

BRIEFS

Ten Reasons DOD Needs an Appropriations Bill Now

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Resources: Budget & Resources

The 2017 fiscal year once again began with an interim continuing resolution—the eighth year in a row that Congress has failed to pass a budget for the federal government by the start of the new fiscal year.[1] (#_ftn1) This continuing resolution maintains the 2016 levels of funding for the Department of Defense (DoD) until December 9, 2016. With the Republicans maintaining control of the House and Senate and taking the White House, increases in defense spending would likely appear sometime after the new Congress and President take office in January. DoD might have a fiscal year (FY) 2017 spending bill in February or March if the defense hawks and the deficit hawks within the Republican caucus can come to terms.

In the meantime, DoD needs to keep the lights on and will need an extension of the current continuing resolution or another appropriations bill before December 9th to avoid a government shutdown. Overall, even if additional resources for defense are on the horizon, it looks as though DoD will be without a real appropriations bill for almost half of this fiscal year. Although passing a continuing resolution has allowed Congress to avoid a government shutdown, it is a poor substitute for an actual appropriations bill.

Retaining last year's funding levels well into the new fiscal year affects DoD's ability to execute its modernization and readiness plans. DoD cannot start procurement of new systems, as continuing resolutions typically prohibit "new starts." For programs that are already underway, a continuing resolution can hamper the programs' transitions from RDT&E into procurement. Due to Pentagon accounting rules, money in RDT&E cannot be used for procurement, leaving programs stalled out. Additionally, continuing the FY 2016 funding levels on autopilot, like a continuing resolution does, doesn't account for changes in the world or in which programs the Pentagon is prioritizing. Using the FY 2016 appropriations to meet current needs allocates too much to some programs while leaving others underfunded. For example, DoD asked for a four-fold increase in the European Reassurance Initiative this year to buy Army prepositioned equipment sets and increase U.S. military presence in Eastern Europe—funds that aren't available under FY 2016 appropriations levels.[2] (#_ftn2)

From a management perspective, the real work cannot start until the Pentagon has some certainty about its funding for the whole year. Having grown to expect continuing resolutions to start every fiscal year, DoD procurement personnel have routinely pushed back contracting actions into the second and even third quarters of the fiscal year.[3] (#_ftn3) If a budget agreement is not reached until February or beyond, industries, especially those that rely on different levels of funding at different phases of construction such as shipbuilding in Newport News, may face difficulties finishing projects on time. As a recent letter to Congress from fourteen major defense contractor and military advocacy associations states, a continuing resolution "that extends beyond the one under which we are currently operating will unnecessarily delay new programs, prevent the ramping up of mature programs, and affect defense readiness and operational issues."[4] (#_ftn4)

Although it may sound like a "green-eyeshade" complaint, months-long continuing resolutions hobble DoD. Congress must pass an FY 2017 defense appropriations bill as soon as possible and start FY 2018 next October with a real spending bill.

Ten of DoD's biggest and most important defense acquisition programs distorted by this year's continuing resolution are:

AGM-114 Hellfire

The AGM-114 Hellfire missile is an air-to-ground missile used by the Army, Air Force, and Navy. U.S. forces have used Hellfires extensively in strikes on ISIS installations.[5] (#_ftn5) In FY 2017, the Army plans to significantly increase its Hellfire buy, purchasing 3,827 more than last year. The Navy will buy Hellfires for the first time. The Air Force, for its part, plans to decrease its Hellfire buy 75 percent from FY 2016, purchasing just over 1,500 of these missiles. The continuing resolution prevents the funding shifts necessary for the Army to buy more missiles and for the Air Force to scale back its buy. Over the course of FY 2017, at continuing resolution funding levels the Air Force would spend \$697.7 million on Hellfire procurement, almost 300 percent more than the \$179.1 million it requested for the missile in PB 2017. Meanwhile, the Army would get only \$65 million of the \$498 million requested. The Navy would have none of the \$8.6 million it requested, as they did not buy any Hellfire missiles in FY 2016.[6] (#_ftn6)

