0	2.1%
Interest assumption	-40.0	3.1%
COLA assumption	76.2	3.6%
Salary assumption	8.9	0.4%
Non-economic experience	-0.1	0.0%
b. 10/1/22 unpaid contribution ***	1.0	0.0%
c. Adding USCG to MRF	59.7	2.8%
d. Total benefit change (gain)/loss	0.0	0.0%
e. Total assumption change (gain)/loss	67.7	3.2%
Updated VA Offset	58.8	2.8%
Updated Retiree Death and Other Loss Rates	1.4	0.1%
Updated Mortality Improvement	7.5	0.4%

In this table, negative values represent actuarial gains and positive values represent actuarial losses.

* Percentages shown are ratios of absolute values of each gain or loss component to the accrued liability (Table 5, line 3), except for the interest gain, which is the ratio to the actuarial value of assets.

** The reasons for the total experience (gain)/loss:
- Interest = 4.00% long-term assumed vs. 7.7% FY22 actual dollar-weighted fund yield
- COLA = 2.50% long-term assumed vs. 8.7% January 1, 2023, actual
- Salary = 2.75% long-term assumed vs. 4.6% January 1, 2023, actual

*** October 1, 2022, unpaid contribution loss is due to sequestration of the Treasury Concurrent Receipt normal cost contribution.

TABLE 8

MILITARY RETIREMENT FUND
PAST AND PROJECTED FLOW OF PLAN ASSETS [1]
(In Billions of Dollars and as a Proportion of Payroll)

