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TESTIMONY

Statement of

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Before

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Chairman Forbes, Ranking Member Courtney, distinguished members of the subcommittee, thank you for the opportunity to appear before you today to discuss acquisition efficiency and the future Navy force. You asked that I testify on how contracting mechanisms like multiyear procurement (MYP) and block buy contracting (BBC) can reduce the procurement costs of Navy ships, and on the use of incremental funding in Navy shipbuilding. These are topics that I have been following in my CRS reports since 2002.[1]

Some Key Points Up Front

Some key points that can be made up front include the following:

- MYP, which has been used more extensively in Navy shipbuilding programs in recent years, can reduce the unit procurement costs of ships by roughly 10%, compared to unit procurement costs under the standard or default Department of Defense (DOD) approach of annual contracting.
- BBC, which has been used in two Navy shipbuilding programs, can reduce the unit procurement costs of ships by amounts comparable to those of MYP, if the authority granted for using BBC explicitly includes authority for making economic order quantity (EOQ) purchases of components. If the authority granted for using BBC does not explicitly include authority for making EOQ purchases, then the savings from BBC will be less—in the range of roughly 5%. EOQ authority comes automatically with MYP authority, but must be explicitly included in legislation granting BBC authority.
- BBC, unlike MYP, can be used at the outset of a shipbuilding program, starting with the lead ship in the class. MYP, in contrast, cannot be used until the lead ship has completed construction. Thus, for a class of ships that is procured at a rate of one ship per year and in which each ship takes five years to build, BBC can be a contracting option starting with the first ship in the class, and MYP can become a contracting option starting with the fifth or sixth ship in the class. This difference is due to the requirement under the statute governing MYP (10 U.S.C. 2306b) that a program must demonstrate design stability to qualify for MYP. In a shipbuilding program, design stability is typically demonstrated by completing the construction of the lead ship in the class.
- MYP contracts and block buy contracts can be awarded competitively. The law governing MYP requires MYP contracts to be fixed price contracts. BBC contracts can also be fixed price contracts.
- Some shipbuilding programs that have not employed MYP or BBC have been able to reduce their unit procurement costs by a few percent by making combined purchases of components for multiple ships in the class. Specifically, some ships funded in the past through the National Defense Sealift Fund (NDSF) have had their unit procurement costs reduced through combined purchases of components. Ohio replacement program (ORP) ballistic missile submarines (SSBN[X]s) funded through the National Sea-Based Deterrence Fund (NSBDF) might similarly have their unit procurement costs reduced

[1] See:

-- CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke and Moshe Schwartz (first published in July 2011 and most recently updated on November 6, 2015);

-- CRS Report RL32776, *Navy Ship Procurement: Alternative Funding Approaches—Background and Options for Congress*, by Ronald O'Rourke (first published in February 2005 and archived in June 2007); and

-- CRS Report RL31404, *Defense Procurement: Full Funding Policy—Background, Issues, and Options for Congress*, by Ronald O'Rourke and Stephen Daggett (first published in May 2002 and archived in June 2007).

through combined purchases of components, even if the ORP program does not employ MYP or BBC. For shipbuilding programs that do not employ MYP or BBC, and which are not funded through NDSF or NSBDF, authority to make combined purchases of materials and components can be granted through specific legislation.

- From a congressional perspective, tradeoffs in making greater use of MYP, BBC, and combined purchases of materials and components include the following:
  - reduced congressional control over year-to-year spending, and tying the hands of future Congresses;
  - reduced flexibility for making changes in Navy shipbuilding programs in response to unforeseen changes in strategic or budgetary circumstances (which can cause any needed funding reductions to fall more heavily on programs not covered by MYP or BBC contracts);
  - a potential need to shift funding from later fiscal years to earlier fiscal years to fund EOQ purchases of components;
  - the risk of having to make penalty payments to shipbuilders if multiyear contracts need to be terminated due unavailability of funds needed for the continuation of the contracts; and
  - the risk that materials and components purchased for ships to be procured in future years might go to waste if those ships are not eventually procured.
- Several Navy shipbuilding programs can be viewed as candidates for using MYP, BBC, or combined purchases of materials and components. In considering whether to grant authority for using MYP, BBC, or combined purchases of materials and components, Congress may weigh the potential savings of these measures against the tradeoffs listed above.
- Incremental funding, which has been used more extensively in certain Navy shipbuilding programs in recent years, can help mitigate budget "spikes" associated with the procurement of very expensive ships that are procured at a rate of less than one per year, such as aircraft carriers and LHA-type amphibious assault ships. Using incremental funding distributes the cost of a ship across multiple years, but as a general matter does not materially change the total procurement cost of the ship. Mitigating budget spikes, however, might reduce the need for the Navy to shift the procurement of other items to years before and after the spike. Since such shifts can increase costs for those other programs by disrupting their procurement schedules, using incremental funding in a shipbuilding program might help avoid cost increases to other programs. This would not be a savings, but rather an avoided cost increase.

Contracting Mechanisms and Funding Approaches

In discussing MYP, BBC, and incremental funding, it can be helpful to distinguish contracting mechanisms from funding approaches. The two are often mixed together in discussions of DOD acquisition, sometimes leading to confusion. Stated briefly:

- **Funding approaches** are ways that Congress can appropriate funding for weapon procurement programs. Examples of funding approaches include traditional full funding (the standard or default DOD approach), incremental funding, and advance appropriations. Any of these funding approaches might make use of advance procurement

(AP) funding.[2] As a general matter, funding approaches do not materially change the total procurement cost of a ship.

- **Contracting mechanisms** are ways for DOD to contract for the procurement of weapons systems, once funding for those systems has been appropriated by Congress. Examples of contracting mechanisms include annual contracting (the standard or default DOD approach), MYP, and BBC. Contracting mechanisms can materially change the total procurement cost of a ship.

The use of a particular funding approach in a defense acquisition program does not dictate the use of a particular contracting mechanism. Defense acquisition programs consequently can be implemented using various combinations of funding approaches and contracting mechanisms. Most DOD weapon acquisition programs use a combination of traditional full funding and annual contracting. A few programs, particularly certain Navy shipbuilding programs, use incremental funding as their funding approach. A limited number of DOD programs use MYP as their contracting approach, and to date two Navy shipbuilding programs have used BBC as their contracting approach. The situation is summarized in **Table 1**.

Table 1. Contracting mechanisms and funding approaches

		Funding approaches		
		Full funding	**Incremental funding**	**Advance appropriations**
Contracting mechanisms	**Annual contracting**	Most programs	A few programs (e.g., CVNs, LHAs, DDG-1000s)	
	MYP	Selected programs		
	Block buy contracting	Virginia class (units 1-4) and Littoral Combat Ship (units 5-24)		

Source: Table prepared by CRS.

Notes: Advance procurement (AP) can be used with any of the funding approaches. As a general matter, funding approaches do not materially change the total procurement cost of a ship. (By mitigating budgets spikes, however, incremental funding might prevent disruptions to other programs.) Contracting approaches can materially change the total procurement cost of a ship. Funding a ship inside or outside the procurement title of the DOD appropriation act can affect the application of the full funding policy, and thus how funds can be used for purposes such as making combined purchases of components for multiple ships in a class.

For additional background information on MYP, and BBC, see **Appendix A**.

For additional background information on full funding, incremental funding, and advance appropriations, see **Appendix B**

For a general summary of some lessons learned in Navy shipbuilding, see **Appendix C**.

[2] AP funding is provided in one or more years prior to the year of procurement of a weapon system for the procurement of long-leadtime components—components with long construction times. Such components must be funded prior to the procurement of the remainder of the weapon system if they are to be ready for installation in the weapon system at the appropriate point in the construction process. AP funding is a permitted exception to the full funding provision. AP funding is not to be confused with advance appropriations.

Increased Use of Incremental Funding, MYP, and BBC in Navy Shipbuilding

With congressional approval, the Navy in recent years has made increased use of incremental funding its shipbuilding programs. Incremental funding is now the standard funding approach for aircraft carriers and LHA-type amphibious assault ships. Aircraft carriers are now being funded with six-year incremental funding, and amphibious assault ships are typically funded with two-year incremental funding (aka split funding). Incremental funding has also been used on rare occasions to fund other types of ships, such as the three Zumwalt (DDG-1000) class destroyers, which were each funded with split funding.

