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May 2018

DOD PERSONNEL

Further Actions Needed to Strengthen Oversight and Coordination of Defense Laboratories' Hiring Efforts

Accessible Version

GAO-18-417

GAO Highlights

Highlights of GAO-18-417, a report to the Committee on Armed Services, U.S. Senate

May 2018

DOD PERSONNEL

Further Actions Needed to Strengthen Oversight and Coordination of Defense Laboratories' Hiring Efforts

Why GAO Did This Study

DOD's defense labs help sustain, among other things, U.S. technological superiority and the delivery of technical capabilities to the warfighter. Over time Congress has granted unique flexibilities—such as the ability to hire qualified candidates who meet certain criteria using direct hire authorities—to the defense labs to expedite the hiring process and facilitate efforts to compete with the private sector.

Senate Report 114-255 included a provision for GAO to examine the labs' hiring structures and effective use of hiring authorities. This report examines (1) the defense labs use of existing hiring authorities and officials' views on the benefits of authorities and challenges of hiring; (2) the extent to which DOD evaluates the effectiveness of hiring, including hiring authorities at the defense labs; and (3) the extent to which DOD has time frames for approving and implementing new hiring authorities. GAO analyzed DOD hiring policies and data; conducted a survey of 16 defense lab officials involved in policy-making; interviewed DOD and service officials; and conducted nongeneralizable interviews with groups of officials, supervisors, and new hires from 6 labs—2 from each of the 3 military services, selected based on the labs' mission.

What GAO Recommends

GAO recommends that DOD (1) routinely obtain and monitor defense lab hiring data to improve oversight; (2) develop performance measures for evaluating the effectiveness of hiring; and (3) establish time frames to guide hiring authority approval and implementation. DOD concurred with the recommendations.

View GAO-18-417. For more information, contact Brenda S. Farrell, 202-512-3604, farrellb@gao.gov.

What GAO Found

The Department of Defense's (DOD) laboratories (defense labs) have used the laboratory-specific direct hire authorities more than any other category of agency-specific or government-wide hiring authority for science, technology, engineering, and mathematics personnel. As shown below, in fiscal years 2015—2017 the labs hired 5,303 personnel out of 11,562 total hires, or 46 percent using these direct hire authorities. Lab officials, however, identified challenges to hiring highly qualified candidates, such as delays in processing security clearances, despite the use of hiring authorities such as direct hire.

The Defense Laboratories' Most Used Hiring Authorities, Fiscal Years 2015—2017

Hiring authority category	Number of actions	Percentage
Defense lab direct hire authorities, all	5,303	45.9
Internal hiring actions	1,379	11.9
Expedited hiring authority	1,370	11.9
Government-wide direct hire authorities	789	6.8
Other[a]	668	5.8
All other[b]	2,053	17.8
Total	11,562	100[c]

Source: GAO analysis of Department of Defense data. | GAO-18-417.

[a] Other includes all other defense laboratory-specific direct hiring authorities used.
[b] All other includes remaining five categories of hiring authorities.
[c] Percentages may not sum to total due to rounding.

DOD and the defense labs track hiring data, but the Defense Laboratories Office (DLO) has not obtained or monitored these data or evaluated the effectiveness of the labs' hiring, including the use of hiring authorities. While existing lab data can be used to show the length of time of the hiring process, effectiveness is not currently evaluated. According to lab officials, timeliness data do not sufficiently inform about the effectiveness of the authorities and may not reflect a candidate's perception of the length of the hiring process. Further, the DLO has not developed performance measures to evaluate the effectiveness of hiring across the defense laboratories. Without routinely obtaining and monitoring hiring data and developing performance measures, DOD lacks reasonable assurance that the labs' hiring and use of hiring authorities—in particular, those granted by Congress to the labs—result in improved hiring outcomes.

DOD does not have clear time frames for approving and implementing new hiring authorities. The defense labs were unable to use a direct hire authority granted by Congress in fiscal year 2015 because it took DOD 2½ years to publish a federal register notice—the process used to implement new hiring authorities for the labs—for that authority. DOD officials identified coordination issues associated with the process as the cause of the delay and stated that DOD is taking steps to improve coordination—including meeting to formalize roles and responsibilities for the offices and developing a new approval process—between offices responsible for oversight of the labs and personnel policy. However, DLO's new federal register approval process does not include time frames for specific stages of coordination. Without clear time frames for its departmental coordination efforts related to the approval and implementation of new hiring authorities, officials cannot be certain they are taking action in a timely manner.

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Abbreviations

DCPDS	Defense Civilian Personnel Data System
DOD	Department of Defense
GPRA	Government Performance and Results Act
LQEP	Laboratory Quality Enhancement Program
NDAA	National Defense Authorization Act
OPM	Office of Personnel Management
SMART	Science, Mathematics, and Research for Transformation
STEM	Science, technology, engineering, and mathematics

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May 30, 2018

The Honorable John McCain
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The rapidly changing technological landscape necessitates that the Department of Defense (DOD) pursue innovative ways to sustain and advance its military superiority with a focus on new capabilities and efficiencies to address existing and emerging threats. To support these efforts, DOD's defense laboratory enterprise's vision includes sustaining U.S. technological superiority, preparing for an uncertain future, and accelerating the delivery of technical capabilities to the warfighter. In February 2016 the then-Assistant Secretary of Defense for Research and Engineering testified that the department employed more than 39,000 scientists and engineers in DOD's 63 laboratories, warfare centers, and engineering centers, spanning 22 states.[1] The Assistant Secretary recognized that, to meet the needs of the warfighter, the department must recruit and retain the best and brightest military and civilian scientists and engineers.

Staffing the enterprise, specifically the laboratories, is complicated by factors such as the high demand for science and technology workers, competition with the private sector, the requirement for U.S. citizenship, the need for new hires to obtain security clearances, and the aging of the federal science and technology workforce. These factors have contributed to concerns about the outlook for a workforce that supports the department's mission. In May 2016 the Senate Armed Services Committee recognized the defense laboratory enterprise as a unique national resource carrying out work that is vital to the national security interests of the United States.[2] According to the committee, it has taken

[1] Department of Defense Fiscal Year 2017 Science and Technology Programs: Defense Innovation to Create the Future Military Force, Hearing before the H. Comm. on Armed Services (Emerging Threats and Capabilities Subcommittee), 114th Cong. (Feb. 24, 2016) (statement of Mr. Stephen Welby, Assistant Secretary of Defense for Research and Engineering.

[2] See S. Rep. No. 114-255, at 77 (2016).

steps to provide the defense laboratories with certain flexibilities from federal rules and regulations that could hinder the laboratories' ability to carry out their critical missions. These flexibilities include greater pay-setting authority and the ability to hire qualified candidates who meet certain criteria using direct hire—authorities that are intended to expedite the hiring process and facilitate efforts to compete with the private sector. The committee further stated that its ultimate goal is to help ensure that the laboratories and lab employees have the desired flexibility to experiment and innovate as necessary to meet the needs of those responsible for ensuring the national defense.

Senate Report 114-255 accompanying a bill for the National Defense Authorization Act for Fiscal Year 2017 included a provision for us to examine the various hiring structures at the defense laboratories, the time it takes to hire personnel, and whether the laboratories are using existing hiring authorities effectively.[3] This report examines (1) the defense laboratories use of existing hiring authorities and what officials view as the benefits of authorities and incentives and the challenges in hiring; (2) the extent to which DOD evaluates the effectiveness of hiring, including hiring authorities, at the defense laboratories; and (3) the extent to which DOD has time frames for approving and implementing new hiring authorities.

For our first objective, we reviewed the authorities used to hire science, technology, engineering, and mathematics (STEM)[4] personnel at 15 of the 17 defense laboratories.[5] We selected these 15 laboratories because the remaining 2 laboratories were in the process of being implemented at the time of our review. We obtained and analyzed documentation, including past National Defense Authorization Acts (fiscal years 1995 through 2017), guidance related to government-wide hiring authorities, and federal register notices on existing hiring authorities for the defense laboratories.

[3] See S.Rep. No. 114-255, at 68 (2016).

[4] DOD science, technology, engineering, and mathematics (STEM) positions include, among others, the following career categories: life sciences, computer sciences and information technology, mathematics and related sciences, and engineering. See appendix I for a list of all STEM occupational categories and series.

[5] For a list of the defense laboratories included in the scope of our review see table 1 in the background.

We obtained data that were coordinated by the Defense Manpower Data Center and prepared by the Defense Civilian Personnel Advisory Service's Planning and Accountability Directorate. These hiring action data included hiring process milestone dates and the type of hiring authority used for each civilian hire at the defense laboratories in fiscal years 2015 through 2017. We selected these years because they were the three most recent years for which hiring data were available and because doing so would allow us to identify any trends in the use of hiring authorities or the length of time taken to hire. The data we obtained were extracted from the Defense Civilian Personnel Data System (DCPDS) using the Corporate Management Information System. Based on discussions with officials from the Defense Civilian Personnel Advisory Service and the Defense Manpower Data Center and reviews of additional documentation provided to support the data file, we determined that these data were sufficiently reliable for the purposes of reporting the frequency with which the labs used specific hiring authorities and calculating the time it takes the labs to hire, or time to hire, for fiscal years 2015 through 2017.

We also administered a survey to 16 officials who served as their respective laboratories' representatives to the Laboratory Quality Enhancement Program (LQEP) Panel on Personnel, Workforce Development, and Talent Management, in order to collect information on the use of specific hiring authorities, their perceptions about the effectiveness of those authorities, and their perceptions about any barriers to hiring.[6] Given the panel members' knowledge of their labs' hiring processes, we determined that they would be best positioned to respond to our survey. We received a response rate of 100 percent to our questionnaire of 16 laboratory representatives from the Panel. A copy of our questionnaire can be found in appendix II. We also interviewed defense laboratory supervisors and recent hires to obtain their perspectives on the hiring process. These individuals were selected by their respective defense laboratories' points of contact based on specific criteria we provided, including, for example, participation in hiring activities and the amount of time since they were hired. However, the

[6] The Space and Naval Warfare Center has LQEP representatives for both its Atlantic and its Pacific divisions. Accordingly, we obtained two completed questionnaires—one for Atlantic and one for Pacific—instead of a single consolidated questionnaire for the Space and Naval Warfare Center. As a result, instead of a total of 15 questionnaires from the 15 defense laboratories, we received 16 completed questionnaires.

views obtained from these officials, supervisors, and recent hires are not generalizable and are presented solely for illustrative purposes.

For our second and third objectives, we reviewed guidance and policies for collecting and analyzing laboratory personnel data related to the implementation and use of hiring authorities by these labs. We interviewed DOD, military service, and defense laboratory officials to discuss and review their hiring processes and procedures for STEM personnel, the use of existing hiring authorities, and efforts to document and evaluate time-to-hire metrics. We also met with DOD officials from the Office of the Under Secretary of Defense for Personnel and Readiness and the Office of the Under Secretary of Defense for Research and Engineering to discuss processes and procedures for implementing new hiring authorities granted by Congress. We evaluated their efforts to determine whether they met federal internal control standards, including that management should design appropriate types of control activities to achieve the entity's objectives, such as conducting top-level reviews of actual performance and establishing an organizational structure, assigning responsibilities, and delegating authority to achieve an organization's objectives.[7] We provide further details on our scope and methodology in appendix III.

We conducted this performance audit from November 2016 to May 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The Defense Laboratories

The National Defense Authorization Act (NDAA) for Fiscal Year 1995 authorized the Secretary of Defense to conduct personnel demonstration projects at the department's laboratories designated as Science and

[7] GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

Technology Reinvention Laboratories.[8] The demonstration projects were established to give laboratory managers more authority and flexibility in managing their civilian personnel. These projects function as the vehicles through which the department can determine whether changes in personnel management concepts, policies, or procedures, such as flexible pay or hiring authorities, would result in improved performance and would contribute to improved DOD or federal personnel management.[9] Table 1 presents a list of the 15 defense laboratories included in the scope of our review.

Table 1: The Department of Defense Laboratories, by Military Department Included in Our Review

Military department	Defense laboratory
Army (9)	• Armament Research, Development, and Engineering Center[a] • Army Research Laboratory[a] • Aviation and Missile Research, Development, and Engineering Center[a] • Communications-Electronics Research, Development, and Engineering Center[a] • Edgewood Chemical Biological Center[a] • Engineer Research and Development Center • Medical Research and Materiel Command • Natick Soldier Research, Development and Engineering Center[a] • Tank Automotive Research, Development and Engineering Center[a]
Navy (5)	• Naval Air Systems Command Warfare Centers, Weapons and Aircraft Divisions • Naval Research Laboratory • Naval Sea Systems Command Warfare Centers, Naval Surface and Undersea Warfare Centers • Office of Naval Research • Space and Naval Warfare Systems Command, Space and Naval Warfare Systems Center, Atlantic and Pacific
Air Force (1)	• Air Force Research Laboratory

Source: GAO analysis of Department of Defense information. | GAO-18-417

Note: At the start of our review, the Department of Defense was in the process of developing two additional defense laboratories—the Army Research Institute and the Space and Missile Defense Command.

[a]Denotes laboratories that fall under the Army's Research, Development, and Engineering Command.

[8] Pub. L. No. 103–337, § 342 (1994), as amended by section 1109 of the NDAA for Fiscal Year 2000 (Pub. L. No. 106–65 (1999)) and section 1114 of the NDAA for Fiscal Year 2001 (Pub. L. No. 106–398 (2000)). We refer to these Science and Technology Reinvention Laboratories as defense laboratories or labs.

[9] Department of Defense Instruction 1400.37, *Science and Technology Reinvention Laboratory (STRL) Personnel Demonstration Projects* (July 28, 2009).

The Defense Laboratories Office—within the Office of the Undersecretary of Defense for Research and Engineering (Research and Engineering)—carries out a range of core functions related to the defense labs, including the aggregation of data, analysis of capabilities, and alignment of activities, as well as advocacy for the defense labs. The National Defense Authorization Act for Fiscal Year 2017 gave authority to conduct and evaluate defense laboratory personnel demonstration projects to the Under Secretary of Defense for Research and Engineering and, accordingly, the Defense Laboratories Office.[10] The Defense Laboratories Office supports the Research and Engineering mission by helping to ensure comprehensive department-level insight into the activities and capabilities of the defense laboratories.

The LQEP was chartered on April 15, 1994 to improve productivity and effectiveness of the defense laboratories through changes in, among other things, personnel management and contracting processes. The NDAA for Fiscal Year 2017 established a new organizational structure for the program, adding two new panels while also specifying that two previously existing subpanels on personnel and infrastructure would continue to meet.[11] The NDAA for Fiscal Year 2017 requires the department to maintain a LQEP Panel on Personnel, Workforce Development, and Talent Management—one of the four panels established by a February 14, 2018 charter signed by the Under Secretary of Defense for Research and Engineering. The purpose of the panel is to help the LQEP achieve the following goals: (1) review and make recommendations to the Secretary of Defense on current policies and new initiatives affecting the defense laboratories; (2) support implementation of quality enhancement initiatives; and (3) conduct assessments and data analysis. The LQEP Panel on Personnel,

[10] Pub. L. No. 114-328, §211 (2016). While the statute states that this authority would shift to the Assistant Secretary of Defense for Research and Engineering, the same National Defense Authorization Act, at section 901, directed a change in organization within the Office of the Secretary of Defense, as of February 1, 2018. That change ultimately results in (1) the elimination of the Office of the Assistant Secretary of Defense for Research and Engineering, and (2) a shifting of the responsibilities of the Assistant Secretary of Defense for Research and Engineering to a newly established Under Secretary of Defense for Research and Engineering, among other things. Accordingly, where this report refers to the transition of authorities regarding defense lab personnel demonstration projects under Pub. L. No. 114-328, §211 , it refers to the new Under Secretary of Defense for Research and Engineering, rather than the Assistant Secretary of Defense for Research and Engineering.

