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December 4, 2018

The Honorable James M. Inhofe
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Mac Thornberry
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

Military Retirement: Service Contributions Do Not Reflect Service Specific Estimated Costs and Full Effect of Proposed Legislation is Unknown

As of fiscal year 2016, the Department of Defense (DOD) has approximately 1.4 million active-duty servicemembers and 735,000 reserve component servicemembers with the potential to receive future retirement benefits.¹ In fiscal year 2016 the Military Retirement System, to which DOD contributes, paid approximately \$57.2 billion in retirement benefits to approximately 2.3 million participants. As of the end of fiscal year 2016, the Military Retirement System had a present value of future benefits of over \$1.6 trillion. Military retirement benefits, including funding for survivors of deceased servicemembers, are funded through the Department of Defense Military Retirement Fund (Fund).² Since fiscal year 1984, the Fund has operated under a financing procedure where DOD makes monthly contributions based on percentages of basic pay—one for all active duty and one for Select Reserve duty servicemembers—and the total amount of basic pay accrued that month for the same population.³ We refer to these monthly

¹Throughout this report we will refer to active duty members as well as full-time reservists (including full-time National Guard) as “active duty” servicemembers and selected reserve duty as “reserve component” servicemembers. Military retired pay is based on “basic pay”. This is the principal element of military compensation that all members receive. Other elements of the military compensation package include allowances for housing and subsistence and special and incentives pays.

² Thrift Savings Plan matching within the Blended Retirement System is funded outside of the Department of Defense Military Retirement Fund.

³*Department of Defense Authorization Act, 1984*, Pub. L. No. 98-94 (1983). Throughout this report we will refer to active duty members as well as full-time reservists (including full-time National Guard) as “active duty” servicemembers and select reserve duty as “reserve component” servicemembers. Military retired pay is based on “basic pay.” This is the principal element of military compensation that all members receive. Other elements of the military compensation package include allowances for housing and subsistence and special and incentives pays.

contributions as DOD's share of the retirement system's "normal cost."⁴ Additionally, a lump sum payment is made to the Fund each year by the Department of the Treasury to amortize existing unfunded accrued liabilities.⁵

Section 1002 of S. 1519 (Section 1002), a bill for the National Defense Authorization Act for Fiscal Year 2018, proposed that the monthly contribution rate be percentages of basic active duty pay and reserve component pay specific to each uniformed service, rather than aggregated, and applied across all uniformed services. Section 1002 would amend 10 U.S.C. § 1465, the statute that directs the determination of contributions into the Military Retirement Fund. The provision was not adopted.

Conference Report 114-404 accompanying H.R. 2810, a bill for the National Defense Authorization Act for Fiscal Year 2018, contained a provision for us to assess the effect of the change proposed in Section 1002. Specifically, this report addresses whether the current method used to calculate DOD retirement contributions reflects estimated service retirement costs, and what effects, if any may result from the change proposed in Section 1002.

For our objective, we reviewed and analyzed relevant Military Retirement Fund documents, budget documents, documents related to military retirement fund contributions, relevant statutes, and proposed statutory changes. In addition, we reviewed a previous DOD effort that identifies how a potential change from a single-level, aggregate percentage rate would affect service financial contributions to the Military Retirement Fund.⁶ Further, we reviewed a 2017 RAND Corporation report on military retirement contributions as contained in the conference report provision.⁷ We also interviewed officials from the DOD Board of Actuaries, the DOD Office of the Actuary, the Office of the Under Secretary of Defense (Comptroller), the Army, Marine Corps, Navy, and Air Force, and RAND Corporation to gain their perspectives related to the current single, aggregate percentage rate and service specific contributions to the Military Retirement Fund. Finally, we reviewed and analyzed annual DMDC data on servicemembers' years of service for the period from fiscal years 1978 to 2017. We used this data to calculate annual continuation rates, from which we estimated average probabilities of servicemembers completing 20 years or more of service to be eligible for retirement, for DOD as a whole and separately for each service.⁸ Continuation rates reflect a key input into the determination of a service's retirement liabilities. To assess the reliability of military retirement fund contribution

⁴The DOD Board of Actuaries defines "normal cost" as the percentage of basic pay that would be necessary to finance the benefits payable to a group of new entrants into military service, assuming it is paid into a fund during each year of service and the fund is invested in interest-bearing securities. Besides DOD's share of the normal cost, the Department of the Treasury contributes the portion of the normal cost attributable to "concurrent receipt" benefits.

⁵The DOD Board of Actuaries defines "accrued liability" as the theoretical amount that would be in the fund at any given time for a group of participants if normal costs had been paid throughout all past years of service and all demographic and economic assumptions had been realized. Advance funding was not done before October 1, 1984. The accrued liability on that date is called the initial unfunded accrued liability.

⁶From here forth we refer to "single-level" contribution rate as a "single" contribution rate.

⁷RAND Corporation, *Toward Efficient Military Retirement Accrual Charges* (2017).

