<u>**Advance Policy Questions for Bruce Jette**</u>
<u>**Nominee for Assistant Secretary of the Army for Acquisition, Logistics, and Technology**</u>

<u>**Defense Acquisition Reforms**</u>

The National Defense Authorization Act for Fiscal Year 2017 and the National Defense Authorization Act for Fiscal Year 2016 enacted sweeping reforms of the defense acquisition system and organizational structure. These reforms restructured the Office of the Secretary of Defense, particularly with respect to the Under Secretary for Acquisition, Technology, and Logistics; returned more authority to the Services for program management; and created additional acquisition pathways. If confirmed, many of these reforms will affect your role as the Service Acquisition Executive.

1. **What is your understanding of these major reforms?**

   There were quite a number of valuable reforms in these Acts and, if confirmed, I will work to ensure that they are effectively implemented. I believe that the reforms related to rapid acquisition; modularity and prototyping; defining the proper and limited use of lowest price technically acceptable; movement to commercial standards for cost accounting; expansion of fixed price contracting; and use of commercial rather than military standards and products have the most potential for improving the acquisition process.

2. **Do you support these reforms?**

   Yes, I support these reforms.

3. **What is your understanding of the reforms you will be responsible for implementing, if confirmed?**

   Many of these reforms make changes to DoD and Service acquisition processes and, if confirmed, I will ensure that those referring to specific Army actions or changes are effectively implemented. My initial review indicates that the Component Acquisition Executive is be responsible for the overall management of the Army's acquisition portfolio to include implementation of the reforms applicable to the Department of Defense and all service components. Should I be confirmed, I will ensure my understanding is complete.

4. **The Department of Defense has been slow to act on many of these reforms. If confirmed, what steps would you take to ensure that the Department of the Army conforms with, and implements, these reforms?**

   Should I be confirmed, I will ensure that my office has a full understanding of the requirements of these Acts, determine the status of compliance, and ensure resolution of any issues precluding effective and timely completion.

If confirmed, you will be the first Assistant Secretary of the Army for Acquisition, Logistics, and Technology to serve since the major acquisition reforms of the National Defense Authorization Acts for Fiscal Years 2016 and 2017.

5. **If confirmed, in what ways would you use these new authorities to fulfill your duties differently than your predecessors?**

If confirmed, I will ensure that the Army acquisition community fully understands the new authorities and appreciates how the Army can utilize them to improve Army acquisition. I will empower Army acquisition officials with the authority and resources necessary to implement the reforms and I will closely monitor their use and effectiveness.

6. **What changes, if any, would you recommend to these reform-related statutory provisions?**

I have no recommendations at this time.

7. **If confirmed, what steps will you take to improve accountability in acquisition management and how would you propose to hold those acquisition officers accountable for failing to follow acquisition laws and regulations?**

My experience has shown me that the vast majority of compliance failures are due to inadequate training and metrics, particularly for key compliance issues. If confirmed, I will ensure that there is a functional system for ensuring that appropriate members of the acquisition community understand the laws and regulations with which they must comply. I will impress on acquisition community leaders that should individuals purposely not comply, I would hold the individual responsible and take appropriate action.

8. **If confirmed, what steps will you take to improve oversight in the requirements determination, resource allocation or acquisition management processes?**

My understanding is that the establishment of the Modernization Command is intended to facilitate this process. However, I also believe that, if confirmed, I would retain responsibility to ensure that those developing the requirements have insightful realistic advice on technologies essential to operational concepts, that realistic costing is applied to concepts for more informed trades, and that those involved in the specific acquisition process must understand their programs from the underlying operational concepts, technologies, costs, and trades to contracting and execution.

The Weapons Systems Acquisition Reform Act of 2009 (WSARA) established a set of program management and systems engineering practices that have attempted to better control acquisition costs and schedule.

9. **What is your assessment of the reforms established under WSARA?**

WSARA established or revised acquisition organizations that provided senior leaders with improved tools for better acquisition. Establishment of CAPE and the Directors of Developmental Test and Evaluation and Systems Engineering appear, from my assessment at this point, designed to improve financial accountability, a more supportive yet independent testing system, and a means to ensure coherence of engineering of systems across stovepipes, especially inter-services. It appears to also direct development with lifecycle competition to be considered, to employ prototyping, and to ensure primes select component and suppliers in a make-buy decision which do not directly benefit them rather than the government. These, all, appear to be excellent improvements.

Duties and Qualifications

Section 3016(b)(5)(A) of title 10, United States Code, states that the principal duty of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) shall be the overall supervision of acquisition, technology, and logistics matters of the Department of the Army.

10. What is your understanding of the duties and functions of the ASA(ALT)?

In accordance with Title 10, §3016(b)(1), The Assistant Secretary shall perform such duties and exercise such powers as the Secretary of the Army prescribes. Furthermore, §3016(b)(5)(A) states: One of the Assistant Secretaries shall be the Assistant Secretary of the Army for Acquisition, Technology, and Logistics. The principle duty of the Assistant Secretary is to provide overall supervision of acquisition, technology and logistics matters of the Army. Under current Army policy, the Assistant Secretary of the Army of Acquisition, Technology and Logistics, advises the Secretary on all matters acquisition, logistics, and technology; responsible for their overall supervision; designation as the Army Acquisition Executive, Senior Procurement Executive, Senior Official for contract services, Science Advisor to the SecArmy, senior R&D official, and responsible for setting strategic direction in all these and other areas.

11. What recommendations, if any, do you have for changes in the duties and functions of the ASA(ALT), as set forth in section 3016(b)(5)(A) of title 10, United States Code, or in Department of Defense regulations pertaining to functions of the ASA(ALT)?

I do not have any recommendations for change at this time.

12. What background and experience do you possess that qualify you to perform these duties?

My 45 years of education and work experience meld operational military, scientific, government acquisition, continued government advisory, and a broad spectrum of domestic and international business experience.

My 28 years of active duty included multiple command and operations assignments as an Armor with multiple overseas and stateside tours including much of 2 ½ years of service in Afghanistan, Kuwait, and Iraq.

Graduating from the United States Military Academy and the Massachusetts Institute of Technology allowed me to obtain BS, MS, and PhD degrees in areas highly relevant to these duties: nuclear engineering, chemistry, materials science – solid state, and physics. Having completed my research in the Army Research Laboratory provides unique insight into its operations and capabilities.

Military skills and, particularly, my experience in employing robots in combat allowed me to develop and teach a course in Robotics and the Future of War for Georgetown University's Strategic studies program, which provides an understanding of both the state of military robotics of the US Army and our adversaries.

The last 12 years of my military service was as a Level III certified acquisition officer. As board select Product Manager for all the Army airborne electronic warfare systems, I developed rapid development techniques when required to produce 2 complex EW planes in only 8 months while continuing to develop a multi-billion-dollar system which was subsequently fielded as well. For these successes, my PM office was recognized as the US Army PM of the Year and selected as the Army's selectee for the Packard Award. Subsequently, I was board selected as the Program Manager for Soldier Systems, resolved significant program challenges, and established Program Executive Office Soldier. During that duty, I drove fielding of numerous products including body armor, new uniforms, soldier electronics, new individual equipment, and many other products. Directly reporting to the Vice Chief of Staff of the Army, I founded the Rapid Equipping Force leading it in combat and developing rapid acquisition protocols for the Army.

I was an advisor to the DARPA Senior Advisory Group, consultant to the Defense Science Board, 6 years member of the Army Science Board to include chair of two studies on encouraging and retaining innovation in the Army, and 3 year member of the Board of Science and Technology through the National Science Foundation.

Twelve years of experience as president and CEO of a commercial company with all profit and loss and contracting responsibilities have provided extensive insight into the value and management of money and how proper contracting can significantly play a role in business success. Specific corporate experience included management and technical consulting to large corporations, financial institutions, and small companies, both domestically and internationally. As a manager and technical contributor, I have conducted research, developed engineering solutions, produced products, and managed intellectual property to include 6 patents awarded in the last 2 years as part of commercial and government efforts to include DARPA, OSD, and the US Army.

If confirmed, I will leverage these experiences to the benefit of the soldier in order to better produce warfighting capabilities that regain our overmatch at an affordable cost.

13. If confirmed, how will you manage the Army's programs, which are over 800? How will you set priorities?

The Chief of Staff and the Acting Secretary have announced 6 priorities for modernization. TRADOC has supplemented The US Army Operating Concept with more detailed doctrinal publications providing a vision of fighting in a complex multi-domain environment. These two efforts provide, in my view, the foundation for modernization priorities. The 800 programs or products must fit these priorities and do so in a coherent valuable manner. If confirmed, I would make a concerted effort to examine all 800 programs with respect to these priorities, support those that contribute, and consider cancelling those that do not.

14. What background or experience do you have in the acquisition of major weapon systems?

I have been directly or indirectly involved in major acquisition systems during the last three decades. This experience includes serving as the Product Manager of the $4B Guardrail System II resolving both programmatic and technical failures leading to its fielding. Concurrently, I developed and fielded in only 8 months Airborne Reconnaissance Low – Multi-Function. Both these systems, which remain in use today, were continuously upgraded, integrated with space and Air Force systems, and maintained through the PM office. I was Program Manager for the $5B Soldier Systems office which included over 100 individual items, supported the other services, and integrated the individual soldier into the electronics of the battlefield for the first time. My wartime duties founded the Rapid Equipping Force which, during my 2 ½ year role as Director, fielded over 250 systems in a timely manner spanning robots, UAVs, jammers, decoys, special weapons, up-armored vehicles, to technologies to reduce base operations costs. An indirect experience of relevance was as Strategic Science Advisor to the Army Chief of Staff helping develop the base concepts underpinning the digitization of the Army.

15. If confirmed, what duties and functions do you expect that the Secretary of Defense and the Secretary of the Army would prescribe for you?

If confirmed, I would expect to discuss with the Secretary of the Army whether he would prescribe any additional duties to which my background and experience may allow me to contribute constructively.

Major Challenges and Problems

16. In your view, what are the major challenges facing the Army today?

I see three related major challenges facing the Army, today. The high operational tempo of the Army now and over the last 15 years has challenged the Army's ability to maintain required readiness, particularly with worn, damaged, and obsolete equipment. Modernization has been slowed or become stagnant in many significant areas allowing

those we once dominated to become near-peer competitors. The Budget Control Act and 30 Continuing Resolutions have impacted negatively on the Army's ability to properly address these challenges. Without resolution of the BCA and avoidance of any further CRs and with the continuing OPTEMPO, it will be extremely challenging to return the force to overmatch and to develop effective material solutions.

17. In your view, what are the major challenges that will confront the next ASA(ALT)?

The major challenge for the next Assistant Secretary of the Army for Acquisition, Logistics, and Technology will be to implement a solid modernization plan based on the Army's priorities and our national security strategy. Success in this significant undertaking will depend on receiving adequate and predictable funding.

18. If confirmed, what plans do you have for addressing these challenges?

If confirmed, I see three primary paths to address these challenges. First, working with Army leadership, clarify modernization priorities, and establish realistic though aggressive objectives. Second, work closely with Congress to ensure adequate resources. Third, improve the overall acquisition process from technology base to requirements generation to program management to contracting to testing to accountability to personnel training and assignment in order to establish a realistic path to meeting the operational needs.

19. What are the most serious problems in the management of acquisition functions in the Army?

From my experience both in the acquisition community and industry, I see a number of interrelated management challenges. Acquisition professionals need to broaden their knowledge of their own processes and the honest details of how those across the table, the businesses, conduct themselves in order to ensure the optimal outcome. Challenges with contracting has spawned a myriad of work-arounds which add bureaucratic layers that contribute nothing tangible to the work outcome. Testing that does not provide a series of constructive assessments does not facilitate program success. Additionally, ill-defined requirements contribute to programmatic challenges. These areas are often, from my experience, attended to separately rather than in an integrated and continuous fashion. An integrated view may significantly reduce program risk, cost, and schedule.

20. If confirmed, what management actions and timetables would you establish to address these problems?

If confirmed, I would add contracting and testing and work to meet the same aggressive timeline I understand the Acting Secretary established for development of a new Modernization Command. If confirmed, I would examine the current professional development program and make changes as necessary to ensure deeper professional development and an understanding of commercial business. Similarly, if confirmed, I

would examine the perceived and real constraints on contracting methodologies to ensure contracting personnel are not just responsible for a legal contract but, partly, responsible for the success of the contract. My estimation would be that, at least, the assessment could be completed for these two efforts within 120 days. Finally, if confirmed, I will examine the current Army protocols for testing and the effect of the establishment of the office of the Director of Developmental Test and Evaluation has had on a more integrated constructive approach. Following the examination, I would develop a program of improvement.

21. If confirmed, how will you support the Secretary of Defense's modernization priorities?

Yes.

22. What is your opinion of the Secretary of Defense's initiative to establish a modernization task force?

I support the Secretary's initiative and, if confirmed, will look at how the Army may contribute to and benefit from it.

Relations with Congress

23. What are your views on the state of the relationship between the Office of the ASA(ALT)and the Senate Armed Services Committee in particular, and with Congress in general?

I understand the relationship between the Office of the ASA(ALT) and the Senate Armed Services Committee is, and must remain, one of close cooperation. As stated above, the Army faces important challenges in its acquisition mission and addressing those challenges requires an open and transparent relationship with the SASC and the other relevant committees in Congress to ensure proper oversight and to improve the overall modernization path.

24. If confirmed, what actions would you take to sustain a productive and mutually beneficial relationship between Congress and the Office of the ASA(ALT)?

If confirmed, I will make it a priority to ensure the Office of the ASA(ALT) is proactive in working with the oversight committees and other interested Members of Congress. We will be responsive to inquiries and I will make myself and the other senior leaders in my office available for direct interaction or to answer any questions. My experience has shown a close transparent working relationship provides the greatest opportunity for success.

Relations with the Office of the Secretary of Defense

25. What relationship should the future Under Secretary of Defense for Research and Engineering have with Service research and engineering activities?

My understanding of the current design, mission, and processes of the Under Secretary of Defense for Research and Engineering is still being finalized. However, understanding its basic mission to drive innovation and accelerate advancement of technologies and warfighter capabilities, I believe the Army must have a close working relationship with the office. This includes integration of strategic technology plans and leveraging developments from the office USD(R&E). Should I be confirmed, I will ensure that this close relationship and interaction is established early and becomes robust.

26. What relationship should the future Under Secretary of Defense for Acquisition and Sustainment have with Service and Defense Agency acquisition and sustainment activities?

Understanding its basic mission to improve acquisition and reduce both the cost and burden of logistics to the Department and services, I believe the Army must have a close working relationship with the office. Should I be confirmed, I will ensure a close relationship and interaction is established early and becomes robust.

Relations with Service Chiefs

27. What specific roles should the Army Chief of Staff play in acquisition programs and policies?

My understanding is that the FY16 NDAA enhanced the Chief of Staff's role and authorities in balancing resources against priorities in acquisition programs and ensuring that appropriate trade-offs are made. Specifically, the Chief of Staff's concurrence in the cost, schedule, technical feasibility, and performance trade-offs must be accomplished in milestone decisions. Additionally, the Chief of Staff, in consultation with SECARMY, must approve any configuration changes proposed by the Configuration Steering Board that could have an adverse effect on program cost or schedule.

28. If confirmed, how will you work with the Army Chief of Staff to improve Army acquisition outcomes and the overall health of the Army research and engineering enterprise?

The Army has robust processes and bodies overseeing the acquisition process and the research and engineering enterprise. These bodies include representatives from both the Army Secretariat and the Army Staff. Their missions are to ensure alignment of acquisition resources and resultant efforts to top Army priorities and to ensure progress of priority efforts toward successful modernization outcomes. The proposed Modernization Command may offer additional means of improvement. If confirmed, I will collaborate with the Army Chief of Staff and his representatives in these processes and organizations to continuously improve acquisition outcomes.

Major Weapon System Acquisition

29. Do you believe that the Army's current investment budget for major systems is affordable given historic cost growth in major systems, costs of current operations, projected increases in end strength, and asset recapitalization?

Based on my current review, I do not believe the current investment budget for major systems is affordable within the context of the current fiscal environment and acquisition process. As I understand it, investment accounts have been the billpayers to support the Army's number one priority of readiness. Soldier readiness should be the Army's number one priority. However, as a result, recent testimony tells me that the Army has struggled for years to sufficiently invest in equipment that adequately addresses both the current equipping needs of Soldiers and commanders and the necessity for developmental programs to meet future threats. Cost growth in programs and schedule delays only serve to further diminish critically needed resources. It appears, also, that the Budget Control Act and numerous Continuing Resolutions have laid the foundation for these difficulties.

30. If confirmed, how do you plan to address this issue?

If confirmed, I will be committed to overhauling acquisition processes to enable more efficient delivery of programs, both on cost and on schedule; developing realistic achievable but aggressive requirements; ensuring the organization aggressively leverages the commercial sector properly balances with the defense industry; establishing a more responsive and responsible contracting system; integrating assessments into development; and focusing science and technology efforts on critical capability gaps which are not resolved through existing commercial or academic efforts. Throughout all of this, I will ensure personnel development and accountability.

31. What would be the impact of a decision by the Army to reduce purchases of major systems because of affordability issues?

Reductions in procurement of weapons systems diminish the Army's ability to execute its mission. From an acquisition perspective, reducing procurement quantities most likely result in higher costs per-system, as well. Longer delivery at a higher per-system cost often is significantly more expensive than if the system was procured on the original schedule.

Nearly half of the Department of Defense's major defense acquisition programs have exceeded the so-called "Nunn-McCurdy" cost growth standards established in section 2433 of title 10, United States Code, to identify seriously troubled programs. Section 206 of WSARA tightened the standards for addressing such programs.

32. What steps, if any, do you believe that the Army should consider taking in the case of major defense acquisition programs that exceed the critical cost growth thresholds established in the Nunn-McCurdy provision?