[11] Pub. Law No. 114-328 § 211 (2016) [10 U.S.C. § 2358 note].

Workforce, Development, and Talent Management includes representatives from each of the defense laboratories, as well as from the Army, Navy, Air Force, appropriate defense agencies, and Office of the Under Secretary of Defense for Research and Engineering.

Hiring Authorities

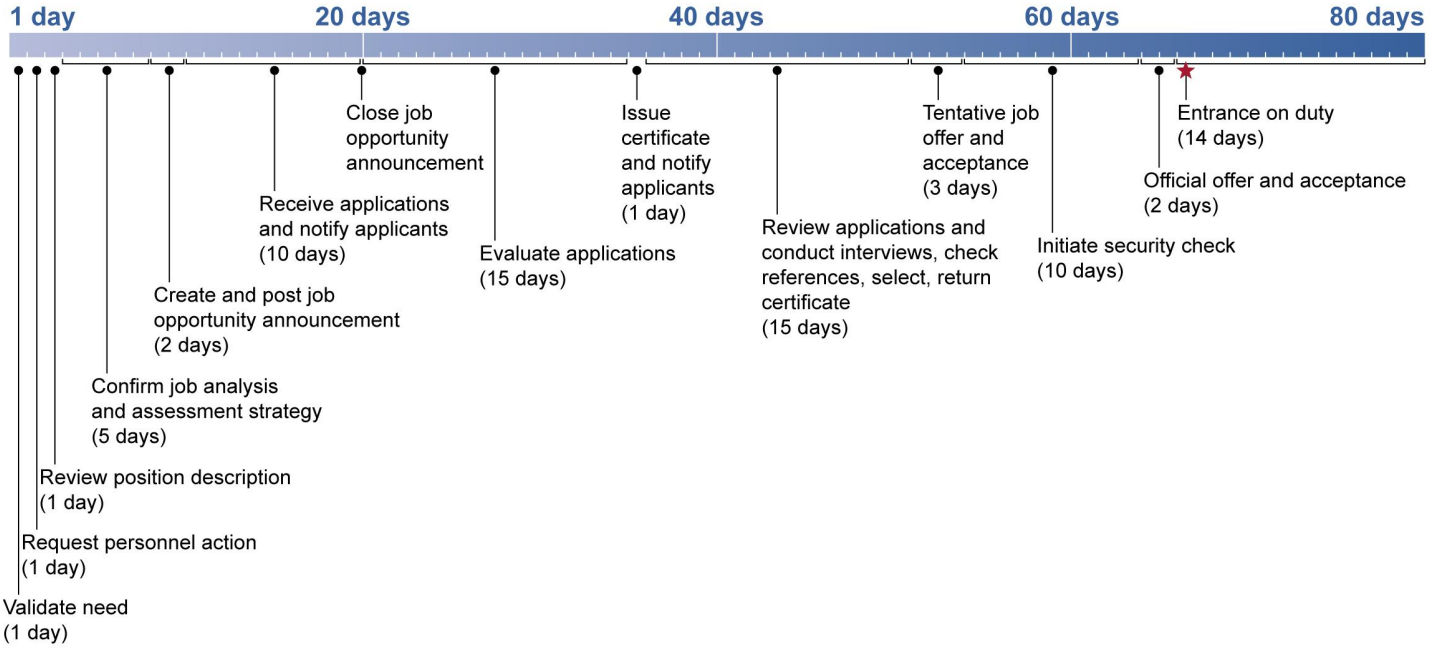
A hiring authority is the law, executive order, or regulation that allows an agency to hire a person into the federal civil service. Among other roles, hiring authorities determine the rules (or a subset of rules within a broader set) that agencies must follow throughout the hiring process. These rules may include whether a vacancy must be announced, who is eligible to apply, how the applicant will be assessed, whether veterans preference applies, and how long the employee may stay in federal service. Hiring authorities may be government-wide or granted to specific agencies.

Government-wide (Title 5) Hiring Authorities

- **Competitive (Delegated) Examining.** This is the traditional method for making appointments to competitive service positions, and it requires adherence to Title 5 competitive examining requirements. The competitive examining process requires agencies to notify the public that the government will accept applications for a job, screen applications against minimum qualification standards, apply selection priorities such as veterans preference, and assess applicants' relative competencies or knowledge, skills, and abilities against job-related criteria to identify the most qualified applicants.[12] Federal agencies typically assess applicants by rating and ranking them based on their experience, training, and education. Figure 1 depicts the Office of Personnel Management's (OPM) 80-day standard roadmap for hiring under the competitive process.

[12] 5 U.S.C. §§ 3304-3319 and 5 C.F.R. parts 332 and 337.

Figure 1: The Federal Government Competitive Hiring Process



Source: Office of Personnel Management. | GAO-18-417

- **Governmentwide (Title 5) Direct Hire Authority.** This authority allows agencies to appoint candidates to positions without regard to certain requirements in Title 5 of the United States Code, with OPM approval. A direct hire authority expedites hiring by eliminating specific hiring rules. In order for an agency to use direct hire, OPM must determine that there is either a severe shortage of candidates or a critical hiring need for a position or group of positions. When using the direct hire authority, agencies must adhere to certain public notice requirements.
- **The Pathways Programs.** These programs were created to ensure that the federal government continues to compete effectively for students and recent graduates. The current Pathways Programs consist of the Internship Program, the Recent Graduates Program, and the Presidential Management Fellows Program.[13] Initial hiring is made in the excepted service, but it may lead to conversion to permanent positions in the competitive service.

[13]Exec. Order No. 13562, *Recruiting and Hiring Students and Recent Graduates*, 75 Fed. Reg. 82,585 (Dec. 27, 2010).

- **Veterans-Related Hiring Authorities.** These include both the Veterans Recruitment Appointment Authority and the Veterans Employment Opportunities Act authority. The Veterans Recruitment Appointment authority allows for certain exceptions from the competitive examining process. Specifically, agencies may appoint eligible veterans without competition under limited circumstances or otherwise through excepted service hiring procedures.[14] The Veterans Employment Opportunities Act authority is a competitive service appointment authority that allows eligible veterans to apply for positions announced under merit promotion procedures when an agency accepts applications from outside of its own workforce.

DOD-specific Hiring Authorities

- **The Defense Laboratory Direct Hire Authorities.** These include the following four types of direct hire authorities granted to the defense laboratories by Congress for hiring STEM personnel:[15] (1) direct hire authority for candidates with advanced degrees;[16] (2) direct hire authority for candidates with bachelor's degrees;[17] (3) direct hire authority for veterans;[18] and (4) direct hire authority for students currently enrolled in a graduate or undergraduate STEM program.[19] The purpose of these direct hire authorities is to provide a streamlined and accelerated hiring process to allow the labs to successfully compete with private industry and academia for high-quality scientific, engineering, and technician talent.
- **The Expedited Hiring Authority for Acquisition Personnel.** This authority permits the Secretary of Defense to designate any category

[14]38 U.S.C. § 4214(b) and 5 C.F.R. § 307.103. If an agency has more than one candidate for the same job and one (or more) is preference-eligible, veterans preference procedures under part 302 of 5 C.F.R. apply.

[15]For the purposes of this review, we refer to these hiring authorities that have been granted to the defense laboratories as defense laboratory-specific hiring authorities.

[16] Pub. L. No. 110-417, § 1108 (2008). An advanced degree is a Master's or higher degree from an accredited college or university in a field of scientific or engineering study directly related to the duties of the position to be filled.

[17] Pub. L. No. 113-66, § 1107(a)(1) (2013).

[18] Pub. L. No. 113-66, § 1107(a)(2) (2013). A veteran is defined in 38 U.S.C. § 101 as a person who served in the active military, naval, or air service, and who was discharged or released under conditions other than dishonorable.

[19] Pub. L. No. 113-291, § 1105 (2014).

of positions in the acquisition workforce as positions for which there exists a shortage of candidates or there is a critical hiring need; and to utilize specific authorities to recruit and appoint qualified persons directly to positions so designated.[20]

- **The Science, Mathematics, and Research for Transformation (SMART) Scholarship-for-Service Program.** This program was established pursuant to 10 USC §2192a, as amended, and is funded through the National Defense Education Program. The SMART scholarship for civilian service program provides academic funding in exchange for completing a period of full-time employment with DOD upon graduation.

The Defense Laboratories Have Used Direct Hire Authorities and Other Incentives to Help Hiring Efforts, but Officials Reported Challenges in Hiring Highly Qualified Candidates

The labs have used the defense laboratory-specific direct hire authorities more than any other category of agency-specific or government-wide hiring authority.[21] Defense laboratory officials we surveyed reported that these direct hire authorities had been the most helpful to the labs' efforts to hire highly qualified candidates for STEM positions, and also reported that the use of certain incentives had been helpful in this effort. However, even with access to the authorities, these defense laboratory officials identified challenges associated with the hiring process that affected their ability to hire highly qualified candidates.

[20]10 U.S.C. § 1705(f).

[21]As noted, for the purposes of this review, we refer to these hiring authorities that have been granted to the defense laboratories as defense laboratory-specific hiring authorities.

Defense Laboratories Used the Direct Hire Authorities Most Frequently for Hiring STEM Candidates, and the Use of These Authorities Has Increased since 2015

For fiscal years 2015 through 2017, the defense laboratories used laboratory-specific direct hire authorities more often than any other category of hiring authorities when hiring STEM personnel. Moreover, the defense laboratories' use of these direct hire authorities increased each year from fiscal year 2015 through fiscal year 2017. Of the 11,562 STEM hiring actions in fiscal years 2015 through 2017, approximately 46 percent were completed using one of the defense laboratory direct hire authorities. The second and third most used hiring authorities were internal hiring actions and the expedited hiring authority for acquisition personnel, each of which comprised approximately 12 percent of the hiring actions during the time period. Table 2 provides information on the overall number of hiring actions by hiring authority for fiscal years 2015 through 2017.

Table 2: The Department of Defense Laboratories' Overall Use of Hiring Authorities for Fiscal Years 2015—2017

Hiring authority category	Number of hiring actions	Percentage
Defense laboratory direct hire authorities, all	5,303	45.9
Internal hiring actions	1,379	11.9
Expedited hiring authority	1,370	11.9
Government-wide direct hire authorities	789	6.8
Other[a]	668	5.8
Competitive hiring/delegated examining unit	595	5.2
Unknown[b]	591	5.1
Veterans-related hiring authorities	468	4.1
Science, mathematics, and research for transformation (SMART) program	248	2.1
Pathways	151	1.3
Total	**11,562**	**100[c]**

Source: GAO analysis of Department of Defense data. | GAO-18-417

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown.

[c]Percentages may not sum to total due to rounding.

The laboratory-specific direct hire authorities include the direct hire authorities for candidates with advanced degrees, candidates with bachelor's degrees, and candidates who are veterans—authorities were granted by Congress in prior legislation.[22] Among the defense laboratory direct hire authorities, the direct hire authority for candidates with bachelor's degrees was used for 55 percent of all direct hires, for a total of 2,920 hiring actions for fiscal years 2015 through 2017. During the same time frame, the labs used the direct hire authority for candidates with advanced degrees for approximately 36 percent (1,919 hiring actions) of all direct hires, and the direct hire authority for veteran candidates for approximately 9 percent (455 hiring actions). In addition, for less than one percent of the direct hires, either the labs used another category of laboratory-specific direct hire authority or we were unable to determine which type of direct hire authority was used during those same three fiscal years.[23] See table 3 for information on the defense labs' use of the defense laboratory-specific direct hire authorities for fiscal years 2015 through 2017.

Table 3: The Department of Defense Laboratories' Use of Direct Hire Authorities in Fiscal Years 2015—2017, by Type of Hiring Authority

Type of direct hire authority used	Number of hiring actions	Percentage
Direct hire authority for bachelor's degrees	2,920	55.0
Direct hire authority for advanced degrees	1,919	36.2
Direct hire authority for veterans	455	8.6
Direct hire authority, unspecified[a]	5	0.1
Direct hire authority, other[b]	4	0.1
Total	**5,303**	**100**

Source: GAO analysis of Department of Defense data. | GAO-18-417

[a]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of defense laboratory direct hire authority used was unspecified.

[22] See Pub. L. No. 110-417, § 1108 (2008); Pub. L. No. 113-66, § 1107(a)(1) (2013); and Pub. L. No. 113-66, § 1107(a)(2) (2013). The defense-laboratory specific authority for direct hire of students found at Pub. L. No. 113-291, § 1105 was implemented by the Department of Defense in June 2017, and, as a result, was not included in these statistics.

[23] For the purposes of our analysis, we had to create two additional categories of laboratory-specific direct hire authorities to capture a small number of hiring actions that (1) did not fall into one of the three other categories of defense laboratory-specific direct hire authorities (Direct hire authority, other); or (2) we were unable to classify due to missing or unclear information in the DOD data (Direct hire authority, unspecified).

[b]Other includes all other defense laboratory-specific direct hiring authorities used by the defense laboratories.

In fiscal year 2017 the defense labs used the defense laboratory direct hire authorities for 54 percent of STEM hiring actions completed, representing an increase of approximately 16 percentage points relative to fiscal year 2015, when 38 percent were hired under defense lab direct hire authorities. For additional information on the labs' use of hiring authorities in fiscal years 2015 through 2017, as well as hiring authority data by laboratory, see appendix IV. One laboratory official explained that the increased use of the direct hire authorities could be a result of the NDAA for Fiscal Year 2016, which increased the laboratories' allowable use of the direct hire authority for candidates with bachelor's degrees from 3 percent to 6 percent, and use of the direct hire authority for veterans from 1 percent to 3 percent, of the total number of scientific and engineering positions at each laboratory at the end of the preceding fiscal year. The direct hire authority for candidates with bachelor's degrees was used most often—for 1,151 out of 1,835 hiring actions—as compared with the other direct hire authorities in fiscal year 2017. See table 4 for more information on the laboratories' use of all hiring authorities in fiscal year 2017. In addition, table 5 provides more information on the labs' use of the direct hire authorities in fiscal year 2017.

Table 4: The Department of Defense Laboratories' Overall Use of Hiring Authorities for Fiscal Year 2017

Hiring authority category	Number of hiring actions	Percentage
Defense laboratory direct hire authorities, all	1,835	54.5
Internal hiring actions	426	12.7
Expedited hiring authority	363	10.8
Other[a]	170	5.1
Government-wide direct hire authorities	146	4.3
Competitive hiring/delegated examining unit	122	3.6
Unknown[b]	113	3.4
Science, mathematics, and research for transformation (SMART) program	91	2.7
Veterans-related hiring authorities	89	2.6
Pathways	10	0.3
Total	**3,365**	**100.0**

Source: GAO analysis of Department of Defense data. | GAO-18-417

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown.