⁸A continuation rate is the probability of continuing a state or activity. For our purposes the continuation rate for a servicemember is the probability that the servicemember will remain in military service from one year to the next. One reason why military retirement costs are so sensitive to continuation rates is that the defined benefit portion of the Military Retirement System uses 20-year "cliff vesting," whereby only those servicemembers who serve 20 years get any defined benefit pension.

data we reviewed relevant documentation about how these data are collected and interviewed the DOD Office of the Actuary about these data, and we determined the data to be sufficiently reliable for our purposes. To assess the reliability of the DMDC data on annual service cohort length of service, from 1978 through 2017, we reviewed relevant documentation and interviewed officials about the quality of these data, and determined the data to be sufficient for the purpose of estimating the probabilities of reaching 20 years of service. Enclosure I provides more detail on our objective, scope, and methodology.

We conducted this performance audit from February 2018 to November 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

DOD Military Retirement Funding

The *Department of Defense Authorization Act of 1984* changed the method of military retirement benefit funding.⁹ Prior to 1984, military retirement benefits were funded on a “pay-as-you-go” basis. “Pay-as-you-go” basis is a method of funding where the costs of retirement benefits are paid for when owed to plan participants. The *Department of Defense Authorization Act of 1984* established an accrual funding system for the Military Retirement System. Accrual funding is a method of setting aside funds from current budgets for retirement annuities that eventually will be received by military personnel who are in current service. Military retirement pension benefits, including benefits for survivors of deceased servicemembers, are paid out of the Department of Defense Military Retirement Fund.

Under the current accrual funding system, a percentage of the annual appropriation for basic pay for members of the armed forces is transferred to the Department of Defense Military Retirement Fund in order to defray the future costs of retirement benefits earned during the year covered by the appropriation. Funds transferred to the Military Retirement Fund are invested until disbursed to plan participants.

The *Department of Defense Authorization Act of 1984*, as amended also mandates the actuarial cost method for developing retirement contribution rates for funding the Military Retirement Fund. The law mandates that DOD utilize the “aggregate entry-age normal” actuarial cost method for funding.¹⁰ The law requires DOD to develop a single contribution rate across the department for active duty personnel and a single rate for reserve component personnel. The contribution rate is the estimated percentage of basic pay that must be contributed over the entire active career of a typical group of new entrants to pay for all the future retirement and survivor benefits of that group. Mathematically, a contribution rate is calculated by dividing the

⁹Pub. L. No. 98-94 (1983), *codified at* 10 U.S.C. §§461-1467.

¹⁰An actuarial cost method is a method for allocating the cost of future retirement benefits over some period of time, generally over the working years of those expected to become eligible for benefits. The Actuarial Standards Board defines an actuarial cost method as a procedure for allocating the actuarial present value of projected benefits (and expenses, if applicable) to time periods, usually in the form of a normal cost and an actuarial accrued liability.

present value of future benefits for the entire cohort by the present value of future basic pay, evaluated at an assumed interest rate.¹¹

In other sectors of United States employment—in particular, for private sector and state and local government sector pension plans—to the extent that use of a particular actuarial cost method is required, the actuarial cost method generally differs from that required to be used for funding the Military Retirement System. See Enclosure II for more information regarding United States pension requirements in the private, state, and local government sectors.

In addition to DOD’s contribution to the Military Retirement Fund, the Department of the Treasury is required to make an annual contribution to cover, over time, the fund’s initial unfunded liability, the cost of changes to Military Retirement System benefit provisions, the cost of changes in actuarial assumptions and actuarial gains or losses, and the normal cost for “concurrent receipt” benefits. “Concurrent receipt” refers to Combat Related Special Compensation and Concurrent Retirement and Disability Pay program where certain retirees can receive both retirement pay and disability pay.¹² The Military Retirement Fund’s initial unfunded liability is equal to the amount of liabilities owed when retirement benefit funding changed from a “pay-as-you-go” basis to an accrual funding basis.

DOD Board of Actuaries

The DOD Board of Actuaries consists of three members appointed by the Secretary of Defense to staggered 15-year terms.¹³ The DOD Board of Actuaries consists of qualified professional actuaries who are members of the Society of Actuaries. They are private sector civilians and act in a federally mandated oversight role. Each year, the DOD Board of Actuaries reviews and approves actuarial assumptions and methods to consider possible revisions, among other duties. The DOD Board of Actuaries is required to report at least once every four years to the President and Congress on the status of the Military Retirement Fund and may include relevant recommendations the DOD Board of Actuaries believes appropriate and necessary to maintain the funds on a sound actuarial basis.¹⁴

DOD Office of the Actuary

The DOD Office of the Actuary provides actuarial expertise on all matters relating to military compensation and benefits. The DOD Office of the Actuary works in support of the DOD Board of Actuaries. The DOD Office of the Actuary performs annual valuations of the military retirement system and other benefits accruing to the military retired population and others. The valuations include calculating annual DOD contribution costs, as well as determining program unfunded liabilities and their amortizations.