If confirmed, my first priority would be to determine if any of the current programs are in breach or are encroaching the threshold. In the case of one that has already exceeded threshold, I would undertake an internal review to determine the root cause and why it was not stoppable, to include why it may not have been predicted. In the case of one encroaching, I would undertake a similar review with the objective of determining what courses of action were possible to resolve the issues. My objective would be to determine root causes which may be related to how the Army does business, then, resolve them for all programs to minimize likelihood of further breaches. This may include more proper alignment of requirements, resources, and acquisition to support successful program execution.

33. Do you believe that the Office of the ASA(ALT), as currently structured, has the organization and resources necessary to effectively oversee the management of these major defense acquisition programs? If not, how would you address this problem, if confirmed?

If confirmed, I will make assessing the current structure, organization, and resourcing the Office of the ASA(ALT) one of my top priorities. In addition, I will examine the effectiveness of its interaction with CAPE, and the Directors of Developmental Testing and Evaluation and Systems Engineering along with other agencies that assist in oversight, such as DCMA and USD AT&L. I will work with my staff, other related offices, and, if appropriate, Congressional staffs and committees to resolve problems found.

34. Do you see the need for any changes to the Nunn-McCurdy provision?

I do not see any need for changes to the Nunn-McCurdy provision. I believe the current provision serves its purpose and led to improvements in the overall management of major defense acquisition programs. Since the implementation of WSARA, I understand only five Army programs experienced cost growth resulting in a "Nunn-McCurdy" breach and the last occurred in 2014. If confirmed, I will work to improve even this record.

35. What principles will guide your thinking on whether to recommend terminating a program that has experienced "critical" cost growth under Nunn-McCurdy?

If confirmed, my intent would be to evaluate programs that experience critical cost growths to identify the root cause of the growth. I would consider termination if the cost growth results from the inability to mature technology or achieve integration goals, the technology goals are no longer achievable or affordable, or the threat changed to render the solution less relevant. I would look to restructure the program if the requirement remained solid, the technology achievable, and the solution affordable. I would also look

to restructure the program if a change in the threat or capability gap caused the Army to add capability requirements to the existing program and created the cost growth.

Prototyping and Rapid Acquisition

The Army has created the Rapid Equipping Force, Asymmetric Warfare Group, Rapid Capability Office, and other organizations to help the Army compete with adversary adaptation and keep pace with the rate of technological change.

36. What is your understanding of these offices and their associated processes?

From personal experience and both Army Science Board and the Board of Army Science and Technology, I believe that these offices are critical to the Army's efforts to defeat emerging threats encountered by operational forces, defeat rapidly modernizing adversaries, keep pace with technological change and afford a mechanism to leverage possible leap ahead technologies being developed independent of the Army. While the organizations have distinct functions, they also collaborate to advance technologies and approaches that bridge capability gaps and address near-term, mid-term and emerging threats. The Rapid Equipping Force focuses on delivering mainly commercial, off the shelf products to meet the urgent operational needs of a specific forward-deployed unit in short timeframes. The Asymmetric Warfare Group provides analysis and expertise on regional operating environments to identify and address emerging capability gaps. The Army Rapid Capabilities Office executes high-priority, threat-based projects to address strategic gaps defined by Combatant Commanders where the materiel solution does not exist today but can be developed and fielded in a 1-5 year timeframe. If confirmed, I would make it a priority to examine how to best leverage these organizations as part of a larger overall acquisition strategy.

37. Do you support these organizations and methods?

Yes. We still need to go faster in Army acquisition and if confirmed I will build on the successes of these organizations to accelerate modernization across the force.

38. If confirmed, how would you balance the need to undertake prototyping, experimentation, and rapid acquisition with the demands of managing the execution of the Army's major defense acquisition programs?

I do not believe that prototyping, experimentation, and rapid acquisition are optional approaches to affordable realistic acquisition. Rather, they are strategic imperatives created by our adversaries' aggressive advancement in critical technology areas such as UAVs, EW, robotics, and cyber. I view these efforts as an integral part of the larger Army acquisition ecosystem, and complementary to managing the execution of major defense acquisition programs. Prototyping and experimentation not only provide faster solutions to fulfill operational needs, but also serve to inform by helping us obtain Soldier feedback earlier in the development cycle. If confirmed, I would provide the leadership

direction and advocacy to apply rapid acquisition principles and lessons-learned throughout our portfolio.

Systems Engineering

One of the premises for WSARA was that the best way to improve acquisition outcomes is to place acquisition programs on a sounder footing from the outset by addressing program shortcomings in the early phases of the acquisition process.

39. Do you believe that the Army has the systems engineering organizations, resources, and capabilities needed to ensure that there is a sound basis for key requirements, acquisition, and budget decisions on major defense acquisition programs?

It is my understanding that the Army has the organizations, resources, and capabilities in place to provide a systems engineering foundation for our major defense acquisition programs. The Army's requirements, acquisition, and budget decisions for these programs are informed by a variety of in-depth systems engineering review, analysis, assessment, validation and planning processes. The Army has taken the initiative to better recruit and compete for systems engineering talent and provide unique developmental programs for the engineering workforce. However, while the organizational and institutional structures may be present, the available skill set appears, from my experience, to be insufficient for the Army to ensure control of its own destiny. This is, in part, because this skill set is in critical demand across the public and private sectors. The Army must vigorously compete to maintain and grow its systems engineering personnel. Robust systems engineering is a direct investment in the success of the Army's major defense acquisition programs. If confirmed, I will make this an essential component of my acquisition personnel development plan.

40. What is your assessment of the Army's implementation of systems engineering in support of improving acquisition outcomes?

It is my understanding that the Army has made progress in utilizing systems engineering to improve acquisition outcomes and to support a more integrated modernization approach. A holistic approach that reduces stovepipes and boundaries and establishes architecture and design standards, hopefully based on commercial standards to the fullest extent, is meant to work across portfolios early in the development cycle. If well implemented, it should allow easier identification of modularity which, in turn, allows the Army to choose when to upgrade and, considering intellectual property as part of an architecture, competition throughout the lifecycle. However, despite these positive steps, I believe the Army must continue to do more to foster better acquisition outcomes through systems engineering, including by recruiting and retaining the best qualified personnel in this field. If confirmed, I will make this an essential component of my acquisition personnel development plan.

Developmental Testing

41. Do you believe that the Army has the developmental testing organizations, resources, and capabilities needed to ensure that there is a sound basis for key requirements, acquisition, and budget decisions on major defense acquisition programs?

The Army has a robust developmental test organization with significant facilities and resources. If confirmed, I will examine whether the full cost of testing is considered in program costs and or is driven only by the testers who can declare the necessary testing. Independently assessed developmental testing throughout the development or, in the case of a rapidly fielded item, during field operations should be employed to ensure a timely, informative, affordable test result. If confirmed, I will examine how to improve independent testing to meet these objectives.

42. What is your assessment of the Army's implementation of developmental testing in support of improving acquisition outcomes?

I believe there is opportunity for improvement in implementation and development of testing to improve acquisition outcome. If confirmed, I will examine how to improve independent testing to meet these objectives.

Technological Maturity

Over the last several years, the Government Accountability Office (GAO) has reported that private sector programs are more successful than Department of Defense programs because they consistently require that new technologies achieve a high level of maturity before such technologies may be incorporated into product development programs.

43. How important is it, in your view, for the Army to mature its technologies with research and development funds before these technologies are incorporated into product development programs?

Technology maturity needs to be appropriate for its application. For example, a less mature but demonstrable technology may allow assessment of soldiers or within a systems engineering construct. If, outside of development to produce a full prototype, technology is continuous or ongoing, it can be immature and still useful. On the other hand, if a working prototype is to be made for more formal trials and testing, the technology should be mature enough to be stable and dependable so as not to be a distraction to the assessment intended. A second aspect of applying research and development funds for maturation is to ensure that the technology has not, already, been matured outside of the Army, in which case the funds could be used for procurement, refinement, or integration. My understanding is that the Army has adopted tools to mitigate technical program risk: the Technology Maturation Initiative, a budget activity 4 account that matures and validates advanced technology demonstrators and

experimental prototypes to reduce technical risk, inform concepts, and reduce integration challenges prior to initiation of acquisition programs of record. My understanding is that this program reduces risk for acquisition programs by getting hardware in the hands of Soldiers early, ensuring maturity before spending more time and money on major system development.

44. If confirmed, what steps, if any, would you take to ensure that the key components and technologies to be incorporated into major acquisition programs meet the Army's technological maturity goals?

My understanding is that the Army uses a systematic, metrics-based process to assess the maturity of, and the risk associated with critical component and system-level technologies to be used in Major Defense Acquisition Programs (MDAPs). The ASA(ALT) office, through the DASA(Research and Technology), works as the honest-broker in the acquisition process by overseeing independent reviews of technology maturity data collected by the Program Manager with the assistance of outside subject matter experts and develops Technology Readiness Assessments on Major Defense Acquisition Programs (MDAPs). These assessments serve to verify component and system level maturity prior to incorporation into programs. If confirmed, I will examine this process to determine its accuracy in predicting over time and make adjustments as necessary. Furthermore, I will be proactive in requiring that all new technology-starts demonstrate that no commercial or other governmental agency source exists. As all researchers know well, you don't research what is already known or you are not considered a serious researcher.

45. Do you believe that the Army has the organizations, resources, and capabilities necessary to assess effectively the maturity of technologies that are critical to the development of major weapon systems that the Army procures?

I believe that the Army has the resources, organization and capabilities necessary to assess effectively the maturity of technologies which are critical. However, I also believe that the proper leveraging of these resources needs examination and, perhaps realignment of those resources or development of new ones. If confirmed, I will do so.

46. If not, how should the Army address these deficiencies?

My initial concern is that our organizations and their resources, to include funding, must be focused against technology maturation which is necessary for the project and cannot be obtained through commercial or other governmental sources. Should technology be available from one of these sources but require either integration or further maturation or modification to meet performance requirements, it should be matured within the system. Technologies which are to be matured should be matured by a focused organization which can be comprised of a team of individuals from different research entities but should not be duplicative of work, unless specifically authorized by the research establishment in order to mitigate greater risk. Some maturation is more engineering or development than true research. The former would not likely need multiple teams

addressing maturation while the latter might. If confirmed, I would examine the possible implementation of such an approach and its impact on cost, schedule, and program risk.

47. Do you believe that the Army should make greater use of prototypes, including competitive prototypes, to ensure that acquisition programs reach an appropriate level of technological maturity, design maturity, and manufacturing readiness before receiving milestone approval?

I believe prototyping is an excellent way to eliminate risk and solidify accurate requirements when the cost of and time for the prototype development can be assessed to likely reduce program cost and risk. Competitive prototypes in acquisition programs help to ensure technological and design maturity while allowing the Army to make a best value decision on performance and cost of new systems. Competitive Prototyping, with a "fly before you buy" approach, provides concurrency between manufacturing and development while taking advantage of the U.S.'s robust industrial base. It may also provide a better position with respect to intellectual property, long term sustainment cost management, and modularity.

48. If so, what steps do you believe the Army should take to increase its use of such prototypes?

I believe that all systems, particularly in the development stage, should consider prototyping and only not do so if the cost of the prototype would be prohibitive or the time to produce would significantly delay the overall program. Modular prototype may be a means to address these concerns even on complex systems. For example, prototyping a surrogate vehicle with a developmental firer control and communications system may provide the insight necessary for a cost and schedule that was acceptable. Competitive prototypes should be considered for circumstances discussed in 27., above. If confirmed, I will design a strategy which established the maximum logical use of prototypes that proof both the technologies and operational concepts.

Section 2366b of title 10, United States Code, requires the Milestone Decision Authority for a major defense acquisition program to certify that critical technologies have reached an appropriate level of maturity before Milestone B approval.

49. What steps, if any, will you take, if confirmed, to make sure that the Army complies with the requirements of section 2366b?

If confirmed, I would ensure the Army properly evaluates technology maturation, through demonstration in a relevant environment, determined by my review of the technical risk assessment and independent review outlined in section 807 (a) of the FY17 NDAA.

50. What is your view of the recommendation of the Defense Science Board Task Force on the Manufacturing Technology Program that program managers

should be required to make use of the Manufacturing Readiness Level tool on all programs?

I am not familiar with the manufacturing readiness level tool. However, I agree that programs should consider manufacturability and transition to production issues starting early in the lifecycle, and the assessment of manufacturing risk and manufacturing readiness is an important practice for programs.

51. Beyond addressing technological maturity issues in acquisition programs, what other steps should the Army take to increase accountability and discipline in the acquisition process?

I understand the Army recently launched a pilot program to establish cross-functional teams focused on six core capability areas critical to future readiness. I support the fundamental outline of this plan because it promotes accountability, brings stakeholders together up front, ensures unity of effort, and eliminates bureaucracy. I believe this will constitute a major step forward in reforming the requirements and Acquisition process. I also believe that contracting and testing must have responsibility to deliver a viable affordable product. If confirmed, I look forward to working with the Chief and senior Army leaders to implement this plan.

Excessive Concurrency

Some of the Army's largest and most troubled acquisition programs appear to have suffered significantly from excessive concurrency – the effort to produce a weapon system, even as it is still being designed.

52. Wat impact do you believe such excessive concurrency has on our efforts to produce major weapon systems on schedule and on budget?

I believe concurrency can be used effectively, particularly with prototyping or spiral type development, but, excessive concurrency can negatively affect cost and schedule. Concurrency which is heavily research or early development based often takes much longer to mature than is expected. Predictable engineering concurrency is sensible, such as for software centric or software intensive programs where programmers are continually developing software while building hardware. Software presents challenges when it transitioned from one hardware suite to another. Therefore, development on one set of hardware while the second is produced can be done with concurrency as long as there are realistic estimates for the software development and time is included in the schedule for installation and retesting on the final hardware. Many times, excessive concurrency can come from the lack of configuration control and a baseline that was established too early.

53. If confirmed, what steps, if any, will you take to address this issue?

If confirmed, I would enforce effective configuration control processes. I believe solid user requirements and reducing technology risk by not rushing out of the Technology Maturation and Risk Reduction (TMRR) Phase will eliminate excessive concurrency issues that negatively affect cost and schedule. At some optimal point, a baseline must be established and used to lock the design. Once a program baseline is locked it would take a configuration control authority to deviate from the baseline. I would ensure these standards are being enforced. If concurrency is in the plan, proper integration time and reasonable schedules must be validated.

Unrealistic Cost, Schedule, and Performance Expectations

Many acquisition experts attribute the failure of Department of Defense acquisition programs to a cultural bias that routinely produces overly optimistic cost and schedule estimates and unrealistic performance expectations. According to the GAO, of the nine major defense acquisition programs initiated after the enactment of WSARA, five have experienced cost overruns relative to their baselines, with the total overruns totaling over $2.5 billion.

54. Do you agree with the assessment that overly optimistic cost and schedule estimates and unrealistic performance expectations contribute to the failure of major defense acquisition programs?

I agree that overly optimistic cost and schedule estimates and unrealistic performance expectations contribute to the failure of major defense acquisition programs. Assessing the root cause of the failure is essential to understanding the extent to which poor estimates or other factors contributed to failure and to ensure that we learn from these instances.

55. If confirmed, how do you expect to work with the Director of the new office to ensure that the Army's cost, schedule, and performance estimates are realistic?

If confirmed, I will work to ensure that all acquisition plans are founded on realistic expectations of cost and schedule for a given performance. I will leverage other agencies such as CAPE, as appropriate, to ensure better assessment. The Army is expected to have auditability, to include programs, which may also provide data to support or disprove underlying assumptions and provide insight into better ones. If confirmed, I will work diligently with the Army leadership to ensure that estimates are as accurate and transparent as possible. This includes assisting the Army Chief of Staff in establishing realistic and achievable expectations for the performance of weapon systems as well as working within the acquisition community and the cost evaluation community on cost and schedule estimates. I will work closely with the Director of CAPE to ensure that Army programs employ the most accurate methodologies for developing cost and schedule estimates.

WSARA seeks to address this problem by promoting early consideration of trade-offs among cost, schedule, and performance objectives in major defense acquisition programs.

56. Do you believe that early communication between the acquisition, budget, and requirements communities in the Army can help ensure more realistic cost, schedule, and performance expectations?

Communication between these three communities needs to occur early and often. I understand that the Acting Secretary of the Army and the Army Chief of Staff began implementing a number of initiatives to improve communication, unity of command and effort, and the issuance of the Acquisition Reform Directives. I support these efforts and, if confirmed, will work to support them.

57. If so, what steps, if any, would you take, if confirmed, to ensure such communication?

In addition to supporting the initiatives of the Army leadership, I understand that the Army Chief of Staff or his representative attends both the Army System Acquisition Review Council and the annual Configuration Steering Boards, both of which, if confirmed, I will chair. If confirmed, I will continue this practice as it promotes communication, and a common understanding among senior leaders.

The Department of Defense has increasingly turned to incremental acquisition and spiral development approaches in an effort to make cost, schedule, and performance expectations more realistic and achievable.

58. Do you believe that incremental acquisition and spiral development can help improve the performance of the Army's major acquisition programs?

Yes, in my view, incremental acquisition is effective and should be done when practical within program development. Once fielded, a deliberate continued spiral development can afford next generation capabilities to next batch production and, particularly if configuration management and prototyping allowed modular design, relatively simple upgrade to earlier versions. It is essential particularly where rapidly evolving technologies are involved or rapid fielding is needed to meet operational need.

59. What risks do you see in the Army's use of incremental acquisition and spiral development?

In pursuing incremental acquisition, an open architecture needs to be established to enable incorporation of next-generation technologies. This is more challenging and requires building improved governmental skills in systems engineering. Smart management of the open architecture is also essential to ensure the proper use of commercial technologies and standards versus that of government specific. Also, it is

important to manage the intellectual property rights for any configuration so that one spiral can transition to another.