Fiscal Year	Basic Payroll [2]	From DoD, for Normal Costs [3]		From Treasury, for Normal Costs [3]		From Treasury, for Amortization of Unfunded Liability [4]		Investment Income		Fund Disbursements [5]		Fund Balance, End of Year [6]	
1985	$33.5	$17.0	(50.7%)			$9.5	(28.4%)	$1.1	(3.3%)	$15.8	(47.2%)	$11.8	(35.2%)
1986	35.4	17.4	(49.2)			10.5	(29.7)	2.5	(7.1)	17.6	(49.7)	24.6	(69.5)
1987	36.4	18.3	(50.3)			10.5	(28.8)	3.6	(9.9)	18.1	(49.7)	38.9	(106.9)
1988	37.3	18.4	(49.3)			10.3	(27.6)	5.0	(13.4)	17.5	(46.9)	53.4	(143.2)
1989	38.6	18.5	(47.9)			9.8	(25.4)	6.1	(15.8)	20.2	(52.3)	67.6	(175.1)
1990	39.8	16.3	(41.0)			10.6	(26.6)	7.3	(18.3)	21.5	(54.0)	80.4	(202.0)
1991	42.3	17.2	(40.7)			10.8	(25.5)	8.5	(20.1)	23.1	(54.6)	93.7	(221.5)
1992	41.1	16.3	(39.7)			11.2	(27.3)	9.4	(22.9)	24.5	(59.6)	106.1	(258.2)
1993	38.9	13.2	(33.9)			12.3	(31.6)	10.0	(25.7)	25.7	(66.1)	115.9	(297.9)
1994	38.3	12.8	(33.4)			11.9	(31.1)	10.3	(26.9)	26.7	(69.7)	124.2	(324.3)
1995	37.1	12.2	(32.9)			11.5	(31.0)	10.9	(29.4)	27.8	(74.9)	131.0	(353.1)
1996	36.7	11.2	(30.5)			10.7	(29.2)	11.3	(30.8)	28.8	(78.5)	135.3	(368.7)
1997	36.8	11.1	(30.2)			15.2	(41.3)	11.9	(32.3)	30.2	(82.1)	143.3	(389.4)
1998	37.1	10.4	(28.0)			15.1	(40.7)	12.2	(32.9)	31.1	(83.8)	149.9	(404.0)
1999	37.6	10.4	(27.7)			15.3	(40.7)	12.4	(33.0)	31.9	(84.8)	156.0	(414.9)
2000	39.0	11.4	(29.2)			15.3	(39.2)	12.7	(32.6)	32.8	(84.1)	162.7	(417.2)
2001	40.9	11.4	(27.9)			16.1	(39.4)	13.2	(32.3)	34.1	(83.4)	169.2	(413.7)
2002	44.7	12.9	(28.9)			17.0	(38.0)	12.4	(27.7)	35.1	(78.5)	176.5	(394.9)
2003	52.0	13.7	(26.3)			17.9	(34.4)	10.0	(19.2)	35.6	(68.5)	182.6	(351.2)
2004	53.6	14.1	(26.3)			18.2	(34.0)	10.1	(18.8)	37.0	(69.0)	188.0	(350.7)
2005	56.3	15.0	(26.6)	$1.5	(2.7%)	21.4	(38.0)	10.9	(19.4)	39.0	(69.3)	197.9	(351.5)
2006	54.0	13.9	(25.7)	2.3	(4.3)	23.2	(43.0)	12.3	(22.8)	41.1	(76.1)	208.4	(385.9)
2007	56.4	14.5	(25.7)	2.5	(4.4)	26.0	(46.1)	10.3	(18.3)	43.5	(77.1)	218.2	(386.9)
2008	59.2	16.1	(27.2)	2.8	(4.7)	46.2	(78.0)	15.6	(26.4)	45.8	(77.4)	253.1	(427.5)
2009	63.0	17.5	(27.8)	3.7	(5.9)	51.1	(81.1)	2.9	(4.6)	50.0	(79.4)	278.4	(441.9)
2010	64.4	20.4	(31.7)	4.5	(7.0)	58.6	(91.0)	10.4	(16.1)	50.6	(78.6)	321.7	(499.5)
2011	66.9	21.0	(31.4)	5.0	(7.5)	61.4	(91.8)	18.0	(26.9)	51.0	(76.2)	376.1	(562.2)
2012	66.5	21.9	(32.9)	5.4	(8.1)	64.8	(97.4)	12.5	(18.8)	52.6	(79.1)	428.0	(643.6)
2013	66.3	20.5	(30.9)	6.8	(10.3)	67.7	(102.1)	15.0	(22.6)	54.5	(82.2)	483.5	(729.3)
2014	65.4	20.5	(31.3)	6.3	(9.6)	72.9	(111.5)	17.1	(26.1)	55.4	(84.7)	545.0	(833.3)
2015	64.3	19.7	(30.6)	6.2	(9.6)	75.6	(117.6)	10.8	(16.8)	56.7	(88.2)	600.6	(934.1)
2016	64.6	19.5	(30.2)	6.9	(10.7)	79.3	(122.8)	15.3	(23.7)	57.2	(88.5)	664.4	(1,028.5)
2017	65.4	18.3	(28.0)	6.8	(10.4)	81.2	(124.1)	21.2	(32.4)	57.8	(88.4)	734.1	(1,122.5)
2018	66.7	18.4	(27.6)	6.8	(10.3)	82.9	(124.3)	30.5	(45.8)	58.9	(88.4)	813.9	(1,220.2)
2019	69.1	20.5	(29.7)	7.9	(11.4)	88.0	(127.4)	27.4	(39.7)	60.7	(87.8)	897.0	(1,298.1)