¹¹Present value calculations reflect the time value of money, based on the assumption that a dollar in the future is worth less than a dollar today because the dollar today can be invested and earn interest. Thus, a present value calculation uses an assumed interest rate.

¹²10 U.S.C. § 1414 §§ 1413a and 1414.

¹³10 USC § 183.

¹⁴The most recent DOD Board of Actuaries report was submitted in December 2016. See, DOD Board of Actuaries, *2016 Report to the President and Congress* (December 2016).

The DOD Office of the Actuary reports DOD and Treasury contributions to the Military Retirement Fund in its Annual Valuation of the Military Retirement System reports. From fiscal year 2012 through 2016, DOD’s retirement fund contributions have decreased slightly as shown in table 1.¹⁵

Table 1: Department of Defense Military Retirement Fund Contributions from Fiscal Years 2012 Through 2016 (dollars in billions)

Fiscal year	Active	Reserve component	Total DOD contributions
2012	\$19.7	\$2.2	\$21.9
2013	\$18.3	\$2.2	\$20.5
2014	\$18.5	\$2.1	\$20.5
2015	\$18.0	\$1.9	\$19.9
2016	\$17.7	\$1.9	\$19.5

Source: Department of Defense (DOD). | GAO-19-195R

Note: The Department of Treasury also pays annual contributions to the Military Retirement Fund to cover the unfunded liability and the normal cost for concurrent receipts benefits. For purposes of this table, we will refer to active duty members as well as full-time reservists (including full-time National Guard) as “active duty” servicemembers and select reserve duty as “reserve component” servicemembers.

Single Retirement Contribution Percentage Required Under Current Law Does Not Reflect Estimated Service Specific Retirement Costs, and Full Effect of Proposed Section 1002 Is Unknown

Current Law Requires a Single Percentage Be Applied Across Services for Retirement Contribution Calculation Purposes

Since fiscal year 1984, the “normal cost” of Military Retirement System benefits has been funded in part through monthly DOD contributions computed using a single percentage of basic pay.¹⁶ For example, in fiscal year 2017 the military retirement contribution rate was 28.9 percent for active duty personnel and 22.8 percent for reserve component personnel. Each rate was multiplied by the military services’ respective basic pay to determine the service retirement contribution for the fiscal year. In total, the military services contribute to the Military Retirement Fund in order to meet an aggregate funding level for DOD. See table 2 for contribution rates from fiscal years 2012 through 2017.

¹⁵Note that a decrease in DOD Military Retirement Fund contributions may not necessarily reflect a decrease in future retirement liabilities. Other factors are considered when developing military contributions such as the level of gains or losses due to investment performance.

¹⁶The DOD Board of Actuaries defines “normal cost” as the percentage of basic pay that would be necessary to finance the benefits payable to a group of new entrants into military service, assuming it is paid into a fund during each year of service and the fund is invested in interest-bearing securities. As noted earlier, the Department of the Treasury funds the normal cost of concurrent receipts benefits. For the purpose of this report active duty personnel include active duty members as well as full-time reservists. Reserve component personnel include part-time reservists.

Table 2: Department of Defense Military Retirement Fund Contribution Rates of Basic Pay from Fiscal Years 2012 through 2017

Fiscal year	Active duty	Reserve component
2012	34.3	24.3
2013	32.1	24.4
2014	32.4	24.5
2015	32.2	22.5
2016	31.4	23.0
2017	28.9	22.8

Source: Department of Defense (DOD) data. | GAO-19-195R

Note: The Department of Treasury also pays annual contributions to the Military Retirement Fund to cover the unfunded liability and the normal cost for concurrent receipts benefits. For the purpose of the report active duty personnel include active duty members as well as full-time reservists. Reserve component personnel include part-time reservists.

Continuation Rates Vary by Service, Indicating Retirement Contributions Do Not Reflect Service Specific Costs

Our analysis of continuation rates for active component servicemembers shows that the rate of reaching 20 years of service, or the minimum service time for retirement eligibility, varies substantially among the military services. Based on our analysis, this indicates that the mandated single, aggregate contribution rate does not reflect service specific retirement costs.¹⁷ Economic and non-economic assumptions are used in the development of the military retirement contribution rates:

- *Economic assumptions:* These include inflation, interest, and across-the-board basic pay increases. Changes in economic assumptions are generally global in that inflation, interest, and basic pay increases are not specific to any single military service.
- *Non-economic assumptions:* These include continuation rates and mortality, among others. The most important non-economic variable in the development of military retirement contribution rates are continuation rates.

In general, the actuarial valuation results that go into the development of military retirement contribution rates are most sensitive to changes in economic (e.g., long-term interest assumption) and retention assumptions (i.e., the active and reserve duty probabilities of continuation in service).