Table 5: The Department of Defense Laboratories' Use of Direct Hire Authorities in Fiscal Year 2017, by Type

Type of direct hire authority used	Number of hiring actions	Percentage
Direct hire authority for bachelor's degrees	1,151	62.7
Direct hire authority for advanced degrees	535	29.2
Direct hire authority for veterans	145	7.9
Direct hire authority, other[a]	4	0.2
Direct hire authority, unspecified[b]	0	0.0
Total	**1,835**	**100**

Source: GAO analysis of Department of Defense data. | GAO-18-417

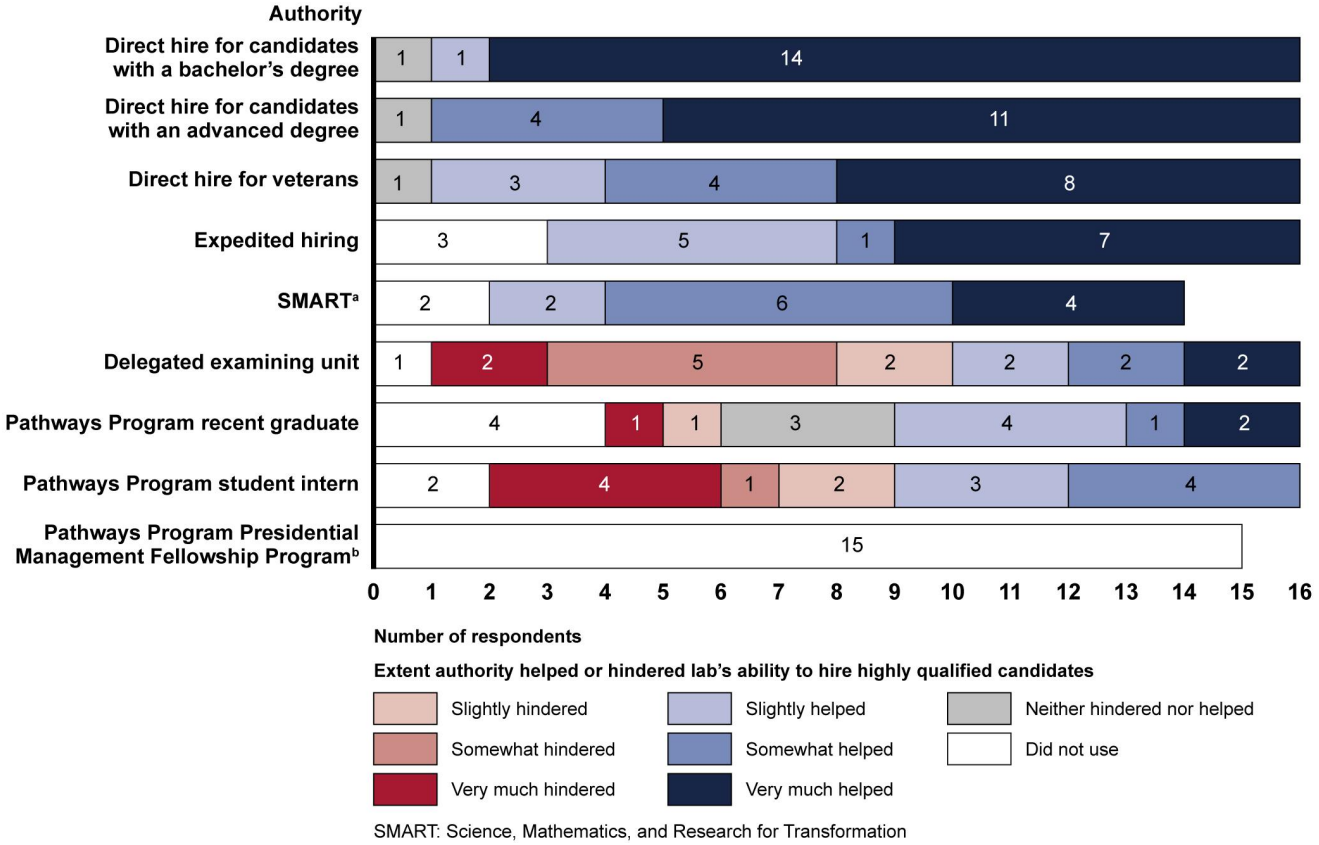
[a]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of defense laboratory direct hire authority used was unspecified.

[b]Other includes other defense laboratory-specific direct hiring authorities used by the defense laboratories.

Laboratory Officials Reported That Certain Hiring Authorities and Incentives Have Helped Defense Laboratories Hire Highly Qualified Candidates

Defense laboratory officials we surveyed most frequently identified the three defense laboratory-specific direct hire authorities as having helped to hire highly qualified candidates (see figure 2) and to hire quickly (see figure 3). Specifically, 15 of 16 respondents to our survey stated that each of the three direct hire authorities had been helpful in hiring highly qualified candidates, and that the direct hire authorities for veterans and for candidates with an advanced degree had helped them to hire quickly. Moreover, all 16 survey respondents stated that the direct hire authorities for candidates with a bachelor's degree had helped them to hire quickly. Among the three direct hire authorities, the one for candidates with bachelor's degrees was reported to be the most helpful to the laboratories' hiring efforts, according to our survey results.

Figure 2: Department of Defense Laboratory Survey Responses about Helpfulness of Various Hiring Authorities in Hiring Highly Qualified Candidates

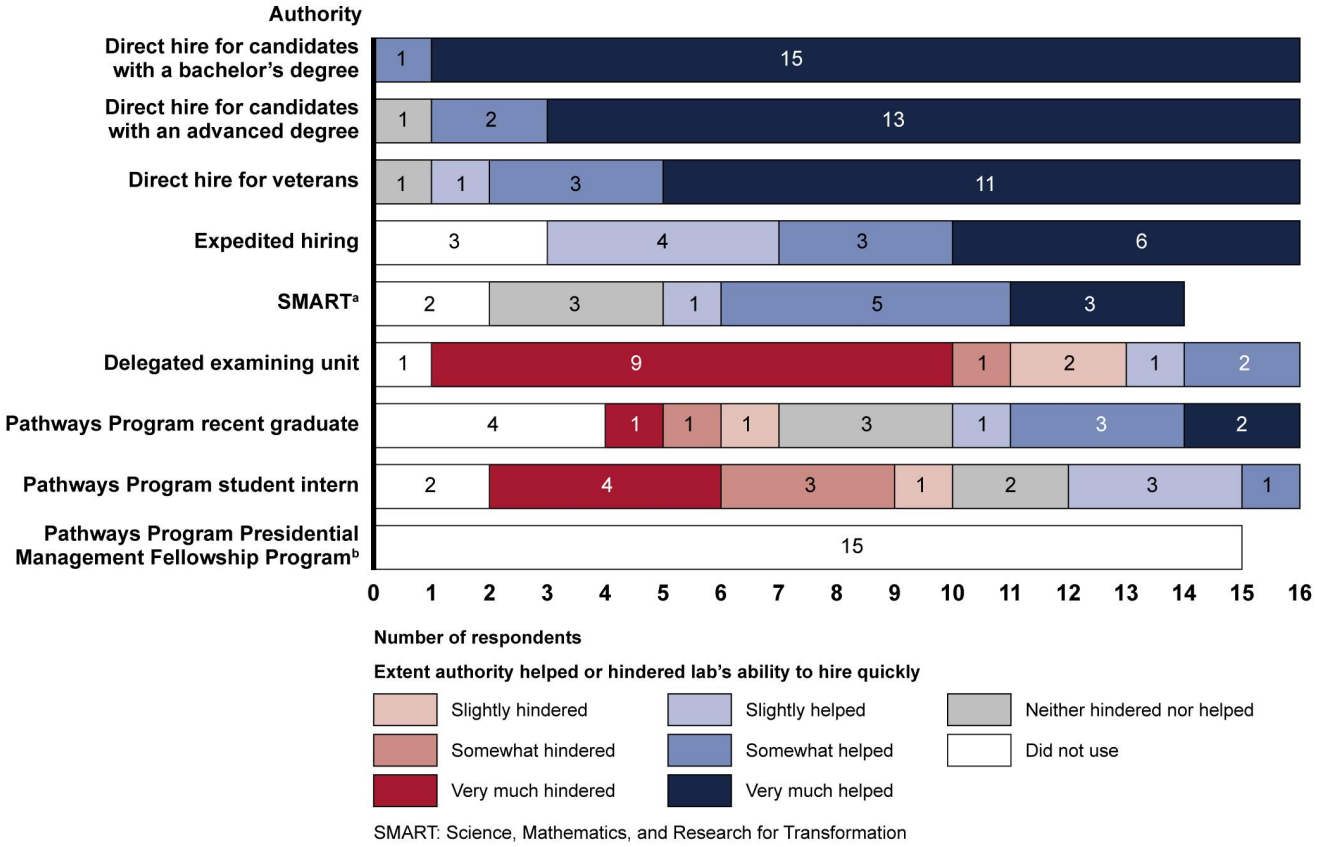


Source: GAO survey. | GAO-18-417

[a]Officials from one lab responded that they did not know whether they had used this authority. Officials from a second lab did not respond to this question.

[b]Officials from one lab did not respond to this question.

Figure 3: Department of Defense Laboratory Survey Responses about Helpfulness of Various Hiring Authorities in Hiring Quickly



Source: GAO survey. | GAO-18-417

[a]Officials from one lab responded that they did not know whether they had used this authority. Officials from a second lab did not respond to this question.

[b]Officials from one lab did not respond to this question.

A majority of the laboratory officials we surveyed also stated that the Expedited Hiring Authority and the Science, Mathematics, and Research for Transformation (SMART) Program had both helped facilitate their efforts to hire highly qualified candidates and to hire them quickly. According to our survey, the least helpful hiring authority that lab officials reported using was the delegated examining unit authority. Six of 16 survey respondents stated that the delegated examining unit authority had helped them to hire highly qualified candidates, while 9 of 16 stated that the authority had hindered this effort. Three of 16 survey respondents stated that the delegated examining unit authority had helped them to hire

quickly, while 12 of 16 stated that the use of this authority had hindered their ability to hire quickly.

During our interviews with laboratory officials, hiring officials and supervisors described the defense laboratory direct hire authorities as being helpful in their hiring efforts. For example, hiring officials from one lab stated that the direct hire authorities were the easiest authorities to use, and that since their lab had started using them, job offer acceptance rates had increased and their workload related to hiring had decreased. A hiring official from another laboratory stated that the use of direct hire authorities had allowed their lab to be more competitive with the private sector in hiring, which is useful due to the high demand for employees in research fields. A supervisor from one lab stated that the use of direct hire authorities was not only faster than the competitive hiring process, but it also allowed supervisors a greater ability to get to know candidates early in the process to determine whether they met the needs of a position. In comparison, hiring managers we interviewed at one laboratory stated that the Pathways Program is not an effective means of hiring students because the program requires a competitive announcement. Supervisors also stated that the application process for Pathways can be cumbersome and confusing for applicants and may cause quality applicants to be screened out early. Defense laboratory officials who responded to our survey also stated that the process takes too long and that quality applicants may drop out of the process due to the length of the process.

Defense laboratory hiring data also indicated that use of the defense laboratory direct hire authorities resulted in faster than median hiring times. As shown in table 6, the median time to hire for STEM positions at the defense laboratories in fiscal year 2017 was 88 days. The median time to hire when using the defense laboratories' direct hire authorities, Pathways, or the SMART program authority was faster than that of the median for all categories combined. The median time to hire when using the competitive hiring process was approximately twice as long as when using the labs' direct hire authorities. Our full analysis of defense laboratory hiring data, including the time to hire by hiring authority category, for fiscal years 2015 through 2017 can be found in appendix V.

Table 6: Department of Defense Laboratory Median Times to Hire, by Hiring Authority Category, for Science, Technology, Engineering, and Mathematics Positions, Fiscal Year 2017

Hiring authority category	Median number of days[a]
Science, mathematics, and research for transformation (SMART) program	33.0
Pathways	40.5
Defense laboratory direct hire authorities (all types combined)	80.0
Other[b]	82.0
All categories combined	**88.0**
Direct hire authority - government-wide	96.0
Expedited hiring authority	101.0
Internal	103.0
Veterans-related hiring authorities	129.0
Unknown[c]	131.0
Competitive hiring/delegated examining unit	162.5

Source: GAO Analysis of Department of Defense data. | GAO-18-417

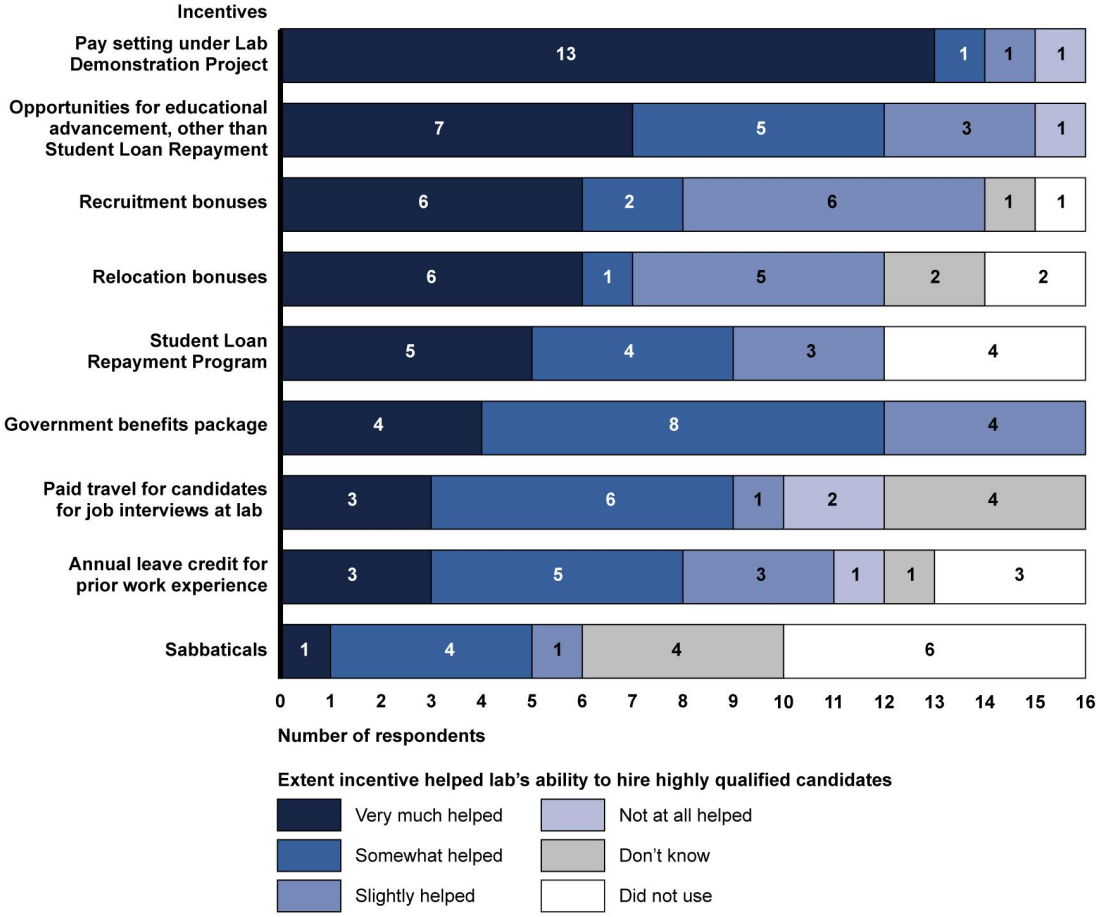
[a]The median number of days was calculated for each hiring action from the date the request for personnel action was initiated to the employee's enter-on-duty date.

[b]Other includes all other hiring authorities used by the defense laboratories.

[c]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown.

Defense laboratory officials also cited the use of incentives as helpful in hiring highly qualified candidates, as shown in figure 4. According to our survey results, the defense laboratories' flexibility in pay setting under their demonstration project authority was generally considered to be the most helpful incentive, with 13 of 16 survey respondents stating that this incentive had very much helped them to hire highly qualified candidates.