Also with congressional approval, Navy has made significant use in recent years of MYP and BBC in its shipbuilding (and aircraft acquisition) programs. Among other things, the Navy in recent years has used MYP or BBC for all three of its year-to-year shipbuilding programs—the Virginia-class attack submarine program, the DDG-51 destroyer program, and the Littoral Combat Ship program. These three programs account for a significant share of the Navy's shipbuilding effort: Of the 48 new-construction ships in the Navy's FY2016 five-year (FY2016-FY2020) shipbuilding plan, these three programs account for 34, or about 71%. Savings from the use of MYP recently have, among other things, helped Congress and the Navy to convert and a nine-ship buy of DDG-51 class destroyers in FY2013-FY2017 into a 10-ship buy, and a nine-ship buy of Virginia-class attack submarines in FY2014-FY2018 into a 10-ship buy.

The Navy's increasing use of MYP and BBC in recent years amounts to a significant change—some might say a quiet revolution—in Navy ship and aircraft acquisition. In an interview published on January 13, 2014, Sean Stackley, the Assistant Secretary of the Navy for Research, Development, and Acquisition (i.e., the Navy's acquisition executive), stated:

> What the industrial base clamors for is stability, so they can plan, invest, train their work force. It [multiyear contracting] gives them the ability in working with say, the Street [Wall Street], to better predict their own performance, then meet expectations in the same fashion we try to meet our expectations with the Hill.
>
> It's emblematic of stability that we've got more multiyear programs in the Department of the Navy than the rest of the Department of Defense combined. We've been able to harvest from that significant savings, and that has been key to solving some of our budget problems. It's allowed us in certain cases to put the savings right back into other programs tied to requirements.[3]

New Opportunities for Using MYP, BBC, Combined Purchases, and Incremental Funding

Several Navy shipbuilding programs can be viewed as candidates for using MYP, BBC, or combined purchases of materials and components. In considering whether to grant authority for using MYP, BBC, or combined purchases of materials and components, Congress may weigh the potential savings of these measures against the tradeoffs listed earlier. Below are brief discussions of individual Navy shipbuilding programs.

[3] "Interview: Sean Stackley, US Navy's Acquisition Chief," *Defense News*, January 13, 2014: 22.

Ohio Replacement Ballistic Missile Submarine Program[4]

BBC and MYP

BBC is an option for reducing the unit procurement costs of the first several Ohio replacement program ballistic missile submarines (SSBN[X]s), and both MYP and BBC are options for reducing the unit procurement costs of the latter ships in the class. If these contracting mechanisms were used across all 12 boats in the class, and if doing so reduced their unit procurement costs by about 10%, the effect would be to get a bit more than one of the 12 planned boats in the class for "free," compared to procuring them with annual contracting.

Combined Purchases of Materials and Components

Based on the precedent of ships funded through the National Defense Sealift Fund (NDSF), Ohio replacement boats funded through the National Sea-Based Deterrence Fund (NSBDF) and procured with annual contracting might be candidates for having their unit procurement costs reduced by a few percent through combined purchases of materials and components. As stated in the CRS report on the Ohio replacement program:

> the National Defense Sealift Fund is located in a part of the DOD budget that is outside the procurement title of the annual DOD appropriations act. Consequently, ships whose construction is funded through the NDSF are not subject to the DOD full funding policy in the same way as are ships and other DOD procurement programs that are funded through the procurement title of the annual DOD appropriations act.
>
> For NDSF-funded ships, what this has meant is that although Congress in a given year would nominally fund the construction of an individual ship of a certain class, the Navy in practice could allocate that amount across multiple ships in that class. This is what happened with both the NDSF-funded Lewis and Clark (TAKE-1) class dry cargo ships and, before that, an NDSF-funded class of DOD sealift ships called Large, Medium-Speed Roll-on/Roll-off (LMSR) ships. In both cases, the result was that although ships in these two programs were each nominally fully funded in a single year, they in fact had their construction financed with funds from amounts that were nominally appropriated in other fiscal years for other ships in the class.
>
> The Navy's ability to use NDSF funds in this manner has permitted the Navy to, among other things, marginally reduce the procurement cost of ships funded through the NDSF by batch-ordering certain components of multiple ships in a shipbuilding program before some of the ships in question were fully funded—something that the Navy cannot do with a shipbuilding program funded through the Navy's shipbuilding account unless the Navy receives approval from Congress to execute the program through a multiyear procurement (MYP) contract.
>
> If the National Sea-Based Deterrence Fund is located outside the procurement title of the annual DOD appropriations act, the Navy might be able to do something somewhat similar in using funds appropriated for the procurement of Ohio replacement boats.[5]

Section 1022 of the FY2016 National Defense Authorization Act (S. 1356) would amend the provision establishing the NSBDF (10 U.S.C. 2218a) by, among other things, adding a new subsection stating that

> The Secretary of the Navy may use funds deposited in the Fund to enter into contracts known as 'economic order quantity contracts' with private shipyards and other commercial or government

[4] This section includes material adapted from CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.

[5] CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke, section entitled "Potential Implications of NSBDF on Funding Available for Other Programs."

> entities to achieve economic efficiencies based on production economies for major components or subsystems. The authority under this subsection extends to the procurement of parts, components, and systems (including weapon systems) common with and required for other nuclear powered vessels under joint economic order quantity contracts.

This new subsection would provide explicit authority to make combined purchases of major components and subsystems for Ohio replacement boats funded through the NSBDF, regardless of where in the DOD appropriations act the NSBDF is located. It would also permit such purchases to include components and materials not only for Ohio replacement boats, but for other nuclear-powered ships, such as Virginia-class attack submarines and Gerald R. Ford-class aircraft carriers. Combining material and component purchases across classes might reduce costs beyond what could be accomplished through combined material and component purchases that are confined to individual ship classes.

Partial Batch Building

As one means of reducing the procurement cost of the Ohio replacement boats, the Navy is considering a partial batch-build approach for building the boats. Under this approach, instead of building the boats in serial fashion, portions of several boats would be built together, in batch form, so as to maximize economies of scale in the production of those portions. Under this approach, the boats would still be finished and enter service one at a time as currently scheduled, but aspects of their construction would be undertaken in batch fashion rather than serial fashion. Implementing a partial batch-building approach for building the boats might be facilitated by

- using an MYP contract whose built-in EOQ authority might be expanded to cover not just batch-ordering of selected long leadtime components, but also batch-building of sections of the ships; or
- using a block buy contract that included an added EOQ authority of similar scope; or
- locating the NSBDF outside the procurement title of the DOD appropriations act and using funds in that account for the construction of Ohio replacement boats in a manner somewhat similar to how the Navy has used funds in the NDSF to batch-order components for ships acquired through the NDSF.

Joint-Class Block Buy Contract

The Navy is investigating the possibility of using a single, joint-class block buy contract that would cover both Ohio replacement boats and Virginia class boats. Such a contract, which could be viewed as precedent-setting in its scope, could offer savings beyond what would be possible using separate MYP or block buy contracts for the two submarine programs. A March 2014 GAO report stated that if the Navy decides to propose such a contract, it would develop a legislative proposal in 2017.[6] The Navy reportedly plans to finalize its acquisition strategy for the Ohio replacement program, including the issue of the contracting approach to be used, in the fall of 2016 as part of DOD's Milestone B decision for the program.[7]

[6] Government Accountability Office, *Defense Acquisitions[:] Assessments of Selected Weapons Programs*, GAO-14-340SP, March 2014, p. 141.

[7] Lee Hudson, "Navy SSBN(X) Acquisition Strategy Will Not Be Finalized Until Fall 2016," *Inside the Navy*, September 8, 2014.

Incremental Funding

Another option for the Ohio replacement program would be to stretch out the schedule for procuring SSBN(X)s and make greater use of split funding (i.e., two-year incremental funding) in procuring them.[8] This option would not reduce the total procurement cost of the Ohio replacement program—to the contrary, it might increase the program's total procurement cost somewhat by reducing production learning curve benefits in the Ohio replacement program.[9] This option could, however, reduce the impact of the Ohio replacement program on the amount of funding available for the procurement of other Navy ships in certain individual years. This might reduce the amount of disruption that the Ohio replacement program causes to other shipbuilding programs in those years, which in turn might avoid certain disruption-induced cost increases for those other programs. The annual funding requirements for the Ohio replacement program might be further spread out by funding some of the SSBN(X)s with three- or four-year incremental funding.