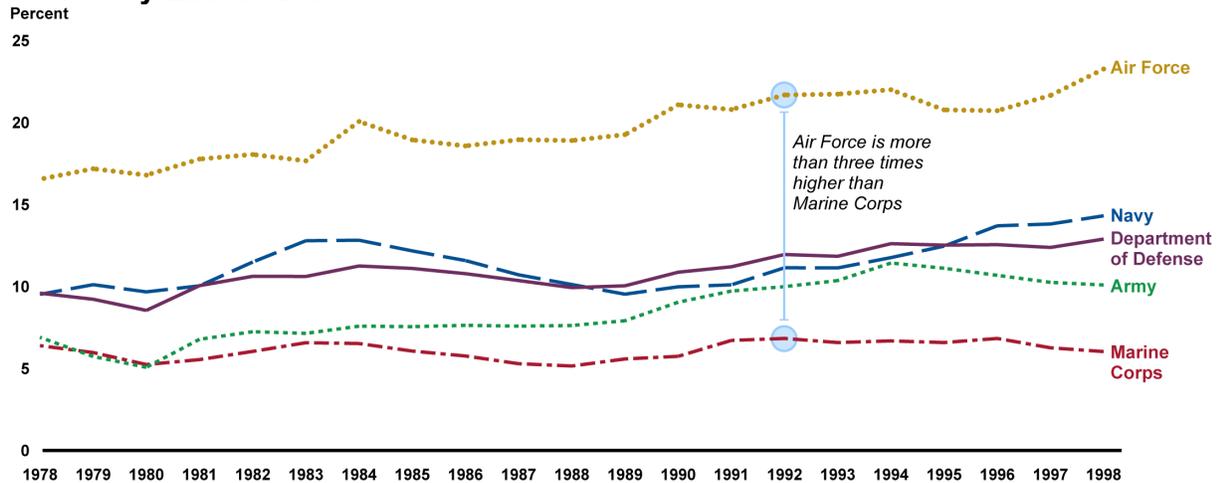
Our analysis shows that for active component servicemembers entering military service in 1992, the estimated probability of reaching 20 years of service was almost 15 percentage points higher—and more than three times higher—for the Air Force than the Marine Corps.¹⁸ See

¹⁷ However, in aggregate, the single contribution rate reflects estimated retirement costs at the DOD-wide level. A continuation rate is the probability of continuing a state or activity. For our purposes the continuation rate for a servicemember is the probability that the servicemember will remain in military service from one year to the next. One reason why military retirement costs are so sensitive to continuation rates is that the defined benefit portion of the Military Retirement System uses 20-year “cliff vesting,” whereby generally only those servicemembers who serve 20 years get any defined benefit pension.

¹⁸ All of our estimated probabilities of reaching 20 years of service are based on having already completed one year of service.

Figure 1 for the results of our continuation rates analysis.¹⁹ DOD Office of the Actuary officials have stated that they agree that the current mandated single, aggregate percentage does not reflect retirement costs at the individual service level, but that the method used is in compliance with statute and produces a reasonable estimate of costs at the DOD-wide level, and that the goal of the current method is to fund military retirement liabilities at the aggregate, or DOD-level.

Figure 1: Active Component Historical Estimated Probabilities of Reaching 20 Years of Service by Entrant Cohort



Source: GAO analysis of Department of Defense data, based on having completed one year of service. | GAO-19-195R

DOD’s Office of Cost Assessment and Program Evaluation (CAPE) led an assessment of the current retirement contribution method as part of a larger effort and identified several positive attributes and several concerns. Among the positive attributes identified in the CAPE-led assessment are that the contribution calculations are easily auditable, and contributions to DOD’s retirement liabilities are determined in an actuarially sound manner that recognizes retirement costs at the DOD level. However, the CAPE-led assessment concluded that among the concerns are that the current contribution method (1) produces “inaccurate” marginal cost estimates at the service level; (2) creates large cross-subsidies among the services; (3) generates inefficiencies in the allocation of resources; and (4) does not provide clear signals and incentives for shaping an efficient experience mix of personnel. The CAPE-led assessment did not make any recommendations and DOD Office of the Actuary officials stated that the CAPE-led assessment was put on hold, deferring reaching a Department-wide conclusion on the feasibility and desirability of service-specific contribution rates, because of other priorities such as the implementation of the Blended Retirement System.²⁰

¹⁹ This analysis used data on continuation rates over time to track different cohorts entering military service in each year from 1978 through 1998 – sometimes referred to as a “longitudinal” analysis. We also performed a “cross sectional” analysis whereby we examined one-year continuation rates in a single fiscal year for servicemembers with different amounts of cumulative service years, using this data to calculate estimated probabilities of reaching 20 years of service based on the data from that fiscal year alone. We performed this additional analysis for each of fiscal years 1979 through 2017, and again found significant differences in estimated probabilities among the four service branches.

²⁰ The *National Defense Authorization Act of Fiscal Year 2016* established the Blended Retirement System, which includes a reduced defined benefit plan and a new defined contribution plan. Pub. L. No. 114-92 (2015). Under the Blended Retirement System, servicemembers may elect to contribute a portion of their salary to a portable Thrift Savings Plan, while the system provides a reduced defined benefit upon retirement. Thrift Savings Plan vesting

Further, a 2017 RAND study found that the current retirement contribution method tends to distort marginal costs by diluting the effect of any one service's change in force shape so that the service does not realize the full consequences of its own incremental personnel decisions that affect experience mix.²¹ The RAND report presents this finding through a theoretical and empirical model, concluding that the single accrual charge rate produces "inaccurate" estimates of each service's total accrual charge, i.e., charges that are higher, or lower, than a service's actual accruing retirement liability.