Figure 4: Department of Defense Laboratory Survey Responses about Helpfulness of Various Incentives in Hiring Highly Qualified Candidates



Source: GAO survey. | GAO-18-417

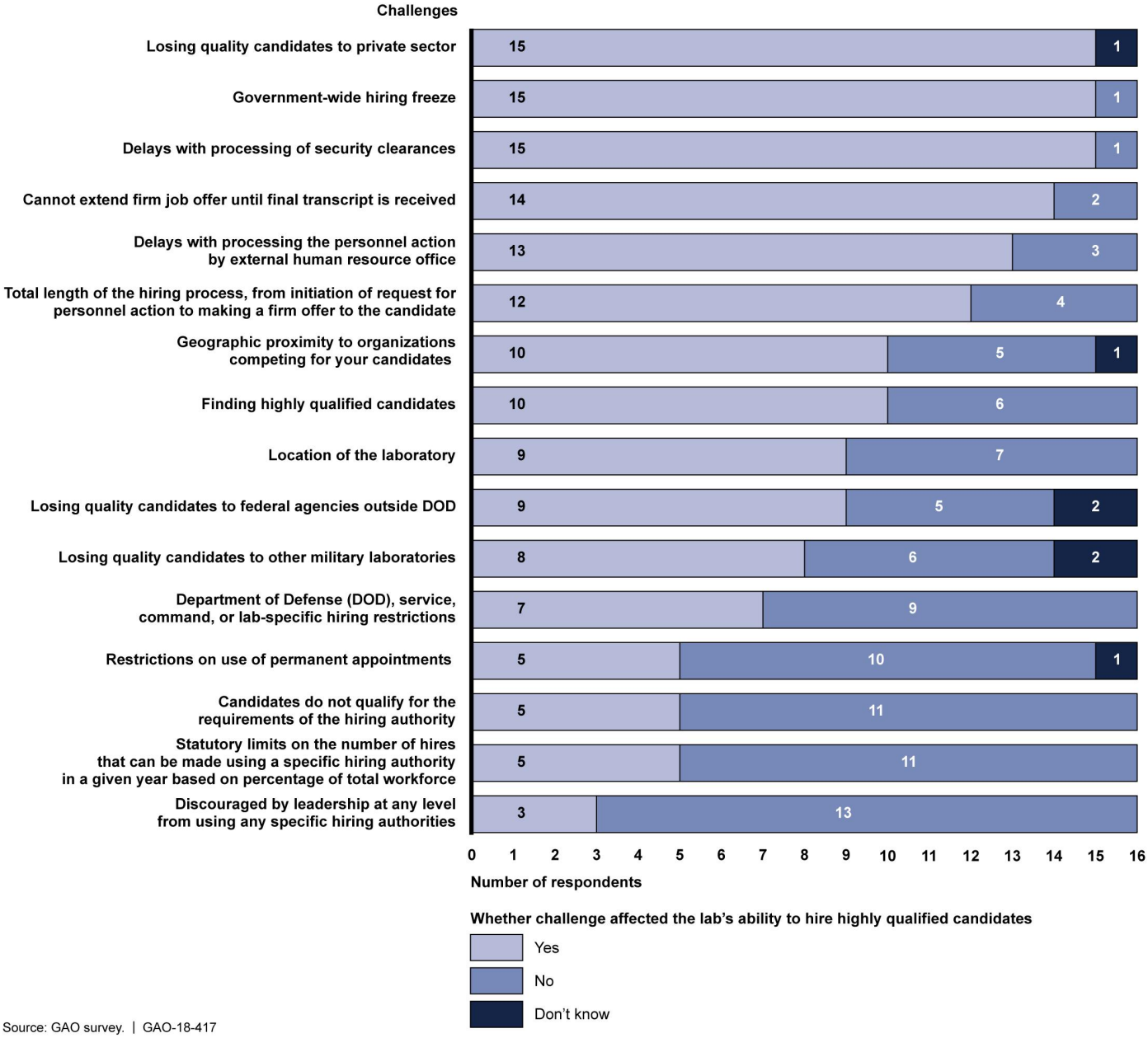
During interviews, laboratory officials described the use of these incentives as being particularly helpful if a candidate is considering multiple job offers because the incentives can help make the lab's offer more competitive with offers from other employers. Multiple hiring officials stated that they would generally not include such incentives in an initial offer, but that if the candidate did not accept that offer, they would consider increasing the salary or offering a bonus. A hiring official from one lab stated that his lab has not offered many recruitment bonuses in recent years, because their acceptance rate has been sufficiently high without the use of that incentive.

Many of the recently hired lab employees whom we interviewed also cited incentives, including bonuses and student loan repayment, as factoring into their decisions to accept the employment offers for their current positions. For example, one recently hired employee stated that the lab's student loan repayment program was a significant factor in his decision to accept employment at the lab rather than with private industry. Recently hired employees also cited less tangible benefits of working at the labs, including the [collegial] work environment, job stability, and type of work performed, as key factors in their decisions to accept their current positions. One newly hired employee stated that, while she could earn more money in a private-sector job, the defense laboratory position would afford her the freedom to pursue the type of work she is currently doing, and that this was a major consideration in her decision to accept it. Another newly hired employee similarly stated that he was interested in the type of research conducted at the lab where he now works, and that he was attracted to the opportunity to contribute to the national defense, while also taking advantage of benefits that support the pursuit of higher education.

Defense Laboratory Officials We Surveyed Identified Challenges That Affect Their Ability to Hire Highly Qualified Candidates

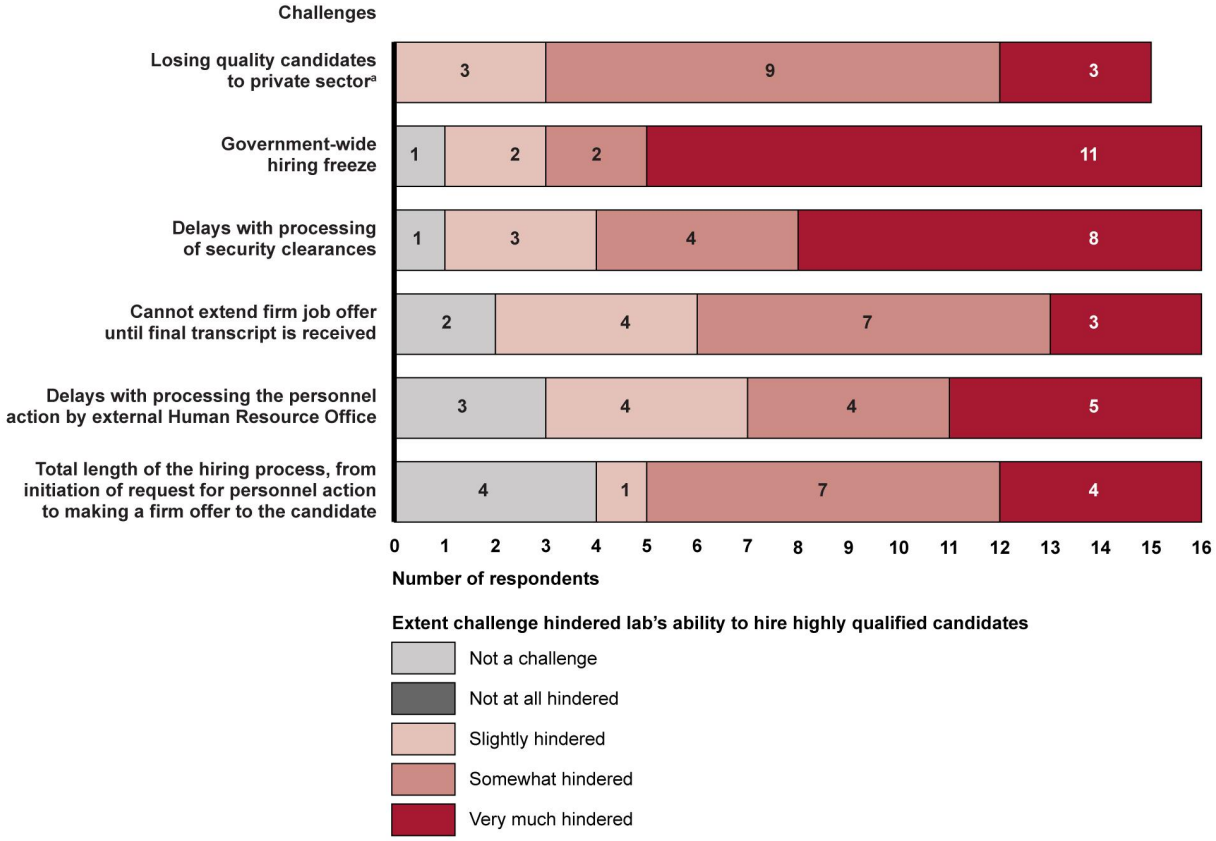
Defense laboratory officials we surveyed reported that, although the available hiring authorities and incentives are helpful, they experience a range of challenges to their ability to hire highly qualified candidates, as shown in figure 5, ranging in order from the most to the least frequently cited. In addition, figure 6 shows the extent to which officials reported selected top challenges that hindered their respective labs' abilities to hire highly qualified candidates.

Figure 5: Department of Defense Laboratory Survey Responses about Challenges in Hiring Highly Qualified Candidates



Source: GAO survey. | GAO-18-417

Figure 6: Department of Defense Laboratory Survey Responses about the Top Challenges



Source: GAO survey. | GAO-18-417

[a]Officials from one laboratory responded that they were not sure whether this was a challenged they had experienced.

Defense laboratory officials described how hiring challenges identified in our survey affect their ability to hire high quality candidates. Specifically, these challenges are as follows:

- **Losing quality candidates to the private sector:** Fifteen of 16 survey respondents stated that this was a challenge, and 12 of the 15 stated that this challenge had somewhat or very much hindered their lab's ability to hire highly qualified candidates for STEM positions since October 2015. Hiring officials and supervisors we interviewed stated that private-sector employers can make on-the-spot job offers to candidates at college career fairs or other recruiting events, whereas the labs are unable to make a firm job offer until later in the hiring process.

- **Government-wide hiring freeze:** Fifteen of 16 survey respondents identified this as a challenge, with 13 of those reporting that it had either somewhat or very much hindered their lab's ability to hire highly qualified candidates for STEM positions since October 2015. Multiple hiring officials and supervisors we interviewed stated that they had lost candidates whom they were in the process of hiring because the candidates had accepted other offers due to the delays created by the hiring freeze. In addition, some officials stated that, although the freeze had been lifted, their labs' hiring efforts were still affected by backlogs created by the freeze, or were adapting to new processes that were implemented as a result of the freeze.
- **Delays with the processing of security clearances:** Fifteen of 16 survey respondents cited this as a challenge; 12 of the 15 stated that this challenge had somewhat or very much hindered their lab's ability to hire highly qualified candidates for STEM positions since October 2015. A supervisor from one lab stated that he was in the process of trying to hire two employees whose hiring actions had been delayed due to the security clearance process. The supervisor stated that he had been told it could potentially take an additional 6 months to 1 year to complete the process, and that he believed this may cause the candidates to seek other employment opportunities. In other cases, hiring officials stated that employees may be able to begin work prior to obtaining a clearance, but that they may be limited in the job duties they can perform while waiting for their clearance to be granted. The government-wide personnel security clearance process was added to GAO's High Risk List in 2018, based on our prior work that identified, among other issues, a significant backlog of background investigations and delays in the timely processing of security clearances.[24]
- **Inability to extend a firm job offer until a final transcript is received:** Fourteen of 16 survey respondents stated that this was a challenge, with 10 of the officials responding that it had somewhat or very much hindered their lab's ability to hire highly qualified candidates. One hiring official stated that top candidates will often receive 5 to 10 job offers prior to graduation, and that his lab's may be the only one of those offers that is characterized as tentative. Multiple

[24] GAO, *Personnel Security Clearances: Additional Actions Needed to Ensure Quality, Address Timeliness, and Reduce Investigation Backlog*, GAO-18-29 (Washington, D.C.: Dec. 12, 2017); and *Personnel Security Clearances: Plans Needed to Fully Implement and Oversee Continuous Evaluation of Clearance Holders*, GAO-18-117 (Washington, D.C.: Nov. 21, 2017).

officials noted that career fairs can often occur several months prior to graduation, so the lab would have to wait for the duration of this time before extending a firm offer to a candidate who has been identified.

- **Delays with processing personnel actions by the external human resources office:** Thirteen of 16 survey respondents stated that this presented a challenge, and 9 of the 13 stated that this challenge had somewhat or very much hindered their lab's ability to hire highly qualified candidates for STEM positions since October 2015. Multiple hiring officials stated that employees at their human resource offices may not have an understanding of either the technical nature of the positions being filled at the lab or the lab's unique hiring authorities, and that this lack of knowledge could create delays. Other officials noted that their servicing human resource offices seemed to be inflexible regarding certain paperwork requirements. For example, officials at one lab stated that their human resource office requires candidates' resumes to be formatted in a particular way, and that they have been required to ask candidates to make formatting changes to their resumes. An official at another lab stated that the lab has faced similar challenges with regard to the formatting of transcripts and has had to request clarifying documentation from the university. In both cases, the officials described these requirements as embarrassing, and as a delay to the hiring process. Further, both a supervisor and a newly hired employee we interviewed noted that it is difficult to learn the status of an application when it is being processed by the human resource office.
- **Overall length of the hiring process:** Twelve of 16 survey respondents cited this as a challenge; 11 of the 12 stated that this challenge had somewhat or very much hindered their lab's ability to hire highly qualified candidates for STEM positions since October 2015. Hiring officials and supervisors we interviewed stated that their lab had lost candidates due to the length of the hiring process. One supervisor we interviewed stated that he has encountered candidates who really wanted to work at his lab but had had to pursue other opportunities because they could not afford to wait to be hired by the lab. Multiple newly hired employees we interviewed described the process as slow or lengthy, but described reasons why they were willing to wait. For example, some employees were already working at their lab in a contractor or post-doctoral fellowship position, and accordingly they were able to continue in these positions while completing the hiring process for the permanent positions they now hold. One employee stated that if the process had gone on any longer, he likely would have accepted another offer he had received, while another employee stated that he knew of at least two post-

doctoral fellows at his lab who chose not to continue in the hiring process for a permanent position at the lab due to the length of the hiring process.

DOD and the Defense Labs Track Hiring Data, but the Defense Laboratories Office Has Not Obtained and Monitored These Data or Evaluated the Effectiveness of Hiring at the Laboratories

The department and the defense laboratories track hiring data that can be used to evaluate some aspects of the individual labs' hiring efforts, but the Defense Laboratories Office has not routinely obtained or monitored these data or evaluated the effectiveness of hiring, including the use of hiring authorities, across the defense laboratories as a whole.[25] Laboratory hiring data are captured at the department level in the Defense Civilian Personnel Data System (DCPDS)—the department's system of record for personnel data. In addition, the individual defense laboratories track hiring data, including the type of hiring authority used and certain milestone dates that can be used to measure the length of the hiring process, known as time to hire.

According to OPM guidance[26] and our prior work,[27] time to hire is a measure that may inform about the effectiveness of the hiring process, and federal agencies are required to report time to hire for certain types of hiring actions to OPM.[28] Defense laboratory officials stated that, from their

[25] In April 2018 we evaluated a DOD report comparing the cost of civilian and contractors that assessed, among other things, the effectiveness of the use of flexible hiring authorities at 17 DOD organizations, including three of the defense laboratories. However, this evaluation was not specific to the STEM workforce and did not specifically assess the direct hire authorities granted to the defense laboratories. See GAO, *Civilian and Contractor Workforces: DOD's Cost Comparisons Addressed Most Report Elements but Excluded Some Costs*, GAO-18-399 (Washington, D.C.: Apr. 17, 2018).