60. In your view, has the Army's approach to incremental acquisition and spiral development been successful? Why or why not?

My current assessment is that the Army's approach has been successful in the conduct of recent major weapon systems. For example, the Army is pursuing incremental improvements to the Abrams tank designed to buy back power deficiencies, improve protection and lethality, and provide the ability to accept future network and protection upgrades.   These improvements will enable the Abrams Tank to maintain its leading edge in measures of survivability, lethality, and maintainability. I understand that the Abrams Tank modernization program is within cost, timeline, and performance.

61. What steps, if any, do you believe are needed to ensure that the requirements process, budget process, and testing regime can accommodate incremental acquisition and spiral development approaches?

If confirmed, I would leverage the Army's initiative to adopt a unity of effort approach to the acquisition process. The use of incremental or spiral development would need to be considered and shown to be cost, risk, or performance beneficial or detrimental.

62. How should the Army ensure that the incremental acquisition and spiral development programs have appropriate baselines against which to measure performance?

Realistic budgeting is key. My thoughts on how to achieve such are provided in 55., above. Some complexity to the analysis and plan would be required for spiral or incremental development but could be based on permutations to a single development cycle. This could provide a baseline from which to make assessments and measure performance.

Performance-Based Payments

In 1995, the Federal Acquisition Regulation was revised to create a new category of payments, known as Performance-Based Payments (PBPs), on fixed price contracts. PBPs are made on the basis of the physical completion of authorized work, rather than the incurrence of seller costs.

63. In your view, what advantages, if any, can the Army gain by using PBPs more extensively in connection with fixed-price contracts for the development of its major systems?

Performance based payment arrangements provide both industry and the Army with advantages, but require more upfront planning, effort, and negotiation to ensure a detailed arrangement that reflects a "win-win" position can be incorporated into the contract. This

approach also opens the door to more competition in that companies that cannot or will not employ the type of accounting system necessary for cost based accounting can participate in larger programs. Risk is a major consideration in these types of contracts. Businesses will accept more risk, reducing that of the government, if they can see a potential benefit for doing so. Contractors receive better cash flow and more favorable financial outcomes.

64. Do you believe that PBPs should be the preferred means of providing contract financing under fixed-price contracts for the development of the Army's major systems? Why or why not?

I don't believe there is a "one size fits all" approach or that the Army should adopt a preferred method of contracting. If confirmed, I would adopt an approach to hold those who must select the right approach accountable for well-reasoned selection. I also believe that a complex major system could be contracted through more than one form of contract. For example, those portions of the major system which are low to medium risk, can be reasonably cost, and for which the contractor is willing to take on the risk, PBP may work well. If another component of the major system of final integration is seen as a high risk in which, essentially, the government is accepting risk and using the contractor as a technical extension to its own capabilities, a cost based contract may be more appropriate.

Funding and Requirements Stability

The poor performance of major defense acquisition programs has also been attributed to instability in funding and requirements. In the past, the Department of Defense has attempted to provide greater funding stability through the use of multiyear contracts. More recently, the Department has sought greater requirements stability by instituting Configuration Steering Boards to exercise control over any changes to requirements that would increase program costs.

65. Do you support the use of Configuration Steering Boards to increase requirements stability on major defense acquisition programs?

I support the use of the Configuration Steering Boards.

66. What other steps, if any, would you recommend taking to increase the funding and requirements stability of major defense acquisition programs?

I believe the Army is moving in the right direction by fundamentally reforming the requirements process and involving senior Army leaders more in the prioritization of required capabilities and resourcing. Additionally, the Army's modernization initiatives are moving toward making this a continuous and systemic approach to confirming requirements within the context of cost and schedule. Prototypes, spiral, and incremental development can provide a means to stabilize requirements and should be considered as such, not just as a means of developing or proving technologies. Continuing to improve

the linkage between requirements, resources, and capabilities remains critical. The recently-announced Army Cross Functional Teams aim to achieve these same ends

Fixed Price-Type Contracts

Congressional and Department of Defense initiatives attempt to reduce technical and performance risks associated with developing and producing major defense acquisition programs so as to minimize the use of cost-reimbursable contracts.

67. Do you think that the Army should move towards more fixed price-type contracting in developing or procuring major defense acquisition programs? Why or why not?

If the approach to development or engineering or production has fixed requirements then the use of fixed price contracts can be beneficial to both parties. The contractor has the opportunity to gain greater profit if they meet the requirement with a lower cost while the government off-loads its risk. For major systems, it may be possible, even wise, to consider breaking aspects of development into fixed and cost based contracts.

68. Under what circumstances, if any, do you believe it would be appropriate for the Army to use a cost-type contract for the production of a major weapon system?

Cost type contracts essentially transfer all the risk to the government and provide no motivation to the contractor for cost reduction or savings. In commercial efforts, cost based contracts are only used for those portions of efforts where the company becomes an extension of the buyer. For example, a cost based contract might be used for consulting services or temporary engineering services. On the other hand, if something that can be defined is to be engineered, multiple bids would normally be pursued in a fixed price approach eliminating risk to the buyer other than selecting a viable firm. Integration is often done in some form of cost based contract. For example, a general contractor, who may have bid a fixed price design with an associated integration cost estimate, may act as an agent of the buyer in that they perform work on a cost basis, as if an employee, to integrate components which often may be fixed price. Should the integration exceed the estimated cost, rates are decreased for the excess work or a penalty may be assessed. If the integration is accomplished at a lower cost, the benefit inures to the contractor and may also earn a bonus, particularly if schedule is also beat. These commercial approaches to the proper use of cost based accounting seem to provide good models but do create a more complex contracting and management environment.

Technology Transition

The Department of Defense continues to struggle with the transition of new technologies into existing programs of record and major weapons systems and platforms. Further, the Department also has struggled with moving technologies from its programs or other sources rapidly into the hands of operational users.

69. What impediments to technology transition do you see within the Army?

This is a multi-faceted problem. First, technology programs within the Army tend to take on a life of their own. Researchers can always find a way to extend their research. There is always more to learn. Determining when "good enough" is good enough and the product should transition is important. Second, new unexpected capabilities may be disruptive to planned developmental and production work. Configuration changes, costs, process, confirmation of acceptability, testing may all be required with little manpower dedicated to such tasks. Third, technical capabilities may not be easily seen as operationally of value without some form of demonstration.

70. What steps, if any, will you take, if confirmed, to enhance the effectiveness of technology transition efforts?

I believe that proper management of funds, planning, and the use of prototypes and spiral or incremental development can resolve the problems discussed in 69., above. Additionally, resources within BA4, Advanced Component Development and Prototypes, and BA7, Operational System Development, are well suited to risk reduction through Technology Maturation Initiatives and prototyping or development of manufacturing processes can provide the funding bridges. The prototypes can allow for operational maturation and facilitate spiral or incremental insertions with testing and integration complete. Requiring some examination would be facilitating the transition of a researcher from one effort to the next in order to discontinue expenditures on further research when such a project is complete. If confirmed, I will review methods to facilitate such transitions, such as emphasizing the use of technology transition plans, to determine if the assumed paths described are viable, and search for possible solutions to the problem of curtailed research.

71. What can be done from a budget, policy, and organizational standpoint to facilitate the transition of technologies from science and technology programs and other sources, including small businesses, venture capital funded companies, and other non-traditional defense contractors, into acquisition programs?

My experience, in both the Army and the private sector, has illustrated the benefits of collaboration between the government and the private sector, including small businesses and non-traditional defense contractors. I believe that Army can instill business models that fosters the generation of joint intellectual property with these entities; incubate spinoff companies for the pursuit and maturation of technologies transitioning further development to the commercial sector; better leverage vehicles such as the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program; and manage intellectual property and technologies allowing their transition to and from the industrial marketplace. If confirmed, I will evaluate resourcing, policy, and organizational options to facilitate efficient and effective technology transition from these entities into acquisition programs.

72. Do you believe that the Army's science and technology organizations have the ability and the resources to carry technologies to higher levels of maturity before handing them off to acquisition programs?

In general, yes. The Army's Science and Technology organizations are using the Technology Maturation Initiative (TMI) program to further mature technology options before transitioning to acquisition programs. The TMI is a Budget Activity 4 account for R&D in advance of requirements to conduct experimental prototyping for emerging or future Programs of Record to inform capabilities and system requirements. However, my experience has also shown that these funds may not be forward looking enough or focused against specific problems of import.

73. What steps, if any, do you believe the Army should take to ensure that research programs are sufficiently funded to reduce technical risk in programs so that technological maturity can be demonstrated at the appropriate time?

One step that I understand on the Army has taken is a review of technology based programs and their overall value to the strategic direction of the modernization plans. This means that programs will be cancelled freeing funding for more critical or underfunded but essential research. Another step is to ensure that research being conducting is unique to the needs of the Army and not replicated in either commercial industry or other government agencies. Finally, replication of research within the Army should only be deliberately to manage risk. These methods can provide greater focus of the research assets and funding. If confirmed, I would work with the offices conducting the reviews and my leadership team to form this type of program within the R&D community.

74. What role do you believe Technology Readiness Levels and Manufacturing Readiness Levels should play in the Army's efforts to enhance effective technology transition and reduce cost and risk in acquisition programs?

As stated previously, I am not familiar with the manufacturing readiness level tool. However, technology maturity and manufacturability are two common risk areas when seeking to transition technology into acquisition programs. To improve technology transition into acquisition programs, it is important to address both of these risk areas as considerations during technology development. If confirmed, I will examine how valid assessment of these risks are incorporated into acquisition decisions to avoid overly optimistic cost, schedule and performance assessments.

75. What is your view of the Rapid Innovation Program established pursuant to section 1073 of the National Defense Authorization Act for Fiscal Year 2011?

The Rapid Innovation Program (RIP) is administered by the Office of the Secretary of Defense and is designed to accelerate or enhance military capability in support of major defense acquisition programs. In my view, the RIP is a valuable mechanism for supporting true innovative technology solutions that are not funded through the Army's

customary structured processes. I believe the RIP can support small and non-traditional businesses that can play a greater role in meeting the Army's needs more rapid and innovative solutions.

76. What do you see as the major challenges to successful implementation of this program?

Although I am not aware of any major challenges with this program, if confirmed, I will ensure that the selection process is consistently and transparently employed and that oversight of RIP funded projects is diligently maintained to promote the best use of the funds allocated for this program. If confirmed, I will work with the Undersecretary of Defense for Research and Engineering to help improve opportunities for the RIP.

77. What steps will you take, if confirmed, to ensure that funds authorized and appropriated for this program are spent in the most effective manner possible to promote the objectives of the program?

If confirmed, I will ensure that Program Executive Offices, and their supporting Research, Development and Engineering Centers are fully aware and committed to the execution of the program, and will track program performance and make corrections as necessary.

Multiyear Contracts

78. What are your views on multiyear procurements? Under what circumstances should they be used?

Multiyear procurements serve a necessary and vital function in major weapon systems acquisitions. They serve to reduce procurement costs, stabilize our industrial base, and ensure a steady production of vital weapon systems, particularly in a period of persistent conflict. Further, multiyear contracting can reduce costs by permitting the contractor to reduce or amortize costs over the life of the contract. Without multiyear authority, the contractor may insist on recovering these costs under the 1-year contract resulting in increased unit prices. They should be used when we have projected to take a long-term view.

79. **What is your opinion on the level of cost savings that constitute "substantial savings" for purposes of the defense multiyear procurement statute, section 2306b of title 10, United States Code?**

In my opinion, substantial savings for purposes of the defense multiyear procurement statute are any savings that allows, through the use of that multi-year procurement, other Army priorities to be met. With competing readiness, operational, and procurement priorities, any decision that allows greater flexibility to meet overall needs is "substantial."

80. If confirmed, under what circumstances, if any, do you anticipate that you would support a multiyear contract with expected savings of less than 10 percent?

If confirmed, I would support a multiyear contract with expected savings of less than 10 percent when the economy of scale of that contract would provide savings that can be realigned to other Army priorities in sufficient dollar amounts to make those other priorities more viable.

81. If confirmed, under what circumstances, if any, would you support a multiyear contract for a major system at the end of its production line?

I would support a multiyear contract for a major system at the end of its production line when the service life of that system has been extended to meet immediate wartime needs or anticipated global threats or when evolving technologies have not matured sufficiently to replace that system.

82. Under what circumstances, if any, do you believe that a multiyear contract should be used for procuring weapons systems that have unsatisfactory program histories, e.g., displaying poor cost, scheduling, or performance outcomes but which might otherwise comply with the requirements at section 2306b of title 10, United States Code?

I would support a multiyear contract for programs with unsatisfactory program histories only if those programs have demonstrated irreplaceable operational effectiveness in the field, particularly on the modern battlefield. For example, the Bradley serves as an example of a system with a long and challenged schedule history but has proven incredibly effective on the modern battlefield.

83. What is the impact of the Department of Defense's current budget situation, in your view, on the feasibility and advisability of additional multiyear procurement contracts for major weapon systems?

Given an increasingly constrained budgetary environment, particularly with the potential of CRs and other budgetary limitations, multiyear procurement contracts can serve to reduce volatility and uncertainty in procuring and sustaining vital weapon systems needed for today's fight and threats into the future. DoD's current budget situation limits the opportunities to award many additional multiyear procurement contracts so opportunities must be scrutinized to ensure any award truly achieves the capabilities and savings sought. Budgetary limitations affect feasibility but any procurement tool that enhances Army readiness and operational effectiveness is advisable.

84. Under what circumstances, if any, should the Army ever break a multiyear procurement?

The Army should break a multiyear procurement when operational considerations indicate that procurement is no longer aligned with Army goals and objectives. I believe

the Army does not and should not expend taxpayer's money to procure systems no longer useful to the Army's mission.

85. What impact, if any, does the use of a multiyear contract have, in your view, on the operation and sustainment cost for a weapon system?

Multiyear contracts allow production efficiencies garnered over time to be placed into production thereby increasing cost savings, stabilizing production, reducing material and sustainment costs by procuring common parts across families of systems, and allowing accelerated deliveries resulting in earlier application of sustainment practices. Live production lines can also facilitate production of repair and replacement components.

86. To what extent should the Army consider operation and sustainment costs, and the stability of such costs, before making a decision whether to acquire a major system under a multiyear contract?

The Army should consider operation and sustainment costs, and the stability of such costs, to the fullest extent possible before any procurement decision, including multi-year contracts. Operation and sustainment costs are recognized as components of total cost of procurement. Every procurement decision must consider all associated costs to ensure the most efficient use of constrained budgets whenever possible. With more modern and capable systems operations and sustainment costs continue to rise compelling a comprehensive understanding of all procurement costs, no matter their contracting method.

87. Has the Army saved money on its multiyear contracts for CH-47s, AH-64s, and UH-60s?

My understanding is, yes. The three most recent executing multi-year contracts (CH-47s, AH-64s and H-60s) have an estimated cost avoidance of over $1.7B. The Army leverages these multi-year contracts to stretch a limited procurement budget by negotiating variable procurement quantities with associated price breaks. The multi-year contracts result in a more stable industrial base by allowing the aviation industry to estimate future required quantities. In FY17, H-60M Blackhawk entered into its ninth multi-year contract with an expected cost avoidance of $509M. Also, AH-64E Apache has entered into its first multi-year contract with an expected cost avoidance of $425M. The CH-47F Chinook implemented its last option year in 2017 of its second multi-year, which provided a total cost avoidance of over $810M.

Continuing Competition and Organizational Conflicts of Interest

WSARA requires the Department of Defense to take steps to promote continuing competition (or the option of such competition) throughout the life of major defense acquisition programs.

88. What is your view on the utility of continuing competition as a tool to achieve long-term innovation and cost savings on major defense acquisition programs?

I believe continuing competition can drive both incremental improvements and innovation in weapon systems acquisition because competition leads to better industry performance, often at reduced costs. Competition can encourage industry to develop new and innovative ways to provide technological advances faster, better and cheaper, continuously pushing the performance envelopes of their proposed products. Managing the system architecture, intellectual property, and modularity can allow this throughout the lifecycle of the system.

89. Do you believe that such continuing competition is a viable option on major defense acquisition programs?

Yes. My desired approach is to maintain the competitive environment not only at the outset, but also on a continuous basis throughout the life of the program. This requires consideration, from the beginning, of those factors discussed in 88., above.

90. If so, what steps, if any, can and should the Army take to address this issue?

I believe the Army's increased use of prototyping will create more competition during the Technology Maturation and Risk Reduction phase resulting in best design and best price. Additionally, purchasing technical data rights early or ensuring modular management of intellectual property, configuration control, systems architecture, and system modularity promote the ability to conduct continuous competition among vendors throughout the Production and Deployment Phase with the potential for a reduction in total life cycle costs.

WSARA also requires the use of competitive prototypes for major defense acquisition programs unless the cost of producing such prototypes would exceed the lifecycle benefits of improved performance and increased technological and design maturity that prototypes would achieve.

91. Do you support the use of competitive prototypes for major defense acquisition programs?

Yes, as long as the benefits are greater than the costs and technology is accelerated to the field. Typically, the use of competitive prototypes will ensure that the Government achieves the best value as well as the ability to meet critical system requirements for major defense acquisition programs.

92. Under what circumstances do you believe the use of competitive prototypes is likely to be beneficial?

Competitive prototypes are beneficial to programs that have stable requirements, sufficient industrial base to support competition, mature technology, and where procurement cost has a significant effect on the program's success. The use of

competitive prototypes in acquisition programs helps to ensure technological and design maturity as the use of these concepts. Since one prototype could prove the technical and operational aspects of a technology, the desire to go to the expense of competing prototypes must demonstrate either a significant or technical advantage of one approach over another or a long-term cost benefit that can be gleaned from the competition. When challenging system requirements or high unit costs exist, competitive prototyping can help to demonstrate best value.