2020	72.2	21.8	(30.2)	8.5	(11.8)	91.9	(127.2)	22.6	(31.3)	62.4	(86.4)	979.4	(1,356.5)
2021	74.6	25.2	(33.8)	9.9	(13.3)	98.1	(131.5)	56.9	(76.3)	63.0	(84.5)	1,106.5	(1,483.2)
2022	76.8	26.0	(33.9)	10.6	(13.8)	114.5	(149.1)	93.0	(121.1)	71.5	(93.1)	1,279.1	(1,665.5)
↑ ACTUAL ↑													
↓ PROJECTED ↓													
2023	80.8	28.3	(35.1%)	10.6	(13.1%)	120.4	(149.0%)	55.5	(68.7%)	74.2	(91.8%)	1,419.9	(1,757.1%)
2024	84.8	24.7	(29.2)	19.9	(23.4)	151.5	(178.6)	62.6	(73.8)	77.9	(91.9)	1,600.7	(1,886.9)
2025	86.5	25.0	(28.9)	22.3	(25.7)	154.7	(178.8)	70.0	(80.9)	80.5	(93.1)	1,792.0	(2,071.9)
2026	88.5	25.4	(28.7)	22.6	(25.5)	158.9	(179.5)	77.8	(87.9)	82.9	(93.7)	1,993.7	(2,252.2)
2027	90.6	25.8	(28.4)	22.9	(25.3)	23.1	(25.5)	80.4	(88.7)	85.2	(94.1)	2,060.6	(2,274.2)
2028	92.8	26.2	(28.3)	23.3	(25.1)	23.7	(25.5)	83.1	(89.5)	87.6	(94.3)	2,129.4	(2,294.0)
2029	95.2	26.7	(28.1)	23.7	(24.9)	24.4	(25.6)	85.8	(90.2)	89.9	(94.4)	2,200.0	(2,311.3)
2030	97.7	27.2	(27.9)	24.1	(24.7)	25.0	(25.6)	88.7	(90.7)	92.3	(94.5)	2,272.8	(2,326.2)
2031	100.3	27.8	(27.7)	24.6	(24.5)	25.7	(25.6)	91.6	(91.3)	94.7	(94.4)	2,347.7	(2,340.2)
2032	103.0	28.4	(27.6)	25.1	(24.3)	26.4	(25.6)	94.6	(91.8)	97.3	(94.5)	2,424.9	(2,353.3)
2033	106.0	29.1	(27.4)	25.6	(24.2)	27.1	(25.6)	97.7	(92.2)	100.0	(94.4)	2,504.4	(2,363.5)
2034	109.0	29.7	(27.3)	26.2	(24.0)	27.9	(25.6)	100.9	(92.6)	102.6	(94.2)	2,586.4	(2,373.8)
2035	112.1	30.4	(27.1)	26.8	(23.9)	28.7	(25.6)	104.2	(93.0)	105.3	(93.9)	2,671.2	(2,383.4)
2036	115.3	31.1	(27.0)	27.3	(23.7)	29.4	(25.5)	107.6	(93.3)	107.9	(93.6)	2,758.8	(2,393.1)
2037	118.5	31.8	(26.8)	27.9	(23.6)	30.3	(25.5)	111.1	(93.7)	110.6	(93.3)	2,849.2	(2,403.7)
2038	121.8	32.5	(26.7)	28.5	(23.4)	31.1	(25.5)	114.7	(94.2)	113.5	(93.2)	2,942.6	(2,415.5)
2039	125.2	33.3	(26.6)	29.2	(23.3)	31.9	(25.5)	118.5	(94.7)	116.4	(93.0)	3,039.1	(2,427.8)
2040	128.7	34.1	(26.5)	29.9	(23.2)	32.8	(25.5)	122.4	(95.1)	119.2	(92.7)	3,139.0	(2,439.9)
2041	132.3	35.0	(26.4)	30.6	(23.1)	33.7	(25.5)	126.4	(95.6)	122.0	(92.2)	3,242.7	(2,451.5)
2042	136.0	35.8	(26.4)	31.4	(23.1)	14.1	(10.4)	129.7	(95.4)	124.8	(91.7)	3,329.0	(2,447.4)
2043	139.9	36.8	(26.3)	32.2	(23.0)	0.0	(0.0)	132.6	(94.8)	127.6	(91.3)	3,402.9	(2,432.7)
2044	143.8	37.7	(26.2)	33.0	(22.9)	0.0	(0.0)	135.6	(94.3)	130.6	(90.8)	3,478.7	(2,419.2)
2045	147.8	38.7	(26.2)	33.8	(22.9)	0.0	(0.0)	138.6	(93.8)	133.3	(90.2)	3,556.5	(2,406.6)
2046	152.0	39.8	(26.2)	34.7	(22.9)	0.0	(0.0)	141.7	(93.3)	136.1	(89.6)	3,636.6	(2,393.1)
2047	156.3	40.8	(26.1)	35.7	(22.8)	0.0	(0.0)	144.9	(92.7)	138.9	(88.9)	3,719.2	(2,379.9)
2048	160.7	41.9	(26.1)	36.6	(22.8)	0.0	(0.0)	148.2	(92.3)	141.8	(88.2)	3,804.2	(2,367.8)
2049	165.1	43.1	(26.1)	37.6	(22.8)	0.0	(0.0)	151.6	(91.8)	144.7	(87.6)	3,891.8	(2,356.7)
2050	169.7	44.3	(26.1)	38.6	(22.8)	0.0	(0.0)	155.2	(91.4)	147.6	(87.0)	3,982.3	(2,346.2)
2051	174.5	45.5	(26.1)	39.7	(22.8)	0.0	(0.0)	158.8	(91.0)	150.6	(86.3)	4,075.7	(2,336.0)
2052	179.3	46.8	(26.1)	40.8	(22.8)	0.0	(0.0)	162.5	(90.6)	153.6	(85.6)	4,172.2	(2,326.3)