[26] Office of Personnel Management, *End-to-End Hiring Initiative* (Washington, D.C.: 2008).

[27] GAO, *Federal Hiring: OPM Needs to Improve Management and Oversight of Hiring Authorities*, GAO-16-521 (Washington, D.C.: Aug. 2, 2016).

[28] Office of Personnel Management Memorandum, *Amended Time-to-Hire Reporting Requirements* (Mar. 10, 2014).

perspectives, the time- to-hire metric does not sufficiently inform about the effectiveness of the use of specific authorities, particularly when using the most commonly tracked milestones—from the initiation of a request for personnel action to an employee's entrance-on-duty date. For example, officials stated that when a direct hire authority is used to hire a candidate who is completing the final year of his or her educational program, the lab may identify and provide a tentative offer to this candidate several months prior to graduation, consistent with private-sector recruitment methods. In this case, officials stated that the length of time between the initiation of the request for personnel action and the candidate's entrance-on-duty date, following his or her graduation, could span a period of several months. According to defense laboratory officials, the total number of days for this hiring action gives the appearance that the use of the hiring authority was not efficient in this case; however, officials stated that it would have been effective from the supervisor's perspective, because the use of the hiring authority resulted in the ability to recruit a highly qualified candidate in a manner that was more competitive with the private sector.

Further, time-to-hire data, as reflected by the milestone dates that are currently tracked across the defense laboratories, may not reflect a candidate's perception of the length of the hiring process. More specifically, a candidate may consider the hiring process to be completed upon receiving a job offer (either tentative or final), which could occur weeks or months before the candidate's entrance-on-duty date, the commonly used end-point for measuring time to hire. According to officials, the length of time from when the offer is extended to entrance on duty can be affected by a candidate's individual situation and preferences, such as the need to complete an educational program or fulfill family or professional responsibilities prior to beginning work in the new position. In other cases, certain steps of the hiring process, such as completing the initial paperwork or obtaining management approval, may occur after a candidate has been engaged but prior to the initiation of a request for personnel action—the commonly used start-point for measuring time to hire. In this situation, the candidate's perception of the length of the hiring process may be longer than what is reflected by the time-to-hire data.

For the reasons described above, some defense laboratories measure time to hire using milestones that they have determined more appropriately reflect the effectiveness of their hiring efforts. For example, officials from one lab stated that they have sought to measure the length of the hiring process that occurs prior to the request for personnel action,

while officials from some labs stated that they measure time to hire using the tentative offer date as an end-point. In addition, some laboratories informally collect other types of data that they use in an effort to evaluate their hiring efforts, such as the reasons why candidates decline a job offer or feedback on the hiring process from newly hired employees.

However, officials from the Defense Laboratories Office stated that their office has not conducted any review of the effectiveness of defense laboratory hiring, including the use of hiring authorities, across the labs. The National Defense Authorization Action for Fiscal Year 2017 gave authority to conduct and evaluate defense laboratory personnel demonstration projects to the Office of the Under Secretary of Defense for Research and Engineering, under which the Defense Laboratories Office resides. Defense Laboratories Office officials stated that the office has not evaluated the effectiveness of defense laboratory hiring because it does not have access to defense laboratory hiring data, has not routinely requested these data from the labs or at the department level to monitor the data, and has not developed performance measures to evaluate the labs' hiring. As noted, laboratory hiring data are captured at the department level in DCPDS and in a variety of service- and laboratory-specific systems and tools. However, the Defense Laboratories Office does not have access to these data and, according to one official, the office would not have access to defense laboratory hiring data unless officials specifically requested them from the labs or from the Defense Manpower Data Center, which maintains DCPDS. According to the official, the Defense Laboratories Office has not routinely requested such data in the past, in part because their role did not require evaluation of such data.

In addition, the Defense Laboratories Office has not developed performance measures to evaluate the effectiveness of hiring across the defense laboratories or the labs' use of hiring authorities. An official from the Defense Laboratories Office stated that the office may begin to oversee the effectiveness of the defense laboratories' hiring efforts and, in doing so, may consider establishing performance measures to be used consistently across the labs, which could include time-to-hire or other measures. However, as of March 2018, the office had not established such measures for use across the defense laboratories nor provided any documentation on any planned efforts.

Standards for Internal Control in the Federal Government states that management should design appropriate types of control activities to achieve the entity's objectives, including top-level reviews of actual

performance and the comparison of actual performance with planned or expected results.[29] Further, consistent with the principles embodied in the GPRA Modernization Act of 2010, establishing a cohesive strategy that includes measurable outcomes can provide agencies with a clear direction for implementation of activities in multi-agency cross-cutting efforts.[30] We have previously reported that agencies are better equipped to address management and performance challenges when managers effectively use performance information for decision making.[31]

Without routinely obtaining and monitoring defense laboratory hiring data and developing performance measures, the Defense Laboratories Office cannot effectively oversee the effectiveness of hiring, including the use of hiring authorities, at the defense laboratories. Specifically, without performance measures for evaluating the effectiveness of the defense laboratories' hiring, and more specifically the use of hiring authorities, the department lacks reasonable assurance that these authorities—in particular, those granted by Congress to the defense laboratories—are resulting in improved hiring outcomes. In addition, without evaluating the effectiveness of the defense laboratories' hiring efforts, the department cannot understand any challenges experienced by the labs or determine appropriate strategies for mitigating these challenges. As a result, the department and defense laboratories may be unable to demonstrate that they are using their authorities and flexibilities effectively, or that such authorities and flexibilities should be maintained or expanded for future use.

[29] GAO-14-704G.

[30] GAO, *Countering Violent Extremism: Actions Needed to Define Strategy and Assess Progress of Federal Efforts*, GAO-17-300 (Washington, D.C.: Apr. 6, 2017); GAO, *Managing for Results: OMB Improved Implementation of Cross-Agency Priority Goals, But Could Be More Transparent About Measuring Progress,* GAO-16-509 (Washington, D.C.: May 20, 2016). The GPRA Modernization Act of 2010, Pub. L. No. 111-352 (2011), updated the Government Performance and Results Act (GPRA) of 1993, Pub. L. No. 103-62 (1993).

[31] GAO, *Managing for Results: OMB Improved Implementation of Cross-Agency Priority Goals, but Could Be More Transparent About Measuring Progress*, GAO-16-509, (Washington, D.C.: May 20, 2016).

DOD Does Not Have Clear Time Frames for Approving and Implementing New Hiring Authorities for the Defense Laboratories

DOD does not have clear time frames for its process for approving and implementing new hiring authorities for the defense laboratories. Section 1105 of the Carl Levin and Howard P "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 established a direct hire authority for students enrolled in a scientific, technical, engineering, or mathematics course of study at institutions of higher education on a temporary or term basis. Officials from the Defense Laboratories Office stated that the labs were unable to use the authority because the department's current process—the publication of a federal register notice—for allowing the laboratories to use the hiring authority took longer than anticipated.[32] On June 28, 2017—2 ½ years after the authority was granted in the NDAA for Fiscal Year 2015—the department published a federal register notice allowing the defense laboratories the authority to use the direct hire for students.[33]

DOD officials stated that the department has typically published a federal register notice whenever the defense laboratories are granted a new hiring authority in legislation—for example, when an NDAA is issued, or when certain modifications to the demonstration projects are made. The Defense Civilian Personnel Advisory Service—through its personnel policymaking role for the department—at the time required that the federal register notice process be used to implement any hiring authorities granted to the defense labs by Congress in legislation.[34] These procedures were published in DOD Instruction 1400.37.[35] DOD officials identified coordination issues that occurred during the approval

[32] The federal register notice process has traditionally been used by the department to implement the personnel demonstration projects at the defense laboratories, according to DOD officials.

[33] 82 Fed. Reg. 29,280 (June 28, 2017).

[34] The Defense Civilian Personnel Advisory Service falls under the umbrella of the Office of the Under Secretary of Defense for Personnel and Readiness.

[35] DOD Instruction 1400.37, *Science and Technology Reinvention Laboratory (STRL) Personnel Demonstration Projects* (July 28, 2009).

process of the federal register notice across the relevant offices as the cause of the delay associated with this federal register notice.[36]

Changes to DOD organizational structures further complicated the process of implementing new hiring authorities for defense laboratories. Specifically, in late 2016 a provision in the NDAA for Fiscal Year 2017 shifted the authority to conduct and evaluate defense laboratory personnel demonstration projects from the Office of the Under Secretary of Defense for Personnel and Readiness to the Office of the Under Secretary of Defense for Research and Engineering.[37] Within the Office of the Under Secretary of Defense for Research and Engineering, the Defense Laboratories Office has been tasked with the responsibility for matters related to the defense laboratories. According to the Director of the Defense Laboratories Office, informal discussions about the transition began shortly after the NDAA for Fiscal Year 2017 was passed in late 2016. According to that official, despite the shift in oversight responsibility, coordination between the offices of the Under Secretaries for Research and Engineering and for Personnel and Readiness is required on issues related to civilian personnel, including defense laboratory federal register notices.

Although a formal process for coordination did not exist at the start of our review, officials from the Defense Laboratories Office stated that representatives from the offices have met approximately five times since December 2016 and were taking steps to establish a coordination process for implementing new authorities. According to officials from the Defense Laboratories Office, during those meetings as well as during

[36] On May 12, 2017, a group of bipartisan senators sent a letter to the Secretary of Defense calling for the implementation of new hiring authorities at the defense laboratories and test ranges, granted within the NDAA for Fiscal Year 2017. In the letter, the group stated that the authorities will expedite the federal hiring process for the department and will allow it to better compete for a limited supply of technical talent to fill important vacancies.

[37] Pub. Law No. 114-328 § 211 (2016). The Defense Laboratories Office falls under the leadership of the Office of the Under Secretary of Defense for Research and Engineering. The shift in authority for defense laboratory personnel demonstration projects from the Office of the Under Secretary of Defense for Personnel and Readiness to the Office of the Under Secretary of Defense for Research and Engineering also included oversight of the Laboratory Quality Enhancement Program, which includes responsibility for, among other things, reviewing and making recommendations to the Secretary with respect to existing policies and practices affecting the labs to improve mission effectiveness and conduct assessments or data analysis on such other issues as the Secretary determines to be appropriate.

other, less formal interactions, officials have taken steps to formalize the roles and responsibilities of the relevant offices. According to officials from the Defense Laboratories Office, as of May 2018 the office was drafting a memorandum to formalize the roles and responsibilities of the Defense Laboratories Office and the Office of the Under Secretary of Defense for Personnel and Readiness to correspond to the federal register notice approval process; however, officials did not provide a completion date.

The Defense Laboratories Office established and documented its own federal register approval process in spring 2017 and updated it in early 2018. The aforementioned memorandum would further describe the roles and responsibilities for the Offices of the Under Secretary for Research and Engineering and the Deputy Assistant Secretary of Defense for Civilian Personnel Policy in carrying out the updated process.[38] According to officials, this is the process the office will use moving forward for coordination and approval of any future federal register notices. On March 6, 2018, the Office published a federal register notice that rescinds the earlier instruction published by the Defense Civilian Personnel Advisory Service of the Office of the Under Secretary of Personnel and Readiness. By rescinding that instruction—including the earlier process for approving requests from the labs and federal register notices—the Defense Laboratories Office can, according to officials, publish its own process and guidance.

In a 2016 presentation to the Joint Acquisition/Human Resources Summit on the defense laboratories, the Chair of the Laboratory Quality Enhancement Program Personnel Subpanel stated that a renewed and streamlined approval process would be beneficial to the creation of new authorities, among other things.[39] Although Defense Laboratories Office officials provided a flowchart of the office's updated federal register approval process for coordination, this process did not include time frames for specific stages of the coordination. Officials stated that they cannot arbitrarily assign time frames or deadlines for a review process because any time frames will be contingent on the other competing priorities of each office, and other tasks may take priority and thus push

[38] According to a Defense Laboratories Office official, this memorandum does not describe the roles of the Office of General Counsel or the Office of the Federal Register, among others.

[39] Michelle Williams, *STRL Update, (*May 13, 2016).

review of a federal register notice down in order of priority. Our prior work has found that other federal agencies identify milestones, significant events, or stages in the agency-specific rulemaking process, and track data associated with these milestones.[40] That work also found that, despite variability across federal agencies in the length of time taken by the federal rulemaking process, scheduling and budgeting for rulemaking are useful tools for officials to manage regulation development and control the resources needed to complete a rule.

Standards for Internal Control in the Federal Government further establishes that management should design control activities to achieve objectives and respond to risks. Further, management should also establish an organizational structure, assign responsibility, and delegate authority to achieve the entity's objectives. Moreover, documentation is a necessary part of an effective internal control system. The level and nature of documentation may vary based on the size and complexity of the organization and its processes. The standards also underscore that specific terms should be fully and clearly set forth such that they can be easily understood.[41] Our prior work on interagency collaboration has also found that overarching plans can help agencies overcome differences in missions, cultures, and ways of doing business, and can help agencies better align their activities, processes, and resources to collaborate effectively to accomplish a commonly defined outcome.[42]

Without establishing and documenting clear time frames for its process for departmental coordination efforts related to the approval and implementation of new hiring authorities, the department cannot be certain that it is acting in the most efficient or effective manner possible. Moreover, the defense laboratories may not promptly benefit from the use of congressionally granted hiring authorities, relying instead on other existing authorities. Doing so could, according to officials, have the unintended consequence of complicating the hiring process, increasing hiring times, or resulting in the loss of highly qualified candidates.

[40]GAO, *Federal Rulemaking: Improvements Needed to Monitoring and Evaluation of Rules Development as Well as to the Transparency of OMB Regulatory Reviews*, GAO-09-205 (Washington, D.C.: Apr. 20, 2009).

[41] GAO-14-704G.

[42] GAO, *Interagency Collaboration: Key Issues for Congressional Oversight of National Security Strategies, Organizations, Workforce, and Information Sharing*, GAO-09-904SP (Washington, D.C.: Sept. 25, 2009).

Conclusions

The future of the department's technological capabilities depends, in large part, on its investment in its people—the scientists and engineers who perform research, development, and engineering. To that end, Congress has granted the defense laboratories specific hiring authorities meant to encourage experimentation and innovation in their approaches to building and strengthening their workforces. The defense laboratories have used most of these authorities as a part of their overall hiring efforts. However, without obtaining and monitoring hiring data and developing performance measures, the Defense Laboratories Office may not be in a position to provide effective oversight of the defense laboratories' hiring, including the use of hiring authorities, or to evaluate the effectiveness of specific hiring authorities. Moreover, the absence of clear time frames to facilitate timely decision-making and implementation of any new hiring authorities may impede the laboratories' ability to make use of future authorities when authorized by Congress. Until the department addresses these issues, it lacks reasonable assurance that the defense laboratories are taking the most effective approach toward hiring a workforce that is critical to the military's technological superiority and ability to address existing and emerging threats.

Recommendations for Executive Action

We are making three recommendations to DOD.