93. Under what circumstances do you believe the cost of such prototypes is likely to outweigh the potential benefits?

When the procurement cost of the item is relatively small and the ability to meet the requirements is well understood or that there does not appear to be any significant benefit of exploring one technical or operational approach over another, competitive prototypes are not likely cost effective. The acquisition community continually assesses the risk-reward of utilizing a competitive prototyping approach. Programs with constrained budgets and lack of stable requirements are not good candidate programs for competitive prototyping.

WSARA required the Department to promulgate new regulations to address organizational conflicts of interest on major defense acquisition programs.

94. Do you agree that organizational conflicts of interest can reduce the quality and value of technical support services provided to the Army and undermine the integrity of the Army's acquisition programs?

I wholeheartedly agree organizational conflicts of interest can negatively influence the quality and value of technical support services. It further undermines the integrity of the Army's acquisition programs by limiting fair competition.

95. What is your understanding of the steps the Army has taken to implement section 207 and the new regulations?

My understanding is that the Department of Defense (DoD) has taken steps to implement fundamental WSARA provisions, including those for approving acquisition strategies and better monitoring weapon acquisition programs. DoD is also continuing to take additional steps to strengthen policies and capabilities. Some provisions, such as issuing guidance for estimating operating and support costs, are being implemented. If confirmed, I will ensure that the Army follows section 207 and these new regulations.

96. What additional steps, if any, do you believe the Army should take to address organizational conflicts of interest in major defense acquisition programs?

Current rules for WSARA were implemented in the Defense Federal Acquisition regulations soon after the Acts enactment. I understand that the Army has review

processes in place aimed at mitigating OCIs in major defense acquisition programs. If confirmed, I will ensure that section 207 is fully followed.

97. What are your views on the use of system engineering and technical assistance contractors that are affiliated with major defense contractors to provide "independent" advice to the Army on the acquisition of major weapon systems?

I am very wary of the use of system engineering and technical assistance contractors that are affiliated with major defense contractors, particularly when their work may relate to the major defense contractor's project as a prime. However, the subject matter expertise the Army needs is often not fully available with organic resources. Contracted support can be essential to managing a successful program. The Army must be vigilant of the risks, and ensure contractors are not performing inherently governmental functions. Should a support contractor affiliated with a major defense contractor as defined in section 207 provide engineering and support services commensurate with government-like access, a firewall plan similar to that used for foreign ownership should be in place and not be allowed in any circumstances where the service contractors are advising on their parent's work.

98. What lines do you believe the Army should draw between those acquisition responsibilities that are inherently governmental and those that may be performed by contractors?

Contractors must believe they are considered to be valued and essential members of the team. At the same time, they must clearly understand the limitation of their status as contractor rather than a government employee. I believe the Army has a robust process to ensure that contractors are not performing tasks identified as inherently governmental. Furthermore, I understand the Army was the first to establish review procedures of its service acquisitions to ensure that lines remain clear.

99. If confirmed, what steps, if any, would you take to ensure that defense contractors do not misuse their access to sensitive and proprietary information of the Army and other defense contractors?

Contractor employees who directly support Government employees, and may have access to similar business sensitive or source selection sensitive information, are subject to appropriate nondisclosure provisions within their contracts, as well as ethics and financial disclosure requirements. Contractor employees are held to similar ethical standards as the Government employees they support, and are not allowed to profit personally or corporately from the information which may be available to them as a result of their performance under a DoD contract. My understanding is that the Army has had few problems in this area due to proactive efforts and, where violations occurred, action was taken. If confirmed, I will assess this area and take action to resolve any issues.

100. If confirmed, what steps, if any, would you take to ensure that defense contractors do not unnecessarily limit competition for subcontracts in a manner

that would disadvantage the government or potential competitors in the private sector?

Federal acquisition regulations for subcontracting plans allow the Government to evaluate, at the time of award and post award, types of supplies and services to be subcontracted and an identification of types of supplies or services planned for subcontracting to other contractors. If confirmed, as the Army Acquisition Executive, I will enforce oversight and compliance to ensure defense contractors are affording fair opportunities for subcontracts. I would also ensure that this be a component of the professional development program of acquisition personnel, particularly PMs, PEOs, and contracting personnel.

Operating and Support Costs

Operating and support (O&S) costs far exceed acquisition costs for most major weapon systems. Yet, the Department of Defense has placed far less emphasis on the management of O&S costs than it has on the management of acquisition costs.

101.   Do you believe that the Army has appropriate organizations, capabilities, and procedures in place to monitor and manage O&S costs?

I believe from my experience that the Army has appropriate organizations, business processes and information systems in place or in development to monitor and manage O&S costs. For example, knowing that O&S costs are historically driven by decisions made early in the systems development process, the Army established Program Support Managers in each office to ensure operating costs are a significant consideration during the development and acquisition of new systems.

102.   If not, what steps would you take, if confirmed, to develop such organizations, capabilities, and procedures?

While the current approaches are productive, I believe that a fresh look at the cost drivers of overall O&S should be made. Systematic cost drivers may not be seen in an individual system O&S cost analysis. If confirmed, I will examine the Army's acquisition and sustainment enterprises for a good example process that identifies O&S cost during a system's requirements development and acquisition to use as a benchmark for O&S cost management and identification of O&S cost drivers.

Contracting for Services

Over the last decade, the Department of Defense has become progressively more reliant upon contractors to perform functions that were once performed exclusively by the Army. As a result, contractors now play an integral role in areas as diverse as the management and oversight of weapons programs, the development of personnel policies, and the collection and analysis of intelligence. In many cases, contractor employees work

in the same offices, serve on the same projects and task forces, and perform many of the same functions as Department of Defense employees.

103.   Do you believe that the current balance between government employees (military and civilian) and contractor employees is in the best interests of the Army?

This issue is multi-faceted. First, there are limitations on the number of government employees in different organizations and roles. Yet, the work and workload may exceed those numbers. This causes the work segregation in that the government employees tend to work inherently governmental tasks which are more bureaucratic than technical even in technical organizations. This results in a loss of technical capabilities within the government ranks. Second, many systems are complex and require significant technical competency unique to only the government with no commercial market equivalence (e.g., missiles, tanks). Again, the lack of flexibility in establishing a technical government workforce requires drawing these skills from civilian contractors. These do result in the government having a shadow workforce. The balance of skills is, therefore, more out of balance than the actual numbers. A better skills balance could allow for use of contractors to provide a surge capability, when needed, and the ability to divest of personnel to adjust to mission demands.

104.   Do you believe that the Army has appropriate organizations, capabilities, and procedures in place to manage its service contracts? If not, what steps would you take, if confirmed, to develop such organizations, capabilities, and procedures?

Yes, however there is room for improvement. Requiring organizations along with the contracting community manage the overall activities associated with Services acquisitions. I know there are several GSA and DOD led initiatives associated with improving Services Acquisition to include Category Management and Strategic Sourcing. The Army needs to embrace best practices and take lessons from industry in some cases. I believe the Army needs to identify accurate requirements (conducted through the Services Acquisition Workshops (SAW)) and resource at appropriate levels to balance requirements with judicious execution of funds.

105.   Do you support the use of management reviews, or peer reviews, of major service contracts to identify "best practices" and develop lessons learned?

Yes, at appropriate levels. I believe peer reviews are a value added tool particularly in cases of higher risk procurements because all the players in the acquisition process participate. I understand the Army uses these reviews to capture best practices and share those lessons learned across the Army.

106.   In your view, has the Army become too reliant on contractors to support the basic functions of the Department?

I believe the Army is balancing the services to meet required capability needs. The Army constantly attempts to ensure the right mix within constraints on government personnel. Contractors provide flexibility to meet expertise, short term surge, and expeditionary requirements. If confirmed, I will examine the level of contract personnel skills supporting basic functions, particularly field support, and share that with my counterpart in ASA(M&RA) to see if there are any opportunities which might be tapped by a two-office examination.

107.   Do you believe that the current extensive use of personal services contracts is in the best interest of the Army?

My understanding is that the Army carefully manages the use of personal services contracts to meet required capability.

108.   What is your view of the appropriate applicability of personal conflict of interest standards and other ethics requirements to contractor employees who perform functions similar to those performed by government employees?

I believe Ethics and Conflict of Interests standards should apply and be a contractual requirement to ensure that Army contractors adhere to established ethics standards.

U.S. military operations in Africa, Syria, Iraq, and Afghanistan rely on contractor support to a great degree. According to widely published reports, the number of U.S. contractor employees in Iraq and Afghanistan has exceeded the number of U.S. military personnel deployed in those countries.

109.   Do you believe that the Army has become too dependent on contractor support for military operations?

The use of contractor support allows the Army to keep our military forces within the limits set forth in status of forces agreements, force management levels, and focus our efforts on inherently military functions. The use of contractors allows the Army more freedom to use organic resources in inherently military operations. However, should I be confirmed, this will be a component of the examination cited in 106., above.

110.   What risks do you see in the Army's reliance on such contractor support? What steps do you believe the Army should take to mitigate such risk?

The greatest risk of over reliance on contractors is, in my opinion, loss of intimate knowledge of technical aspects, to include maintenance and accountability, in a theater of operation and for technical capabilities as discussed above in several places. The Army goes to great lengths to ensure oversight of contractors on the battlefield, however a lack of sufficient oversight can certainly lead to fraud, waste or abuse. The importance of having a sufficient and well-trained government workforce to oversee contractors cannot be underestimated. If confirmed, I will work with the Army staff to ensure that we have

not only a sufficient contracting force, but also that the Army units who oversee contractors on a day to day basis are properly trained as well.

111.   Is the Army appropriately organized to manage contractors on the battlefield?

From my experience, yes, the Army is organized and continues to efficiently manage contractors on the battlefield. In Afghanistan, the Army operates from six fairly secure locations allowing for the execution of services to be conducted by contractors in order to support mission requirements. Oversight and management begins with awarded contracts that identify the Government official who has responsibility and accountability to manage the contractors. Although I believe that the Army is appropriately organized to manage contractors on the battlefield, if confirmed, I will review whether there is a more efficient and effective organizational structure to manage contractors.

112.   What steps, if any, do you believe the Army should take to improve its management of contractors on the battlefield?

While my experience indicates generally good management of contractors on the battlefield, if confirmed, I will review whether there are more efficient and effective methods to do so.

113.   What steps, if any, do you believe the Army should take to minimize the abuse of time-and-materials contracts?

The Army follows Federal and Department of Defense regulations for the proper use of time-and-materials contracts. This includes obtaining approvals at the General Officer/Senior Executive Service level where the time-and-materials performance exceeds $1 million, or where the period of performance including option periods exceeds three years. These policies provide a reasonable basis for assurance that time-and-materials contracts are used when sufficient rationale exists to justify that no other contract type is suitable. Should abuse take place, appropriate action within the breadth of the law will be taken.

Interagency Contracting

114.   What is your assessment of the risks and benefits associated with the Army's use of interagency contracts?

Interagency contracts provide the Army with opportunity to leverage the buying power of the federal government. The Army's Strategic Sourcing Program identified government-wide and agency-wide contract vehicles as preferred sources to promote an organized, systemic and collaborative approach to sourcing supplies, equipment and services. Utilizing these preferred source vehicles reduces the proliferation of redundant business arrangements and generates cost savings or efficiencies. At the same time, the Army must pay fair and reasonable prices for the products and services it buys. Interagency

vehicles may not offer the best price for all goods and services. Army contracting professionals must remain true to sound buying principles, including negotiating price and as well as any other favorable terms and conditions that best support Army requirements.

115.   Do you believe contractors have any responsibility for assuring that the work requested by Army personnel is within the scope of their contract?

The contracting officer has the primary responsibility for determining if work is within the scope of a contract. Contractors are our partners in maintaining an acquisition system based on integrity, fairness and openness. But scope determinations are a governmental function and, if there is a question, the contractor must obtain guidance from the appropriate government contracting representative.

Software Activities and Acquisition of Information Technology

Warfighting capabilities are increasingly software-reliant, and even software-defined. Business operations – financial management, personnel and pay, and travel – run on information technology (IT) systems that have been predominantly reliant on software for some time. Despite these trends, and despite being given both the authority and direction to do so, the Department of Defense and the Army have struggled to implement changes to its acquisition processes that specifically support software activity and IT acquisition, for both warfighting and business operations. This has meant at times that the Department of Defense invests billions of dollars and 5-10 years an IT program – for example, the Expeditionary Combat Support System and more recently the modernization of the Air and Space Operations Center – but delivers no useful capability at all.

116.   Please describe your views on how the Army should treat software – specifically, how it should be developed, acquired, produced, and sustained.

My view is that software should be developed, acquired, produced, and sustained like all other procurements, but with special attention to several aspects. That is, a clear analysis must define the requirement. The large availability of commercial software and its malleability require special attention to determining what commercial packages may directly, or with some modification, meet the requirement. I do not believe the Army should write its own version of that which is a well proven package. Despite meeting the requirements, the Army should not procure a package that is not proven as secure or which comes with onerous licensing requirements. If software is developed, any embedded code which does not belong to the Army must be identified at the outset along with completion of any licensing agreements. If the Army fully pays for the development of code, it should arrange its control of the intellectual property in initial negotiations. Once development has been chosen, the same principles as presented for any other system should be employed to the maximum extent possible, including prototyping and spiral, incremental, and, especially, modular development. Furthermore, smartly leveraging Data Centers, Cloud and Generating Force Computing Environments to

eliminate stove piped software business environments is essential. My understanding is that the Army is employing a service-based infrastructure/hosting environment which reduces the number of local data centers, modernizes and lessens the number of Army applications, and moves the hosting of Army enterprise systems and applications to modern, standardized, centralized environments that are consistent with Department of Defense guidance.

117.   In addition, how is/should it be different from hardware? How should the two be aligned for major efforts that contain both?

Software differs from hardware in many of the characteristics discussed in 116., above. It can be highly modular, easily upgraded, fits well with prototyping, spiral and incremental development. All provide greater flexibility than a hardware component. From a negative perspective, it is more difficult to secure, requires constant attention to resolve bugs and security issues, can present significant ownership issues, and duplication of effort is very feasible. The use of Data Centers, Clouds, and Generating Force Computing Environments provide some methods to mitigate the challenges while emphasizing the positive. A software package may be developed on a particular hardware which differs in some detail from the final configuration which may be developed separately. Time and budget needs to be allocated for system integration when the two are brought together. Software make or buy decisions must include life cycle cost as a factor; Commercial Off The Shelf products are often, but not always, the most effective, lowest cost path.

118.   What do you understand to be the role of Research, Development, and Acquisition as regards IT acquisition and the software activities of the Army?

My perspective is that the precious R&D funds should be allocated to the maximum extent possible against Army unique requirements. Since software may be extensively derived from commercial products or susceptible to insertion of malicious code or to network attack, Research, Development, and Acquisition dollars should focus on cyber hardening of software and ensure our systems cannot be electronically attacked. Because Army requirements can be totally devoid of commercial application, development of algorithms for unique applications should also fall into this category, for example: weapon systems, intel, and cyber activities. Most tactical and enterprise systems today reside on computers. IT acquisition for these systems should be primarily based on buying commercially available servers, laptops, and other computing devices whenever possible which are proofed for security. But, cyber vulnerabilities need to be addressed continually throughout the life of a system adding cost and burden on the users/soldiers.

119.   What do you understand the role of industry to be in this area?

The industrial base in this area is vital to the Nation's security. The enormous and burgeoning commercial marketplace offers readily available solutions for many of the Army's requirements. At the same time, recent well publicized security breaches have demonstrated unacceptable vulnerabilities for critical defense systems. As such, I believe

the Army should continue to carefully consider impacts of our Information Technology decisions as they relate to the industrial base when addressing all requirements for modernization. The Army must have programs in place to ensure it can rely on this base to provide both open source and unique code for weapons, equipment, and enterprise software systems that need to deploy, fight, and win across the full spectrum of conflict. Even the business systems can be "at war" if vulnerabilities allow for hacking and loss of critical data. It is my understanding that the Department currently has appropriate systems and processes for identifying, evaluating, and managing risk in the Army's organic and commercial defense industrial base. However, these systems must continue to evolve to ensure we keep pace with the ever-changing global environment, technologies, and the private sector, among other things.

120.   If confirmed, how do you plan to address systemic and persistent cultural, process, and technical barriers to improving the Army's treatment of software activities and IT acquisition?

If confirmed, I would start by treating the acquisition of software (IT/Business Systems) different from the acquisition of Weapon Systems. The Army should maximize Commercial or Government Off the Shelf solutions before developing unique software. Security must be at the forefront of all analysis. The ease of modularity must be leveraged to the maximum extent possible. Prototyping and getting the product in the hands of the user, even in surrogate form, leverages the flexibility of software development while allowing examination of requirements. All software should be considered both vulnerable and upgradable in a modular manner throughout its life. Full product costs, to include long-term licensing fees must be considered at the outset and reexamined throughout the lifecycle of the software. All maintenance costs must be included such as help centers. If confirmed, I will examine the current methods and processes to determine the weaknesses in the Army's software and IT procurement and, as necessary, redefine them to more align with these realistic requirements. Should I find cultural challenges, I will address them head-on through acquisition workforce training and, if needed, personnel actions.

121.   How will you work with the testing community, the Army's Chief Information Officer, and with the other Military Services, including their Chief Information Officers?

If confirmed, I envision establishing a relationship with the testing community that is transparent and collaborative. I intend to work closely with the other Military Services, particularly in identifying key lessons learned and opportunities for collaboration.

The Army's Chief Information Officer serves as both the Secretary of the Army's Chief Information Officer and the G6 for the Army. I will provide oversight to the Army Chief Information Officer to set the strategic direction and objectives for the Army Network and to ensure the Army is coordinated with other military services.