Table 2 shows the Navy's currently planned schedule for procuring 12 SSBN(X)s and a notional alternative schedule that would start two years earlier and end two years later than the Navy's currently planned schedule, so as to provide more opportunities for using incremental funding. Although the initial ship in the alternative schedule would be procured in FY2019, it could be executed as it if were funded in FY2021. Subsequent ships in the alternative schedule that are funded earlier than they would be under the Navy's currently planned schedule could also be executed as if they were funded in the year called for under the Navy's currently planned schedule. Congress in the past has funded the procurement of ships whose construction was executed as if they had been procured in later fiscal years.[10] The ability to stretch the end of the procurement schedule by two years, to FY2035, could depend on the Navy's ability to carefully husband the use of the nuclear fuel cores on the last two Ohio-class SSBNs, so as to extend the service lives of these two ships by one or two years. Alternatively, Congress could grant the Navy the authority to begin construction on the 11th boat a year before its nominal year of procurement, and the 12th boat two years prior to its nominal year of procurement.

[8] Under split funding, a boat's procurement cost is divided into two parts, or increments. The first increment would be provided in the fiscal year that the boat is procured, and the second would be provided the following fiscal year.

[9] Procuring one SSBN(X) every two years rather than at the Navy's planned rate of one per year could result in a loss of learning at the shipyard in moving from production of one SSBN to the next.

[10] Congress funded the procurement of two aircraft carriers (CVNs 72 and 73) in FY1983, and another two (CVNs 74 and 75) in FY1988. Although CVN-73 was funded in FY1983, it was built on a schedule consistent with a carrier funded in FY1985; although CVN-75 was funded in FY1988, it was built on a schedule consistent with a carrier funded in FY1990 or FY1991.

Table 2. Navy SSBN(X) Procurement Schedule and a Notional Alternative Schedule

Fiscal year	Navy's Schedule	Boat might be particularly suitable for 2-, 3-, or 4-year incremental funding	Notional alternative schedule	Boat might be particularly suitable for 2-, 3-, or 4-year incremental funding
2019			1	X
2020				
2021	1	X	1	X
2022				
2023			1	X
2024	1	X		
2025			1	X
2026	1			
2027	1		1	
2028	1		1	
2029	1		1	
2030	1		1	
2031	1		1	X
2032	1			
2033	1	X	1	X
2034	1	X		
2035	1	X	1	X
2036				
2037			1	X
Total	**12**		**12**	

Source: Navy's current plan is taken from the Navy's FY2015 budget submission. Potential alternative plan prepared by CRS.

Notes: Notional alternative schedule could depend on Navy's ability to carefully husband the use of the nuclear fuel cores on the last two Ohio-class SSBNs, so as to extend the service lives of these two ships by one or two years. Alternatively, Congress could grant the Navy the authority to begin construction on the 11th boat a year before its nominal year of procurement, and the 12th boat two years prior to its nominal year of procurement. Under Navy's schedule, the boat to be procured in FY2033 might be particularly suitable for 4-year incremental funding, and boat to be procured in FY2034 might be particularly suitable for 3- or 4-year incremental funding.

Virginia-Class Attack Submarine Program

The Virginia-class program used BBC to reduce the unit procurement costs of the first four boats in the program,[11] and MYP to reduce the unit procurement costs of most of the subsequent boats in the class. The current Virginia-class MYP contract extends through FY2018. The multiyear contract anticipated for Virginia-class boats to be procured in FY2019-FY2023 can be another Virginia-class MYP contract, or possibly a joint-class block buy contract with the Ohio replacement program (see previous section). The authority for making cross-class joint purchases of major components and subsystems for Ohio replacement boats and "other nuclear powered vessels" that would be provided by Section 1022 of the FY2016 National Defense Authorization Act (S. 1356; see above section on Ohio replacement program) might enable some additional savings under another Virginia-class MYP.

[11] The BBC contract for the first four Virginia-class boats was the first contract of its type. In this sense, BBC can be said to have been invented with this contract.

Gerald R. Ford (CVN-78) Class Aircraft Carrier Program

In previous years, the CRS report on the Gerald R. Ford (CVN-78) class aircraft carrier program[12] presented an option for reducing the procurement costs of CVN-79 and CVN-80 through a two-ship block buy contract broadly similar to the two-ship block buys that Congress approved for the Nimitz (CVN-68) class aircraft carriers CVN-72 and CVN-73 in FY1983, and the Nimitz-class aircraft carriers CVN-74 and CVN-75 in FY1988. Congress has not chosen to pursue a two-ship block buy contract for CVN-79 and CVN-80.

A new option would be to reduce the procurement costs of CVN-80 and CVN-81 through a two-ship block buy contract covering those two ships. A reduced-scope version of that option would be to employ a combined purchase of materials and components for CVN-80 and CVN-81. The current version of the CRS report on the CVN-78 program provides additional discussion of this reduced-scope option for CVN-80 and CVN-81.

The authority for making cross-class joint purchases of major components and subsystems for Ohio replacement boats and "other nuclear powered vessels" that would be provided by Section 1022 of the FY2016 National Defense Authorization Act (S. 1356; see above section on Ohio replacement program) might help reduce the cost of CVN-78 class ships.

DDG-51 Destroyer Program

The DDG-51 program in recent years has used MYP to reduce DDG-51 unit procurement costs. The current DDG-51 MYP contract extends through FY2017. An MYP contract for DDG-51s to be procured in FY2018-FY2022 could continue to reduce DDG-51 unit procurement costs relative to costs that would be experienced under a return to annual contracting. As discussed in testimony to the full committee last year, the DDG-51 program is using Profit Related to Offers (PRO) bidding (i.e., competition for profit) among the two DDG-51 builders to further reduce costs.[13]

Littoral Combat Ship (LCS) Program

The LCS program has used a pair of 10-ship block buy contracts (one with each LCS builder) to procure ships 5 through 24 in the program. The contract began in FY2010, and ship 24 is the first of three LCSs requested for FY2016. At a February 25, 2015, hearing on Department of the Navy acquisition programs

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[12] CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.

[13] As stated in Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee on Case Studies in DOD Acquisition: Finding What Works, June 24, 2014, p. 7:

> When the end of the Cold War led to a reduction in the annual procurement rate of Arleigh Burke (DDG-51) class Aegis destroyers, the Navy judged that the new, lower rate was insufficient to sustain a meaningful competition between the two DDG-51 builders (General Dynamics/Bath Iron Works and Huntington Ingalls Industries/Ingalls Shipbuilding) for the right to build each year's DDG-51s. The Navy, however, found a way to maintain competition in the DDG-51 program by using Profit Related to Offers (PRO) bidding, and has used PRO bidding in the DDG-51 almost every year since FY1996. Under PRO bidding, the Navy allocates individual DDG-51s to the two yards (over time, each yard receives roughly half of the ships), and the yard that submits the lower bid for the ships that it has been allocated receives a higher profit margin. The approach is referred to as competition for profit rather than for quantity, and can be considered a successful example of how to continue employing competition in a procurement program when the program's annual procurement rate is not deemed sufficient to sustain a meaningful competition for quantity.

For an article discussing PRO bidding in the DDG-51 program, see Sydney J. Freedberg Jr., "Can Navy Afford Next-Gen DDG-51 Destroyer, Packard Award Or Not?" *Breaking Defense*, November 12, 2012.

before this subcommittee, Department of the Navy officials testified that the Navy plans to extend the current block buy contracts to include the 25th and 26th ships in the program (i.e., the second and third of the three ships requested for procurement in FY2016), and "use the competitive pricing from the block buy [contracts] to obtain option prices" for those two ships.[14] The Navy has not yet announced an acquisition strategy for ships 27-32 in the program (i.e., the six ships scheduled for procurement in FY2017 and FY2018), or for the final 20 ships in the program—ships 33-52—which are to be procured starting in FY2019 and which are to be built to a modified design.