KC-46A Pegasus

The KC-46A Pegasus, the Air Force's newest tanker aircraft, is used to refuel other aircraft mid-flight and transport large amounts of cargo. The tanker's ability to refuel other aircraft in-flight increases the distance those aircraft can go and makes it central to many Air Force operations. The KC-46 will replace the Air Force's oldest KC-135 tankers, some of which are 50 years old.[7] (#_ftn7) As Air Force Secretary Deborah Lee James sated earlier this year, "The KC-46A Pegasus aerial tanker remains one of our top acquisition priorities. It is absolutely essential that we replace our aging tanker fleet so we have the aircraft necessary to maintain the nation's global reach for years to come." The Air Force has bought nineteen of these planes since FY 2015, all of which should be ready by January 2018, and it plans to have 175 KC-46s in service by 2027.[8] (#_ftn8) The Air Force requested a 20 percent increase in procurement funding in FY 2017, to \$2.9 billion. RDT&E spending will taper off to \$261 million in FY 2017. The continuing resolution will also cap the quantity of new KC-46s at twelve aircraft rather than the fifteen requested in PB 2017.[9] (#_ftn9) According to Secretary James, this change in quantity would "delay operational fielding of the plane." With the new tankers delayed, the Air Force would have to rely on older, less capable aircraft for longer.[10] (#_ftn10)

Ohio Replacement Program/ Columbia Class SSBN

The Ohio Replacement Program ballistic missile submarine (SSBN) is one of the Navy's largest "new starts." The new boats will replace the Ohio-class nuclear submarines, the most survivable leg of the nuclear triad. The Ohio-class submarines are old; originally designed for a 30-year service life, the Navy is now planning to operate them for 42 years. As Capt. Scott Pappano, program manager for strategic attack submarines at Naval Sea Command (NAVSEA) stated, "We don't have the wiggle room to go beyond [42 years]."[11] (# ftn11) This lack of flexibility makes sticking to the current schedule for the Columbia-class critical. Retirement of the Ohio-class submarines will begin in the late 2020s, with one boat retiring annually as new Columbia-class submarines come online. The new submarine is beginning to enter the procurement phase, with the FY 2017 request asking for \$773 million for the final detail design and for starting to buy long-lead items like the nuclear reactor that will power the submarines. According to Navy spokeswoman Lt. Kara Yingling, the Navy was prepared for this continuing resolution and can use RDT&E funds to finish the preliminary design of the Columbia-class during the first quarter of FY 2017. However, Yingling added, "Without [shipbuilding and conversion (SCN) funding], the program will not be able to transition [to a] detail design until Congress either passes an FY '17 appropriations bill or grants a continuing resolution anomaly."[12] (#_ftn12) Any further budget delays could hold up delivery of all twelve planned Columbia-class submarines and, with the hard stop of 42 years for the Ohio-class, could impact the number of nuclear ballistic missile submarines available to the Navy. As Rear Adm. Joseph Tofalo said, "We have consumed the entire margin for error."[13] (#_ftn13) The Navy is already facing a shortfall in ballistic missile submarines in the mid-2020s when it will have just ten submarines based on the current production schedule. Further delays could mean the Navy has fewer than the minimum of ten, forcing the Navy and the nation to make tough decisions about where the submarine-based nuclear deterrent is needed most, as there will not be enough boats to cover both oceans at current patrol levels.