122.   What major improvements would you like to see made in the Army's development and deployment of major IT systems?

If confirmed, I would like to see the following major improvements. First, I must know what exists in the Army regarding IT systems and the intended purpose of those systems. In order to do so, I would like to see the Army develop an overarching architecture that allows it to manage and track what exists today and where the Army needs to go in the future. Once this is accomplished, I would begin to assess what can be maintained/sustained and what is required to complete the Army's strategic and tactical networks to ensure the Army can continue to fight tonight and tomorrow.
Next, if confirmed, I would charge the Army's Chief Information Office to collaborate with the user community to identify and define capability gaps within the current architecture and anticipate future ones. We should identify the needs and gaps in order to prioritize. From this requirements list and keeping the points concerning commercial use, unique development, open architecture, modularity, spiral and incremental development, prototyping, security, and intellectual property in mind, a cost/requirements analysis including full lifecycle analysis should be accomplished.
I recognize that the Army has conducted much of these steps, to date. But, I believe that a full review of them is essential to fully understanding accurately the state of weapon system and business solution software, especially with respect to security, and what next steps must be taken to resolve existing problems and position the Army in future development/purchases. While software was at the base of this discussion, the physical infrastructure must be considered in a similar manner.
Lastly, if confirmed, I would pursue adequate funding. Knowing that the Army has an ongoing effort to reduce unique or independent buys, systems, software packages, etc., savings must be pursued in the transition to a more architecturally controlled software and computing network base.

123.   What are your highest IT priorities or software-related initiatives?

Having extensive experience with the Army's transition to the digital environment and having seen the immense benefit it provides, my highest IT priority is building an Army Network with hardware, software, and infrastructure that is sufficiently mobile and expeditionary, and can be used to fight cohesively in any environment where the electromagnetic spectrum is denied or degraded. Immediate priorities in the operational and tactical space include: Assured Cryptographic capabilities, Assured Position Navigation and Timing, Unified Network Operations, Tactical Radio Systems that can withstand Electronic Warfare/Cyber threats, Defensive Cyber infrastructure, Electronic Warfare Operations, and Mission Command On-the-Move capabilities.
At the strategic level the priority is to optimize Business Systems by building affordable next generation Enterprise Resource Planning (ERP) systems. Converging common ERP elements in the Defense Information Systems Agency Data Center and Army Shared Services Center, and reducing long-term sustainment costs for all Army Defense Business Systems.

124.   If confirmed, how will you encourage process and cultural change in organizations so that they maximize the benefits that new enterprise IT systems can offer in terms of cost savings and efficiency?

I believe that in order for the Army to remain ahead of its current and future adversaries, process and culture change must occur. Based on my experience in the private sector, I believe the Army must partner with industry and leverage Commercial-off-the-Shelf (COT) capabilities. Full lifecycle costing, to include the cost of securing commercial packages, must become second nature to all program shops. By utilizing this approach, the Army will avoid excessive cost, program delays, increase efficiencies, and providing capabilities to the warfighter more quickly. If confirmed, I will examine specific methods by which the Army can better leverage commercial software, ensure a lack of duplication of government or prior-developed software, and sustainment methods. I will do the same for enterprise hardware and service systems. This effort will dovetail with that discussed in 122., above.

125.   What is the relationship between the Department of the Army's efforts to implement enterprise IT programs and supporting computing services and infrastructure to support Department of the Army missions and efforts being undertaken by the Defense Information Systems Agency?

My understanding at this point is that the Army works closely with DISA and leverages their services wherever it makes fiscal and operational sense. The Army's Major Enterprise Resource Planning (ERP) systems are currently migrating their infrastructures into DISA data centers. The goal of this migration is to reduce cost across the Department of Defense by closing down excess data center capacity. In some of these transitions, we have experienced higher costs at DISA data centers than commercial providers, and we continue to work with DISA to get the best value for the Department of Defense.

126.   How will you ensure that appropriate business process reengineering is undertaken and accomplished before initiating new business systems, IT program development, and deployment?

If confirmed, before I would issue a Material Development Decision allowing a Project Manager to develop an IT/Business system, I would ensure a review of the Business Process Reengineering documentation is completed by the Organization requesting the development of the IT/Business System to ensure that organization did due diligence in fixing the process they are trying to automate. This would ensure that an IT/Business System is truly needed and that we were not automating a broken process. I would also work directly with the functional proponent for the system to ensure they have a strong change agent working with the program manager to continue this business process reengineering throughout the development and deployment process.

127.   What role will the Department of the Army's research and testing enterprise play in the development and deployment of Army business IT systems?

In 118., above, I provided my view of how the Army should focus its research dollars and expertise. In all the above questions, I emphasized cyber security as a key aspect of testing. This included the use of prototypes, spiral and incremental development, and modularity. These approaches apply to the use of business IT systems as well. Partnering with industry to ensure their software and hardware is secure may allow reduced costs by negotiating better pricing for data concerning vulnerabilities. It is my understanding that the Army has a testing enterprise designed to assess the efficacy of developed or integrated solutions and to validate readiness before proceeding to full deployment of the business IT systems to our Soldiers and Civilians. If confirmed, I will work to ensure these approaches are instigated if not already in place.

Acquisition Workforce

128.   Do you believe that the Army's workforce is large enough and has the skills needed to perform the tasks assigned to it?

It is my understanding that the Army acquisition workforce is a highly skilled and professional community thanks to the help from Congress with Fiscal Year 2016 and 2017 National Defense Authorization Act (NDAA) language expanding hiring authorities and 2016 NDAA language making the Defense Acquisition Workforce Development Fund (DAWDF) permanent. However, I do believe that there may be skills imbalances versus needs requiring additional training, hiring, or position elimination. In my opinion, the Army's small talent base in systems engineering leaves it, vulnerable to flawed architectures and disconnects, all resulting in added cost. If confirmed, I will specifically examine the issues and challenges facing the Army acquisition workforce size, skill, and allocation so as to ensure they have the necessary personnel and tools to effectively perform their missions and ultimately ensure Army readiness.

129.   In your view, what are the critical skills, capabilities, and tools that the Army's workforce needs for the future? What steps will you take, if confirmed, to ensure that the workforce will possess them?

It is critical that the Army compete well with the private sector to attract and retain the highest quality professionals for our Acquisition workforce. I believe that the acquisition workforce needs greater technical competencies, particularly in systems engineering and in those engineering areas most critical to Army weapon systems: electrical, mechanical, materials, computer, communications, automotive, human factors, robotics, cyber, and chemical. Furthermore, I believe that these skills are not only needed in the general workforce but in the leadership as well. This includes the requirements development community. The Army had, at one time, a robust graduate education program outside of generating professors for the Military Academy. But optempo, the 20-year career planning cycle, required schools and experiences, constraints of DOPMA, and budgeting have reduced those numbers significantly. One of the most powerful cost savings is a technically competent person writing the requirements for a new system from an operator's perspective. In the same way, an acquisition leader sitting across the table from a contractor who is not understanding or following clear technical guidance can

recognize and ensure the problem is resolved before uncontrolled expenditures. If confirmed, I will work closely with the Secretary and, as appropriate, the Assistant Secretary of the Army (M&RA) to ensure the Army acquisition workforce has the skills and capabilities to develop and acquire the best equipment, services and technologies available today and for the future. This includes properly balancing the necessary skills and resolving the constraints on developing inherently governmental technical talent.

130.   Do you agree that the Army needs a comprehensive human capital plan, including a gap analysis and specific recruiting, retention, and training goals, to guide the development of its acquisition workforce?

Absolutely. In 129., I presented my view on the shortcomings of the current personnel skills and how valuable a determined development program could be. Some of these goals should and must be obtained by better recruiting and retention. Proper training of the acquisition workforce would improve compliance and performance. My view is that most mistakes result from a lack of skills and tools than from deliberate deleterious actions. However, I equally believe that should such activity occur or continued poor judgement occur, actions must be taken to eliminate the problem. My understanding is that the Army has been proactive in this area. I understand Army acquisition leadership recently developed a 5 year Human Capital Strategic Plan for the Army Acquisition Workforce that it is in the initial implementation stages. This Human Capital Strategic Plan is very much in alignment with the OSD Acquisition Workforce Human Capital Plan. If confirmed, I will be keenly involved in its further shaping, implementation and improvement. I expect to ensure the Acquisition Community, with its unique skills and abilities, aligns with Army and OSD Human Capital Plans to most effectively and efficiently address workforce challenges. And, with Congressional approval of DAWDF permanence in the 2016 NDAA, there are financial means to address these challenges.

131.   What steps, if any, do you think are necessary to ensure that the Army has the ability it needs to attract and retain qualified employees to the acquisition workforce, especially in competition with the private sector for a limited pool of talent?

It is critical that the Army compete well with the private sector to attract and retain the highest quality professionals for our Acquisition workforce. If confirmed, I will work to better understand the capability, size, and distribution requirements for the Army acquisition workforce, determine the excesses and shortfalls, and establish a plan for filling the gaps while leveling the excesses. I will leverage the programs already underway and implement programs to develop technical skills within the government... I will examine our recruiting methods for the civilian workforce, especially for the laboratories and research and testing facilities and require of their leadership proactive hiring programs. The Army spends a great deal at universities, we should examine how that expenditure, internships, and fellowships might leverage already expended money to increase the talent pool familiar with and interested in our critical work from which we can select our future government employees. I will leverage the expanded hiring authorities granted by Congress in the Fiscal Year 2016 and 2017 National Defense

Authorization Acts (NDAA) to help accomplish this. Quickly disseminating guidance and policy as well as delegating authorities down to the actionable levels is key. I will be committed to identifying and rectifying any problem areas in structure or competence of the Acquisition workforce as these individuals are a critical and essential part of equipping our Soldiers and ensuring the Army's dominance.

132.   What are your views regarding assertions that the acquisition workforce is losing its technical and management expertise and is beginning to rely too much on support contractors, federally funded research and development centers, and, in some cases, prime contractors for this expertise?

While, at this point, I have more circumstantial than corroborative evidence that this is true, it appears overwhelmingly so. This is due to hiring shortcomings, realignment of technical people to administrative functions which must be performed by governmental employees, and a general malaise in developing these skills internally when they can be simply hired. A study, even by a skilled conscientious contractor or FFRDC employee, is not the same as having a leader with a clear understanding of both the technical and operational aspects of an acquisition issue. As discussed above, if confirmed, I will make this a key area for attention. I will leverage the expanded hiring authorities granted by Congress in the Fiscal Year 2016 and 2017 National Defense Authorization Acts (NDAA), the permanence of DAWDF, and work with the Secretary and Army Chief of Staff to reverse this trend and return clear control to government hands.

133.   What is the appropriate tenure for program managers and program executive officers to ensure continuity in major programs?

While my preference would be, to the maximum extent possible, that the tenure of PMs and PEOs align with milestones and key decision points, I recognize that the issue is more complex. I embrace the minimum tenure requirements for specific position types. However, determining the appropriate tenure requirement for each specific position must consider the right balance between programmatic requirements, skills requirements, enterprise level talent management, and individual career management. I understand we have a highly skilled and capable PM workforce that we must grow, develop and utilize (both military and civilian) in various ways depending on these factors. The Army must also consider other tools for measuring individual and program success along the life of the program to provide a foundation for promotion and leadership selection and to provide a stable basis for transition between individuals even if the change does not occur at a clearly defined milestone or similar action. The Army must also include the deputy PMs and deputy PEOs as part of the leadership team when balancing between individual leadership timelines and program continuity.

Section 852 of the National Defense Authorization Act for Fiscal Year 2008 established an Acquisition Workforce Development Fund to help the Department of Defense address shortcomings in its acquisition workforce. The fund provides a continuing source of funds for this purpose.

134. Do you believe that the Acquisition Workforce Development Fund is still needed to ensure that the Army has the right number of employees with the right skills to run its acquisition programs in the most cost effective manner for the taxpayers?

Yes, my understanding is that DAWDF is critical. DAWDF allows the Army to recruit, develop, and retain acquisition professionals on par with industry that advance the acquisition profession. My understanding is that the Army has leveraged DAWDF to replenish the acquisition workforce with skilled professionals in mission critical acquisition career fields such as contracting, engineering, and program management. As discussed above, I see proper acquisition workforce composition, skill set, and distribution critical to future success. It is imperative the acquisition workforce has the resources available to target training that addresses gaps in acquisition functional and leadership competency gaps to develop the next generation of acquisition leaders.

135. If confirmed, what steps, if any, will you ensure that the money made available through the Acquisition Workforce Development Fund is spent in a manner that best meets the needs of the Army and its acquisition workforce?

As stated in 130., above, I understand Army acquisition leadership recently developed a 5 year Human Capital Strategic Plan for the Army Acquisition Workforce that it is in the initial implementation stages. This Human Capital Strategic Plan is very much in alignment with the OSD Acquisition Workforce Human Capital Plan. The success of this effort is dependent on the stability of DAWDF to allow expanded recruitment, hiring, and training. In 129., above, I provided some details of my view toward technical skills development and their essential value to the Acquisition workforce. I take talent and workforce management, development, recruiting, and retention as a key responsibility for the ASA(ALT). If confirmed, I will ensure DAWDF is aligned to acquisition strategic objectives and the Acquisition Workforce's human capital strategic plan. I will ensure that the correct skills, size, and distribution of acquisition personnel is properly managed. I will leverage funding flexibilities outlined in the 2016 and 2017 National Defense Authorization Act (NDAA) to ensure this effort is funded to the maximum extent possible. I do believe this is a "force multiplier" but, particularly with education and hiring, the real value may not be immediately realized.

Army Modernization

In general, major Army modernization efforts have not been successful over the past decade or more. Since the mid-1990s, Army modernization strategies, plans, and investment priorities have evolved under a variety of names from Digitization, to Force XXI, to Army after Next, to Interim Force, to Objective Force, to Future Combat System and Modularity. Instability in funding, either as provided by the Department of Defense or Congress, has been cited by the Army and others as a principal cause of program instability. For the most part, however, the Army has benefited from broad Department of Defense and Congressional support for its modernization and readiness programs even when problems with the technical progress and quality of management of those programs

have been apparent – the Warfighter Information Network-Tactical (WIN-T) is a recent example.

136.   What is your assessment of the Army's modernization record?

The answer is simple and direct. Over the years the Army has had too many failed modernization programs – many of which have been major programs – but has shown success in incremental equipment upgrades. As Dr. Esper recently testified, and I agree with, the Army needs a new acquisition system. Numerous successes have sprung from rapid acquisition. Some have become programs of record. But, my experience is that the formal acquisition system is seen as preeminent and "the right way to acquire." However, there are far greater costs associated with major system failures than the rapid processes. Yet, the rapid processes are not sufficient for major modernization efforts. Leveraging the best from both of these systems; making them complimentary; drawing in commercial products, standards, and methods; and employing a greater use of prototypes, spiral and incremental development, and modularity must be at the core of a new system. The announced Modernization Command offers the opportunity to ensure a closer relationship between technology, requirements, and acquisition. As I've stated earlier, contracting and testing must also be integrated into this close relationship as a matter of course. Bureaucracy must be minimized. A solid acquisition system that can be refined is essential to successful Army modernization and the avoidance of further failures. If confirmed, I will work tirelessly to implement, oversee, and refine such a system in cooperation with OSD and Army leadership and Congress.

137.   Does the Army have a clearly stated modernization strategy? If so, what is its vision? What are its key objectives? What are the requirements? What is the timeline?

I believe the Army has had a clearly stated comprehensive modernization strategy: the "Future Force Development Strategy." This strategy envisions an Army that possesses decisive overmatch to defeat enemy formations, control terrain, secure populations, and consolidate gains. The objective is to deliver critical capabilities our Soldiers and formations need to defeat current adversaries and deter, and if necessary defeat, future adversaries by improving capabilities in the near-, mid-, and far-terms. Based on today's fiscal environment, the Army plans to modernize to meet near-term security challenges by upgrading existing fleets and systems, while at the same time begin investing in a force capable of achieving overmatch and countering challenges of the future. However, to realize these objectives, I believe the Army needs to invest more in science and technology and research and development. If confirmed, I will work with senior military leaders to refine this strategy to effectively modernize the Army.

138.   If modernization is fundamental to future readiness, what must the Army be ready for? What key capabilities must the Army have? What will the Army need in future reconnaissance, weapons, communications, logistics, and other key capabilities? What will the Army need in future force structure and all-arms combat formations?

I believe Soldiers must be trained and equipped to prevail against a range of threats, including near-peers in highly lethal combined arms maneuver, hybrid warfare, and determined, unconventional insurgents. The Army must shoot, move, communicate, and sustain better than any other Army. To make Soldiers and units more lethal and regain our competitive advantage over our adversaries, the Army has established six modernization priorities: Long Range Precision Fires; Next Generation Combat Vehicle; Future Vertical Lift; the Network; Air and Missile Defense; and Soldier Lethality. I understand that the Army is also working on a force structure concept and experimentation they are calling the "multi-domain task force" which I believe is envisioned as not only an "all-arms" but also an "all-domain" combat formation. I think there is some very exciting ongoing work to make sure we provide future Soldiers the training, organizations and equipment they will need to dominate on future battlefields. From these the current modernization strategy can be further refined.

139.   What are the Army's capability gaps and system modernization priorities?

To ensure future readiness, the Army must have sufficient numbers of Soldiers, sufficient amount of training, and the most modern equipment. Investments should be in areas that address the Army's most pressing capability gaps to prevent us from losing overmatch to near-peer competitors who continue to modernization their capabilities. The Army's efforts to close the critical capability gaps are reflected in their top six modernization priorities: Long Range Precision Fires; Next Generation Combat Vehicle; Future Vertical Lift; the Network; Air and Missile Defense; and Soldier Lethality.

140.   What is your understanding and assessment of the Army's modernization investment strategy?

Although my impression is that more investment is needed, I understand that the strategy is designed to modernize the highest priorities within fiscal limitations. The strategy is to adapt its current equipment to gain or regain lost capability as our potential adversaries increase theirs, evolve current equipment to avoid obsolescence and meet emerging gaps, and innovate to develop new tools and methods that permit Army forces to address future demands, and stay ahead of determined enemies.