New block buy contracts are options for both ships 27-32 and ships 33-52. MYP might be an option for ships 27-32, if the design of these ships is not changed substantially from that of ships 5-24. MYP might also be an option for the final ships in the program, after the modified design introduced with ship 33 has demonstrated stability through the construction of ship 33.

LHA-6 Class Amphibious Assault Ship Program

As mentioned earlier, LHA-type ships have been procured in recent years using split funding. The next two LHA-6 class ships are scheduled for procurement in FY2017 and FY2024. One option would be to accelerate the procurement of the second of these two ships to an earlier year (such as FY2021 or FY2022) and then procure the two ships together under a two-ship block buy contract broadly similar to the two-ship block buys for aircraft carriers discussed earlier. A reduced-scope version of that option would be to employ a combined purchase of materials and components for the two ships, broadly similar to the reduced-scope option discussed earlier for CVN-80 and CVN-81.

LX(R) Amphibious Ship Program

The design of the LX(R) is to be based on the design of the San Antonio (LPD-17) class amphibious ship. BBC is an option for the initial ships in the LX(R) amphibious ship program, and BBC and MYP would be options for later ships in the program.

Huntington Ingalls Industries (HII) is the builder of LPD-17s, the 12th of which is requested for procurement in FY2016. As discussed in the CRS report on the LX(R) program,[15] if construction of the initial LX(R)s is awarded to HII, then accelerating the procurement of the lead ship in the LX(R) class from FY2020 to FY2019 or FY2018 might reduce unit procurement costs of LX(R)s by reducing the loss of production learning curve benefits that would occur between the 12th LPD-17 and the first LX(R).

TAO(X) Oiler Program

The design of the TAO(X) has not yet been determined, but could be based on an existing design for a Navy auxiliary ship, a military sealift ship, or a commercial cargo ship. As discussed in the CRS report on the TAO(X) program,[16] BBC is an option for the initial ships in the TAO(X) oiler program, and BBC and MYP would be options for later ships in the program. As also discussed in the CRS report on the TAO(X) program, if TAO(X)s are funded through the NDSF, unit procurement costs could be reduced through combined purchases of components, even if BBC or MYP is not used.

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[14] Statement of the Honorable Sean J. Stackley, Assistant Secretary of the Navy (Research, Development and Acquisition) and Vice Admiral Joseph P. Mulloy, Deputy Chief of Naval Operations for Integration of Capabilities and Resources and Lieutenant General Kenneth J. Glueck, Jr., Deputy Commandant, Combat Development and Integration & Commanding General, Marine Corps Combat Development Command, Before the Subcommittee on Seapower and Projection Forces of the House Armed Services Committee on Department of the Navy Seapower and Projection Forces Capabilities, February 25, 2015, p. 11.

[15] CRS Report R43543, *Navy LX(R) Amphibious Ship Program: Background and Issues for Congress*, by Ronald O'Rourke.

[16] CRS Report R43546, *Navy TAO(X) Oiler Shipbuilding Program: Background and Issues for Congress*, by Ronald O'Rourke.

As mentioned earlier, in considering whether to grant authority for using MYP, BBC, or combined purchases of materials and components, Congress may weigh the potential savings of these measures against the tradeoffs listed earlier.

Mr. Chairman, this concludes my statement. Thank you again for the opportunity to testify, and I will be pleased to respond to any questions the subcommittee may have.

Appendix A. Background information on MYP and BBC

This appendix provides basic background information on MYP and BBC.[17]

Multiyear Procurement (MYP)

MYP in Brief

What is MYP, and how does it differ from annual contracting? MYP, also known as multiyear contracting, is an alternative to the standard or default DOD approach of annual contracting. Under annual contracting, DOD uses one or more contracts for each year's worth of procurement of a given kind of item. Under MYP, DOD instead uses a single contract for two to five years' worth of procurement of a given kind of item, without having to exercise a contract option for each year after the first year. DOD needs congressional approval for each use of MYP.

To illustrate the basic difference between MYP and annual contracting, consider a hypothetical DOD program to procure 20 single-engine aircraft of a certain kind over the five-year period FY2015-FY2019, at a rate of four aircraft per year:

- **Under annual contracting**, DOD would issue one or more contracts for each year's procurement of four aircraft. After Congress funds the procurement of the first four aircraft in FY2015, DOD would issue one or more contracts (or exercise a contract option) for those four aircraft. The next year, after Congress funds the procurement of the next four aircraft in FY2015, DOD would issue one or more contracts (or exercise a contract option) for those four aircraft, and so on.
- **Under MYP**, DOD would issue one contract covering all 20 aircraft to be procured during the five-year period FY2015-FY2019. DOD would award this contract in FY2015, at the beginning of the five-year period, following congressional approval to use MYP for the program, and congressional appropriation of the FY2015 funding for the program. To continue the implementation of the contract over the next four years, DOD would request the FY2016 funding for the program as part of DOD's proposed FY2016 budget, the FY2017 funding as part of DOD's proposed FY2017 budget, and so on.

Potential Savings Under MYP

How much can MYP save? Compared with estimated costs under annual contracting, estimated savings for programs being proposed for MYP have ranged from less than 5% to more than 15%, depending on the particulars of the program in question, with many estimates falling in the range of 5% to 10%. In practice, actual savings from using MYP rather than annual contracting can be difficult to observe or verify because of cost growth during the execution of the contract that was caused by developments independent of the use of MYP rather than annual contracting.

A February 2012 briefing by the Cost Assessment and Program Evaluation (CAPE) office within the Office of the Secretary of Defense (OSD) states that "MYP savings analysis is difficult due to the lack of actual costs on the alternative acquisition path, i.e., the path not taken."[18] The briefing states that CAPE

[17] Material in this appendix is adapted from CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke and Moshe Schwartz.

[18] Slide 10 from briefing entitled "Multiyear Procurement: A CAPE Perspective," given at DOD cost analysis symposium, February 15-17, 2012, posted at InsideDefense.com (subscription required) May 14, 2012.

up to that point had assessed MYP savings for four aircraft procurement programs—F/A-18E/F strike fighters, H-60 helicopters, V-22 tilt-rotor aircraft, and CH-47F helicopters—and that CAPE's assessed savings ranged from 2% to 8%.[19]

A 2008 Government Accountability Office (GAO) report stated that

> DOD does not have a formal mechanism for tracking multiyear results against original expectations and makes few efforts to validate whether actual savings were achieved by multiyear procurement. It does not maintain comprehensive central records and historical information that could be used to enhance oversight and knowledge about multiyear performance to inform and improve future multiyear procurement (MYP) candidates. DOD and defense research centers officials said it is difficult to assess results because of the lack of historical information on multiyear contracts, comparable annual costs, and the dynamic acquisition environment.[20]

How does MYP potentially save money? Compared to annual contracting, using MYP can in principle reduce the cost of the weapons being procured in two primary ways:

- **Contractor optimization of workforce and production facilities.** An MYP contract gives the contractor (e.g., an airplane manufacturer or shipbuilder) confidence that a multiyear stream of business of a known volume will very likely materialize. This confidence can permit the contractor to make investments in the firm's workforce and production facilities that are intended to optimize the facility for the production of the items being procured under the contract. Such investments can include payments for retaining or training workers, or for building, expanding, or modernizing production facilities. Under annual contracting, the manufacturer might not have enough confidence about its future stream of business to make these kinds of investments, or might be unable to convince its parent firm to finance them.
- **Economic order quantity (EOQ) purchases of selected long-leadtime components.** Under an MYP contract, DOD is permitted to bring forward selected key components of the items to be procured under the contract and to purchase the components in batch form during the first year or two of the contract. In the hypothetical example introduced earlier, using MYP could permit DOD to purchase, say, the 20 engines for the 20 aircraft in the first year or two of the five-year contract. Procuring selected components in this manner under an MYP contract is called an economic order quantity (EOQ) purchase.[21] EOQ purchases can reduce the procurement cost of the weapons being procured under the MYP contract by allowing the manufacturers of components to take maximum advantage of production economies of scale that are possible with batch orders.[22]

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[19] Slide 12 from briefing entitled "Multiyear Procurement: A CAPE Perspective," given at DOD cost analysis symposium, February 15-17, 2012, posted at InsideDefense.com (subscription required) May 14, 2012. Slide 12 also stated that these assessed savings were based on comparing CAPE's estimate of what the programs would cost under annual contracting (which the briefing refers to as single-year procurement or SYP) to the contractor's MYP proposal.