TABLE 8 FOOTNOTES

NOTE REGARDING OPEN GROUP PROJECTION: The open group projection in this report is based on benefit provisions, data, methods, and assumptions as of the valuation date. The values are displayed in future-year dollars. They are intended to provide the user with a directional magnitude, but uncertainty increases with the length of the projection period.

In addition, the fundamental purpose of OACT's valuation is to calculate the actuarial liability and normal cost percentages, both of which are done on a closed group basis. In performing the valuation, many assumptions represent long-run average expectations. The open group projections use many of the same long-run average assumptions but incorporate short-term assumptions for basic pay and COLA increases.

[1] By law, DoD contributes the normal cost and Treasury makes payments on the unfunded liability. Starting in FY 2005, Treasury has contributed the portion of the normal cost attributable to Concurrent Receipt benefits. There are no employee contributions to the Fund.

[2] DoD-projected endstrengths are used through the end of FY 2028 and held constant thereafter.

[3] Due to federal budget deadlines, NCPs are established in advance of implementation. The percentages actually used and displayed here may vary from the one derived in the valuation as of the end of the previous year. The Balanced Budget and Emergency Deficit Control Act of 1985 required sequestration of Treasury Normal Cost Payments from 2014 through 2021, and the Infrastructure Investment and Jobs Act extended it through 2031. Sequestration is only reflected in the table through 2024.

[4] Reflects amortization payments for FY 2024 and thereafter determined in the September 30, 2022, valuation, and full repayment of each prior years' sequestration of Treasury Normal Cost amounts brought forward with interest.

[5] Disbursements are on a cash basis and are paid on the first of the month. If the first of the month falls on a weekend or holiday the disbursement is made on the previous business day. This is not accounted for in the projected Fund Disbursements or Balances.

[6] This fund balance (on a book value basis) reflects cash disbursements during the year.

TABLE 8 FOOTNOTES (Continued)

OTHER NOTES: Mortality rates that are applied in the valuation to active/reserve duty members, retirees, and survivors, are subject to annual rates of improvement. See Appendix J of the Technical Reference. People and pay underlying the projection can be found in Appendix K of the Technical Reference. The table does not reflect future gains or losses due to differences between the short-term OMB economic experience below and the valuation's long-term economic assumptions. Consequently, only payments on the total unfunded liability as of September 30, 2022, are reflected.

ECONOMIC ASSUMPTIONS USED IN PROJECTION OF PLAN ASSETS

Fiscal Year	COLA (%)	Basic Pay (%)	Interest (%)
2023	8.7	4.6	4.0
2024	3.1	5.2	4.0
2025	2.7	2.6	4.0
2026	2.3	2.6	4.0
2027	2.3	2.6	4.0
2028	2.3	2.6	4.0
2029	2.3	2.6	4.0
2030	2.3	2.6	4.0
2031	2.3	2.6	4.0
2032	2.5	2.6	4.0
2033	2.5	2.75	4.0

FY 2023 are actual assumptions, FY 2024 through FY 2032 are short-term assumptions from OMB, FY 2033 and beyond are long-term assumptions for COLA and basic pay. Long-term interest assumption is used for all years. COLA represents the cost-of-living increases to retiree and survivor annuities. Basic Pay is the rate at which the entire military pay table increases and occurs each January 1st. Interest assumptions represent the annual, aggregate Fund yield on all cash flows.