141.   If confirmed, what actions, if any, would you propose to take to achieve a genuinely stable modernization strategy and program for the Army?

If confirmed, I will work with the Secretary of the Army and Chief of Staff to implement necessary changes to establish unity of effort and unity of command that consolidates the modernization process and continues their efforts to prioritize the requirements management process, with commanders fully engaged, that will enable efficiency and effectiveness in the acquisition process. We will codify innovative processes such as the reinvigorated Army Requirements Oversight Counsel which critically evaluates each step of the acquisition lifecycle. We will drive faster staffing timelines and pursue our Command-focused Strategic Portfolio Analysis Review (SPAR), which allows the Army to evaluate each program's relative worth. I think it is critical to leverage government

and commercial research and pursue more creative ways to rapidly test, demonstrate, and field technologically advanced systems in order to keep them relevant and ahead of pacing threats. All of this should occur while maintaining focus on the enterprise maintenance and divesture component which are key to defraying overhead costs.

142.   In your view, does the Army's modernization investment strategy appropriately or adequately address current and future capabilities that meet requirements across the spectrum of conflict?

No. I think, by necessity, the Army focuses its constrained modernization dollars where they are most immediately needed: to ensure Soldiers have the modern equipment they need within the next 10 years. That necessity has created an unacceptable strategy of limiting long-term investments to areas where the Army faces its greatest challenges, such long range precision fires and a next generation combat vehicle that will ensure Army combat formations can fight and win against any foe.

143.   In your view, should the Army trade off requirements within the execution of a program in order to make that program affordable and timely?

Yes. In fact, in a resource constrained environment, it is inevitable. My understanding is that the Army has been making difficult trade decisions for at least five years, and, frankly, my research while teaching at Georgetown University clearly shows that it is at the point of losing its technological edge in certain capability areas, thus putting national security at risk. If confirmed, I will work closely with Army senior leaders to find the right balance of requirements, cost, schedule and performance for our systems, so investments are focused on capabilities most critical for meeting our most stressing threats.

144.   Does the Army need a fully resourced all-arms force to experiment with new weapons and technologies to help develop future fighting concepts? Could this experimental unit give direction to technology development? Like the Marine Corps experimental unit, should this all-arms force be ready to deploy as well?

I think the suggestion has merit. Such a unit could explore whether there are alternative paths forward for improving capabilities, which could in turn inform the modernization and acquisition processes. I believe the Army had such a dedicated unit at Fort Bliss but was forced to move it into the operational cycle based on world-wide demand from our Combatant Commanders. Given that demand is only increasing, I think it would be difficult for a unit to do both, but if confirmed, I will look into the concept.

145.   Is there a choice between current readiness and future readiness? Can the Army simultaneously meet short-term readiness standards and modernize for future readiness? If so, what are the risks? How would you recommend managing these risks?

In an ideal world the Army would be fully trained and equipped to meet the challenges of both today and the future. However, the world today is far from ideal – it requires the Army to prioritize force structure and near-term readiness. Given those priorities and the current level of funding, I understand the Army is managing modernization risk by making incremental improvements to existing capabilities and developing new capabilities only when necessary and only to meet their most significant capability gaps. This has set the conditions for the Army to lose qualitative overmatch. I believe the Army must find a way to achieve both a high state of readiness and modernize the force to a level that will achieve overmatch against potential future adversaries. Given current resources that will not be easy or, perhaps, possible. From my perspective, the Army will have to take significant risk to find the resources necessary to maintain current readiness while simultaneously modernizing for future readiness.

146. **Unity of command ensures unity of effort in war and combat. If the Army is challenged by the lack of effective acquisition and modernization, would strong leadership empowered with command authority improve the situation? Does the Army need a modernization command?**

The purpose of acquisition and modernization is to get the best equipment into the hands of our Soldiers as rapidly as possible to enable them to meet mission requirements now and in the future. As a deeply rooted principle of war, unity of command supports this purpose by focusing processes and decision-making toward meeting Soldier and operational needs. The Acting Secretary of the Army and Chief of Staff, Army created a task force to present options which are meant to establish unity of command and unity of effort with respect to the requirements, technology, and programmatic aspects of material fielding in order to consolidate the modernization process under a new command. If confirmed, I will review existing command lines and procedures, and make recommendations to the Secretary and Chief of Staff for decision. I believe there can be significant benefit obtained from a more integrated approach to these three key areas. I've stated earlier that I also believe contracting and testing must be considered in an overall process.

Army Weapon System Programs

147. **What is your understanding and assessment of the following research, development, and acquisition programs? Are all programs delivering or sustaining capabilities that are suitable, reliable, and survivable? Are all programs within cost, timeline, and performance?**

a. Next Generation Combat Vehicle

I understand that the Army is conducting an analysis of the 2035 operational environment of future threats to identify gaps to be addressed in the design for a Next Generation Combat Vehicle. This analysis will inform the Combat Vehicle Modernization Strategy

and will drive the organization of combat Brigade formations in the 2035 and beyond timeframe.

Recently the Army has formed a cross functional team of empowered subject matter experts that will draft and refine capability requirements, conduct technical demonstrations and experimentation in an iterative process to determine if a materiel solution is required for a Next Generation Combat Vehicle. The Army currently plans to make a decision in the 2022-2023 timeframe whether to proceed with a Next Generation Combat Vehicle or to continue with the Engineering Change Proposals for the Abrams and Bradley fleets.

b.   Stryker combat vehicle, including the Stryker Lethality Upgrades

The Stryker Combat Vehicle program is a significant part of the Army's force structure. I am aware that the Army has upgraded survivability in response to an aggressive IED threat and now is pursuing upgrades to increase the fleet's lethality in response to urgent operational needs. Stryker vehicles retrofitted with a more survivable Double V-Hull have saved numerous lives in Afghanistan. Additionally, I understand that improvements currently in progress to the Stryker Double V-hull fleet will increase engine horsepower, on-board electrical power and upgrade the suspension.

In an effort to increase lethality against emerging threats, the Army is integrating a 30mm cannon with an unmanned remote turret in the Stryker vehicles for the 2nd Armored Cavalry Regiment (Stryker) stationed in Germany. My assessment is that this upgrade will provide an improved direct fire weapon system to support infantry at a greater range and with greater lethality against a wide array of targets.

My understanding is that the Stryker Combat Vehicle program is within cost, timeline, and performance objectives.

c.   Joint Light Tactical Vehicle (JLTV)

The Joint Light Tactical Vehicle (JLTV) is a joint Army and Marine Corps program, which consists of a Family of Vehicles that can perform numerous key mission roles as it fills a gap in today's light tactical vehicle fleet. JLTV improves upon the mobility, transportability, and reliability of the Mine Resistant Ambush Protected (MRAP) vehicle fleet, while addressing payload and performance issues in the Up-Armored High Mobility Multipurpose Wheeled Vehicle fleet. In doing so, I understand the JLTV provides significant improvement in the balance of force protection, payload, and mobility performance, along with enhanced fuel efficiency, network capability, and reliability for Soldiers and Marines. The program is meeting its cost, schedule, and performance objectives, having achieved substantial savings through requirement stability and a focus on affordability during its competitive engineering & manufacturing development phase. It is my understanding that the program is completing its developmental testing to verify its suitability, reliability, and survivability, with operational testing scheduled for early next year.

d.   M1 Abrams tank modernization

The Abrams Tank provides the combat capability necessary to close with and destroy enemy forces and has been an essential part of the Army's force structure for decades. I am aware that several vital upgrades are in the works for the Abrams fleet to ensure battlefield dominance. The first modification to go into production by December of this year will include an improved armor suite and greater on-board electrical power to accommodate modernizing the tactical communications network and also permit acceptance of an Active Protection System. The second modification, which began development in September, will upgrade the Abrams aiming and fire control systems allowing Soldiers to detect and identify enemies from longer ranges and enable faster engagement. These upgrades will retain our decisive advantage on the modern armored battlefield.

It is my understanding that the Abrams tank modernization program is within cost, timeline, and performance objectives.

e. M2 Bradley infantry fighting vehicle modernization

The M2 Bradley Fighting Vehicle has been an essential part of the Army's force structure for decades. The Bradley fleet continues to be modernized with vital upgrades to ensure battlefield dominance and several modifications are currently in the works.

The first modification on the fleet is upgrading the suspension and will improve the service life of the track to regain mobility lost due to adding armor and other survivability kits during Operation Iraqi Freedom. It is my understanding that early next year, a second modification will increase the engine's ability to generate power and cool both the crew and electronics while simultaneously preparing for any future tactical communications network. A third modification, which begins development in the next year, will upgrade the Bradley aiming and fire control systems. This upgrade will allow the Bradley to detect and identify enemies from longer ranges and also enable faster engagement. These upgrades will retain our decisive advantage on the modern armored battlefield.

It is my understanding that the M2 Bradley infantry fighting vehicle modernization program is within cost, timeline, and performance objectives.

f. Mobile Protected Firepower

I understand the Infantry Brigade Combat Teams lack a Mobile Protected Firepower capability and it is a priority for the Army. Currently Infantry Brigades that confront defending enemies have limited options aside for indirect fire or air support. This mobile, protected, direct-fire vehicle would engage at long-range on the move against enemy armored vehicles, hardened fortifications, and dismounted personnel.

I am aware that the Army is finalizing the performance requirements and anticipates releasing a Request for Proposal within the next few weeks. The approach prioritizes schedule and the focus is on minimal to moderate development of an existing vehicle. It is my understanding that the Analysis of Alternatives report is in final staffing.

g. Paladin Integrated Management (PIM) self-propelled howitzer modernization

The Paladin Integrated Management (PIM), also known as the M109A7 Family of Vehicles, will replace the current M109A6 Self-Propelled Howitzer and its accompanying ammunition supply vehicle starting in Fiscal Year 2018.

An Initial Operational Test and Evaluation in October 2016 was suspended due to a combination of breech malfunctions, improper crew procedures, and improper maintenance causing levels of toxic fumes in the affected guns to rise to noxious levels. Further testing indicates that fume ventilation is normal when the gun is configured and operated properly. The Program Office is incorporating vehicle upgrades, updating training, and improving maintenance and operating procedures. These improvements will be retrofit to the existing fleet after demonstration in testing.

I am aware that the Army is planning to conduct a second operational test in second quarter Fiscal Year 2018 to determine the suitability, reliability, and survivability of the system. The program is funded to conduct the second operational test and I understand that the need for this test has shifted the scheduled full rate production decision from second quarter Fiscal Year 2017 to fourth quarter Fiscal Year 2018.

The Army plans on fielding the M109A7 to three brigade combat teams by 2020 on schedule. The Army can execute the program within the appropriated funding.

h. Armored Multipurpose Vehicle (AMPV)

The AMPV is a critical component of the Army's Combat Vehicle Modernization strategy for replacement of the M113 Family of Vehicles within the Armored Brigade Combat Team. The AMPV improves the mobility, lethality, and force protection across five mission variants: General Purpose, Mortar Carrier, Mission Command, Medical Evacuation, and Medical Treatment.

I know that the Army has received 21 of 29 prototypes. AMPV began developmental testing July of this year to assess the vehicle's suitability, reliability, and survivability. I understand that the AMPV program is within cost, timeline, and performance objectives.

i. Ground Mobility Vehicle

I understand that the Army seeks to provide enhanced tactical mobility to its Infantry Brigade Combat Teams, which will allow Soldiers to close on objectives more quickly with less time, exposure, and energy spent in movement. To achieve this, the Army initiated the Ground Mobility Vehicle (GMV) program and focused first on meeting the most urgent operational needs in its Airborne IBCTs. It is my understanding that to meet the need for these five IBCTs as quickly as possible-including the Global Response Force of the 82d Airborne Division and Special Operations Forces-the Army is using a Directed Requirement to acquire a version of the U.S. Special Operations Command GMV 1.1 vehicle, modified to reduce cost and meet Army-specific requirements. I also understand that the Army subsequently anticipates a full-and-open competition to equip the remaining IBCTs.

j. Army Tactical Missile System (ATACMS)

ATACMS provides the Army with all-weather, rapidly deployable, surface-to-surface, precision strike capability against point and area targets at extended ranges. I understand that a new effort called Long Range Precision Fires is planned to be the Army's future long-range precision munition.

The Army has used ATACMS for decades, and they are still being used effectively today. An ATACMS Service Life Extension Program effort is ongoing to qualify obsolescence updates and reset the missile shelf life. The ATACMS munition is suitable, reliable, and survivable.

The ATACMS program is currently within cost, timeline, and performance objectives.

k. Stinger surface to air missile

The Stinger is a man-portable shoulder fired missile which can also be fired by Avenger weapon system. Stinger provides the Army's short-range air defense capability against manned and unmanned aircraft systems.

I understand that a Stinger Service Life Extension Program effort is ongoing to qualify obsolescence updates and reset the missile shelf life. Stinger is currently delivering or sustaining capabilities that are suitable, reliable and survivable.

It is my understanding that these programs are all within current cost, timeline, and performance objectives.

l. MIM-104 Patriot surface to air missile

The Phased Array Tracking to Intercept of Target (PATRIOT) missile system has been fielded for decades. The PATRIOT modernization program continues to ensure the defeat of evolving aircraft, cruise missile, large caliber rockets, and ballistic missile threats.

I understand that the PATRIOT program is currently delivering or sustaining capabilities that are suitable, reliable and survivable.

It is my understanding that the PATRIOT program is within current cost, timeline, and performance objectives.

m. Terminal High Altitude Area Defense (THAAD)

It is my understanding that the Terminal High Altitude Area Defense (THAAD) was developed using state-of-the-art engineering that provides high standards and efficient production and maintenance. From development through the fielding of operational systems, THAAD completed a comprehensive program of ground and flight tests, quality assurance, and design and development activities that support mission success. The Missile Defense Agency continues to develop the THAAD weapon system in response to the United States Strategic Command Prioritized Capabilities List to maintain and improve performance against new and emerging threats. In addition to success in the testing arena, THAAD has six operational U.S. Army Batteries and two United Arab Emirates Batteries. It is my understanding that the seventh U.S. Army Battery will complete New Equipment Training in 2Q FY2018. It is also my understanding that the

THAAD System continues to exceed required reliability rates in both Guam and South Korea, and that the THAAD program is within cost, schedule and performance baselines

n. Integrated Air and Missile Defense Command System (IBCS)

The Integrated Air and Missile Defense Battle Command System (IBCS) will provide advanced capabilities to the Army and the Soldier by allowing transformation to a network-centric system-of-system capability that integrates Air and Missile Defense (AMD) sensors and weapons with an IBCS engagement operations center. The system-of-system architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully.
I understand that IBCS is in the Engineering and Manufacturing Development (EMD) Phase and that recent Soldier Check-Out Event assessments indicate that the program is on track to be suitable, reliable, and survivable.
The IBCS program is currently within cost, timeline, and performance objectives.

o. AH-64E Apache modernization and Manned-Unmanned Reconnaissance

AH-64E Apache modernization is on track and represents the most operationally suitable, reliable, and survivable attack helicopter in the US inventory to date. Current AH-64E production involves remanufacturing and new builds on a single production line and to date 200 Remanufactured and 17 New Build AH-64Es (217 total) have been delivered to the Army, within budget and on time. AH-64E is in a Multiyear contract through FY21 producing no less than 244 remanufactured aircraft. Recently the Army increased the Army Acquisition Objective (AAO) to 767 to meet operational requirements globally. Manned Unmanned Teaming integrates the maneuver of Army Aviation Rotary Wing and unmanned aircraft systems (UAS) to conduct movement to contact, reconnaissance, and security tasks. MUMT-X provides AH-64E increasing control of UAS by Army aviators from receiving video feeds through choosing the flight path of the UAS for both the RQ-7 Shadow and the MQ-1C Gray Eagle systems (known as Level of Interface (LOI) 1-4). PM Apache will deliver 428 MUMT-X systems to the AH-64E fleet through 2025 within budget and on schedule.

p. Future of Vertical Lift (FVL)

Future Vertical Life (FVL) is a family of vertical lift solutions that deliver next generation capabilities at the tactical, operational, and strategic levels. They enable Joint Force mission effectiveness in the trans-regional multi-domain and multi-functional threat environment. The FVL Family of Systems seeks to improve vertical lift dominance by improving performance and optimizing affordability, life cycle management, interoperability, and supportability. Currently FVL is preceded by the funded Joint Multirole (JMR) Science and Technology initiative to produce two Air Vehicle Demonstrators (AVD); Bell Helicopter which is conducting ongoing ground runs ongoing w/ first flight 1QFY18 and envelope expansion flight testing through 4QFY19;

and Sikorsky-Boeing conducting system integration/final assembly ongoing w/ first flight 3QFY18; test through 4QFY19. FVL remains within Army budget goals and on schedule.

q. Warfighter Information Network-Tactical

WIN-T Increment 2 is currently within cost, schedule and performance. As part of the Army's recent network modernization review, the Army will halt procurement of Warfighter Information Network-Tactical (WIN-T) Increment 2 at the end of FY18, however there are elements of the overall WIN-T program that can be utilized and will be critical if we are called to fight in the near term.

The Army recently successfully completed an operational test of two lighter, more deployable versions of WIN-T Increment 2 communications and network operations nodes, and these were found effective, suitable and survival by both DOT&E and ATEC. The Army is now procuring these systems for fielding to priority light infantry brigade combat teams.

I understand the Chief of Staff led an in-depth review of all Network programs, and this review found that not all elements are performing as required to meet the operational requirements against a near peer adversary. Any system the Army fields needs to be reliable, resilient, protected, and mobile.

r. Distributed Common Ground System-Army

The DCGS-A is the Army's Intelligence weapon system supporting current operations worldwide. DCGS-A synergizes the Intelligence Community by synchronizing, integrating, and disseminating intelligence information, throughout the full range of military operations, from analysts at the Battalion to the Theater.