[20] Government Accountability Office, *Defense Acquisitions[:] DOD's Practices and Processes for Multiyear Procurement Should Be Improved*, GAO-08-298, February 2008, p. 3.

[21] The term EOQ is occasionally used in discussions of defense acquisition, somewhat loosely, to refer to any high-quantity or batch order of items, even those that do not take place under MYP or BBC. As a general matter, however, EOQs as described here occur only within MYP and block buy contracts.

[22] A 2008 Government Accountability Office (GAO) report on multiyear contracting lists five areas of savings, most of which are covered in the two general areas of savings outlined above. One of GAO's five areas of savings—limited engineering changes due to design stability—can also occur in programs that use annual contracting. The GAO report states:

> Multiyear procurement can potentially save money and improve the defense industrial base by permitting the more efficient use of a contractor's resources. Multiyear contracts are expected to achieve lower unit costs compared to annual contracts through one or more of the following sources: (1) purchase of parts and

(continued...)

What gives the contractor confidence that the multiyear stream of business will materialize? At least two things give the contractor confidence that DOD will not terminate an MYP contract and that the multiyear stream of business consequently will materialize:

- For a program to qualify for MYP, DOD must certify, among other things, that the minimum need for the items to be purchased is expected to remain substantially unchanged during the contract in terms of production rate, procurement rate, and total quantities.
- Perhaps more important to the contractor, MYP contracts include a cancellation penalty intended to reimburse a contractor for costs that the contractor has incurred (i.e., investments the contractor has made) in anticipation of the work covered under the MYP contract. The undesirability of paying a cancellation penalty acts as a disincentive for the government against canceling the contract. (And if the contract is canceled, the cancellation penalty helps to make the contractor whole.)[23]

Permanent Statute Governing MYP

Is there a permanent statute governing MYP contracting? There is a permanent statute governing MYP contracting—10 U.S.C. 2306b. The statute was created by Section 909 of the FY1982 Department of Defense Authorization Act (S. 815/P.L. 97-86 of December 1, 1981), revised and reorganized by Section 1022 of the Federal Acquisition Streamlining Act of 1994 (S. 1587/P.L. 103-355 of October 13, 1994), and further amended on several occasions since. DOD's use of MYP contracting is further governed by DOD acquisition regulations.

Under this statute, what criteria must a program meet to qualify for MYP? 10 U.S.C. 2306b(a) states that to qualify for MYP, a program must meet several criteria, including the following.

- **Substantial savings.** DOD must estimate that using an MYP contract would result in "substantial savings" compared with using annual contracting.
- **Realistic cost estimates.** DOD's estimates of the cost of the MYP contract and the anticipated savings must be realistic.
- **Stable need for the items.** DOD must expect that its minimum need for the items will remain substantially unchanged during the contract in terms of production rate, procurement rate, and total quantities.

(...continued)

> materials in economic order quantities (EOQ), (2) improved production processes and efficiencies, (3) better utilized industrial facilities, (4) limited engineering changes due to design stability during the multiyear period, and (5) cost avoidance by reducing the burden of placing and administering annual contracts. Multiyear procurement also offers opportunities to enhance the industrial base by providing defense contractors a longer and more stable time horizon for planning and investing in production and by attracting subcontractors, vendors, and suppliers. However, multiyear procurement also entails certain risks that must be balanced against potential benefits, such as the increased costs to the government should the multiyear contract be changed or canceled and decreased annual budget flexibility for the program and across DOD's portfolio of weapon systems. Additionally, multiyear contracts often require greater budgetary authority in the earlier years of the procurement to economically buy parts and materials for multiple years of production than under a series of annual buys.

Government Accountability Office, *Defense Acquisitions[:] DOD's Practices and Processes for Multiyear Procurement Should Be Improved*, GAO-08-298, February 2008, pp. 4-5.

[23] Annual contracts can also include cancellation penalties.

- **Stable design for the items.** The design for the items to be acquired must be stable, and the technical risks associated with the items must not be excessive.

Section 811 of the FY2008 National Defense Authorization Act (H.R. 4986/P.L. 110-181 of January 28, 2008) amended 10 U.S.C. 2306b to require the Secretary of Defense to certify in writing, by no later than March 1 of the year in which DOD requests MYP authority for a program, that these and certain other criteria have been met. It also requires that the Secretary provide the congressional defense committees with the basis for this determination, as well as a cost analysis performed by DOD's office of Cost Assessment and Program Evaluation (CAPE) that supports the findings.[24] Section 811 further amended 10 U.S.C. 2306b to require the following:

- **Sufficient prior deliveries to determine whether estimated unit costs are realistic.** A sufficient number of the type of item to be acquired under the proposed MYP contract must have been delivered under previous contracts at or within the most current estimates of the program acquisition unit cost or procurement unit cost to determine whether current estimates of such unit costs are realistic.
- **No Nunn-McCurdy critical cost growth breaches within the last five years.** The system being proposed for an MYP contract must not have experienced within five years of the anticipated award date of the MYP contract a critical cost growth breach as defined under the Nunn-McCurdy act (10 U.S.C. 2433).[25]
- **Fixed-price type contract.** The proposed MYP contract must be a fixed-price type contract.[26]

What is meant by "substantial savings"? The meaning of "substantial savings" is open to interpretation and might depend on the circumstances of the program in question. In practice, estimated savings of at least 5% might be judged substantial, and estimated savings in the range of 10% (or more) are more likely to be judged substantial. The amount of savings required under 10 U.S.C. 2306b to qualify has changed over time; the requirement for "substantial savings" was established by Section 808(a)(2) of the FY1991 National Defense Authorization Act (H.R. 4739/P.L. 101-510 of November 5, 1990), which amended 10 U.S.C. 2306b in this regard.[27]

What is meant by "stable design"? The term "stable design" is generally understood to mean that the design for the items to be procured is not expected to change substantially during the period of the contract. Having a stable design is generally demonstrated by having already built at least a few items to that design (or in the case of a shipbuilding program, at least one ship to that design) and concluding, through testing and operation of those items, that the design does not require any substantial changes during the period of the contract.

[24] §811 states that the cost analysis is to be performed by DOD's Cost Analysis Improvement Group (CAIG). In a subsequent DOD reorganization, CAIG was made part of CAPE.

[25] For more on the Nunn-McCurdy provision, see CRS Report R41293, *The Nunn-McCurdy Act: Background, Analysis, and Issues for Congress*, by Moshe Schwartz.

[26] The requirement for using a fixed price contract is now codified at 10 U.S.C. 2306b, subsection (i)(3)(F).

[27] For a discussion of the evolution of the savings requirement under 10 U.S.C. 2306b, including a figure graphically summarizing the legislative history of the requirement, see Government Accountability Office, *Defense Acquisitions[:] DOD's Practices and Processes for Multiyear Procurement Should Be Improved*, GAO-08-298, February 2008, pp. 21-22, including Figure 3 on p. 22.

Potential Consequences of Not Fully Funding an MYP Contract

What happens if Congress does not provide the annual funding requested by DOD to continue the implementation of the contract? If Congress does not provide the funding requested by DOD to continue the implementation of an MYP contract, DOD would be required to renegotiate, suspend, or terminate the contract. Terminating the contract could require the government to pay a cancellation penalty to the contractor. Renegotiating or suspending the contract could also have a financial impact.

Effect on Flexibility for Making Procurement Changes

What effect does using MYP have on flexibility for making procurement changes? A principal potential disadvantage of using MYP is that it can reduce Congress's and DOD's flexibility for making changes (especially reductions) in procurement programs in future years in response to changing strategic or budgetary circumstances, at least without incurring cancellation penalties. In general, the greater the portion of DOD's procurement account that is executed under MYP contracts, the greater the potential loss of flexibility. The use of MYP for executing some portion of the DOD procurement account means that if policymakers in future years decide to reduce procurement spending below previously planned levels, the spending reduction might fall more heavily on procurement programs that do not use MYP, which in turn might result in a less-than-optimally balanced DOD procurement effort.