TABLE 9

MILITARY RETIREMENT FUND
PAST AND PROJECTED PAYROLL AND NORMAL COST PAYMENTS
(In Billions of Dollars and as a Proportion of Payroll)

Fiscal	Payroll			DoD Normal Cost Payments				Treasury Normal Cost Payments				Normal Cost Payments	
Year	Full-Time	Part-Time	Total	Full-Time		Part-Time		Full-Time		Part-Time		Total	
1985	$30.6	$2.9	$33.5	$15.5	(50.7%)	$1.5	(50.7%)	$0.0		$0.0		$17.0	(50.7%)
1986	32.3	3.1	35.4	16.4	(50.7)	1.6	(50.7)	0.0		0.0		17.9	(50.7)
1987	33.4	3.0	36.4	17.4	(52.2)	0.8	(26.4)	0.0		0.0		18.2	(50.1)
1988	34.0	3.3	37.3	17.4	(51.2)	0.9	(26.1)	0.0		0.0		18.3	(49.0)
1989	35.0	3.6	38.6	17.6	(50.2)	0.9	(25.7)	0.0		0.0		18.5	(47.9)
1990	36.0	3.7	39.7	15.8	(43.9)	0.5	(13.4)	0.0		0.0		16.3	(41.1)
1991	38.6	3.7	42.3	16.7	(43.2)	0.5	(13.3)	0.0		0.0		17.2	(40.6)
1992	36.9	4.1	41.0	15.8	(42.7)	0.5	(13.3)	0.0		0.0		16.3	(39.8)
1993	35.1	3.8	38.9	12.8	(36.4)	0.4	(10.6)	0.0		0.0		13.2	(33.9)
1994	34.5	3.8	38.3	12.4	(36.0)	0.4	(10.6)	0.0		0.0		12.8	(33.5)
1995	33.4	3.8	37.2	11.9	(35.5)	0.4	(10.5)	0.0		0.0		12.3	(32.9)
1996	33.1	3.7	36.8	10.9	(32.9)	0.4	(9.6)	0.0		0.0		11.2	(30.6)
1997	33.2	3.7	36.9	10.8	(32.6)	0.4	(9.6)	0.0		0.0		11.2	(30.3)
1998	33.4	3.7	37.1	10.2	(30.5)	0.3	(8.8)	0.0		0.0		10.5	(28.3)
1999	33.7	3.9	37.6	10.2	(30.2)	0.3	(8.7)	0.0		0.0		10.5	(28.0)
2000	35.1	4.0	39.1	11.2	(31.8)	0.4	(9.8)	0.0		0.0		11.6	(29.5)
2001	36.7	4.2	40.9	10.9	(29.6)	0.6	(14.1)	0.0		0.0		11.5	(28.0)
2002	40.8	3.9	44.7	12.4	(30.3)	0.6	(14.4)	0.0		0.0		12.9	(28.9)
2003	47.8	4.2	52.0	13.1	(27.4)	0.6	(14.6)	0.0		0.0		13.7	(26.4)
2004	49.4	4.2	53.6	13.4	(27.1)	0.7	(16.0)	0.0		0.0		14.1	(26.2)
2005	52.0	4.3	56.3	14.3	(27.5)	0.7	(16.7)	1.7	(3.3%)	0.0	(0.8%)	16.8	(29.8)
2006	49.7	4.3	54.0	13.2	(26.5)	0.7	(16.7)	2.4	(4.9)	0.1	(1.4)	16.4	(30.3)
2007	51.2	5.2	56.4	13.6	(26.5)	0.9	(17.5)	2.5	(4.9)	0.1	(1.5)	17.1	(30.3)
2008	53.5	5.7	59.2	15.5	(29.0)	1.1	(19.1)	2.7	(5.0)	0.1	(1.5)	19.4	(32.7)
2009	57.1	5.9	63.0	16.8	(29.4)	1.2	(21.1)	4.0	(7.0)	0.1	(2.3)	22.2	(35.2)
2010	58.3	6.1	64.4	18.9	(32.4)	1.5	(24.5)	4.7	(8.0)	0.2	(2.8)	25.2	(39.2)
2011	56.6	10.3	66.9	18.5	(32.7)	2.5	(24.4)	4.6	(8.2)	0.3	(3.2)	26.0	(38.9)
2012	57.3	9.2	66.5	19.7	(34.3)	2.2	(24.3)	5.0	(8.8)	0.3	(3.6)	27.3	(41.0)
2013	57.1	9.2	66.3	18.3	(32.1)	2.2	(24.4)	6.4	(11.2)	0.3	(3.2)	27.3	(41.1)
2014	57.0	8.4	65.4	18.5	(32.4)	2.1	(24.5)	6.0	(11.7)	0.2	(2.9)	26.8	(40.9)
2015	56.0	8.3	64.3	18.0	(32.2)	1.9	(22.5)	6.0	(11.8)	0.2	(2.7)	26.1	(40.6)
2016	56.3	8.3	64.6	17.7	(31.4)	1.9	(23.0)	6.7	(13.1)	0.2	(2.9)	26.5	(41.0)
2017	56.4	9.0	65.4	16.3	(28.9)	2.0	(22.8)	6.6	(12.8)	0.3	(3.3)	25.2	(38.5)
2018	57.5	9.2	66.7	16.3	(28.4)	2.1	(22.6)	6.5	(12.5)	0.3	(3.3)	25.2	(37.8)
2019	60.1	9.0	69.1	18.3	(30.4)	2.2	(24.7)	7.6	(13.6)	0.3	(3.6)	28.4	(41.1)
2020	62.8	9.4	72.2	19.5	(31.0)	2.3	(24.4)	8.2	(14.2)	0.3	(3.8)	30.3	(42.0)
2021	64.0	10.6	74.6	22.3	(34.9)	2.9	(26.9)	9.5	(15.9)	0.4	(4.2)	36.7	(49.2)
2022	66.6	10.2	76.8	23.4	(35.1)	2.6	(25.7)	10.1	(16.5)	0.5	(4.4)	36.6	(47.7)
						↑ ACTUAL ↑							
						↓ PROJECTED ↓							
2023	68.6	12.2	80.8	25.4	(36.9%)	3.0	(24.5%)	10.2	(16.2%)	0.4	(3.8%)	39.0	(48.2%)
2024	74.6	10.3	84.8	22.4	(30.0)	2.4	(23.1)	19.1	(27.9)	0.8	(8.5)	44.6	(52.6)
2025	77.1	9.4	86.5	22.8	(29.6)	2.1	(22.8)	21.4	(27.8)	0.8	(8.5)	47.2	(54.6)
2026	78.8	9.7	88.5	23.2	(29.4)	2.2	(22.6)	21.7	(27.6)	0.8	(8.5)	47.9	(54.1)
2027	80.7	9.9	90.6	23.5	(29.2)	2.2	(22.5)	22.1	(27.4)	0.8	(8.4)	48.7	(53.7)
2028	82.6	10.2	92.8	23.9	(29.0)	2.3	(22.3)	22.4	(27.1)	0.9	(8.4)	49.5	(53.3)
2029	84.7	10.5	95.2	24.4	(28.8)	2.3	(22.2)	22.8	(26.9)	0.9	(8.3)	50.4	(52.9)
2030	86.9	10.8	97.7	24.9	(28.6)	2.4	(22.0)	23.2	(26.7)	0.9	(8.3)	51.3	(52.5)
2031	89.2	11.1	100.3	25.4	(28.4)	2.4	(21.9)	23.7	(26.5)	0.9	(8.3)	52.4	(52.2)
2032	91.6	11.4	103.0	25.9	(28.3)	2.5	(21.8)	24.1	(26.3)	0.9	(8.2)	53.5	(51.9)
2033	94.2	11.8	106.0	26.5	(28.1)	2.6	(21.7)	24.7	(26.2)	1.0	(8.2)	54.7	(51.6)
2034	96.8	12.1	109.0	27.1	(28.0)	2.6	(21.6)	25.2	(26.0)	1.0	(8.1)	55.9	(51.3)
2035	99.6	12.5	112.1	27.7	(27.8)	2.7	(21.5)	25.8	(25.9)	1.0	(8.1)	57.2	(51.0)
2036	102.4	12.8	115.3	28.4	(27.7)	2.7	(21.3)	26.3	(25.7)	1.0	(8.1)	58.5	(50.7)
2037	105.3	13.2	118.5	29.0	(27.5)	2.8	(21.2)	26.9	(25.5)	1.1	(8.0)	59.7	(50.4)
2038	108.2	13.6	121.8	29.7	(27.4)	2.9	(21.1)	27.5	(25.4)	1.1	(8.0)	61.1	(50.1)
2039	111.1	14.0	125.2	30.3	(27.3)	2.9	(21.0)	28.1	(25.3)	1.1	(7.9)	62.5	(49.9)
2040	114.2	14.5	128.7	31.1	(27.2)	3.0	(20.9)	28.7	(25.2)	1.1	(7.9)	64.0	(49.7)
2041	117.4	14.9	132.3	31.9	(27.1)	3.1	(20.8)	29.4	(25.1)	1.2	(7.9)	65.5	(49.6)
2042	120.7	15.3	136.0	32.7	(27.1)	3.2	(20.8)	30.2	(25.0)	1.2	(7.9)	67.2	(49.4)
2043	124.1	15.8	139.9	33.5	(27.0)	3.3	(20.7)	30.9	(24.9)	1.2	(7.9)	69.0	(49.3)
2044	127.5	16.3	143.8	34.4	(27.0)	3.4	(20.7)	31.7	(24.9)	1.3	(7.8)	70.7	(49.2)
2045	131.0	16.7	147.8	35.3	(26.9)	3.4	(20.6)	32.5	(24.8)	1.3	(7.8)	72.6	(49.1)
2046	134.7	17.2	152.0	36.2	(26.9)	3.5	(20.6)	33.4	(24.8)	1.3	(7.8)	74.5	(49.0)
2047	138.5	17.8	156.3	37.2	(26.9)	3.6	(20.5)	34.3	(24.8)	1.4	(7.8)	76.5	(49.0)
2048	142.4	18.3	160.7	38.2	(26.8)	3.7	(20.5)	35.2	(24.7)	1.4	(7.8)	78.6	(48.9)
2049	146.3	18.8	165.1	39.2	(26.8)	3.8	(20.4)	36.1	(24.7)	1.5	(7.8)	80.7	(48.8)
2050	150.4	19.4	169.7	40.3	(26.8)	4.0	(20.4)	37.1	(24.7)	1.5	(7.8)	82.9	(48.8)
2051	154.5	19.9	174.5	41.4	(26.8)	4.1	(20.4)	38.2	(24.7)	1.5	(7.8)	85.2	(48.8)
2052	158.8	20.5	179.3	42.6	(26.8)	4.2	(20.4)	39.2	(24.7)	1.6	(7.8)	87.6	(48.8)