Proposed Section 1002 Would Change Service Retirement Contributions but the Full Effect Is Unknown

Proposed Section 1002 would change individual military service retirement contributions to reflect service retirement costs, but the full effect of these proposed changes is unknown. Section 1002 of FY 2018 NDAA proposes separate percentages of basic pay for active duty and selected reserve for each armed force. The proposed amendment would change the calculation of the single percentage applied to basic pay with respect to the required monthly deposits into the Military Retirement Fund to separate rates for each military service, rather than the single percentage required under 10 U.S.C. § 1465.²² The purpose of the proposed service specific approach is to increase budgetary transparency with respect to the relative long-term costs associated with changes in end strength and benefits among the military services. The proposed change contains the same actuarial cost method DOD is currently mandated to use, but at the military service level instead of one rate DOD-wide for active and reserve servicemembers.

However, what actual service-specific retirement contribution rates would be is not known. According to officials from DOD's Office of the Actuary, it would take an estimated 2 to 3 years to develop and implement service specific retirement contribution rates. In addition to the estimated 2 to 3 years to develop and implement service specific retirement rates, DOD's Office of the Actuary estimated that additional personnel would be required as well as additional technology resources to handle the increased workload of developing additional contribution rates.

Prior to the proposal of Section 1002, CAPE led an assessment of the potential effects of service specific retirement contribution rates for active component servicemembers. The CAPE-led assessment utilized continuation rate data analyzed by the DOD Office of the Actuary. The CAPE led assessment concluded service specific retirement contribution rates would likely increase the Air Force's and Navy's contributions and decrease the Army and Marine Corps contributions. Officials estimated two possible service contribution rate changes based on analysis of different historical continuation data, but actual service contribution rate changes are not known. See table 3 for estimates of potential service retirement contribution changes.

occurs after two years of military service. All members who join the uniformed services on or after January 1, 2018 are required to participate in the new retirement system. Servicemembers who have served for fewer than 12 years as of December 31, 2017 also have the option to opt in via an irrevocable election during calendar year 2018.

²¹ RAND Corporation, *Toward Efficient Military Retirement Accrual Charges* (2017).

²²Note that "active duty" includes active component, Army National Guard and Air National Guard members on full-time duty.

Table 3: Estimated Service Retirement Contribution Changes for Fiscal Year 2014 - Applied to Active Component Servicemembers

	Service	Retirement contribution rate	Contributions (mil) ^a	Estimated service specific ^b	Difference (mil) ^b	Percent dollar difference ^c
Potential changes based on 10 years of historical data	Army	32.4%	\$6,688	31.1%	-\$250	-3.7%
	Air Force	32.4%	\$4,359	38.2%	\$800	18.4%
	Navy	32.4%	\$4,057	32.4%	\$10	0.2%
	Marine Corps	32.4%	\$2,094	23.3%	-\$560	-26.7%
Potential changes based on 5 years of historical data	Army	32.4%	\$6,688	30.8%	-\$380	-5.7%
	Air Force	32.4%	\$4,359	39.2%	\$940	21.6%
	Navy	32.4%	\$4,057	33.7%	\$160	3.9%
	Marine Corps	32.4%	\$2,094	21.1%	-\$720	-34.4%

Source: Department of Defense (DOD) and GAO analysis of DOD data. | GAO-19-195R

Note: Ten years of historical data is data from fiscal years 2005 through 2014. Five years of historical data is continuation rate data from fiscal year 2010 through 2014. Numbers may not total due to rounding.

^aBased on Military Service fiscal year 2014 budget request.

^bIndicates developed by a DOD Cost Analysis and Program Evaluation – led assessment of the potential effects of service specific retirement contribution rates for active component servicemembers.

^cCalculation based on a DOD Cost Analysis and Program Evaluation-led assessment dollar difference and the Military Service fiscal year 2014 budget request.

Military service officials acknowledged that service specific retirement contribution rates would likely change respective service contributions but stated that their workforce decision making processes would not change.²³ However, on the other hand, the RAND report opined that service specific retirement contribution rates could enhance resource allocation efficiency among the services and, within the services, improve the efficiency of personnel decisions and budget choices between personnel and other resources.

In addition, the CAPE-led assessment also identified several positive attributes and several concerns during its effort to evaluate service specific retirement contribution rates. Among the positive attributes identified were that service specific retirement contribution rates, at the military service level, would:

- enforce good governance by providing more “accurate” budget estimates;
- provide appropriate incentives to make better tradeoffs in defense management and improve personnel policy decisions; and
- result in more accurate evaluations at the service level of long-range budgetary effects of prospective modifications to the retirement system.