CH-53K King Stallion

As with the Ohio Replacement Program, the CH-53K program was expected to begin procurement in FY 2017. The CH-53K is the Marine Corps' newest heavy-lift helicopter, capable of moving more than twice the material over the same distance as the current model, the CH-53E.[14] (#_ftn14) Currently, the Marines have 147 of these helicopters in service, but most are nearing the end of their 41-year service lives.[15] (#_ftn15) However, each CH-53E needs 100 days of heavy maintenance over the next three years, taking forty-eight out of service per year and limiting the total number of helicopters available for use even as the Marine's operational tempo (http://csbaonline.org/assets/pdfjs/web/viewer.html?file=%2Fuploads%2Fdocuments%2FCSBA6174_ %2528Deploying_Beyond_Their_Means%2529Final2-web.pdf#page=9&zoom=auto,-14,713) has increased.[16] (#_ftn16) The limited number of helicopters has forced the Marine's active component heavy helicopter squadrons to operate with twelve helicopters—rather than the ideal sixteen—and reserve squadrons to operate with six rather than eight.[17] (#_ftn17) The Marines plan to buy 200 CH-53Ks over the life of the program in order to fill in the current airlift gap. Delays to the CH-53K will force the Marines to remain reliant on these older, less capable helicopters longer, incurring high maintenance costs and limiting the number of expeditionary missions the Marines can execute that require extremely heavy lift capabilities.

Carrier Replacement Program

The Carrier Replacement Program will build additional Ford-class aircraft carriers to replace the Nimitz-class carriers that will reach the end of their 50-year service lives between 2025 and 2045.[18] (#_ftn18)(#_ftn18) Just like the Nimitz-class, the new carriers will be the centerpiece of the U.S. global power projection and deterrence missions.[19] (#_ftn19) Delays to the Ford-class construction could mean the Navy has only ten, or possibly nine carriers available. According to the Navy, the service needs at least eleven carriers. Anything less than that will result in gaps in the Middle East and possibly the Pacific as carriers rotate home for maintenance.[20] (#_ftn20) The 2017 budget requested a 7 percent increase in funding for a total program cost of \$2.7 billion and shifted \$30 million from RDT&E into procurement.[21] (#_ftn21) This procurement funding includes advance procurement items like the ship hull and electronics that have long lead times, so that they will be ready for their scheduled installation on the ship. The third Ford-class carrier, USS Enterprise (CVN-80), is scheduled to begin construction in December 2017. Any delays in starting to build CVN-80 would jeopardize the procurement schedule of subsequent carriers, as the size and complexity of the project constrains the number of ships that can be worked on at a time, and there is only one shipyard that produces aircraft carriers.

Evolved Expendable Launch Vehicle (EELV)

The EELV program was created in 1995 to increase competition and bring down the costs of military satellite launches. Today there are two main companies that produce EELVs: United Launch Alliance, a joint venture of Boeing and Lockheed Martin, and Space-X, newly certified in May 2015.[22] (#_ftn22)(#_ftn22) The PB 2017 request increased EELV funding for both RDT&E and procurement. The RDT&E request increased by 23 percent for a total cost of \$297 million, and the procurement request rose by 8 percent for a total of \$738 million. PB 2017 also requested five launch vehicles, an increase of one from FY 2016.[23] (#_ftn23) Delays to this program could stall the launch of satellites essential for military and civilian activity like improved Global Positioning System satellites. As retired Admiral Cecil Haney, former commander of U.S. Strategic Command, said in a press conference last year, "The threat in space... is a real one. It's been demonstrated. So we have to be ready for any campaign that extends its way into space."[24] (#_ftn24) The increased importance of space and the growing vulnerability of U.S. assets in space make a steady stream of launch vehicles essential.

E-2D Hawkeye

The E-2D Hawkeye airborne early warning aircraft is the eyes and ears of the carrier strike group. Equipped with advanced radar technologies and integrated into the Naval Integrated Fire Control-Counter Air (NIFC CA) system, it is designed to participate in air and missile defense by detecting long-distance threats like enemy missiles, ships, and aircraft over land and water.[25] (#_ftn25) These capabilities are especially important to counter the increasing A2/AD threat to carrier strike groups from adversaries' long-range aircraft and missiles. PB 2017 requested \$1.52 billion, an 8 percent increase from FY 2016, in order to procure six aircraft, up from five in FY 2016.[26] (#_ftn26) Cdr. John Hewitt, head of E-2D training, explained the massive leap of capabilities of the E-2D compared to the E-2C, the Navy's current early warning aircraft. The E-2D can detect "very small contacts, air and surface, over land, over water, the aircraft does not care."[27] (#_ftn27) Interrupting this program could limit how many of these aircraft are available to the Navy and would mean that carrier strike groups would be stuck operating with a limited picture of the operational environment in increasingly contested environments.