The Secretary of Defense should ensure that the Defense Laboratories Office routinely obtain and monitor defense laboratory hiring data to improve the oversight of the defense laboratories' use of hiring authorities. (Recommendation 1)

The Secretary of Defense should ensure that the Defense Laboratories Office develop performance measures to evaluate the effectiveness of the defense laboratories' use of hiring authorities as part of the labs' overall hiring to better inform future decision making about hiring efforts and policies. (Recommendation 2)

The Secretary of Defense should ensure that the Defense Laboratories Office, in collaboration with the Under Secretary of Defense for Personnel and Readiness and the Laboratory Quality Enhancement Panel's Personnel Subpanel, establish and document time frames for its

coordination process to direct efforts across the relevant offices and help ensure the timely approval and implementation of hiring authorities. (Recommendation 3)

Agency Comments

We provided a draft of this report to DOD for review and comment. In its written comments, reproduced in appendix VI, DOD concurred with our recommendations, citing steps the department has begun and plans to take to improve oversight and coordination of the defense laboratories' hiring efforts. DOD also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, and other interested parties, including the Defense Laboratories Office and defense laboratories. In addition, this report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions regarding this report, please contact Brenda Farrell at (202) 512-3604 or farrellb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix VII.

Brenda S. Farrell
Director, Defense Capabilities and Management

Appendix I: Department of Defense Science, Technology, Engineering, and Mathematics (STEM) Occupations

The term “STEM” refers to the fields of science, technology, engineering, and mathematics. The following figure identifies the Department of Defense’s broad categories of STEM occupations, as well as the specific occupational series within each category.

Figure 7: Department of Defense STEM Categories and Occupational Series

Broad Category	Occupational Series
Life sciences	28 Environmental Protection Specialist
	401 General Biological Science
	403 Microbiology
	405 Pharmacology
	408 Ecology
	410 Zoology
	413 Physiology
	414 Entomology
	415 Toxicology
	430 Botany
	434 Plant Pathology
	435 Plant Physiology
	437 Horticulture
	440 Genetics
	454 Rangeland Management
	457 Soil Conservation
	460 Forestry
	470 Soil Science
	471 Agronomy
	482 Fishery Biology
	486 Wildlife Biology
	487 Animal Science
Computer sciences and information technology	334 Computer Specialist
	1550 Computer Science
	1670 Equipment Specialist
	2210 Information Technology Management
Mathematics and related sciences	1510 Actuary
	1515 Operations Research
	1520 Mathematics
	1529 Mathematical Statistician
	1530 Statistician
	1540 Cryptography
	1541 Cryptanalysis
Physical sciences	1301 General Physical Science
	1306 Health Physics
	1310 Physics
	1313 Geophysics
	1315 Hydrology
	1320 Chemistry
	1330 Astronomy & Space Science
	1340 Meteorology
	1350 Geology
	1360 Oceanography
	1372 Geodesy

Broad Category	Occupational Series
Social sciences	101 Social Science
	110 Economist
	130 Foreign Affairs
	131 International Relations
	132 Intelligence
	136 International Cooperation
	150 Geography
	180 Psychology
	184 Sociology
	190 General Anthropology
	193 Archeology
	1730 Education Research
Engineering	801 General Engineering
	803 Safety Engineering
	804 Fire Protection Engineering
	806 Materials Engineering
	810 Civil Engineering
	819 Environmental Engineering
	830 Mechanical Engineering
	840 Nuclear Engineering
	850 Electrical Engineering
	854 Computer Engineering
	855 Electronics Engineering
	858 Biomedical Engineering
	861 Aerospace Engineering
	871 Naval Architecture
	880 Mining Engineering
	881 Petroleum Engineering
	890 Agricultural Engineering
	893 Chemical Engineering
	895 Industrial Engineering
	1321 Metallurgy
Engineering Technicians	802 Engineering Technician
	809 Construction Control
	817 Surveying Technician
	818 Engineering Drafting
	856 Electronics Technician
	873 Ship Surveying
	896 Industrial Engineering Technician
	1370 Cartography
	1371 Cartographic Technician
	1373 Land Surveying

Broad Category	Occupational Series
Life and Physical Science Technicians	404 Biological Science Technician
	458 Soil Conservation Technician
	462 Forestry Technician
	1311 Physical Science Technician
	1316 Hydrologic Technician
	1341 Meteorological Technician
	1361 Navigational Information
	1374 Geodetic Technician
	1382 Food Technology
	1384 Textile Technology
	1386 Photographic Technology
	1521 Mathematics Technician
	1531 Statistical Assistant
Architects	807 Landscape Architecture
	808 Architecture
Health Practitioners	601 General Health Science
	602 Medical Officer
	603 Physicians Assistant
	610 Nurse
	630 Dietitian & Nutritionist
	660 Pharmacist
	662 Optometrist
	665 Speech Pathology & Audiology
	667 Orthotist & Prosthetist
	668 Podiatrist
	680 Dental Officer
	701 Veterinary Medical Science
Health Technicians	620 Practical Nurse
	644 Medical Technologist
	645 Medical Technician
	646 Pathology Technician
	647 Diagnostic Radiologic Technologist
	648 Therapeutic Radiologic Technologist
Program Management	340 Program Management
	343 Management & Program Analysis
	346 Logistics Management

Blue highlight indicates Department of Defense Mission Critical Occupations[a]

Source: Department of Defense. | GAO-18-417

[a]According to DOD's Strategic Workforce Plan, mission-critical occupations are occupations or occupational groups that set direction, directly impact, or execute performance of mission-critical functions or services. Further, mission-critical occupations are positions key to DOD's current and future mission requirements, as well as those that present recruiting and retention challenges.

Appendix II: Copy of GAO Questionnaire Administered to the Defense Laboratory Officials

GAO U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Questionnaire for Defense Laboratories

The U.S. Government Accountability Office (GAO) is responsible for reporting to Congress on federal programs. The Senate Armed Services Committee Report accompanying the National Defense Authorization Act for Fiscal Year 2017 directed GAO to conduct a review of hiring at Department of Defense (DOD) laboratories.

Our review is focused on examining the extent to which defense laboratories have used available hiring authorities and other flexibilities to hire laboratory personnel and the extent to which the department's use of hiring authorities and other flexibilities has resulted in expedited hiring of highly qualified candidates at the defense laboratories. This review focuses on the hiring of employees in the Science, Technology, Engineering, and Math (STEM) fields at Science and Technology Reinvention Laboratories (STRL) within the departments of the Air Force, Army, and Navy.

For the purpose of this questionnaire, we consider STEM fields to mean: agricultural sciences; astronomy; biological sciences; chemistry; computer science; earth, atmospheric, and ocean sciences; engineering; material science; mathematical sciences; physics; social sciences (e.g., psychology, sociology, anthropology, cognitive science, economics, behavioral sciences); or technology. Our definition of STEM includes health care professions that primarily involve scientific research; it does not include professions that primarily involve patient care. For this questionnaire, we are interested in hiring for any STEM positions, including but not limited to scientists, engineers, and technicians.

The purpose of this questionnaire is to obtain information about your laboratory's hiring process, the use of hiring authorities, hiring timeframes, and challenges, if any, experienced during the hiring process. We are asking all of the DOD STRLs to complete this survey. You were identified to us as the point of contact (POC) for your lab because you are the POC on the Laboratory Quality Enhancement Program (LQEP) Personnel Panel. We are asking you to complete this questionnaire on behalf of your STRL (lab). If you are not the appropriate POC for your lab, please let us know as soon as possible. You may not have the answer to every question readily available, so please consult records and consult with others (e.g., laboratory director, human resources manager, or hiring managers) who have the necessary information that will allow you to answer every question as completely and accurately as possible.

Your responses, along with those of other labs, will provide valuable information to the Congress. We will combine your answers with answers from the other labs in a report to the Congress that could prompt changes to the hiring process.

If you have any questions, please contact Serena Epstein at 404-679-1824 or epsteins@gao.gov.

Please complete and return this questionnaire to Serena Epstein at epsteins@gao.gov by Friday, July 21, 2017.

1

Filling out the questionnaire:

To navigate throughout this questionnaire, please use the tab key, up and down arrow keys, page up and page down keys, or the scroll bar. To select an answer using a check box ☐, simply use the mouse to click in the box. To remove a mark from a check box, simply click in the check box again and the "X" should disappear. To answer a question that requires that you type a comment, please click on the answer box and begin typing. The comment area will expand as you type.

Questions:

1. **What is the name of the lab (or your subordinate lab directorate or division if applicable) you are completing this questionnaire for?**

2. **Overall, since October 1, 2015, how easy or difficult has it been for your lab to fill vacancies with highly qualified candidates for Science, Technology, Engineering, and Mathematics (STEM) positions?** For this questionnaire, we consider STEM fields to mean: agricultural sciences; astronomy; biological sciences; chemistry; computer science; earth, atmospheric, and ocean sciences; engineering; material science; mathematical sciences; physics; social sciences (e.g., psychology, sociology, anthropology, cognitive science, economics, behavioral sciences); or technology. Our definition of STEM includes health care professions that primarily involve scientific research; it does not include professions that primarily involve patient care. For this questionnaire, we are interested in hiring for any STEM positions, including but not limited to scientists, engineers, and technicians. *Please check one box.*

Very easy	Somewhat easy	Neither easy nor difficult	Somewhat difficult	Very difficult	No Opinion
☐	☐	☐	☐	☐	☐

2

3. **Since October 1, 2015, has your lab used a direct hire authority for advanced degrees to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 4*

a. **Since October 1, 2015, when your lab has used the direct hire authority for advanced degrees, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the direct hire authority for advanced degrees, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 4 ←	←	←	←	←	←	←	←

c. **If your lab did not use the direct hire authority for advanced degrees to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

3

4. **Since October 1, 2015, has your lab used a direct hire authority for Bachelor's degrees to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 5*

a. **Since October 1, 2015, when your lab has used the direct hire authority for Bachelor's degrees, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the direct hire authority for Bachelor's degrees, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 5 ←	←	←	←	←	←	←	

c. **If your lab did not use the direct hire authority for Bachelor's degrees to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

4

5. Since October 1, 2015, has your lab used a direct hire authority for veterans to successfully fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 6*

a. Since October 1, 2015, when your lab has used the direct hire authority for veterans, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. Since October 1, 2015, when your lab has used the direct hire authority for veterans, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 6 ←	←	←	←	←	←	←	←

c. If your lab did not use the direct hire authority for veterans to hire for STEM positions since October 1, 2015, why did you not use it? *The box will expand as you type.*

☐

5

6. **Since October 1, 2015, has your lab used the expedited hiring authority (EHA) to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 7*

a. **Since October 1, 2015, when your lab has used the EHA, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the EHA, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 7 ←			←	←	←	←	←

c. **If your lab did not use the EHA to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

6

7. **Since October 1, 2015, has your lab used the Science, Mathematics, and Research for Transformation (SMART) program hiring authority to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 8*

a. **Since October 1, 2015, when your lab has used the SMART program, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the SMART program, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 8 ←	←	←	←	←	←	←	←

c. **If your lab did not use the SMART program to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

7

8. **This and the next two questions refer to the Pathways program. . . . Since October 1, 2015, has your lab used the Pathways Program's student intern hiring authority to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 9*

a. **Since October 1, 2015, when your lab has used the Pathways Program's student intern hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the Pathways Program's student intern hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 9 ←	←	←	←	←	←	←	

c. **If your lab did not use the Pathways Program's student intern hiring authority to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

8

9. **Since October 1, 2015, has your lab used the Pathways Program's recent graduate hiring authority to successfully fill STEM positions?** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 10*

a. **Since October 1, 2015, when your lab has used the Pathways Program's recent graduate hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. **Since October 1, 2015, when your lab has used the Pathways Program's recent graduate hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly?** *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 10 ←			←	←	←	←	←

c. **If your lab did not use the Pathways Program's recent graduate hiring authority to hire for STEM positions since October 1, 2015, why did you not use it?** *The box will expand as you type.*

9

10. Since October 1, 2015, has your lab used the Pathways Program's Presidential Management Fellowship Program hiring authority to successfully fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 11*

a. Since October 1, 2015, when your lab has used the Pathways Program's Presidential Management Fellowship Program hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. Since October 1, 2015, when your lab has used the Pathways Program's Presidential Management Fellowship Program hiring authority, how much, if at all, has the authority hindered or helped your lab's ability to hire quickly? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 11 ←			←	←	←	←	←

c. If your lab did not use the Pathways Program's Presidential Management Fellowship Program hiring authority to hire for STEM positions since October 1, 2015, why did you not use it? *The box will expand as you type.*

10

11. Since October 1, 2015, has your lab used the delegated examining unit authority (i.e., the competitive examining process) to successfully fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to "c"*

Don't know ... ☐ ➔ *Please skip to Question 12*

a. Since October 1, 2015, when your lab has used the delegated examining unit authority (i.e., the competitive examining process), how much, if at all, has the authority hindered or helped your lab's ability to hire highly qualified candidates for STEM positions? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

b. Since October 1, 2015, when your lab has used the delegated examining unit authority (i.e., the competitive examining process), how much, if at all, has the authority hindered or helped your lab's ability to hire quickly? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐
↓	↓	↓	↓	↓	↓	↓	↓
Please skip to Question 12 ←			←	←	←	←	←

c. If your lab did not use the delegated examining unit authority (i.e., the competitive examining process) to hire for STEM positions since October 1, 2015, why did you not use it? *The box will expand as you type.*

11

12. Since October 1, 2015, has your lab used <u>any other hiring authorities than those asked about above</u> to successfully fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to Question 13*

Don't know ... ☐ ➔ *Please skip to Question 13*

a. What other hiring authorities has your lab used to successfully fill STEM positions since October 1, 2015? *The box will expand as you type.*

b. Since October 1, 2015, when your lab has used <u>other hiring authorities</u>, how much, if at all, have the authorities hindered or helped your lab's ability to hire highly qualified candidates for STEM positions? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

c. Since October 1, 2015, when your lab has used <u>other hiring authorities</u>, how much, if at all, have the authorities helped your lab's ability to <u>hire quickly</u>? *Please check one box.*

Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped	Don't know
☐	☐	☐	☐	☐	☐	☐	☐

12

13. Since October 1, 2015, has your lab experienced any barriers to using each of the following hiring authorities for STEM positions? If Yes, please describe the barrier(s). ***Barriers may include, but are not limited to, limits on the use of each specific hiring authority, guidance within your organization restricting the use of a specific hiring authority, any requirements placed on the use of a specific hiring authority that has limited your ability to use the authority, or a lack of funding.*** *Please complete each row.*

Authority	Experienced a Barrier?	If Yes, what were the barrier(s)?
Direct hire authority for advanced degrees	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Direct hire authority for Bachelor's degrees	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Direct hire authority for veterans	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Expedited hiring authority	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Science, Mathematics, and Research for Transformation (SMART) program hiring authority	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Pathways Program's student intern hiring authority	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Pathways Program's recent graduate hiring authority	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	

13

Authority	Experienced a Barrier?	If Yes, what were the barrier(s)?
Pathways Program's Presidential Management Fellowship Program hiring authority	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	
Delegated examining unit authority (i.e., the competitive examining process)	Yes ☐ ➔ ➔ ➔ No ☐ ➓ Don't know ☐ ➓	

a. **OPTIONAL: If there is anything else you would like to add to elaborate on the previous question, please write it here.** *The box will expand as you type.*

14. **Since October 1, 2015, has your lab experienced any barriers to using any hiring authorities other than those asked about above when hiring for STEM positions?** ***Barriers may include, but are not limited to, limits on the use of each specific hiring authority, guidance within your organization restricting the use of a specific hiring authority, any requirements placed on the use of a specific hiring authority that has limited your ability to use the authority, or a lack of funding.*** *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to Question 15*

Don't know ... ☐ ➔ *Please skip to Question 15*

a. **In the table below, please list the other hiring authorities your lab has experienced barriers to using for STEM positions since October 1, 2015 and what the barrier(s) to each have been.**

Authority	What were the barrier(s)?

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Authority	What were the barrier(s)?