Among the concerns identified are the significant effort within existing Office of the Actuary and Defense Finance and Accounting Service systems to implement service specific contribution rates, a possible increase in operational risk from disaggregating funding requirements, and a weak relationship between accrual charges and incentives to allocate resources efficiently.

²³ This refers to the decision making process to determine whether functions will be performed by civilian, military, or contractors.

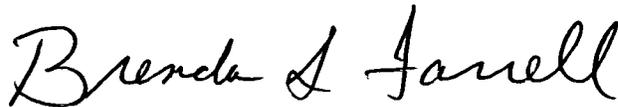
Agency Comments

We provided a draft of this report to DOD for review and comment. DOD informed us in an email that they had no comments.

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We are sending copies of this report to the appropriate congressional committees. We are also sending copies to DOD and other interested parties. This report will also be available at no charge on our Web site at <http://www.gao.gov>.

Should you or your staff have any questions concerning this report, please contact Brenda S. Farrell at (202) 512-3604 or farrellb@gao.gov or Frank Todisco at (202) 512 – 2700 or todiscof@gao.gov. Mr. Todisco meets the qualification standards of the American Academy of Actuaries to address the actuarial issues contained in this report. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report include Vincent Balloon, Assistant Director; Bob Dacey (Chief Accountant), Martin De Alteriis, Courtney LaFountain, Felicia Lopez, Michael Perkins, and Norris “Traye” Smith.



Brenda S. Farrell
Director
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Frank Todisco
Chief Actuary
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Enclosures – 2

Enclosure I - Objective, Scope and Methodology

This report addresses whether the current method used to calculate Department of Defense (DOD) retirement contributions reflects estimated service retirement costs and what effects, if any, may result from proposed changes in Section 1002 of S. 1519, a bill for the National Defense Authorization Act of Fiscal Year 2018. In addition we are providing information on alternative actuarial methods we identified during this review.

For our objective, we reviewed and analyzed relevant Military Retirement Fund documents, budget documents, and documents related to Military Retirement Fund contributions. In addition, we reviewed a previous DOD effort that identifies how a potential change from a single, aggregate percentage rate would affect service financial contributions to the Military Retirement Fund. Further, we reviewed a 2017 RAND report on retirement contributions.²⁴ We also interviewed officials from the DOD Board of Actuaries, DOD Office of the Actuary, Office of the Under Secretary of Defense (Comptroller), the Army, Marine Corps, Navy, and Air Force, and RAND Corporation to gain their perspectives related to the current single, aggregate percentage rate and service specific contributions to the Military Retirement Fund.

Finally, we reviewed and analyzed annual Defense Manpower Data Center (DMDC) data on active component servicemembers' years of service for the period from fiscal years 1978 to 2017. We used this data to calculate annual continuation rates, from which we estimated the average probabilities of servicemembers completing 20 years or more of service to be eligible for retirement, for DOD as a whole and separately for each service. Continuation rates reflect a key input into the determination of a service's retirement liabilities.

For each service and fiscal year, we first calculated annual continuation rates, meaning the fraction of service members who completed each additional year of service (the data started with servicemembers who had already completed at least one year of service). For example, we calculated the fraction of servicemembers who completed their second year of service, the fraction of servicemembers who completed their third year of service, and so on through the fraction of servicemembers who completed their twentieth year of service. Then, we multiplied the fraction of servicemembers who completed their second year of service in one year by the fraction of servicemembers who completed their third year of service in the following year, and so on through the fraction of servicemembers who completed their twentieth year of service 19 years after the initial year. For example, to estimate the probability that servicemembers who started their service in 1990 (and then served one year) served until 2010 or later, we multiplied the fraction of servicemembers who completed their second year of service in 1992 by the fraction of servicemembers who completed their third year of service in 1993, and so on through the fraction of servicemembers who completed their twentieth year of service in 2010.

In this analysis, we used data on continuation rates over time to track different cohorts entering military service in each year from 1978 through 1998 – sometimes referred to as a “longitudinal” analysis. We also performed a “cross sectional” analysis whereby we examined annual continuation rates in a single fiscal year for servicemembers with different amounts of cumulative service years, using this data to calculate estimated probabilities of reaching 20 years of service based on the data from that fiscal year alone. We performed this additional analysis for each of fiscal years 1978 through 2017.

²⁴RAND Corporation, *Toward Efficient Military Retirement Accrual Charges* (2017).

While our estimates can shed light on differences across services in the estimated probability of serving for 20 years or more, they are subject to limitations and should be interpreted with caution. They should not be regarded as best estimates of probabilities going forward, which would depend on multiple facts, circumstances, and judgments. However, these estimates can be indicative of the likelihood of potentially significant differences across services in the retention of servicemembers over multiple years of service.

To assess the reliability of military retirement fund contribution data we reviewed relevant documentation about how these data are collected and interviewed the DOD Office of the Actuary about these data and we determined the data to be sufficiently reliable for the purposes of (1) describing total DOD annual contributions from 2012 to 2016, (2) describing the active duty and reserve components contributions as a percentage of basic pay from 2012 to 2017, and (3) making general estimates of potential differences in contributions by the services if specific changes had been made in 2014.