Joint Light Tactical Vehicle (JLTV)

The JLTV program will replace many of the High Mobility Multipurpose Wheeled Vehicles (HMMWVs) in service today with more resilient, more capable vehicles that provide increased protection and firepower to the warfighter. To date, the JLTV has been one of the Army's most successful programs in terms of sticking both to its budget and timeline.[28] (#_ftn28) The Army plans to nearly triple production of the JLTV this year to 1,828 JLTVs, up from 686 in FY 2016. Similarly, the Marine Corps plans to increase its JLTV buy 63 percent over last year, to 192 vehicles. These requested quantity increases are mirrored by requested funding increases. The Army asked for \$338 million more, for a total procurement level of \$588 million. The Marines also asked for about twice as much funding: \$53 million more than the FY 2016 funding level of \$60 million.[29] (#_ftn29) However, with the continuing resolution in place, neither service will be able to get this increased funding until a budget deal can be reached. If a deal cannot be reached, then the program could face the types of major delays it has avoided so far.[30] (#_ftn30)

F-35B Lightning II STOVL Aircraft

The F-35B Lightning II Short Takeoff Vertical Landing (STOVL) aircraft is being developed by the Navy and Marine Corps as the eventual replacement of the F/A-18 Hornet. This aircraft is essential to future Marine operational concepts

(http://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/MOC/Marine%20Corps%20Operating%20 Concept%20Sept%202016.pdf?ver=2016-09-28-084156-190#page=7)

(http://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/MOC/Marine%20Corps%20Operating%20 Concept%20Sept%202016.pdf?ver=2016-09-28-084156-190#page=7) like distributed operations, and the strike capabilities will enable small units of Marines to penetrate adversary A2/AD bubbles (http://csbaonline.org/assets/pdfjs/web/viewer.html?file=%2Fuploads%2Fdocuments%2FCSBA6216-AmphibiousWarfare_FINAL_LoRes.pdf#page=39&zoom=auto,-14,720)

(http://csbaonline.org/assets/pdfjs/web/viewer.html?file=%2Fuploads%2Fdocuments%2FCSBA6216-AmphibiousWarfare_FINAL_LoRes.pdf#page=39&zoom=auto,-14,720). The F-35B uses a vertical flight system that allows it to take off and land with very little runway space, such as on short, unimproved runways or from an amphibious ship.[31] (#_ftn31) The Navy and Marine Corps are working to ensure that two F-35B squadrons will be ready to deploy in 2018. With FY 2016 funding, the Navy would receive \$171 million more than requested for FY 2017 \$3.3 billion dollars, but the mix of RDT&E and procurement funding is not what the Marines wanted. DoD asked for \$89 million more in RDT&E to conduct a variety of tests including flight, weapons integration, and communications tests, and \$218 million less in procurement than it received in FY 2016. The 2018 deadline is "coming at us like a freight train," said Lt. Col. Richard Rusnok, the detachment officer in charge of one of the F-35B squadrons. He continued, "We're looking at all these opportunities to increase the level of experience among all of the folks that are going to touch the airplane, operate with the aircraft, and we're going to explore some interoperability."[32] (#_ftn32) The proposed RDT&E increase for FY 2017 will be important to ensure the aircraft is ready to go into service on schedule.