Army Test community found the improved version (Increment 1, release 2) effective, suitable, and survivable. Based on these findings, fielding was initiated in February 2016. Since then, this version has been fielded in theater and being integrated across the force.

The Army continues to ensure compliance with Fiscal Year (FY) 2017 National Defense Authorization Act (NDAA). Section 113 of the FY17 NDAA seeks to improve Increment 1's usability to tactical echelons through a competitive commercial off-the-shelf (COTS) procurement, utilizing Soldiers for testing, and rapid fielding.

In order to provide our Soldiers with the best capabilities industry has to offer, it is my understanding that the Army has restructured the program in accordance with the FY17 NDAA, Section 220. The Army has aligned the strategy to incorporate commercially available components directly into the battalion and below echelon in accordance with FY17 NDAA. The Army is committed to providing Soldiers with commercial technology that is easy to use, reduces complexity and meets the unique requirements at the battalion and below echelon.

The Army will use a multiple vendor award strategy to stimulate competition for the battalion and below commercial product and incorporate Soldier feedback throughout the

competitive procurement process prior to a down-select to a single vendor and subsequent fielding to battalion and below units.

The fielded system is within cost, schedule and performance. If confirmed, I will review the program with an open mind to ensure our Soldiers have the best available tools to meet the requirements of the Army.

s. Army Tactical Radios

All fielded Army tactical radios are suitable, reliable, and survivable.
I understand the Chief of Staff conducted a review of all Army Networking programs, and that this review included assessments of operational capability, cost, schedule, and performance of the tactical network programs. If confirmed, I aim to work closely with the Chief and other senior Army leaders to review the status and the path forward of Army tactical radios

The Army has delayed the requirement approval for the Small Airborne Networking Radio (SANR), and the program will incur a schedule breach in addition the breach in total RDT&E cost as reported in 2015. Additionally, the Army's single-channel Rifleman Radio previously experienced a schedule breach in Oct 2016 when Rifleman Radio purchases were deferred as technological advances made pursuit of a 2-channel Leader Radio more advantageous earlier than planned.

The HMS Manpack radio and 2-Channel Leader Radio have valid Army requirements and those programs are currently in competitive procurement. The Manpack radio is in competitive evaluation with intent to deliver a manpack and vehicular mounted radio to ensure the Army can communicate over critical military communications capabilities. The 2-Channel leader radio will communicate with existing radios to enable joint, interoperable, secure voice communications and provides networking software for data communications. Both radios will be assessed in operational testing scheduled for late 2018/Early 2019.

t. Joint Multi-Role rotorcraft program

It is my understanding that Joint Multi-Role Technology Demonstrator effort is a science and technology program that will demonstrate advanced vertical lift capabilities in preparation for decisions regarding replacement of the current Department of Defense vertical lift fleet. The purpose of the program is to reduce risk for the Future Vertical Lift Program of Record by demonstrating that enabling technologies are achievable; and to inform the user and acquisition communities on capabilities and requirements.

u. Small arms modernization

It is my understanding that the Army will modernize rifles and machine guns through research, development, and commercial items with a focus on improvements to enhance lethality, training effectiveness, reliability, and weight reduction. The Army continuously

assesses weapon system capabilities with the goal of overmatching any adversary while ensuring solutions are suitable, reliable, and survivable.

I understand the Army is determining a path forward for a more potent combination of combat rifle and ammunition to address emerging threats. Ongoing modernization programs include the newly awarded XM17 Modular Handgun System and upgrades to/replacements for the M4A1 Carbine, M2A1 Machine Gun, and the M240 Machine Gun. The Squad Designated Marksman Rifle SDMR along with Advanced Armor Piercing ammunition will provide an interim capability to address evolving threats faced by U.S. Forces and will be on an accelerated fielding schedule to help address the capability gap. The Next Generation Weapon Systems requirements are currently in development to provide leap ahead technology to address emerging threats.
It is my understanding that the Small Arms Programs are currently within cost, timeline, and performance objectives.

v. Personal protective equipment modernization

My assessment is that the Army continues to provide the best PPE in the world, protecting our Soldiers against a wide range of bullets, grenades, improvised explosive devices, and blunt impact. The Army is constantly working to reduce weight and improve performance of PPE. The Army's next generation PPE system is the modular and mission-tailorable Soldier Protection System (SPS). I understand that the SPS offers better performance, reduced weight, better fit, and increased mobility for all Soldiers, male and female.
It is my understanding that the Army's PPE modernization through the SPS program is within cost, timeline, and performance objectives.

w. AN/TPQ-53 Counter Fire RADAR

The AN/TPQ-53 Counter Fire Radar detects, classifies, tracks, and locates the points of origin of projectiles fired from mortar, artillery, and rocket systems and provides counter-battery target acquisition capabilities for all types of military operations. The system has both 90- and 360-degree capability and is the replacement for the Army's legacy fleet of AN/TPQ-36 and AN/TPQ-37 Firefinder Radars.

The AN/TPQ-53 has proven itself in combat operations in Iraq and Afghanistan since 2010. The AN/TPQ-53 was assessed as operationally effective, suitable and survivable as a counter fire radar based on performance during operational testing according the Office of the Director, Operational Test and Evaluation's Fiscal Year 2015 Report to Congress. The Army is assessing the AN/TPQ-53's ability to identify and track unmanned aerial systems with the goal of tracking rocket, artillery, mortar targets and unmanned aerial systems simultaneously.
I understand that the program is within cost, timeline, and performance objectives.

Army-Related Defense Industrial Base

148. What is your understanding and assessment of the systems and processes for identifying, evaluating, and managing risk in the Army's organic and commercial defense industrial base?

My understanding is that the Army continually identifies, evaluates, and manages risk in its organic (Army-owned) and commercial components of the Army Industrial Base. In the organic component, the Army assesses critical capabilities, minimum sustaining workloads, and other attributes of its facilities to ensure these facilities can meet requirements during mobilizations, national defense contingencies, and other emergencies. As part of managing organic risk, the Army continues to work with the commercial sector to establish partnerships to reduce costs and preserve critical manufacturing and technological capabilities at Army facilities. In the commercial sector, the Army works closely with the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Manufacturing and Industrial Base Policy office and other federal agencies to identify fragile and critical suppliers; assess financial, operational, geopolitical, and socio-economic risks; and take actions to mitigate risk. I understand that, annually, the Army synchronizes its commercial assessments based on expertise from both within and external to the Army to ensure assessments support optimal operational readiness of all Army weapons systems.
If confirmed, I will strive to strengthen the Army's processes to identify, assess, and mitigate risk in the Army Industrial Base while maintaining compliance with the law.

149. What is the health of the supply chain needed for the Army's industrial base? What key supply chains are in jeopardy?

It is my understanding that the Army has a very healthy supply chain it relies on to meet the needs of the Warfighter. The commercial component of the Army's industrial base is wide and varied, consisting of prime contractors and many tiers of subcontractors. This intricate network of commercial market suppliers is critical to ensuring optimal materiel readiness within the Army. The Army complements its commercial industrial base component with its organic industrial base component to provide products and services when the commercial sector cannot meet required cost, schedule, and/or performance criteria.

The Army supply chain is positioned to support the current Army operational requirements. If confirmed, I will work closely with my commercial sector partners and the Office of the Secretary of Defense, Manufacturing and Industrial Base Policy to ensure proactive management of critical Army supply chains for any surge in operational requirements. I will also emphasize the health of the Army's industrial base by ensuring that Army continues to effectively identify, assess, and mitigate risk among critical and fragile suppliers.

150. Should Army acquisition leaders consider impacts on the industrial base when addressing requirements for recapitalization or modernization of major end items such as tanks, tactical wheeled vehicles, or key repair parts?

Yes, I believe the Army should carefully consider impacts on both the organic and commercial components. These components play a significant role in producing, maintaining, storing, or supplying many of these systems. It is my understanding that this is already a consideration when making acquisition decisions. If confirmed, I will take steps to ensure the Army continues to assess impacts in the Industrial Base when addressing recapitalization or modernization requirements, while still optimizing cost, schedule, and performance of major end items.

151.   If confirmed, what changes, if any, would you pursue in systems and processes to improve identification, monitoring, assessment, and timely actions to ensure that risk in the Army-relevant sectors of the defense industrial base is adequately managed in order to develop, produce, and sustain technically superior, reliable, and affordable weapons systems?

If confirmed, I will review the Army's systems and processes used to identify, monitor, assess, and mitigate supply chain risk in the Army Industrial Base, to identify more effective ways to ensure a capable and ready supply chain. The Army currently works with the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics), other military services, federal agencies, and industry partners to identify, evaluate, and mitigate supply chain risk in the Army Industrial Base. The Army's efforts, in concert with its partners, have resulted in the procurement of superior, reliable, and affordable weapons systems to meet the needs of the Warfighter.

Army Science and Technology

152.   What is your understanding and assessment of the role that Army science and technology programs have played and will play in developing capabilities for current and future Army systems?

Through more than sixteen years of war, it is clear the value and impact that technology brings to the battlefield and how critical those capabilities enabled by technology are to warfighters. I believe that the Army's Science and Technology mission should be to provide these critical capabilities for both near-term operational challenges and innovatively toward meeting long-term National Security threats. This community's technical expertise, coupled with an understanding of the operational environment, have led to many fielded capabilities in response to both Operational Needs Statements (ONS) and Joint Urgent ONS (JUONS). The same community provides a base for technologies critical to the Army regaining its overmatch. As has been discussed, above, this community is undergoing review to reset priorities and resource allocation and to balance them between near and far term requirements. I believe this is a good strategy and, if confirmed, will work to ensure the priority of effort goes against military unique requirements and provides the Army an achievable but aggressive path to the future in ways which will return overmatch.

153.   Given the budget, how will you ensure that Army science and technology programs will successfully transition to operational warfighting capabilities?

It is my understanding that the Army has been taking a very serious, long-term strategic look at its modernization investment strategy, including planning, programming, and budgeting for acquisition Programs of Record across the full spectrum of Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy. As these programs are assessed across their life cycles, the Science and Technology (S&T) research experts inform the research and development community of opportunities for technology insertions into ongoing acquisition programs, including when to start S&T investments targeted for replacement platforms. Transition Agreements are one of the essential mechanisms between the Science and Technology (S&T) Enterprise and Materiel Developers that provide the planning rigor to facilitate technology transitions and are essential to maximizing the use of the knowledge and technologies developed by the Army S&T Enterprise. If confirmed, I will work with the Army's S&T community to continue take a long-term view that closely aligns S&T programs with Modernization priorities and the Programs of Record within available funding to ensure successful transition of technologies to the Warfighter and that S&T projects requiring transition agreements utilize them to their maximum effectiveness.

154.   If confirmed, what metrics would you use to judge the value and the investment level in Army science and technology programs?

If confirmed, I will verify that the Army's science and technology (S&T) efforts align to Warfighter needs and top modernization priority capability gaps. I will also challenge the S&T community to develop metrics and measures of effectiveness that assess whether the Army is appropriately invested to maintain a technological edge over potential threats and adversaries, now and in the future, and is making measurable technical progress towards reaching those goals.

Army Laboratories and Research, Development, and Engineering Centers (RDEC)

155.   What role should Army laboratories play in supporting current operations and in developing new capabilities to support Army missions?

I believe that the Army laboratories are a useful asset and can be even more critical in meeting emerging threats and both predicting and meeting long term operationally relevant technological needs. These laboratories should facilitate the various acquisition processes: rapid acquisition, acquisition, and sustainment, to better leverage commercial technologies when tailoring or modification is needed and would still make economic sense. They should focus their research and development efforts on military unique requirements and must work closely and collaboratively with the requirements and doctrine developers. The scientist would receive timely and relevant guidance while the military futurists would be able to see new opportunities with a sense of realism. Direct program support is also necessary, particularly for rapid acquisition and for existing programs under development or revision. As I've stated, above, I believe that the review

of the work focus and skills mix of the tech base is essential. If confirmed, I will support this effort fully.

156.   If confirmed, how will you ensure that the Army laboratories and research and development centers have a high-quality workforce, laboratory infrastructure, resources, and management, so that they can continue to support deployed forces and develop next generation capabilities?

The Army laboratories must compete with a highly competitive private sector to build and maintain its science, technology, engineering, and mathematics, or STEM, workforce. This is further complicated by the shrinking percentage of the U.S. population choosing science or engineering as a career, since security constraints limit use of foreign workers. As discussed above, if confirmed, I will make personnel development and management central to my tenure. The Army must have a deliberate and focused plan to consistently recruit, train, employ, grow, and retain of its STEM personnel. The mix of skills must meet current and future needs. It should be proactive with consideration for continuing education. A mix of military personnel in the organizations can help to develop a better understanding of the warfighter's needs and engender vision on both parts. The Army also has significant laboratory resources. As for the scientists and engineers, they should be focused against military specific problems and not compete head-to-head with commercial industry or academia. Those resources should be properly configured to provide environments for real leap ahead technology efforts in areas of military interest, both short and long term. If confirmed, I will review the facilities to determine their ability to align with the evolving technology focus and available talent. One key point is that I believe S&T cannot be run as tightly as is desired for a program of record. Research and breakthroughs need some flexibility in the system and the opportunity to fail. If confirmed, I would promote this flexibility with appropriate accountability.

157.   Do you support the full utilization of authorities established by Congress under the Laboratory Personnel Demonstration program that is currently being run in many Army RDECs?

If confirmed, I will support the full utilization of authorities established by Congress under the Laboratory Personnel Demonstration Program. I understand these authorities enable the Army laboratories and RDECs with the flexibility and tools necessary to compete with the private sector to attract, recruit, train and retain an elite STEM workforce, including flexible compensation, enhanced hiring authorities, and flexible career paths.

158.   Do you believe that all RDECs in the Army's Research, Development, and Engineering Command (RDECOM) need enhanced personnel authorities in order to attract and retain the finest technical workforce? Would you support expansion of the Laboratory Personnel Demonstration authorities to all of RDECOM's laboratories and engineering centers?

It is my understanding that all Army laboratories and RDECs are already designated as Science and Technology Reinvention Labs (STRL), providing them with all the authorities included as part of the Laboratory Personnel Demonstration project. The Army STRLs include the RDECOM laboratories and engineering centers, the Corps of Engineers laboratories, the Medical Command laboratories, the Army Research Institute, and the Space and Missile Defense Technical Center. It is my understanding that the Laboratory Personnel Demonstration project gives laboratory directors important tools to shape their workforce and remain competitive with the private sector. As stated above, I believe this to be a critical area of concern. If confirmed, I will work with the S&T enterprise and with Congress to ensure these authorities are utilized to the fullest extent and to seek new authorities where necessary to further enable the Army's ability to attract and retain the best and brightest workforce.

159.   Do you believe that the Army's laboratories and engineering centers should have a separate, dynamic personnel system, uniquely tailored to support laboratory directors' requirements to attract and retain the highest quality scientific and engineering talent?

If confirmed, I will take a deeper look at this issue to better understand the current system and potential impacts of moving to a different system. I believe, at this point, that the Army labs and RDECs have the necessary authorities, under the Laboratory Personnel Demonstration program, to grant laboratory directors the ability to attract, recruit, and retain the highest quality scientific and engineering personnel by providing hiring flexibilities, rapid on-boarding, and flexible compensation options. However, if confirmed, I will examine the effectiveness of this program, continue to work with the S&T Enterprise to ensure we are able to attract, and retain the highest quality workforce. Should additional support from Congress be necessary, I would ensure the Committee and applicable members were informed and involved.

160.   If confirmed, how will you assess the quality of Army laboratory infrastructure and the adequacy of investments being made in new military construction and sustainment of that infrastructure?

My understanding is that Army laboratory facilities have an average age of more than 50 years. Based on my experience in the private sector, modern buildings, equipment, and adequate resourcing are vital to developing cutting-edge technology and to recruit and retain the most talented scientific personnel. At the same time, the ongoing technology assessments being conducted may identify new needs or those that are better obtained in the commercial sector. Should that impact existing infrastructure requirements, facility modernization should be leveraged to upkeep, upgrade, and convert facilities to meet these needs. If confirmed, I will engage the appropriate Army organizations to better understand the challenges facing our S&T infrastructure and look at possible solutions to ensure we make the necessary and insightful investments to sustain, restore, and modernize our laboratory infrastructure and keep our Army research facilities at the forefront of relevant research and development.

161.   Are you concerned about the current or future supply of experts in defense critical disciplines, particularly personnel with appropriate security clearances, to hold positions in defense laboratories?

I am concerned about the national trend of declining numbers of U.S. students pursuing Science, Technology, Engineering and Math (STEM) degrees, and the competition with the private sector for the limited talent pool once they graduate. The Army must continue to invest in STEM education to ensure a continuing supply of the next generation of domestic scientists and engineers, who can get security clearances in a timely manner. A number of questions, above, have allowed me to provide deliberate actions and incentives which may improve the Army's competitiveness within the population in recruiting and retention.

If confirmed, I will work to ensure the Army can compete with the private sector to attract and retain the highest quality personnel for a spectrum of STEM fields, including critical emerging areas such as materials science, biotechnology, and cyber. I will also ensure that Army labs have the necessary authorities to access a high quality and cleared workforce, both now and in the future.

162.   What is your view of the quality of the Army laboratories as compared to the Department of Energy national laboratories, federal laboratories, academic laboratories, and other peer institutions?

My understanding is that the Army laboratory research is on par with peer organizations, including DOE, Federal and Academic Institutions. Scientists and engineers deliver high quality of research in critical Army technology areas such as autonomy, energetics, air and missile defense, networks and cyber. However, I believe that the Army has under invested in laboratory infrastructure over the past few decades. The Army has taken risk in infrastructure investment to balance resources between force structure, readiness, and modernization. Currently, the Army's infrastructure investment is not able to keep pace with normal facility degradation nor does it compensate for shifts in technology focus nor allow for establishment of new required facilities.