Congressional Approval

How does Congress approve the use of MYP? Congress approves the use of MYP on a case-by-case basis, typically in response to requests by DOD.[28] Congressional approval for MYP contracts with a value of more than $500 million must occur in two places: an annual DOD appropriations act[29] and an act other than the annual DOD appropriations act.[30]

In annual DOD appropriations acts, the provision permitting the use of MYP for one or more defense acquisition programs is typically included in the title containing general provisions, which typically is Title VIII.

An annual defense authorization act is usually the act other than an appropriations act in which provisions granting authority for using MYP contracting on individual defense acquisition programs are included. Such provisions typically occur in Title I of the defense authorization act, the title covering procurement programs.

Provisions in which Congress approves the use of MYP for a particular defense acquisition program may include specific conditions for that program in addition to the requirements and conditions of 10 U.S.C. 2306b.

How often is MYP used? MYP is used for a limited number of DOD acquisition programs. Annual DOD appropriations acts since FY1990 typically (but not always) have approved the use of MYP for one or a few DOD programs each year.

A February 2012 briefing by the Cost Assessment and Program Evaluation (CAPE) office within the Office of the Secretary of Defense (OSD) shows that the total dollar value of DOD MYP contracts has remained more or less stable between FY2000 and FY2012 at roughly $7 billion to $13 billion per year.

[28] The Anti-Deficiency Act (31 U.S.C. 1341) prohibits the making of contracts in advance of appropriations. A multiple-year commitment may be made when authorized by Congress by entering into a firm commitment for one year and making the government's liability for future years contingent on funds becoming available.

[29] 10 U.S.C. 2306b, subsection (l)(3).

[30] 10 U.S.C. 2306b, subsection (i)(1).

The briefing shows that since the total size of DOD's procurement budget has increased during this period, the portion of DOD's total procurement budget accounted for by programs using MYP contracts has declined from about 17% in FY2000 to less than 8% in FY2012.[31] The briefing also shows that the Navy makes more use of MYP contracts than does the Army or Air Force, and that the Air Force made very little use of MYP in FY2010-FY2012.[32]

A 2008 Government Accountability Office (GAO) report stated:

> Although DOD had been entering into multiyear contracts on a limited basis prior to the 1980s, the Department of Defense Authorization Act, [for fiscal year] 1982,[33] codified the authority for DOD to procure on a multiyear basis major weapon systems that meet certain criteria. Since that time, DOD has annually submitted various weapon systems as multiyear procurement candidates for congressional authorization. Over the past 25 years, Congress has authorized the use of multiyear procurement for approximately 140 acquisition programs, including some systems approved more than once.[34]

Block Buy Contracting (BBC)

BBC in Brief

What is BBC, and how does it compare to MYP? BBC is similar to MYP in that it permits DOD to use a single contract for more than one year's worth of procurement of a given kind of item without having to exercise a contract option for each year after the first year.[35] BBC is also similar to MYP in that DOD needs congressional approval for each use of BBC.

BBC differs from MYP in the following ways:

- There is no permanent statute governing the use of BBC.
- There is no requirement that BBC be approved in both a DOD appropriations act and an act other than a DOD appropriations act.
- Programs being considered for BBC do not need to meet any legal criteria to qualify for BBC because there is no permanent statute governing the use of BBC that establishes such criteria.
- A BBC contract can cover more than five years of planned procurements. The BBC contracts currently being used by the Navy for procuring Littoral Combat Ships (LCSs), for example, cover a period of seven years (FY2010-FY2016).

[31] Slide 4 from briefing entitled "Multiyear Procurement: A CAPE Perspective," given at DOD cost analysis symposium, February 15-17, 2012, posted at InsideDefense.com (subscription required) May 14, 2012.

[32] Slide 5 from briefing entitled "Multiyear Procurement: A CAPE Perspective," given at DOD cost analysis symposium, February 15-17, 2012, posted at InsideDefense.com (subscription required) May 14, 2012.

[33] S. 815/P.L. 97-86 of December 1, 1981, §909.

[34] Government Accountability Office, *Defense Acquisitions[:] DOD's Practices and Processes for Multiyear Procurement Should Be Improved*, GAO-08-298, February 2008, p. 5.

[35] Using the hypothetical example introduced earlier involving the procurement of 20 aircraft over the five-year period FY2013-FY2017, DOD would follow the same general path as it would under MYP: DOD would issue one contract covering all 20 aircraft in FY2013, at the beginning of the five-year period, following congressional approval to use BBC for the program, and congressional appropriation of the FY2013 funding for the program. To continue the implementation of the contract over the next four years, DOD would request the FY2014 funding for the program as part of DOD's proposed FY2014 budget, the FY2015 funding as part of DOD's proposed FY2015 budget, and so on.

- Economic order quantity (EOQ) authority does not come automatically as part of BBC authority because there is no permanent statute governing the use of BBC that includes EOQ authority as an automatic feature. To provide EOQ authority as part of a BBC contract, the provision granting authority for using BBC in a program may need to state explicitly that the authority to use BBC includes the authority to use EOQ.
- BBC contracts are less likely to include cancellation penalties.

Given the one key similarity between BBC and MYP (the use of a single contract for more than one year's worth of procurement), and the various differences between BBC and MYP, BBC might be thought of as a less formal stepchild of MYP.

When and why was BBC invented? BBC was invented by Section 121(b) of the FY1998 National Defense Authorization Act (H.R. 1119/P.L. 105-85 of November 18, 1997), which granted the Navy the authority to use a single contract for the procurement of the first four Virginia (SSN-774) class attack submarines. The four boats were scheduled to be procured during the five-year period FY1998-FY2002 in annual quantities of 1-1-0-1-1. Congress provided the authority granted in Section 121(b) at least in part to reduce the combined procurement cost of the four submarines. Using MYP was not an option for the Virginia-class program at that time because the Navy had not even begun, let alone finished, construction of the first Virginia-class submarine, and consequently could not demonstrate that it had a stable design for the program.

When Section 121(b) was enacted, there was no name for the contracting authority it provided. The term block buy contracting came into use later, when observers needed a term to refer to the kind of contracting authority that Congress authorized in Section 121(b).

Potential Savings Under BBC

How much can BBC save, compared with MYP? BBC can reduce the unit procurement costs of ships by amounts comparable to those of MYP, if the authority granted for using BBC explicitly includes authority for making economic order quantity (EOQ) purchases of components. If the authority granted for using BBC does not explicitly include authority for making EOQ purchases, then the savings from BBC will be less. Potential savings under BBC might also be less than those under MYP if the BBC contract does not include a cancellation penalty, or includes one that is more limited than typically found in an MYP contract, because this might give the contractor less confidence than would be the case under an MYP contract that the future stream of business will materialize as planned, which in turn might reduce the amount of money the contractor invests to optimize its workforce and production facilities for producing the items to be procured under the contract.

Frequency of Use of BBC

How frequently has BBC been used? Since its use at the start of the Virginia-class program, BBC has been used very rarely. The Navy did not use it again in a shipbuilding program until December 2010, when it awarded two block buy contracts, each covering 10 LCSs to be procured over the six-year period FY2010-FY2015, to the two LCS builders.[36] A third example, arguably, is the Air Force's KC-46 aerial refueling tanker program, which is employing a fixed price incentive fee (FPIF) development contract

[36] For further discussion, see CRS Report RL33741, *Navy Littoral Combat Ship (LCS)/Frigate Program: Background and Issues for Congress*, by Ronald O'Rourke.

that includes a "back end" commitment to procure certain minimum numbers of KC-46s in certain fiscal years.[37]

Using BBC Rather than MYP

When might BBC be suitable as an alternative to MYP? BBC might be particularly suitable as an alternative to MYP in cases where using a multiyear contract can reduce costs, but the program in question cannot meet all the statutory criteria needed to qualify for MYP. As shown in the case of the first four Virginia-class boats, this can occur at or near the start of a procurement program, when design stability has not been demonstrated through the production of at least a few of the items to be procured (or, for a shipbuilding program, at least one ship).

MYP and BBC vs. Contracts with Options

What's the difference between an MYP or block buy contract and a contract with options? The military services sometimes use contracts with options to procure multiple copies of an item that are procured over a period of several years. The Navy, for example, used a contract with options to procure Lewis and Clark (TAKE-1) class dry cargo ships that were procured over a period of several years. A contract with options can be viewed as somewhat similar to an MYP or block buy contract in that a single contract is used to procure several years' worth of procurement of a given kind of item.