Stryker Modification

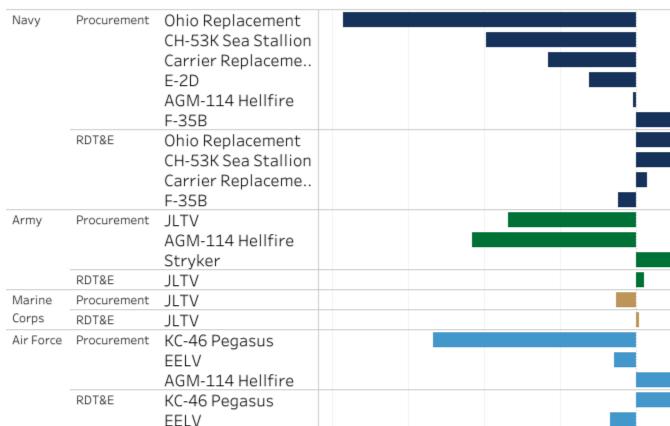
In FY 2017 the Stryker modification program will upgrade 123 of the eight-wheeled armored fighting vehicles, a 5 percent decrease from FY 2016. These vehicles are able to operate in a variety of environments and are used to move quickly through urban areas or to provide soldiers protection in more open environments. The modifications to the Strykers include an improved hull made to protect against improvised explosive devices (IEDs), an engine that can support the weight of the new hull, and upgraded electronics. Under the continuing resolution this program will receive \$978 million when the Army only requested \$591 million. Putting an extra \$387 million dollars towards upgrading Strykers means the money can't be used for other programs. As a result, the Army will be stuck buying upgrades it doesn't want as higher priority programs, like the JLTV, languish.

Impacts of FY17 Continuing Resolution

Program Funding FY 2016 and PB 2017 Request

Impact of CR on Total Program Funding Difference in F by Service, Pro and Appropriat

Difference in Funding, Relative to PB 2017 Request



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NOTES

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- [1] (#_ftnref_1) Lynn M. Williams and Darren P. Wees, *FY2017 Defense Spending Under an Interim Continuing Resolution (CR): In Brief*, R44636 (Washington, DC: Congressional Research Service, September 16, 2016), pp. 6–7, available at https://news.usni.org/wp-content/uploads/2016/09/R44636.pdf#viewer.action=download (https://news.usni.org/wp-content/uploads/2016/09/R44636.pdf#viewer.action=download).
- [2] (#_ftnref_2) The White House, "Fact Sheet: The FY2017 European Reassurance Initiative Budget Request," February 2, 2016, available at https://www.whitehouse.gov/the-press-office/2016/02/02/fact-sheet-fy2017-european-reassurance-initiative-budget-request (https://www.whitehouse.gov/the-press-office/2016/02/02/fact-sheet-fy2017-european-reassurance-initiative-budget-request).
- [3] (#_ftnref_3) U.S. Congress, Senate, Committee on Armed Services, "Statement of Admiral John M. Richardson, U.S. Navy, Chief of Naval Operations on Long Term Budgetary Challenges: Hearing before the Committee on Armed Services," 114th Cong., 2nd sess., September 15, 2016, p. 3, available at http://www.armed-services.senate.gov/imo/media/doc/Richardson_09-15-16.pdf (http://www.armed-services.senate.gov/imo/media/doc/Richardson_09-15-16.pdf).
- [4] (#_ftnref_4) "Defense Related Associations," Letter to Congress, November 1, 2016, available at http://www.ndia.org/Policy/policyweeklydigest/Documents/7Nov2016/DRA_Budget_Letter.pdf (http://www.ndia.org/Policy/policyweeklydigest/Documents/7Nov2016/DRA_Budget_Letter.pdf).
- [5] (#_ftnref_5) Kris Osborn, "Pentagon Ramps Up HELLFIREs to Attack ISIS as US Helicopters Join the Fight," *Scout Warrior*, June 5, 2016, available at http://www.scout.com/military/warrior/story/1678889-us-revs-up-hellfires-as-apaches-attack (http://www.scout.com/military/warrior/story/1678889-us-revs-up-hellfires-as-apaches-attack).
- [6] (#_ftnref_6) VisualDoD.
- [7] (#_ftnref_7) Military.com, "KC-46A Tanker," *Military.com Equipment Guide*, 2016, available at http://www.military.com/equipment/kc-46a-tanker (http://www.military.com/equipment/kc-46a-tanker).