By comparison, peer institutions in the Department of Energy, academia, and the private sector have invested in modern laboratory capabilities. If confirmed, I will study the challenges facing the Army's Science and Technology infrastructure and look at various options to ensure the Army makes the investments necessary to modernize its laboratory infrastructure in support of Army research and development. While I believe that more investment is needed, I also believe that more innovation in facility use is needed.

163.   What metrics will you use, if confirmed, to evaluate the effectiveness, competitiveness, and scientific vitality of the Army laboratories?

Vitality of Army laboratories can be measured by its effectiveness. How much of funding goes to actual research, as opposed to overhead, that is of value to one or more military programs? How many developments have been of sufficient value to be considered critical to either a program development or operational concept such that it effected the long term operational concepts? How have recruiting and retention programs

been able to obtain and retain a quality workforce? How many significant leaps forward in military unique technologies have we been able to achieve from a portion of the research effort which is less structured and intended to allow high risk and failures in their pursuit? All of these are, to my current thinking, essential to moving the laboratory system toward militarily vital capabilities and could be reasonably measured. If confirmed, I will mature these metrics to ensure there is an effective means of assessing progress in relationship to deliberate efforts to improve capabilities.

164.   What steps, if any, will you take, if confirmed, to increase the mission effectiveness and productivity of the Army laboratories?

Measuring the ability of the laboratory developments and their integration into systems, both near and far term, and their ability to impact operational thought through more visionary but achievable technology approaches can provide insight in effectiveness. Productivity can be measured on a more classical system of requirements complete and cost basis. High value results would be separately measured the true success of which would be dependent, initially, on the operational acceptance by senior and responsible military leaders. If confirmed, I will work to ensure that such measuring methods or ones which achieve the same are put in place.

165.   Do you see value in enhancing the level of technical collaboration between the Army laboratories and academic, other federal, and industrial scientific organizations?

Yes, I believe there is value in collaboration. If confirmed, I would encourage increased collaboration by Army laboratories with other research institutions. This can be of benefit not only to Army research, per se, but to provide additional recruiting and retention tools. Moving an engineer to Natick Laboratories while pursuing a masters of science in materials at MIT with research in the Soldier Nano-Technology Center is an example of this concept. In my opinion, this form of collaboration is essential to refining the Army's focus in S&T investment and complementing efforts by other leading institutions.

166.   What steps, if any, will you take, if confirmed, to enhance such technical collaboration?

If confirmed, I will explore opportunities to enhance technical collaboration among the Army laboratories, other DoD and federal labs, academia and the private sector. I will solicit from within the research community their concepts on improved collaboration. I will specifically look for bi-directionally beneficial opportunities which will cost little or no funds to execute. And, I will examine ways in which the Army can improve its facility use, and potential income, from commercial support uses. I believe that effective collaboration depends such tenets as modern government workforce and management; shared facilities between government, academia and the private sector; and a collaborative culture that fosters an entrepreneurial and innovative environment.

167. What is your view of the funding mechanism for the research and development priorities of defense laboratory directors provided by section 219 of the National Defense Authorization Act for Fiscal Year 2009?

It is my understanding that the funding mechanism provided by Section 219 of the National Defense Authorization Act for Fiscal Year 2009 directly enhances the laboratory Directors' ability to fund innovative in-house research in support of military missions, transition technology development programs into operational use, implement workforce development activities to recruit and retain critical scientific and engineering personnel, and revitalize aging laboratory infrastructure. These critical investments would otherwise be unfunded. I fully support the implementation of the Section 219 funding mechanism across all the Army labs.

168. What continuing impediments, if any, do you see to the full implementation of this provision?

At this time, I do not know of any. If confirmed, I will explore any continuing impediments regarding the full implementation of the Section 219 funding mechanism across all Army labs, and develop mitigation strategies for implementation. I believe that Section 219 provides critical authorities to the Directors of our Army labs to invest in priority business sectors.

Army Test and Evaluation

The Department of Defense has, on occasion, been criticized for failing to adequately test its major weapon systems before these systems are put into production.

169. What are your views on the degree of independence needed by the Director of Operational Test and Evaluation in ensuring the success of the Army's acquisition programs?

I believe that independent testing is a vital part of the process and serves as an essential tool in addressing issues in system development. However, independent assessment is not the same as testing which may not benefit the program objectives. I understand the reasoning and motivation for the establishment of an independent test effort. I also have seen dollars spent testing obsolete requirements or retesting well matured, combat tested, systems. If confirmed, I believe that a concerted effort to review the Army's testing protocols need to be accomplished to resolve these and many other disconnects between testing and the program offices. I believe that independence and an honest assessment can be made while being a constructive, affordable component of the acquisition process. To accomplish this, I plan to work closely with both the Director, Operational Test and Evaluation and Deputy Under Secretary of the Army for Test and Evaluation to make sure operational tests are properly gauged for evaluation of the system effectiveness, suitability, and survivability.

170. Are you concerned with the level of test and evaluation conducted by the contractors who are developing the systems to be tested?

I am not aware of any significant issues at this time. However, if confirmed, I will ensure that any testing accomplished by contractors is done so in a highly rigorous and ethical manner with clear, complete results readily available to the government managers. I would also ensure that sample testing by government testers be able to proof these results. Should it be found that false results were being reported, I would direct that appropriate action be taken against the contractor and the issue be resolved at the least cost to the government.

171. What is the impact of rapid fielding requirements on the standard testing process?

Rapid fielding currently requires safety testing which can result in some limitations on use or soldier handling. Over the course of 15 years, more and more testing prior to release has infused itself into rapid fielding. In one case I witnessed, testing was required on a belt buckle that was literally an optional item that could be bought at clothing sales. This test took tens of thousands of dollars and months to complete making the fielding irrelevant to the need. I've also seen extensive testing required of systems which might offer some degree of risk in employment, but that risk was never assessed against ongoing risk of not employing the system. If the Army is to be able to move technologies to the warfighter in a timely and consistent manner through such organizations as the Rapid Equipping Force, Rapid Capabilities Office, and spiral development of a standard program office, a graduated and balanced testing methodology needs to be codified which addresses both sides of risk and timeliness of employment. If confirmed, I will work with both the Director, Operational Test and Evaluation and Deputy Under Secretary of the Army for Test and Evaluation to pursue a more effective system that meets these challenges.

172. If confirmed, how will you work to ensure that all equipment and technology that are deployed to warfighters are subject to appropriate operational testing?

My understanding is that there are a number of test protocols in place to address testing of all equipment and technologies to be deployed to the warfighter. However, I do have some concerns with the current process. If confirmed, I will validate my observations and, if necessary, take action to work with the Director, Operational Test and Evaluation and Deputy Under Secretary of the Army for Test and Evaluation to ensure assessments during development, balanced testing of rapidly equipped material, implementation of in-field assessments, testing of the realistic requirements, and cost effective testing of major acquisition systems. In all cases, I believe that the test community must guard its integrity carefully and only provide clear and honest assessments. At the same time, they must provide assessments which contribute to the clear and honest management of programs at a cost and in a timeframe that facilitates program success. I do believe these objectives are achievable.

173.   Do you believe that the developmental testing organizations in the Army are adequate to ensure an appropriate level of developmental testing, and testing oversight, on major defense acquisition programs?

It is my understanding that the developmental test community is adequately structured and resourced to execute the appropriate level and scope of developmental testing. However, I believe there are opportunities to improve testing by using soldiers more often in developmental tests. It is essential that best practices from industry in operational testing of products in use be employed more effectively such as monitoring samples through first use buyers. Similarly, the Army should establish a similar method for evaluating those items fielded through rapid equipping but which are destined for programs of record. The Deputy Under Secretary of the Army for Test and Evaluation provides sufficient Army oversight of developmental testing activities. However, if confirmed, I will direct an evaluation of testing protocols as described in these answers. Also, at the Office of the Secretary of Defense level, the Director of Developmental Test and Evaluation provides thorough developmental testing oversight to Army major defense acquisition programs requiring developmental testing.

174.   If not, what steps would you take, if confirmed, to address any inadequacies in such organizations?

If confirmed, I would institute an evaluation of testing methodologies in coordination with the Deputy Under Secretary of the Army for Test and Evaluation and Director of Developmental Test and Evaluation.

175.   How will assess the quality of the Army test workforce and infrastructure with respect to the need for early and realistic testing of systems during acquisition and prior to deployment?

This is a challenging area in that a relatively small community is required to test and evaluate everything from laser weapons to food packing. I believe that the examination of testing methodologies must be tied to an examination of proper manning requirements. If the Army considers employing more commercial standards, it could leverage the capabilities and practices of commercial companies that need not set up unique facilities but, in many cases, conduct programmatically productive testing. If confirmed, I would incorporate these considerations into the evaluation.

As systems grow more sophisticated, networked, and software-intensive, the Department of Defense's ability to test and evaluate them becomes more difficult. Some systems-of-systems cannot be tested as a whole until they are already bought and fielded.

176.   Are you concerned with Army's ability to test these new types of systems?

I am concerned that any new system the Army needs presents new and difficult challenges in test and evaluation. My expectation is that the Army's increased emphasis on early prototyping and experimentation will not only assess individual systems and

their components, but also provide early evaluation insight on the system of systems aspects of the overall operational capability. Testing and evaluation are critical to system readiness and Soldier readiness, and if confirmed I will examine this issue to ensure our capabilities are sufficient to changing demands. Being able to have a testing organization which can affordably adapt to the changes may be rooted in the answer to the study posed in question 175.

177. What steps, if any, do you believe the Army should take to improve its test and evaluation facilities to ensure adequate testing of such systems?

To ensure that we provide the warfighter with the most effective and appropriately tested equipment, if confirmed I will work with the Test Resource Management Center, Deputy Undersecretary of the Army for Test and Evaluation, and Army Test and Evaluation Command to evaluate our test facilities' ability to meet ongoing needs. For example, the Army should examine the need for upgrades in new fields such as robotics, automation and cybersecurity. The Army must also ensure that not only its test and evaluation facilities, but also its developmental and laboratory facilities are linked together to share capabilities and infrastructure. It must examine what testing can be accomplished more economically leveraging commercial facilities, when appropriate, and focusing its limited resources on those tests which are military unique.

178. In your view, does the Army have sufficient capabilities to test and evaluate the cybersecurity of its new information technology systems and networks?

While my access to the exact state of this capability is limited, I believe, in general, that the Army should never assume it has sufficient capabilities for testing in this area. The threat will always be increasing, and our cybersecurity must evolve as well. In order to continually stay capable in the cybersecurity front, if confirmed, I will work to enhance our capabilities by providing ongoing virtual and simulated testing capabilities so that we can remain flexible and responsive to emerging threats. Here, again, there may be some opportunity to collaborate with commercial testing facilities to, at least, ensure our best practices meet or exceed theirs.

179. What steps, if any, would you propose to take, if confirmed, to enhance this capability?

This is a critical area and my open source reading indicates that we have spent more on talent development than facilities. I don't question this approach, since talent development takes more time than facility procurement. However, it is essential that any existing gaps due to facilities be closed quickly and maintained that way. Some collaboration with industry and other government agencies might be a solution to the problem short-term. A more long-term solution will require deliberate planning and procurement. If confirmed, I will make this a parallel evaluation similar to that discussed for the general testing community in question 175., above.

Some have argued that testing takes too long and costs too much. Others contest this opinion pointing out that testing and evaluation is an essential tool to assist in the development of weapon systems and ensure that they perform as intended.

180.   Do you believe that major defense acquisition programs are helped or hurt by cutting tests budgets and reducing the time available for developmental testing?

Developmental test budgets and duration should be appropriate to reducing risk as necessary. Developmental tests should be scoped to ensure a reduction in technical risk, allow some degree of operational concept confirmation or requirements restructuring early, and to foster success during operational evaluations that follow. A reasonable assessment plan that confirms assumptions throughout the development cycle and is tied to operationally relevant requirements will save money in the long run

181.   What steps, if any, will you take, if confirmed, to ensure that the program management and testing and evaluation leadership work collaboratively and effectively?

The current acquisition system provides methods for accomplishing this today. However, as can be seen in my answers, above, I have significant reservations that testing is being done which is supportive and timely for both technical and operational concept maturation. The current structure and tasking of the test community limits their availability and skill sets for particular or continuous testing or validation. Moreover, some of the staid testing procedures cost significant costs and delays. If confirmed, I would work to reshape the test environment to allow testing to be more continuous and, yet, independently assessed and confirmed at a lower overall cost. In a question 175, above, I proposed a method of working to lay the foundation for such a more efficient and productive testing regime that, if confirmed, I would work to put in place.

182.   To what extent do you think that dedicated operational testing can be integrated into developmental and live-fire testing in a way that is also sufficiently rigorous?

Commercial industry essentially accomplishes this on a regular basis. It would be essential in a spiral or incremental development effort. And, it would contribute to leveraging data from actual field use of various early prototypes or rapidly deployed systems. Sampling, evaluation of technical shortcomings, statistical analysis, and detailed evaluation plans of units using the system can still be indicative of developmental maturity while providing operational insight. Separate tests are not necessary as a matter of course. From my military experience, I do know that this has been done successfully and I believe it should be more the rule than dedicated testing.

Small Business Innovation Research (SBIR) Program

183. **What do you see as the major successes and challenges facing the Army SBIR program?**

My understanding is that one of the major successes of the Army SBIR is reaching more than 300 small businesses annually, each of whom bring a strong, independent business creativity to solving Army technology problems. It is also my understanding that one of the biggest challenges to the SBIR program is that the contracting process must be streamlined and consider the challenges of small business in working with the government. To accomplish this, if confirmed, I will work with OSD to seek ways to improve the overall process to make it easier for all involved. The total number of defense contractors is about 5,000, this includes large and small. The total number of corporations in the US is approximately 29 million. It would seem to me that a more aggressively and open structure might engender a broader leveraging of small business.

184. **What steps would you take, if confirmed, to ensure that the Army has access to and invests in the most innovative small businesses?**

If confirmed, I would task the Army office for small business to work with me to develop a series of actions that would make it easier for small businesses to do business with the Army, make it easier for the programs to reach out to and contract with small businesses, and educate the acquisition workforce on the best methods and challenges of leveraging small business.

185. **What steps would you take, if confirmed, to ensure that successful SBIR research and development projects transition into production?**

If confirmed, I would make it the responsibility of the Army SBIR office to know of each award, its status, and potential methods of transition to a product phase whether inside or out of the Army. This office should help facilitate connectivity with potential users in the Army and government. I would also direct investigation of the possible use of the SBA to facilitate commercial transition. Finally, I would consider a program I have experienced in the State Department that allows some modest investment in a technology to facilitate its commercial transition which is paid back, if successful but considered a grant if not. This can ensure availability of the technology from the commercial sector with little government risk and likelihood of repayment.

Technical Data

186. **Do you believe that the Army should secure ownership of technical data in connection with items and processes associated with major weapon systems?**

The first thing discussed in any commercial meeting is intellectual property rights and non-disclosure responsibilities. My experience is that it is the last in the government. Additionally, I have personally seen exposure of trade secrets by government employees because of callous attitudes toward IP. The result is that most companies never work

with the government after one such incident. Unlike large defense contractors with large facilities and real property, IP, either patents or trade secrets, is all that small businesses own. To secure government IP, it is essential to make clear the rules of IP within the government and Army contracts, be honest and up-front with contractors, and abide by the agreements. If a system must use a specific piece of IP that is unique and developed with government money, owning that IP may be the correct plan and must be part of the original contract. If modularity allows for changeout or if IP ages, it may be best to use a licensing agreement. Any mixed IP should be stated in the initial contract and ownership of derived IP clarified. All of this effects contract costs.

187.   Should software-based acquisitions require government ownership of technical data? If so, why?

If the software is unique to and fully funded by the government, yes it should. Poor software rights management, particularly in mixed development causes the government to have to buy the full rights in arrears which is always much more expensive than in up-front negotiations. It is imperative that the Army know at the onset, what they are licensing, what is mixed into the product from the vendor that even if modular would be essential to making government funded and owned software work, and what software is specifically developed and owned by the government. Driving a modular approach, even with mixed software, can reduce the risk to the government for recovering IP rights.

188.   What steps, if any, will you take, if confirmed, to ensure that the Army obtains the technical data rights that it needs to avoid being locked into unnecessary sole-source follow-on production and sustainment to incumbents to the detriment of the taxpayer and the warfighter?

If confirmed, I will review, and if necessary, modify our decision-making processes for obtaining technical data rights. If our current cost/benefit analysis is lacking, I will take action to train our workforce to consider the true cost in not obtaining these rights.   In the past we may have had the mindset that a program manager had to "make the case" for obtaining technical data rights. I intend to reinforce the view that we have to make the case for NOT obtaining technical data right or how it will be managed if not obtained.

Congressional Oversight

In order to exercise its legislative and oversight responsibilities, it is important that this Committee and other appropriate committees of Congress are able to receive testimony, briefings, and other communications of information.

189.   Do you agree, if confirmed, to appear before this Committee and other appropriate committees of Congress?

Yes.

190. **Do you agree, if confirmed, to appear before this Committee, or designated members of this Committee, and provide information, subject to appropriate and necessary security protection, with respect to your responsibilities as the ASA(ALT)?**

Yes.

191. **Do you agree to ensure that testimony, briefings, and other communications of information are provided to this Committee and its staff and other appropriate committees in a timely manner?**

Yes.

192. **Do you agree to provide documents, including copies of electronic forms of communication, in a timely manner when requested by a duly constituted committee, or to consult with this Committee regarding the basis for any good faith delay or denial in providing such documents?**

193. **Do you agree to answer letters and requests for information from individual Senators who are members of this Committee?**

Yes.

194. **If confirmed, do you agree to provide to this Committee relevant information within the jurisdictional oversight of the Committee when requested by the Committee, even in the absence of the formality of a letter from the Chairman?**

Yes, if confirmed, I agree to provide appropriate responses to all Congressional oversight requests.