15. What additional hiring authorities, if any, would help facilitate the hiring process for STEM positions at your lab? This includes authorities that do not currently exist as well as authorities that exist but are not currently available for your lab to use. If no additional authorities, please skip to the next question. For any authorities you list, please explain how that authority would help facilitate the hiring process for STEM positions at your lab. *The boxes will expand as you type.*

Additional authority	How would this authority help facilitate the hiring process for STEM positions at your lab?

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16. Since October 1, 2015, has each of the following been a challenge to your lab's ability to hire highly qualified candidates for STEM positions? For any that have been a challenge, how much if at all, has it hindered your lab's ability to hire highly qualified candidates for STEM positions? *Please complete each row.*

Potential Challenge	Was this a challenge since Oct 1, 2015?	How much, if at all, did this challenge hinder your lab's ability to hire highly qualified candidates?				
		Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered	Don't know
Statutory limits on the number of hires that can be made using a specific hiring authority in a given year based on percentage of total workforce	Yes ☐ ➔ ➔ No ☐ ➔ Don't know ☐ ➔	☐	☐	☐	☐	☐
Candidates do not qualify for the requirements of the hiring authority	Yes ☐ ➔ ➔ No ☐ ➔ Don't know ☐ ➔	☐	☐	☐	☐	☐
Finding highly qualified candidates	Yes ☐ ➔ ➔ No ☐ ➔ Don't know ☐ ➔	☐	☐	☐	☐	☐
Discouraged by leadership at <u>any</u> level (e.g., from directorates through DOD) from using any <u>specific</u> hiring authorities	Yes ☐ ➔ ➔ No ☐ ➔ Don't know ☐ ➔	☐	☐	☐	☐	☐

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Potential Challenge	Was this a challenge since Oct 1, 2015?	How much, if at all, did this challenge hinder your lab's ability to hire highly qualified candidates?				
		Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered	Don't know
Total length of the hiring process, from initiation of request for personnel action to making a firm offer to the candidate	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Delays with processing of security clearances	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Delays with processing the personnel action by external HR office (e.g., Civilian Personnel Advisory Center (CPAC), Office of Civilian Human Resources (OCHR), Human Resources Office Operations Centers, Human Resources Offices (HRO), etc.)	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐

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Potential Challenge	Was this a challenge since Oct 1, 2015?	How much, if at all, did this challenge hinder your lab's ability to hire highly qualified candidates?				
		Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered	Don't know
Cannot extend firm job offer until final transcript is received	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Government-wide hiring freeze	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
DOD, service, command, or lab-specific hiring restrictions (e.g., a 1:6 hiring ratio)	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Losing quality candidates to private sector	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Losing quality candidates to federal agencies outside DOD	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Losing quality candidates to other military laboratories	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Geographic proximity to organizations competing for your candidates	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐

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Potential Challenge	Was this a challenge since Oct 1, 2015?	How much, if at all, did this challenge hinder your lab's ability to hire highly qualified candidates?				
		Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered	Don't know
Location of the laboratory	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Restrictions on use of permanent appointments	Yes ☐ ➔ ➔ No ☐ ↓ Don't know ☐ ↓	☐	☐	☐	☐	☐
Other challenge(s) (please specify below)						
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	

a. **OPTIONAL: If there is anything else you would like to add to elaborate on the previous question, please write it here.** *The box will expand as you type.*

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17. Since October 1, 2015, which of the potential challenges below has hindered your lab's ability to hire highly qualified candidates for STEM positions the most, which challenge has been the second biggest hindrance, and which challenge has been the third biggest hindrance? *Please rank the challenges by checking only one box for each column.*

Potential Challenge	Biggest hindrance (Check only one)	Second biggest hindrance (Check only one)	Third biggest hindrance (Check only one)
Statutory limits on the number of hires that can be made using a specific hiring authority in a given year based on percentage of total workforce	☐	☐	☐
Candidates do not qualify for the requirements of the hiring authority	☐	☐	☐
Finding highly qualified candidates	☐	☐	☐
Discouraged by leadership at any level (e.g., from directorates through DOD) from using any specific hiring authorities	☐	☐	☐
Total length of the hiring process, from initiation of request for personnel action to making a firm offer to the candidate	☐	☐	☐
Delays with processing of security clearances	☐	☐	☐
Delays with processing the personnel action by external HR office (CPAC, OCHR Ops Centers, HRO, etc.)	☐	☐	☐
Cannot extend firm job offer until final transcript is received	☐	☐	☐
Government-wide hiring freeze	☐	☐	☐
DOD, service, command, or lab-specific hiring restrictions (e.g., a 1:6 hiring ratio)	☐	☐	☐
Losing quality candidates to private sector	☐	☐	☐
Losing quality candidates to federal agencies outside DOD	☐	☐	☐
List continues on the next page			

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Potential Challenge	Biggest hindrance (Check only one)	Second biggest hindrance (Check only one)	Third biggest hindrance (Check only one)
Losing quality candidates to other military laboratories	☐	☐	☐
Geographic proximity to organizations competing for your candidates	☐	☐	☐
Location of the laboratory	☐	☐	☐
Restrictions on use of permanent appointments	☐	☐	☐
Other challenge(s) (please specify below)			
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

a. **OPTIONAL: If there is anything else you would like to add to elaborate on the previous question, please write it here.** *The box will expand as you type.*

18. **Since October 1, 2015, how much, if at all, has each of the following incentives helped your lab's ability to hire highly qualified candidates for STEM positions?** *Please check one box in each row.*

Incentive	Lab did not use this incentive since Oct 1, 2015	Not at all helped	Slightly helped	Somewhat helped	Very much helped	Don't know
Pay setting under Lab Demonstration Project ("lab demo")	☐	☐	☐	☐	☐	☐
Recruitment Bonuses	☐	☐	☐	☐	☐	☐
Relocation Bonuses	☐	☐	☐	☐	☐	☐

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Incentive	Lab did not use this incentive since Oct 1, 2015	Not at all helped	Slightly helped	Somewhat helped	Very much helped	Don't know
Student Loan Repayment Program	☐	☐	☐	☐	☐	☐
Opportunities for educational advancement, other than Student Loan Repayment, for example, tuition assistance	☐	☐	☐	☐	☐	☐
Sabbaticals (authorized absences from duty for study or work experience)	☐	☐	☐	☐	☐	☐
Government benefits package	☐	☐	☐	☐	☐	☐
Annual leave credit for prior work experience	☐	☐	☐	☐	☐	☐
Paid travel for candidates for job interviews at lab	☐	☐	☐	☐	☐	☐
Other incentive(s) (please specify below)						
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	

a. **OPTIONAL: If there is anything else you would like to add to elaborate on the previous question, please write it here.** *The box will expand as you type.*

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19. The next two questions ask about term appointments and modified term appointments. By "modified term appointment" we mean an appointment used to fill positions for a period of not more than five years. By "term appointment" we mean an appointment used to fill positions for a period of not more than four years. . . . . Since October 1, 2015, has your lab used modified term appointments to fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to Question 20*

Don't know ... ☐ ➔ *Please skip to Question 20*

a. For what purpose(s) has your lab used modified term appointments since October 1, 2015 to fill STEM positions? *The box will expand as you type.*

b. What, if any, positive outcomes related to hiring for your lab have resulted from using the modified term appointment authority since October 1, 2015? *The box will expand as you type.*

c. What, if any, negative outcomes related to hiring for your lab have resulted from using the modified term appointment authority since October 1, 2015? *The box will expand as you type.*

20. Since October 1, 2015, has your lab used term appointments to fill STEM positions? *Please check one box.*

Yes ..... ☐ ➔ *Please continue to "a"*

No ..... ☐ ➔ *Please skip to Question 21*

Don't know ... ☐ ➔ *Please skip to Question 21*

a. For what purpose(s) has your lab used term appointments since October 1, 2015 to fill STEM positions? *The box will expand as you type.*

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b. **What, if any, positive outcomes related to hiring for your lab have resulted from using the term appointment authority since October 1, 2015?** *The box will expand as you type.*

c. **What, if any, negative outcomes related to hiring for your lab have resulted from using the term appointment authority since October 1, 2015?** *The box will expand as you type.*

21. **If you would like to tell us more about anything covered in this questionnaire (e.g., hiring processes, timeframes, challenges, etc.), please type it here.** *The box will expand as you type.*

22. **Who, if anyone, did you consult with to answer any of the questions in this questionnaire?** *Please complete each row.*

Consultation conducted	Yes	No	Not Applicable
Staff at my STRL's headquarters	☐	☐	☐
Staff from my STRL's directorates or other organizations subordinate to my STRL's headquarters	☐	☐	☐
I did not need to consult with anyone else to answer all questions accurately and completely	☐	☐	☐

Thank you very much for your time and assistance!

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Appendix III: Objectives, Scope, and Methodology

This report examines (1) the defense laboratories use of existing hiring authorities and what officials view as the benefits of authorities and incentives and the challenges in hiring; (2) the extent to which the Department of Defense (DOD) evaluates the effectiveness of hiring, including hiring authorities, at the defense laboratories; and (3) the extent to which DOD has time frames for approving and implementing new hiring authorities.

To address these objectives, we included in the scope of our review science, technology, engineering, and mathematics (STEM) hiring at the 15 defense laboratories designated as Science and Technology Reinvention Laboratories (STRL) that were implemented at the time of our review within the Army, Navy, and Air Force.[1] We included 9 Army laboratories: Armament Research, Development, and Engineering Center; Army Research Laboratory; Aviation and Missile Research, Development, and Engineering Center; Communications-Electronics Research, Development, and Engineering Center; Edgewood Chemical and Biological Center; Engineer Research and Development Center; Medical Research and Materiel Command; Natick Soldier Research, Development, and Engineering Center; and Tank Automotive Research, Development, and Engineering Center. We included 5 Navy laboratories: Naval Air Systems Command Warfare Centers, Weapons Division and Aircraft Division; Naval Research Laboratory; Naval Sea Systems Command Warfare Centers, Naval Surface and Undersea Warfare Centers; Office of Naval Research; and Space and Naval Warfare Systems Command, Space and Naval Warfare Systems Center, Atlantic and Pacific. We included 1 Air Force laboratory: Air Force Research Laboratory. We excluded 2 additional defense laboratories within the Army—the Army Research Institute and the Space and Missile Defense Command—because these defense laboratories were in the process of being implemented at the time of our review.

For our first objective, we obtained and analyzed documentation, including past National Defense Authorization Acts (fiscal years 1995

[1] For this review, we refer to the Science and Technology Reinvention Laboratories as defense laboratories.

through 2017), guidance related to government-wide hiring authorities, and federal register notices on existing hiring authorities used by the defense laboratories to hire STEM personnel. We obtained data that were coordinated by the Defense Manpower Data Center and prepared by the Defense Civilian Personnel Advisory Service's Planning and Accountability Directorate. These data included, among other things, hiring process milestone dates and type of hiring authority used for each civilian hire at the defense laboratories for fiscal years 2015 through 2017. We selected these years because they were the three most recent years for which hiring data were available, and because doing so would allow us to identify any trends in the use of hiring authorities or the length of time taken to hire. The data we obtained were extracted from DCPDS using the Corporate Management Information System.

The team refined the data to include only those hiring actions that were made by the 15 defense laboratories included within the scope of our review. In addition, we excluded hiring actions that used a 700-series nature of action code, which denotes actions that relate to position changes, extensions, and other changes, which we determined should not be included in our analysis. We included actions that used nature of action codes in the 100-series (appointments) and 500-series (conversions to appointments). For the purpose of calculating time to hire, we also excluded records with missing dates and those for which the time-to-hire calculation resulted in negative number (that is, the record's request for personnel action initiation date occurred after the enter-on-duty date). Specifically, we excluded 92 actions for which no request for personnel action initiation date was recorded and 205 actions for which the date occurred after the enter-on-duty date, for a total of 2.57 percent of all hiring actions. We included in our calculation 7 actions for which the request for personnel action initiation date was the same date as the enter-on-duty date, resulting in a time to hire of zero days.

To determine the extent to which the defense laboratories use existing hiring authorities, based on the department's data, we analyzed the current appointment authority codes identified for individual hiring actions. Current appointment authority codes are designated by the Office of Personnel Management and are used to identify the law, executive order, rule, regulation, or other basis that authorizes an employee's most recent conversion or accession action. Based on our initial review of the data, we determined that, in some cases, more than one distinct current appointment authority code could be used to indicate the use of a certain hiring authority. Alternately, a single current appointment authority code could in some cases be used for indicating more than one type of

authority. In these cases, the details of the specific type of hiring authority that was used for the hiring action can be recorded in the description field associated with the current appointment authority code field. For this reason, in order to determine the type of hiring authority used, it was necessary to analyze the description fields for the current appointment authority code when certain codes were used. Two analysts independently reviewed each description and identified the appropriate hiring authority. Following this process, the two analysts compared their work and resolved any instances in which the results of their analyses differed. A data analyst used the results to produce counts of the number of times various categories of hiring authorities were used, as well as the average time to hire for each hiring authority category.

For those instances where the analysts could not identify a hiring authority on the basis of the three digit codes or the description fields, the hiring actions were assigned to an “unknown” category. We note that the “unknown” category included 591 hiring actions, or approximately 5 percent of the total data for fiscal years 2015 through 2017. In addition, within the laboratory-specific direct hire authority category, if a determination could not be made about the specific type of laboratory-specific direct hire authority used, the hiring action was captured in the “direct hire authority, unspecified” category because the action was clearly marked as one of the laboratory-specific direct hire authorities but the type of authority (for example, direct hire for veterans) was unclear. Of the 5,303 hiring actions identified as a laboratory-specific direct hire authority, 0.1 percent of the hiring actions fell into the unspecified category. Based on the aforementioned steps and discussions with officials from the Defense Civilian Personnel Advisory Service and the Defense Manpower Data Center and reviews of additional documentation provided to support the data file, as well as interviews with officials from 13 of the laboratories about their data entry and tracking, we determined that these data were sufficiently reliable for the purposes of reporting the frequency with which the labs used specific hiring authorities and calculating the time it takes the labs to hire, or time to hire, for fiscal years 2015 through 2017.

To describe officials’ views of hiring authorities and other incentives, we conducted a survey of officials at each of the defense laboratories on (1) their perceptions of the various hiring authorities and incentives, (2) whether those authorities and incentives have helped or hindered hiring efforts, (3) the extent to which they experienced barriers to using hiring authorities, and (4) any challenges during the hiring process, among other things. We administered the survey to the official at each defense

laboratory who was identified as the Laboratory Quality Enhancement Program Personnel, Workforce Development, and Talent Management Panel point of contact, because we determined that this individual would be the most knowledgeable about his or her lab's hiring process and use of hiring authorities. One laboratory—the Space and Naval Warfare Systems Command Centers—had two designated Laboratory Quality Enhancement Program Personnel, Workforce Development, and Talent Management Panel points of contact, one for each of its command centers (Atlantic and Pacific). Because the contacts would each be knowledgeable about his or her lab's hiring processes for their respective command centers, we chose to include both command centers in our survey. As a result, we included a total of 16 laboratory officials in our survey.

We drafted our questionnaire based on the information obtained from our initial interviews with department, service, and laboratory personnel. We conducted pretests to check that (1) the questions were clear and unambiguous, (2) terminology was used correctly, (3) the questionnaire did not place an undue burden on agency officials, (4) the information could feasibly be obtained, and (5) the survey was comprehensive and unbiased. We conducted five pretests to include representatives from each of the three services, as well as from corporate research laboratories and from research, development, and engineering centers. We conducted the pretests—with the assistance of a GAO survey specialist—by telephone and made changes to the content and format of the questionnaire after each pretest, based on the feedback we received. Key questions from the questionnaire used for this study are presented in appendix II.