To assess the reliability of the DMDC data on annual service cohort length of service, from 1978 through 2017, we reviewed relevant documentation and interviewed officials about the quality of these data, and determined the data to be sufficient for the purpose of estimating the probabilities of reaching 20 years of service.

We conducted this performance audit from February 2018 to November 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Enclosure II - Additional Information on Pension Funding and Financial Reporting Requirements in the United States

Most pension funding and financial reporting requirements in the United States, to the extent they have required use of a particular actuarial cost method, have generally required methods other than the aggregate entry age normal method that the Department of Defense (DOD) is required by statute to use for determining contribution rates to the Military Retirement System.

For employers providing pension coverage to their employees, a distinction can be made between “funding” and “financial reporting.” Funding refers to the employer’s obligation to contribute to the plan in accordance with applicable law or regulation. Financial reporting refers to the measures of plan costs and obligations reported in the employer’s financial statements in accordance with applicable accounting standards. Measurements for both funding and financial reporting purposes typically involve actuarial calculations that will vary based on, among other factors, the particular actuarial cost method and actuarial assumptions (such as an interest rate assumption) used. Because funding and financial reporting are governed by different laws, regulations, or standards, often requiring different actuarial methods or assumptions, actuarial measurements—such as normal cost or accrued liability—for funding purposes will often differ from actuarial measurements for financial reporting purposes.

As previously discussed, the methodology that DOD uses for funding purposes—i.e., to determine its contribution rates to the Military Retirement Fund—is governed by the *Department of Defense Authorization Act of 1984*.²⁵ The methodology that DOD uses for financial reporting purposes—for example, in its agency financial statements—is governed by applicable accounting standards issued by the Federal Accounting Standards Advisory Board (FASAB).

An actuarial cost method is a method for allocating the cost of future retirement benefits over time, generally in some manner over the working years of those expected to become eligible for benefits.²⁶ Attributes of different actuarial cost methods include whether the calculation methodology is “individual” or “aggregate”; and whether costs are allocated as a percentage of pay, as an amount per active participant, or in a pattern that matches some aspect of the plan’s benefit formula.

In 1984, Congress mandated DOD to utilize a method known as the aggregate entry-age normal actuarial cost method for funding purposes.²⁷ However, most pension funding and financial reporting requirements in the United States, to the extent they have required use of a particular actuarial cost method, have generally required actuarial cost methods other than the aggregate entry age normal method. Actuarial cost methods are applicable for pension plans in different sectors of the U.S. economy, such as for private sector pension plans, state and local

²⁵ Pub. L. No. 98-94 (1983).

²⁶The Actuarial Standards Board defines an actuarial cost method as a procedure for allocating the actuarial present value of projected benefits (and expenses, if applicable) to time periods, usually in the form of a normal cost and an actuarial accrued liability.

²⁷This method is an “aggregate” type of actuarial cost method. “Individual” actuarial cost methods take into account the particular demographic characteristics and benefit entitlements of each individual participant in a plan. In contrast, the aggregate entry age normal method utilizes group averages, which can produce a reasonable overall result but can also result in less precise measures, including when measuring costs for subgroups of plan participants. The aggregate entry age normal actuarial cost method has an “individual” counterpart known as the individual entry age normal actuarial cost method.

government sector pension plans, and federal pension plans. In particular, outside of federal pension plans, to the extent a method is required, individual rather than aggregate actuarial cost methods have often been required. For example, for the funding of single-employer private sector plans, the *Pension Protection Act of 2006* (PPA) requires the use of a particular individual type of actuarial cost method.²⁸

For private sector employers sponsoring pension plans, the Financial Accounting Standards Board (FASB) provides applicable generally accepted accounting principles. For this purpose, FASB standards issued in 1985 require the use of a particular individual type of actuarial cost method.²⁹ For state and local government pension plans, each state has its own funding laws or regulations, but the Governmental Accounting Standards Board (GASB) provides applicable generally accepted accounting principles for state and local entities. GASB issued revised standards for pension accounting in 2012, in which it specified that the actuarial cost method should be the entry age normal method, but specifying that it should be applied on an individual basis (meaning, the individual entry age normal method and not the aggregate entry age normal method that is required to be used by DOD).

In contrast, the Federal Accounting Standards Advisory Board (FASAB), which provides applicable generally accepted accounting principles for federal entities, generally directs use of the aggregate entry age normal method. One of the reasons cited by the FASAB for utilizing this method is that the method is already used for funding purposes by the Military Retirement System and other major federal retirement systems, such as the Federal Employees Retirement System (FERS) and the Civil Service Retirement System (CSRS). The FASAB also viewed the aggregate entry age normal method as a reasonable method.