There is, however, a key difference between an MYP or block buy contract and a contract with options: In a contract with options, the service is under no obligation to exercise any of the options, and a service can choose to not exercise an option without having to make a penalty payment to the contractor. In contrast, in an MYP or block buy contract, the service is under an obligation to continue implementing the contract beyond the first year, provided that Congress appropriates the necessary funds. If the service chooses to terminate an MYP or block buy contract, and does so as a termination for government convenience rather than as a termination for contractor default, then the contractor can, under the contract's termination for convenience clause, seek a payment from the government for cost incurred for work that is complete or in process at the time of termination, and may include the cost of some of the investments made in anticipation of the MYP or block buy contract being fully implemented. The contractor can do this even if the MYP or block buy contract does not elsewhere include a provision for a cancellation penalty.[38]

[37] For more on the KC-46 program, see CRS Report RL34398, *Air Force KC-46A Tanker Aircraft Program*, by Jeremiah Gertler.

[38] Source: Telephone discussion with Elliott Branch, Deputy Assistant Secretary of the Navy for Acquisition & Procurement, October 3, 2011, and email from Navy Office of legislative Affairs, October 11, 2011. Under the termination for convenience clause, the contractor can submit a settlement proposal to the service, which would become the basis for a negotiation between the contractor and the service on the amount of the payment.

Appendix B. Background information on funding approaches

This appendix provides back background information on full funding, incremental funding, and advance appropriations.[39]

Full Funding Policy

General Description

Most Navy ships procured since the late 1950s have been funded in accordance with the full funding policy. Before then, many Navy ships were procured with incremental funding.

For DOD procurement programs, the full funding policy requires the entire procurement cost of a usable end item (such as a Navy ship) to be funded in the year in which the item is procured. The policy applies not just to Navy ships, but to all weapons and equipment that DOD procures through the procurement title of the annual DOD appropriations act.

In general, the full funding policy means that DOD cannot contract for the construction of a new weapon or piece of equipment until funding for the entire cost of that item has been approved by Congress. Sufficient funding must be available for a complete, usable end item before a contract can be let for the construction of that item. Under traditional full funding, no portion of a usable end item's procurement cost is funded in a year after the year in which the item is procured.

Congress imposed the full funding policy on DOD in the 1950s to make the total procurement costs of DOD weapons and equipment more visible and thereby enhance Congress's ability to understand and track these costs. Congress's intent in imposing the policy was to strengthen discipline in DOD budgeting and improve Congress's ability to control DOD spending and carry out its oversight of DOD activities. Understanding total costs and how previously appropriated funds are used are key components of Congress's oversight capability.

The full funding policy is consistent with two basic laws regarding government expenditures—the Antideficiency Act of 1870, as amended, and the Adequacy of Appropriations Act of 1861. Regulations governing the full funding policy are found in Office of Management and Budget (OMB) Circular A-11 and DOD Directive 7000.14-R, which provide guidelines on budget formulation. OMB Circular A-11 states, among other things, that

> Good budgeting requires that appropriations for the full costs of asset acquisition be enacted in advance to help ensure that all costs and benefits are fully taken into account at the time decisions are made to provide resources. Full funding with regular appropriations in the budget year also leads to tradeoffs within the budget year with spending for other capital assets and with spending for purposes other than capital assets. Full funding increases the opportunity to use performance-based fixed price contracts, allows for more efficient work planning and management of the capital project (or investment), and increases the accountability for the achievement of the baseline goals.
>
> When full funding is not followed and capital projects (or investments) or useful segments are funded in increments, without certainty if or when future funding will be available, the result is sometimes poor planning, acquisition of assets not fully justified, higher acquisition costs,

[39] Material in this appendix is adapted from CRS Report RL32776, *Navy Ship Procurement: Alternative Funding Approaches—Background and Options for Congress*, by Ronald O'Rourke.

cancellation of major investments, the loss of sunk costs, or inadequate funding to maintain and operate the assets.[40]

Support for the full funding policy has been periodically reaffirmed over the years by Congress, the Government Accountability Office (GAO), and DOD.[41]

Advance Procurement (AP) Payments Under Full Funding

The executive branch regulations that implement the full funding policy for DOD procurement programs permit two circumstances under which advance procurement (AP) "down payments" on a usable end item can be provided in one or more years prior to the item's year of procurement:[42]

- AP funding may be used to pay for long-lead items—components of a usable end item that have long manufacturing lead times—if needed to ensure that these items will be ready for installation into the end item at the appropriate point in the end item's construction process.
- AP funding may also be used to pay for economic order quantity (EOQ) procurement of a set of long-lead items for a set of weapons being acquired under a multiyear procurement (MYP) arrangement.

"One Decision for One Pot of Money"

Although some DOD weapons and equipment are procured with AP funding provided in prior years, most DOD procurement items are funded through a single decision by Congress to provide the entire cost of the item in the item's year of procurement. For this reason, the full funding policy for DOD procurement programs can be described in simplified terms as "one decision for one pot of money."[43]

Incremental Funding

General Description

In spite of the existence of the full funding policy, some Navy and DOD ships, particularly aircraft carriers and LHA-type amphibious assault ships, have been procured in recent years with incremental funding. Prior to the imposition of the full funding policy in the 1950s, however, much of DOD weapon procurement was accomplished through incremental funding.

Under incremental funding, a weapon's cost is divided into two or more annual portions, or increments, that can reflect the need to make annual progress payments to the contractor as the weapon is built.

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[40] OMB Circular A-11 (July 2003), Appendix J, Section C, Principle 1 (of four principles for financing capital assets).

[41] For a detailed discussion of the origins, rationale, and governing regulations of the full funding policy, as well as examples of where Congress, GAO, and DOD have affirmed their support for the policy, see Appendix A of CRS Report RL31404, *Defense Procurement: Full Funding Policy - Background, Issues, and Options for Congress*.

[42] Note that the funding discussed here is advance *procurement* funding, which is not to be confused with the alternate funding approach called advance *appropriations*, discussed later.

[43] When Congress approves AP funding for an item, it does so through a funding decision for that year that is separate from the decision that Congress subsequently makes, in the item's year of procurement, to fund the remainder of the item's procurement cost. Items procured with AP funding thus involve two or more funding decisions from Congress—one or more decisions to approve AP funding in one or more years prior to the year of procurement, plus a final decision, in the item's year of procurement, to fund the remainder of the item's procurement cost. A decision by Congress to approve AP funding for an item does not create an obligation on the part of Congress to approve the remainder of the item's procurement cost in some future year, but it usually indicates that Congress anticipates doing so.

Congress then approves each year's increment as part of its action on that year's budget. Under incremental funding, DOD can contract for the construction of a weapon after Congress approves only the initial increment of its cost, and completion of the weapon is dependent on the approval of the remaining increments in future years by that Congress or future Congresses. A key feature of incremental funding is that a portion of the ship's cost is provided in one or more years beyond the item's year of procurement.

"Multiple Decisions for Multiple Pots of Money"

Since incremental funding divides the procurement cost of an end item into two or more annual increments, and since Congress typically approves one of these increments each year, incremental funding can be described in simplified terms as "multiple decisions for multiple pots of money."

Advance Appropriations

General Description

Advance appropriations have not been used in Navy ship procurement, but have been used by other executive branch agencies to fund various programs.[44] Advance appropriations is an alternate form of full funding that is permitted under executive branch budget regulations. As a funding approach, it can be viewed as lying somewhere between traditional full funding and incremental funding. Advance appropriations is not to be confused with advance procurement (AP) funding that can occur under traditional full funding.

Under advance appropriations, as under traditional full funding, Congress makes a one-time decision to fund the entire procurement cost of an end item. That cost, however, can then be divided into two or more annual increments, as under incremental funding, that are assigned to (in budget terminology, "scored in") two or more fiscal years.[45]

In contrast to incremental funding, under which Congress must take a positive action each year to approve each year's funding increment, under advance appropriations, Congress, following its initial decision to fund the item, would need to take a positive action to cancel or modify an annual funding increment in a future-year budget. In this sense, advance appropriations can be thought of as a legislatively locked in form of incremental funding: the future-year funding increments will occur unless Congress takes action to stop them.