TABLE 10

MILITARY RETIREMENT FUND
PAST AND PROJECTED UNFUNDED LIABILITY PAYMENTS ON OCTOBER 1
($ in billions)

Calendar Year	Original UFL	Assumption Changes	Benefit Changes	Actuarial Experience	Total
1984	$9.500	$0.000	$0.000	$0.000	$9.500
1985	10.500	0.000	0.000	0.000	10.500
1986	11.042	0.000	0.000	-0.518	10.524
1987	11.679	0.000	-0.113	-1.281	10.285
1988	12.003	0.135	-0.112	-2.244	9.782
1989	16.300	-2.116	-0.132	-3.456	10.596
1990	17.237	-2.237	-0.140	-4.078	10.782
1991	18.228	-2.366	-0.148	-4.508	11.206
1992	22.621	-4.625	-0.171	-5.552	12.273
1993	23.865	-4.880	-0.180	-6.897	11.908
1994	25.177	-5.148	-0.189	-8.370	11.470
1995	27.746	-6.619	-0.079	-10.349	10.699
1996	33.456	-6.917	-0.042	-11.346	15.151
1997	36.227	-8.529	0.048	-12.627	15.119
1998	37.676	-8.870	0.050	-13.606	15.250
1999	39.183	-9.201	0.052	-14.732	15.302
2000	42.098	-9.984	0.335	-16.360	16.089
2001	43.571	-9.862	0.472	-17.134	17.047
2002	45.096	-10.059	0.661	-17.770	17.928
2003	46.674	-10.741	0.977	-18.721	18.189
2004	46.857	-10.959	4.627	-19.167	21.358
2005	48.614	-11.337	6.081	-20.178	23.180
2006	50.437	-11.238	6.313	-19.464	26.048
2007	66.711	-7.642	6.430	-19.312	46.187
2008	69.213	-5.076	7.026	-20.038	51.125
2009	70.379	-1.241	7.100	-17.619	58.619
2010	73.018	-1.012	7.367	-17.969	61.404
2011	75.757	0.171	7.643	-18.820	64.751
2012	78.598	0.386	7.930	-19.181	67.733
2013	81.373	3.150	8.211	-19.849	72.885
2014	84.221	2.594	8.498	-19.751	75.562
2015	87.169	3.770	8.796	-20.446	79.289
2016	90.024	4.459	7.724	-21.015	81.192
2017	92.950	3.736	7.904	-21.713	82.877
2018	94.971	6.383	8.214	-21.572	87.996
2019	98.057	6.361	8.858	-21.403	91.873
2020	100.414	9.550	9.196	-21.054	98.106
2021	103.197	15.309	7.679	-11.722	114.463
2022	105.404	17.162	7.676	-9.804	120.438
		↑ A C T U A L ↑			
		↓ P R O J E C T E D ↓			
2023	129.256	21.608	7.768	-7.111	151.521
2024	132.812	22.202	7.981	-8.334	154.661
2025	136.464	22.813	8.201	-8.563	158.915
2026	0.000	23.440	8.426	-8.798	23.068
2027	0.000	24.085	8.658	-9.040	23.703
2028	0.000	24.747	8.896	-9.289	24.354
2029	0.000	25.428	9.141	-9.544	25.025
2030	0.000	26.127	9.392	-9.807	25.712
2031	0.000	26.846	9.651	-10.076	26.421
2032	0.000	27.584	9.916	-10.353	27.147
2033	0.000	28.342	10.189	-10.638	27.893
2034	0.000	29.122	10.469	-10.931	28.660
2035	0.000	29.922	10.757	-11.231	29.448
2036	0.000	30.745	11.052	-11.540	30.257
2037	0.000	31.591	11.356	-11.858	31.089
2038	0.000	32.460	11.669	-12.184	31.945
2039	0.000	33.352	11.990	-12.518	32.824
2040	0.000	34.270	12.319	-12.863	33.726
2041	0.000	14.354	5.160	-5.388	14.126
2042	0.000	0.000	0.000	0.000	0.000
2043	0.000	0.000	0.000	0.000	0.000

TABLE 11

MILITARY RETIREMENT FUND
PAST AND PROJECTED UNFUNDED LIABILITY BALANCE ON SEPTEMBER 30 (Before Payment)
($ in billions)