One entity that used the aggregate entry age normal actuarial cost method was the New York City Office of the Actuary. However, New York City Office of the Actuary officials stated that after the current Chief Actuary arrived, the New York City Office of the Actuary began transitioning away from the aggregate entry-age normal cost method and switching to the individual entry age normal cost method for its five major actuarially-funded retirement and pension systems.³⁰ Officials stated that they transitioned away from the aggregate entry-age normal actuarial cost method because they found it to be less accurate for purposes of determining the costs for a specific subgroup of the population. Officials stated that their newly implemented actuarial cost method provides more accurate valuation results for purposes of determining the costs for a specific subgroup of the population, such as for a particular employer within their system; they also cited the pension plans' multiple tiers of retirement benefits. They noted that when measuring the cost impact of a plan change for a specific subpopulation of plan participants, the aggregate entry age normal method could produce anomalous results because of its use of group averages, where an individual method would be

²⁸ Pub. L. No. 109-280 (2006). Specifically, PPA requires the use of a method known as the Unit Credit actuarial cost method.

²⁹ Specifically, the FASB directs the use of a method known as the Projected Unit Credit actuarial cost method.

³⁰ The New York City Office of the Actuary provides actuarial information and services for the five major actuarially-funded New York City Retirement Systems and Pension Funds resulting in an annual determination of New York City's and obligors' contributions to these retirement systems and pension funds. These systems include the New York City Employees' Retirement System (NYCERS), the Teachers' Retirement System of the City of New York (TRS), New York City Board of Education Retirement System (BERS), New York City Police Pension Fund, and the New York City Fire Pension Fund. According to the New York City Office of the Actuary collectively, in 2018, this equates to the fourth largest public pension system in the United States.

more accurate. In addition, officials stated that advances in technology and computing processes now allow for more precise and more granular methodologies, but also noted that the New York City Office of the Actuary had adequate technological resources in place to support the actuarial cost method change and therefore the change required a minimum effort in resources and personnel.

DOD is required by statute to use the aggregate entry age normal actuarial cost method for funding purposes, and directed by FASAB accounting standards to use this same method for financial reporting purposes. However, the DOD Board of Actuaries has stated that alternative actuarial cost methods may provide more transparency of retirement costs. Specifically, in its most recent quadrennial report to the President and Congress, the DOD Board of Actuaries recommended that Congress should consider alternative actuarial cost methods.³¹ The Board opined that the aggregate entry-age normal cost method is a valid cost method, but stated that it is rarely used. The Board also stated that with advancements in computing capabilities, “individual” actuarial cost methods have become much more popular and do a better job of reflecting plan and assumption changes that might apply to select groups of members. The Board concluded that moving to an individual actuarial cost method would improve the overall actuarial valuation results. The Board of Actuaries also stated in its report that DOD does not currently have the software necessary for alternative methodologies and that upgrading DOD systems could be costly.

DOD Office of the Actuary officials stated that while they use the statutorily required aggregate entry age normal actuarial cost method, they apply it in an actuarially sound way that avoids certain problems that they stated may have contributed to the method falling out of favor.³² They also noted that the aggregate entry age actuarial cost method, as used by the Office of the Actuary within the framework specified by current law, has an advantage to DOD in that it supports advance budgeting requirements and the need for a normal cost expressed as a cost-of-labor type rate, in this case as a percentage of basic pay.

In addition, significant changes have occurred external and internal to the DOD Military Retirement Fund since 1984. As mentioned above, for non-federal pension plans, actuarial cost methods other than the aggregate age entry normal method are often required for certain purposes. In addition, DOD’s Office of the Actuary has made several changes to its actuarial calculations, most recently as required by the *National Defense Authorization Act of Fiscal Year 2016*, which established the “Blended Retirement System” (BRS), a major reform to military compensation.³³ Implemented in 2018, the Blended Retirement System provides a reduced defined benefit plan and is supplemented with a portable Thrift Savings Plan with matching contributions from DOD. The BRS provides a new tier of retirement benefits and changes retired

³¹In addition to this recommendation, the Department of Defense Board of Actuaries has also recommended that all costs of changes to military retirement benefit provisions be recognized and borne by the Department of Defense, including the portion of normal cost percentage attributable to concurrent receipts benefits, which is currently borne by the Department of the Treasury. Department of Defense Board of Actuaries, *2016 Report to the President and Congress* (December 2016).

³²DOD Office of the Actuary officials told us that they first calculate separate normal cost percentages for each historical entry-period-based tier of plan members, and then determine the required single normal cost percentage by weighting the tier-appropriate normal cost percentages by the percentage of payroll expected to be paid to plan members under that tier. They contrasted their approach with a different approach that would base the normal cost percentage solely on the most recent tier of benefits.

³³Pub. L. No. 114-92 (2015).

pay distribution options. DOD Office of the Actuary Officials stated that the current actuarial cost method handles BRS implementation in actuarially appropriate manner. However, such a major change to the military retirement system could potentially result in future measurement needs that could be better met by an individual type of actuarial cost method. Moreover, there have been significant advances in technology and computing power since 1984, making alternative actuarial cost methods more feasible.

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