[8] (#_ftnref_8) Valerie Insinna, "Air Mobility Commander: US Air Force Needs More New Tankers," *Defense News*, August 31, 2016. http://www.defensenews.com/articles/kc46-training-squadron-activated-air-force (http://www.defensenews.com/articles/kc46-training-squadron-activated-air-force).

[9] (#_ftnref_9) VisualDoD.

[10] (#_ftnref_10) Richard Sisk, "More Problems Ahead for Long-delayed KC-46 Refueler," *DOD Buzz*, August 12, 2016, available at http://www.DODbuzz.com/2016/08/12/more-problems-ahead-for-long-delayed-kc-46-refueler/ (http://www.dodbuzz.com/2016/08/12/more-problems-ahead-for-long-delayed-kc-46-refueler/).

[11] (#_ftnref_11) Megan Eckstein, "Ohio-Class Subs Approaching Several Firsts as Navy Prepares them to Reach 42 Years of Service," *USNI News*, February 3, 2016, available at https://news.usni.org/2016/02/03/ohio-class-subs-approaching-several-firsts-as-navy-prepares-them-to-reach-42-years-of-service (https://news.usni.org/2016/02/03/ohio-class-subs-approaching-several-firsts-as-navy-prepares-them-to-reach-42-years-of-service).

[12] (#_ftnref_12) Megan Eckstein, "Navy Can Weather 6-Week Continuing Resolution, but Extension Would Delay Columbia Submarine Class, Other Programs," *USNI News*, September 29, 2016, available at https://news.usni.org/2016/09/29/navy-can-weather-6-week-cr-but-extension-would-delay (https://news.usni.org/2016/09/29/navy-can-weather-6-week-cr-but-extension-would-delay).

[13] (#_ftnref_13) Sydney J. Freedberg, Jr. "No Margin for Error as Navy Builds New Nukes: Tofalo," *Breaking Defense*, May 39, 2015, available at http://breakingdefense.com/2015/05/no-margin-for-error-as-navy-builds-new-nukes-tofalo/ (http://breakingdefense.com/2015/05/no-margin-for-error-as-navy-builds-new-nukes-tofalo/).

[14] (#_ftnref_14) U.S. Marine Corps Concepts and Programs, "CH-53K Heavy Lift Helicopter," March 3, 2015, available at https://marinecorpsconceptsandprograms.com/programs/aviation/ch-53k-heavy-lift-helicopter (https://marinecorpsconceptsandprograms.com/programs/aviation/ch-53k-heavy-lift-helicopter).

[15] (#_ftnref_15) Richard R. Burgess, "Marine Corps Structures its CH-53K Transition Plan," *Seapower Magazine*, February 19, 2016, available at http://seapowermagazine.org/stories/20160219-ch-53k.html (http://seapowermagazine.org/stories/20160219-ch-53k.html).

[16] (#_ftnref_16) James Drew, "Sikorsky CH-53Es Need Readiness Reset as USMC Await King Stallion," *Flight Global*, April 21, 2016, available at https://www.flightglobal.com/news/articles/sikorsky-ch-53es-need-readiness-reset-as-usmc-await-424467/ (https://www.flightglobal.com/news/articles/sikorsky-ch-53es-need-readiness-reset-as-usmc-await-424467/).

[17] (#_ftnref_17) Burgess, "Marine Corps Structures its CH-53K Transition Plan."

[18] (#_ftnref_18) U.S. Navy, "Aircraft Carriers-CVN," *United States Navy Fact File,* June 9, 2016, available at http://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=200&ct=4 (http://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=200&ct=4).

[19] (#_ftnref_19) Eckstein, "Navy Can Weather 6-Week Continuing Resolution, but Extension Would Delay Columbia Submarine Class, Other Programs."