Calendar Year	Original UFL	Assumption Changes	Benefit Changes	Actuarial Experience	Total
1984	$528.700	$0.000	$0.000	$0.000	$528.700
1985	553.500	0.000	0.000	-13.800	539.700
1986	578.800	0.000	-3.000	-34.200	541.600
1987	605.200	3.600	-2.998	-59.500	546.302
1988	632.700	-50.062	-3.076	-81.180	498.382
1989	664.173	-53.711	-3.172	-94.562	512.728
1990	693.224	-55.207	-3.253	-102.283	532.481
1991	723.306	-97.578	-3.331	-111.879	510.518
1992	757.959	-102.353	-3.421	-139.327	512.858
1993	790.488	-105.057	-3.494	-167.942	513.995
1994	824.120	-130.691	-0.968	-201.052	491.409
1995	852.872	-134.017	-0.832	-217.255	500.768
1996	880.822	-159.859	0.897	-231.424	490.436
1997	902.444	-162.883	1.000	-244.673	495.888
1998	922.521	-164.057	1.014	-259.976	499.503
1999	942.360	-169.827	6.583	-277.940	501.176
2000	959.626	-164.942	9.414	-284.168	519.931
2001	974.873	-162.970	13.075	-285.393	539.585
2002	989.509	-170.593	19.216	-293.105	545.027
2003	1,003.439	-172.248	94.231	-297.115	628.308
2004	1,016.562	-171.288	125.272	-304.415	666.132
2005	1,030.312	-165.769	128.261	-290.020	702.784
2006	1,043.054	-126.439	131.332	-282.660	765.287
2007	1,052.174	-89.221	140.140	-279.068	824.025
2008	1,044.591	-27.990	142.047	-254.441	904.207
2009	1,031.462	-19.974	142.785	-245.726	908.548
2010	1,016.346	2.415	143.487	-258.786	903.461
2011	997.569	8.208	143.947	-252.478	897.246
2012	974.816	68.621	144.141	-254.041	933.537
2013	945.510	58.240	143.703	-262.357	885.095
2014	911.665	81.894	142.944	-268.738	867.765
2015	872.953	96.068	127.811	-280.383	816.450
2016	827.038	80.674	124.563	-289.710	742.564
2017	775.707	140.441	131.072	-279.349	767.871
2018	716.895	139.147	129.327	-265.801	719.567
2019	653.020	214.646	140.610	-252.606	755.671
2020	581.324	266.366	138.010	-232.396	753.304
2021	501.348	298.374	134.289	-188.876	745.135
2022	474.758	362.096	131.674	-138.753	829.774
		↑ ACTUAL ↑			
		↓ PROJECTED ↓			
2023	383.128	358.731	128.958	-133.649	737.169
2024	264.027	350.608	126.038	-131.599	609.074
2025	136.464	341.543	122.779	-128.196	472.589
2026	0.000	331.479	119.161	-124.418	326.222
2027	0.000	320.360	115.165	-120.245	315.280
2028	0.000	308.126	110.767	-115.653	303.240
2029	0.000	294.714	105.946	-110.619	290.041
2030	0.000	280.058	100.677	-105.118	275.617
2031	0.000	264.088	94.936	-99.123	259.901
2032	0.000	246.732	88.697	-92.609	242.819
2033	0.000	227.914	81.932	-85.547	224.299
2034	0.000	207.555	74.613	-77.905	204.262
2035	0.000	185.570	66.709	-69.653	182.627
2036	0.000	161.874	58.191	-60.759	159.306
2037	0.000	136.374	49.024	-51.188	134.211
2038	0.000	108.974	39.175	-40.903	107.246
2039	0.000	79.575	28.606	-29.867	78.314
2040	0.000	48.072	17.281	-18.043	47.309
2041	0.000	14.354	5.160	-5.388	14.126
2042	0.000	0.000	0.000	0.000	0.000
2043	0.000	0.000	0.000	0.000	0.000