OMB Circular A-11 allows for the use of advance appropriations to help finance capital assets under certain circumstances:

> Regular appropriations for the full funding of a capital project or a useful segment (or investment) of a capital project in the budget year are preferred. If this results in spikes that, in the judgment of OMB, cannot be accommodated by the agency or the Congress, a combination of regular and

[44] Use of advance appropriations in the federal budget is summarized in the appendix volume of each year's U.S. government budget.

[45] Advance appropriations can also be used to fund the entire cost of an item and have that entire cost assigned to a single future fiscal year.

OMB Circular A-11 defines advance appropriations as appropriations that are enacted normally in the current year; scored after the budget year (e.g., in each of one, two, or more later years, depending on the language); and available for obligation in the year scored and subsequent years if specified in the language.

> (OMB Circular A-11 (July 2003 version), Appendix J (Principles of Budgeting for Capital Asset Acquisitions), Section E (Glossary).)

> advance appropriations that together provide full funding for a capital project or a useful segment or an investment should be proposed in the budget.
>
> *Explanation*: Principle 1 (Full Funding) is met as long as a combination of regular and advance appropriations provide budget authority sufficient to complete the capital project or useful segment or investment. Full funding in the budget year with regular appropriations alone is preferred because it leads to tradeoffs within the budget year with spending for other capital assets and with spending for purposes other than capital assets. In contrast, full funding for a capital project (investment) over several years with regular appropriations for the first year and advance appropriations for subsequent years may bias tradeoffs in the budget year in favor of the proposed asset because with advance appropriations the full cost of the asset is not included in the budget year. Advance appropriations, because they are scored in the year they become available for obligation, may constrain the budget authority and outlays available for regular appropriations of that year.
>
> If, however, the lumpiness caused by regular appropriations cannot be accommodated within an agency or Appropriations Subcommittee, advance appropriations can ameliorate that problem while still providing that all of the budget authority is enacted in advance for the capital project (investment) or useful segment. The latter helps ensure that agencies develop appropriate plans and budgets and that all costs and benefits are identified prior to providing resources. In addition, amounts of advance appropriations can be matched to funding requirements for completing natural components of the useful segment. Advance appropriations have the same benefits as regular appropriations for improved planning, management, and accountability of the project (investment).[46]

"One Decision for Multiple Pots of Money"

Because advance appropriations involves a one-time decision by Congress to approve the entire procurement cost of the end item, which can then be divided into two or more increments that are assigned to two or more fiscal years, advance appropriations can be described in simplified terms as "one decision for multiple pots of money."

Navy Advocacy in 2001

In 2001, some Navy officials advocated the use of advance appropriations for Navy ship procurement, noting at that time that this funding approach is used by several federal agencies other than DOD.[47]

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[46] OMB Circular A-11 (July 2003), Appendix J, Section C, Principle 2 (of four principles for financing capital assets). Italics as in the original.

[47] Source: Slides for May 3, 2001 Navy briefing to CRS, *Advance Appropriations for Navy Shipbuilding*, pages 19-21. The Navy also argued that current law, contrary to some assertions, does not prohibit the use of advance appropriations. Specifically, the Navy argued that:

> —31 USC 1341, [the] "Anti-Deficiency Act," prohibits writing a contract which "involves the government in a contract or obligation for the payment of money before an appropriation is made *unless authorized by law*."
>
> —10 USC 2306b [the provision covering multi-year procurement contracts] allows [DOD and certain other federal agencies] to enter into multi-year contracts for the purchase of weapon systems, as long as [there is] "a reasonable expectation that throughout the contemplated contract period the head of the agency will request funding for the contract at the level required to avoid contract cancellation."
>
> —31 USC 1105 [a provision relating to the contents of the federal budget and its submission to Congress] requires that [the executive branch] identify in advance of need future appropriations that will have to be approved in order to complete the contract. These advance appropriations have to be specifically approved by Congress to allow [the executive branch] to obligate the government in advance of receipt of funds. (Slides for May 3, 2001 Navy briefing to CRS, *Advance Appropriations for Navy Shipbuilding*, page 16. Emphasis as on the briefing slide.)

Although use of advance appropriations for Navy ship procurement was supported by some Navy officials and some Members of Congress,[48] the Navy in 2001 apparently did not receive approval from the Office of Management and Budget (OMB) to use the approach for ship procurement, and did not officially propose its use as part of its FY2002 budget submission to Congress.[49] Congress in 2001 did not adopt advance appropriations as a mechanism for funding Navy ships. The House Appropriations Committee, in its report (H.Rept. 107-298 of November 19, 2001) on the FY2002 defense appropriations bill (H.R. 3338), stated that it was

> dismayed that the Navy continues to advocate the use of alternative financing mechanisms to artificially increase shipbuilding rates, such as advanced appropriations, or incremental funding of ships, which only serve to decrease cost visibility and accountability on these important programs. In attempting to establish advanced appropriations as a legitimate budgeting technique, those Navy advocates of such practices would actually decrease the flexibility of future Administrations and Congresses to make rational capital budgeting decisions with regard to shipbuilding programs. Accordingly, the Committee bill includes a new general provision (section 8150) which prohibits the Defense Department from budgeting for shipbuilding programs on the basis of advanced appropriations.[50]

The general provision mentioned above (Section 8150) was not included in the final version of the bill that was passed by Congress and signed into law (H.R. 3338/P.L. 107-117 of January 10, 2002).

[48] Christian Bohmfalk, "O'Keefe: Advance Appropriations, If Used Correctly, Could Help Navy," *Inside the Navy*, November 26, 2001; Christian Bohmfalk, "Stevens Promotes Advance Appropriations To Boost Ship Production," *Inside the Navy*, September 10, 2001; Mike McCarthy, "CNO Advocates Advance Funding of Ships," *Defense Week*, July 16, 2001, p. 2; Christian Bohmfalk, "Senior Navy Leaders Describe Benefits of Advance Appropriations," *Inside the Navy*, April 16, 2001; Christopher J. Castelli, "Congress Weighs Using 'Advance Appropriations' For Shipbuilding," *Inside the Navy*, April 9, 2001; Dale Eisman, "Plan Would Boost Navy Shipbuilding," *Norfolk Virginian-Pilot*, April 5, 2001.

[49] Dale Eisman, "White House Rejects Proposal To Stretch Shipbuilding Funds," *Norfolk Virginian-Pilot*, September 6, 2001; Christian Bohmfalk, "Advance Appropriations, Not Part of FY-02 Request, May Resurface," *Inside the Navy*, July 16, 2001.

[50] H.Rept. 107-298, p. 119.

Appendix C. A Summary of Some Shipbuilding Lessons Learned

Measures for efficiently executing Navy shipbuilding programs are not limited to MYP, BBC, and combined purchases of materials and components. A more general summary of lessons learned for Navy shipbuilding, reflecting comments made repeatedly by various sources over the years, includes the following:[51]

- **Get the operational requirements for the program right up front.** Manage risk by not trying to do too much in the program, and perhaps seek a so-called 70%-to-80% solution (i.e., a design that is intended to provide 70%-80% of desired capabilities). Achieve a realistic balance up front between requirements and estimated costs.
- **Impose cost discipline up front.** Use realistic price estimates, and consider not only development and procurement costs, but life-cycle operation and support (O&S) costs.
- **Employ competition** where possible in the awarding of design and construction contracts;
- **Use a contract type that is appropriate for the amount of risk involved**, and structure its terms to align incentives with desired outcomes.
- **Minimize design/construction concurrency** by developing the design to a high level of completion before starting construction and by resisting changes in requirements (and consequent design changes) during construction.
- **Properly supervise construction work.** Maintain an adequate number of properly trained Supervisor of Shipbuilding (SUPSHIP) personnel.
- **Provide stability for industry**, in part by using, where possible, MYP or BBC.
- **Maintain a capable government acquisition workforce** that understands what it is buying, as well as the above points.

Identifying these lessons is not the hard part—most if not all these points have been cited for years. The hard part is living up to them without letting circumstances lead program-execution efforts away from these guidelines.

[51] Material in this appendix is adapted from Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee on Case Studies in DOD Acquisition: Finding What Works, June 24, 2014, pp. 8-9.