[20] (#_ftnref_20) Megan Eckstein, "Navy: Half the Carrier Fleet Tied Up in Maintenance, Other 5 Strained to Meet Demands," *USNI News,* November 4, 2015, available at https://news.usni.org/2015/11/04/navy-half-the-carrier-fleet-tied-up-in-maintenance-other-5-strained-to-meet-demands (https://news.usni.org/2015/11/04/navy-half-the-carrier-fleet-tied-up-in-maintenance-other-5-strained-to-meet-demands).

[21] (#_ftnref_21) VisualDoD.

[22] (#_ftnref_22) United Launch Alliance, "EELV Program," *Frequently Asked Questions*, 2015, available at http://www.ulalaunch.com/faqs-eelv-program.aspx (http://www.ulalaunch.com/faqs-eelv-program.aspx)program.aspx); and SpaceFlight Insider, "Space-X's Flacon 9 Breaks EELV Monoploy," May 27, 2015, available at http://www.spaceflightinsider.com/organizations/space-exploration-technologies/spacexs-falcon-9-breaks-eelv-monopoly/ (http://www.spaceflightinsider.com/organizations/space-exploration-technologies/spacexs-falcon-9-

(http://www.spaceflightinsider.com/organizations/space-exploration-technologies/spacexs-falcon-9-breaks-eelv-monopoly/)(http://www.spaceflightinsider.com/organizations/space-exploration-technologies/spacexs-falcon-9-breaks-eelv-monopoly/).

[23] (#_ftnref_23) VisualDoD.

[24] (#_ftnref_24) Admiral Cecil Haney, Department of Defense press briefing, March 24, 2015, transcript available at http://www.defense.gov/News/Transcripts/Transcript-View/Article/607027 (http://www.defense.gov/News/Transcripts/Transcript-View/Article/607027).

[25] (#_ftnref_25) Kris Osborn, "Navy to deploy New E-2D Advanced Hawkeye Radar Plane," *Defense Tech,* October 20, 2014, available at http://www.defensetech.org/2014/10/20/navy-to-deploy-new-e2d-advanced-hawkeye-radar-plane/ (http://www.defensetech.org/2014/10/20/navy-to-deploy-new-e2d-advanced-hawkeye-radar-plane/).

[26] (#_ftnref_26) VisualDoD.

[27] (#_ftnref_27) Sydney J. Freedberg Jr., "E-2D Hits IOC; Navy Hawkeye Gets Larger, Lethal Role," *Breaking Defense*, October 17, 2014, available at http://breakingdefense.com/2014/10/e-2d-hits-ioc-navy-hawkeyes-larger-more-lethal-role/ (http://breakingdefense.com/2014/10/e-2d-hits-ioc-navy-hawkeyes-larger-more-lethal-role/).

[28] (#_ftnref_28) Stew Magnuson, "Tactical wheeled Market on Downward Slide," *National Defense Magazine*, July 2016, available at

http://www.nationaldefensemagazine.org/archive/2016/July/Pages/TacticalWheeledVehicleMarketon DownwardSlide.aspx

(http://www.nationaldefensemagazine.org/archive/2016/July/Pages/TacticalWheeledVehicleMarketo nDownwardSlide.aspx)

(http://www.nationaldefensemagazine.org/archive/2016/July/Pages/TacticalWheeledVehicleMarketo nDownwardSlide.aspx).

[29] (#_ftnref_29) VisualDoD.

[30] (#_ftnref_30) Magnuson, "Tactical wheeled Market on Downward Slide."

[31] (#_ftnref_31) Lockheed Martin, "How it Works: An F-35B Ski Jump Takeoff," *F-35 Lightning II*, July 2, 2016, available at https://www.f35.com/in-depth/detail/how-it-works-and-f-35b-ski-jump-takeoff (https://www.f35.com/in-depth/detail/how-it-works-and-f-35b-ski-jump-takeoff).

[32] (#_ftnref_32) Megan Eckstein, "Marines Refining F-35B Operations, Maintenance at Sea During Final Developmental Test," *USNI News,* November 7, 2016, available at https://news.usni.org/2016/11/07/marines-refining-f-35b-operations (https://news.usni.org/2016/11/07/marines-refining-f-35b-operations).