The Military Retirement Fund Transaction Process

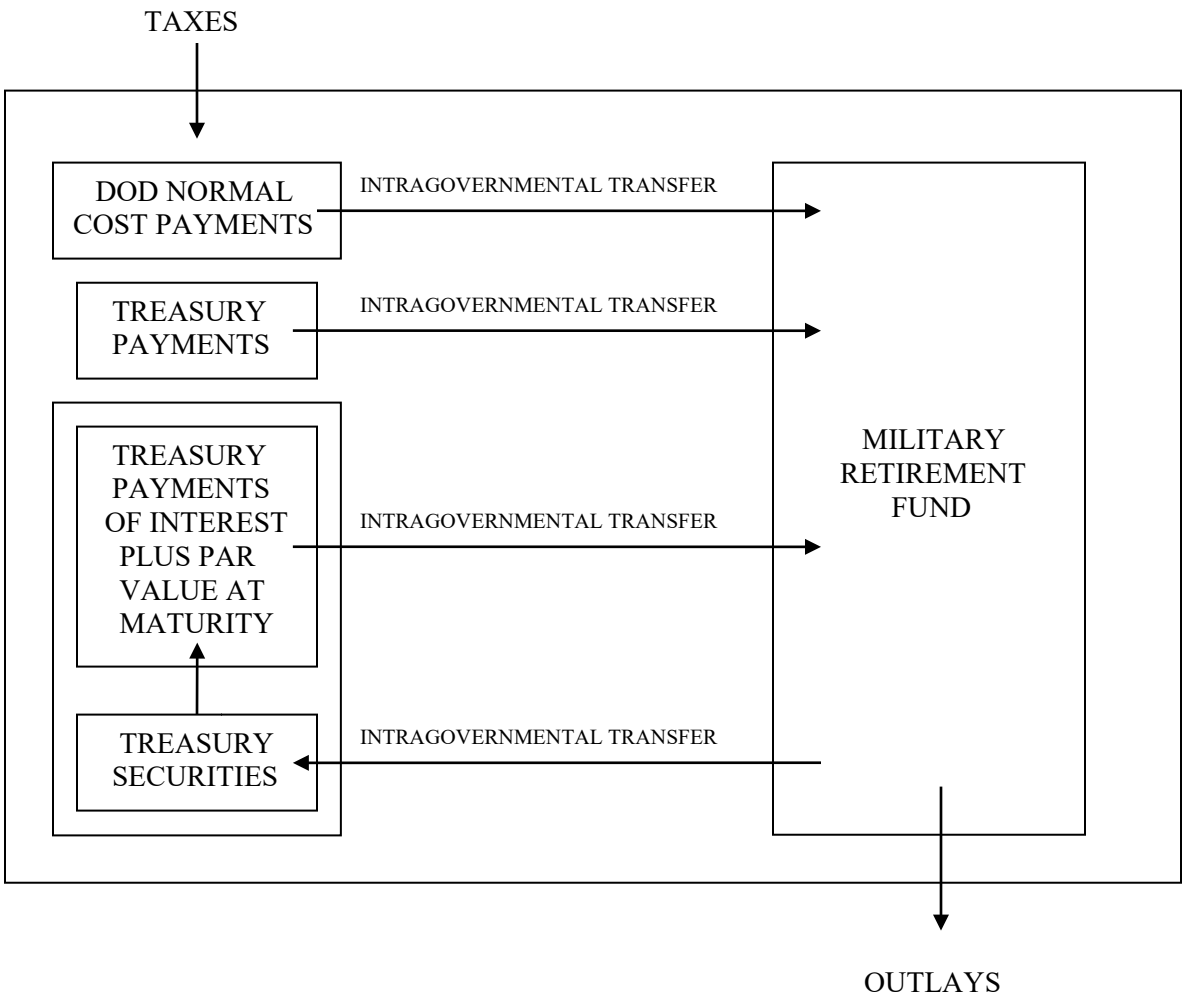
The description of deficit, debt, and funding impact contained in this section are applicable under the current practices of the federal government regarding budget accounting and tax policy. These practices do not provide for increases in taxes to fund the MRF beyond what is required to pay benefits to retirees and survivors each year but do result in increases in the national debt.

A nonrevolving trust fund was created inside the Unified Budget of the federal government for the monies of the MRF. This fund has three sources of income: (1) normal cost payments made by DoD, (2) unfunded liability and Concurrent Receipt normal cost payments made by Treasury, and (3) interest earnings on investments in government securities made by Treasury and the payments of the par values of these securities at maturity. All three of these items are intragovernmental transfers consisting of debits from one government account and credits to another.

The Fund has two types of payouts: payments to retirees and survivors, and purchases of U.S. Treasury securities. The purchase of a Treasury security is also an intragovernmental transfer, while a payment to a retiree or a survivor is not.

The only transactions in a particular year that directly affect the deficit of the Unified Budget are those that pass in or out of the government, such as tax collections ("in") and retiree or survivor payments ("out"). The intragovernmental transfers are debits and credits within the federal budget, with no direct effect on the deficit. See Figure 2.

FIGURE 2
MILITARY RETIREMENT FUND
UNIFIED BUDGET



All of the intragovernmental transfers in Figure 2 will always generate both a credit and an associated equal debit within the Unified Budget. Consequently, under current federal budget accounting practices, contributions to the Fund beyond what are required to pay benefits to retirees and survivors that year have no impact on the total federal deficit. Just as in the pay-as-you-go method, the only transactions that directly affect the deficit in the retirement system accounting process are payments to retirees and survivors (i.e., outlays).

On the other hand, the purchase of securities by the Fund does increase the national debt, specifically the portion of the debt held by the government. The portion held by the public will not change. However, the total debt will increase, and this requires an increase in the statutory borrowing authority (debt ceiling).

However, funding does affect the DoD budget. With the normal cost payments in the DoD budget, policymakers can see the impact on future retirement costs if they make manpower decisions, and this could have a significant impact on future federal budgets. For example, if a decision were made today to double the size of the active duty and reserve forces, the DoD budget would have an immediate increase in retirement funding obligations. Under the pay-as-you-go method, the retirement expenses would not necessarily be considered in the initial decision since they would not emerge for 20 years.

The establishment of the Fund does not represent actual advance funding. Real advance funding could be achieved by investing the assets outside the Unified Budget, for example, in stocks or corporate bonds, or in bonds of state and local municipalities or quasi-federal government agencies. Instead, the accrual accounting procedure now in place is essentially an internal cost accounting system. While the nation has not technically set aside money to pay the benefits of those who have served in uniform, the Fund can be viewed as earmarking future tax receipts for the benefit of military retirees. As such, the existence of the Fund promotes a measure of "psychological security" for military members, retirees, and survivors.

The fact that costs are fully recognized in advance provides greater benefit security over the long term. Also, when there is a Fund, the system is not as dependent on obtaining the necessary appropriation from Congress each year to pay benefits for that year. This can provide additional benefit security in the short run.