We sent a survey notification email to each laboratory's identified point of contact on July 6, 2017. On July 10, 2017, we sent the questionnaire by email as a Microsoft Word attachment that respondents could return electronically after marking checkboxes or entering responses into open answer boxes. One week later, we sent a reminder email, attaching an additional copy of the questionnaire, to everyone who had not responded. We sent a second reminder email and copy of the questionnaire to those who had not responded 2 weeks following the initial distribution of the questionnaire. We received questionnaires from all 16 participants by August 4, 2017, for a 100 percent response rate. Between July 26 and October 5, 2017, we conducted additional follow-up with 11 of the respondents via email to resolve missing or problematic responses.

Because we collected data from every lab, there was no sampling error. However, the practical difficulties of conducting any survey may introduce errors, commonly referred to as non-sampling errors. For example, differences in how a particular question is interpreted, the sources of information available to respondents, how the responses were processed and analyzed, or the types of people who do not respond can influence the accuracy of the survey results. We took steps in the development of the survey, the data collection, and the data analysis to minimize these non-sampling errors and help ensure the accuracy of the answers that were obtained. For example, a survey specialist designed the questionnaire, in collaboration with analysts having subject matter expertise. Then, as noted earlier, the draft questionnaire was pretested to ensure that questions were relevant, clearly stated, and easy to comprehend. The questionnaire was also reviewed by internal subject matter experts and an additional survey specialist.

Data were electronically extracted from the Microsoft Word questionnaires into a comma-delimited file that was then imported into a statistical program for quantitative analyses and Excel for qualitative analyses. We examined the survey results and performed computer analyses to identify inconsistencies and other indications of error, and we addressed such issues as necessary. Quantitative data analyses were conducted by a survey specialist using statistical software. An independent data analyst checked the statistical computer programs for accuracy.

To obtain information on department- and service-level involvement in and perspectives of defense laboratory hiring, we interviewed officials at the Defense Personnel Advisory Service, Defense Laboratories Office, Army Office of the Assistant G-1 for Civilian Personnel, and Navy Office of Civilian Human Resources. In addition, we interviewed hiring officials, first-line supervisors, and newly hired employees from a non-generalizable sample of six defense laboratories or subordinate level entities within a laboratory (for example, division or directorate) to obtain their perspectives on the hiring process. We selected the six laboratories based on the following two criteria: (1) two laboratories from each of the three services, and (2) a mix of both corporate research laboratories and research and engineering centers. In addition, because some hiring activities can occur at subordinate levels within a laboratory—such as a division or directorate—we included at least one subordinate level entity for each service. In total, we selected: Army Research Laboratory Sensors and Electron Devices directorate; Aviation and Missile Research, Development, and Engineering Center (Army); Naval Research

Laboratory; Naval Air Warfare Center Weapons Division; Air Force Research Laboratory Information directorate; and Air Force Research Laboratory Space Vehicles directorate. For each lab, we requested to interview the official(s) most knowledgeable about the lab's hiring process, supervisors who had recently hired, and newly hired employees. We initially requested to interview one group each of supervisors and newly hired employees. Following our first round of interviews at one laboratory, we requested to interview two groups each of supervisors and newly hired employees. Subsequent to this request, at one lab we were able to conduct one supervisor interview and at a second lab we were able to conduct one newly hired employee interview, due to scheduling constraints. The views obtained from these officials, supervisors, and recent hires are not generalizable and are presented solely for illustrative purposes.

For our second and third objectives, we reviewed guidance and policies for collecting and analyzing laboratory personnel data related to the implementation and use of hiring authorities by these labs. We interviewed DOD, military service, and defense laboratory officials to discuss and review their hiring processes and procedures for STEM personnel, the use of existing hiring authorities, and efforts to document and evaluate time-to-hire metrics. We also met with DOD officials from the Office of the Under Secretary of Defense for Personnel and Readiness and the Office of the Under Secretary of Defense for Research and Engineering to discuss processes and procedures for implementing new hiring authorities granted by Congress. We evaluated their efforts to determine whether they met federal internal control standards, including that management should design appropriate types of control activities to achieve the entity's objectives, including top-level reviews of actual performance, and should establish an organizational structure, assigning responsibilities and delegating authority to achieve an organization's objectives.[2]

We conducted this performance audit from November 2016 to May 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that

[2] GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014).

the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix IV: The Department of Defense Laboratories' Use of Hiring Authorities for Fiscal Years 2015, 2016, and 2017

We analyzed three years of Department of Defense hiring data obtained from the Defense Civilian Personnel Data System to identify the defense laboratories' use of hiring authorities. We found that the defense laboratories completed a total of 11,562 STEM hiring actions in fiscal years 2015 through 2017 and used the defense laboratory direct hire authorities the most often when hiring STEM personnel. Table 7 provides information on the laboratories' use of hiring actions by hiring authority for fiscal years 2015, 2016, and 2017.

Table 7: The Department of Defense Laboratories' Overall Use of Hiring Authorities for Fiscal Years (FY) 2015—2017

Hiring authority category	2015	2016	2017	All years
Competitive hiring/delegated examining unit	238	235	122	595
Defense laboratory direct hire authorities, all	1,665	1,803	1,835	5,303
Expedited hiring authority	523	484	363	1,370
Government-wide direct hire authorities	439	204	146	789
Internal hiring actions	455	498	426	1,379
Other[a]	278	220	170	668
Veterans-related hiring authorities	268	111	89	468
Pathways	101	40	10	151
Science, mathematics, and research for transformation (SMART) program	70	87	91	248
Unknown[b]	325	153	113	591
Total	**4,362**	**3,835**	**3,365**	**11,562**

Source: GAO analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown.

Table 8 provides a breakdown of the individual labs' use of hiring authorities in fiscal years 2015 through 2017.

Table 8: The Department of Defense Laboratories' Use of All Hiring Authorities in Fiscal Years 2015—2017, by Type

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
Air Force Research Laboratory	Competitive hiring/delegated examining unit	3	7	5	15
	Government-wide direct hire authorities	0	1	0	1
	Expedited hiring authority	40	15	11	66
	Internal hiring actions	5	4	0	9
	Other[a]	2	3	5	10
	Science, mathematics, and research for transformation program	3	5	2	10
	Defense laboratory direct hire authority for advanced degrees	153	131	108	392
	Defense laboratory direct hire authority for bachelor's degrees	68	60	53	181
	Defense laboratory direct hire authority, unspecified[b]	1	0	0	1
	Defense laboratory direct hire authority for veterans	2	0	0	2
	Unknown[b]	2	12	10	24
	Veterans-related hiring authorities	4	2	2	8
Aviation and Missile Research, Development, and Engineering Center	Competitive hiring/delegated examining unit	5	3	1	9
	Government-wide direct hire authorities	0	3	0	3
	Expedited hiring authority	4	13	18	35
	Internal hiring actions	1	3	1	5
	Other[a]	5	9	0	14
	Science, mathematics, and research for transformation program	2	2	3	7
	Defense laboratory direct hire authority for advanced degrees	10	14	13	37
	Defense laboratory direct hire authority for bachelor's degrees	48	80	47	175
	Defense laboratory direct hire authority for veterans	3	6	7	16
	Veterans-related hiring authorities	0	0	1	1
Armament Research, Development, and Engineering Center	Competitive hiring/delegated examining unit	3	0	4	7
	Expedited hiring authority	0	1	1	2
	Internal hiring actions	0	3	0	3
	Other[a]	1	2	0	3

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
	Science, mathematics, and research for transformation program	1	1	0	2
	Defense laboratory direct hire authority for advanced degrees	1	1	2	4
	Defense laboratory direct hire authority for bachelor's degrees	4	1	1	6
	Defense laboratory direct hire authority for veterans	2	1	0	3
	Unknown[b]	1	0	1	2
Army Research Laboratory	Competitive hiring/delegated examining unit	3	10	8	21
	Government-wide direct hire authorities	70	0	8	78
	Internal hiring actions	6	4	4	14
	Other[a]	2	4	10	16
	Pathways	0	5	1	6
	Science, mathematics, and research for transformation program	10	6	6	22
	Defense laboratory direct hire authority for advanced degrees	16	67	86	169
	Defense laboratory direct hire authority for bachelor's degrees	2	13	15	30
	Defense laboratory direct hire authority for veterans	1	9	3	13
	Unknown[b]	1	5	3	9
	Veterans-related hiring authorities	1	0	0	1
Communications-Electronics Research, Development, and Engineering Center	Competitive hiring/delegated examining unit	8	3	5	16
	Government-wide direct hire authorities	0	2	2	4
	Expedited hiring authority	13	6	16	35
	Internal hiring actions	2	.	1	3
	Other[a]	9	9	3	21
	Pathways	0	0	1	1
	Science, mathematics, and research for transformation program	0	1	0	1
	Defense laboratory direct hire authority for advanced degrees	18	13	15	46
	Defense laboratory direct hire authority for bachelor's degrees	3	15	9	27
	Defense laboratory direct hire authority, other	0	0	1	1

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
	Defense laboratory direct hire authority for veterans	2	3	2	7
	Unknown[b]	2	0	5	7
	Veterans-related hiring authorities	0	0	2	2
Edgewood Chemical Biological Center	Competitive hiring/delegated examining unit	0	0	2	2
	Government-wide direct hire authorities	0	1	3	4
	Expedited hiring authority	1	0	1	2
	Pathways	0	1	0	1
Engineer Research and Development Center	Competitive hiring/delegated examining unit	29	29	13	71
	Government-wide direct hire authorities	0	0	3	3
	Internal hiring actions	7	5	6	18
	Other[a]	3	9	8	20
	Science, mathematics, and research for transformation program	5	6	4	15
	Defense laboratory direct hire authority for advanced degrees	52	43	30	125
	Defense laboratory direct hire authority for bachelor's degrees	25	35	43	103
	Defense laboratory direct hire authority for veterans	12	7	13	32
	Unknown[b]	12	18	7	37
	Veterans-related hiring authorities	4	3	2	9
Medical Research and Materiel Command	Competitive hiring/delegated examining unit	31	24	15	70
	Government-wide direct hire authorities	30	35	7	72
	Expedited hiring authority	2	4	5	11
	Internal hiring actions	7	8	9	24
	Other[a]	7	7	6	20
	Science, mathematics, and research for transformation program	0	1	0	1
	Defense laboratory direct hire authority for advanced degrees	12	34	19	65
	Defense laboratory direct hire authority for bachelor's degrees	3	6	11	20
	Defense laboratory direct hire authority, unspecifiedb	0	1	0	1
	Defense laboratory direct hire authority for veterans	3	4	0	7

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
	Unknown[b]	4	6	2	12
	Veterans-related hiring authorities	8	8	4	20
Naval Sea Systems Command Warfare Centers: Naval Surface and Undersea Warfare Centers	Competitive hiring/delegated examining unit	44	75	28	147
	Government-wide direct hire authorities	121	56	54	231
	Expedited hiring authority	323	191	96	610
	Internal hiring actions	346	413	342	1101
	Other[a]	118	121	81	320
	Pathways	44	17	1	62
	Science, mathematics, and research for transformation program	31	36	51	118
	Defense laboratory direct hire authority for advanced degrees	162	138	81	381
	Defense laboratory direct hire authority for bachelor's degrees	301	414	419	1134
	Defense laboratory direct hire authority, unspecified[b]	0	1	0	1
	Defense laboratory direct hire authority for veterans	75	60	67	202
	Unknown[b]	19	4	5	28
	Veterans-related hiring authorities	94	57	35	186
Naval Air Systems Command Warfare Centers, Weapons and Aircraft Divisions	Competitive hiring/delegated examining unit	6	3	0	9
	Government-wide direct hire authorities	100	43	24	167
	Expedited hiring authority	89	159	108	356
	Internal hiring actions	40	29	27	96
	Other[a]	34	17	12	63
	Pathways	40	2	1	43
	Science, mathematics, and research for transformation program	8	13	8	29
	Defense laboratory direct hire authority for advanced degrees	120	76	57	253
	Defense laboratory direct hire authority for bachelor's degrees	153	197	305	655
	Defense laboratory direct hire authority, unspecified[b]	1	0	0	1
	Defense laboratory direct hire authority for veterans	23	18	21	62
	Unknown[b]	211	72	54	337

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
	Veterans-related hiring authorities	46	13	7	66
Naval Research Laboratory	Government-wide direct hire authorities	3	11	4	18
	Internal hiring actions	2	4	2	8
	Other[a]	4	2	2	8
	Defense laboratory direct hire authority for advanced degrees	64	69	52	185
	Defense laboratory direct hire authority for bachelor's degrees	27	18	36	81
	Defense laboratory direct hire authority for veterans	4	4	4	12
	Unknown[b]	18	14	13	45
	Veterans-related hiring authorities	4	1	0	5
Natick Soldier Research, Development and Engineering Center	Other[a]	0	1	0	1
	Defense laboratory direct hire authority for advanced degrees	0	1	0	1
	Defense laboratory direct hire authority for bachelor's degrees	2	0	0	2
	Unknown	0	1	0	1
Office of Naval Research	Expedited hiring authority	6	3	3	12
	Internal hiring actions	3	1	0	4
	Other[a]	1	3	1	5
	Defense laboratory direct hire authority for advanced degrees	0	0	2	2
	Defense laboratory direct hire authority for bachelor's degrees	0	0	4	4
	Unknown[b]	17	4	4	25
	Veterans-related hiring authorities	1	0	0	1
Space and Naval Warfare Systems Command, Space and Naval Warfare Systems Center, Atlantic and Pacific	Competitive hiring/delegated examining unit	91	45	22	158
	Government-wide direct hire authorities	111	51	32	194
	Expedited hiring authority	44	83	99	226
	Internal hiring actions	36	24	34	94
	Other[a]	84	28	37	149
	Pathways	17	12	6	35
	Science, mathematics, and research for transformation program	9	8	7	24
	Defense laboratory direct hire authority for advanced degrees	81	63	50	194

	Category	Number of hiring action for 2015	Number of hiring action for 2016	Number of hiring action for 2017	Total hiring actions
	Defense laboratory direct hire authority for bachelor's degrees	120	81	164	365
	Defense laboratory direct hire authority, other	0	0	3	3
	Defense laboratory direct hire authority for veterans	40	19	24	83
	Veterans-related hiring authorities	105	27	36	168
Tank Automotive Research, Development and Engineering Center	Competitive hiring/delegated examining unit	15	36	19	70
	Government-wide direct hire authorities	4	1	9	14
	Expedited hiring authority	1	9	5	15
	Other[a]	8	5	5	18
	Pathways	0	3	0	3
	Science, mathematics, and research for transformation program	1	8	10	19
	Defense laboratory direct hire authority for advanced degrees	23	22	20	65
	Defense laboratory direct hire authority for bachelor's degrees	24	69	44	137
	Defense laboratory direct hire authority, unspecified[b]	1	0	0	1
	Defense laboratory direct hire authority for veterans	3	9	4	16
	Unknown[b]	38	17	9	64
	Veterans-related hiring authorities	1	0	0	1
Total		**4,362**	**3,835**	**3,365**	**11,562**

Source: GAO analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown or unspecified.

Appendix V: Defense Laboratory Time to Hire Data by Hiring Authority Category for Fiscal Years 2015, 2016, and 2017

We analyzed three years of the DOD hiring data to identify time to hire using various types of hiring authorities when hiring for Science, Technology, Engineering, and Math (STEM) occupations at the defense laboratories. Tables 9, 10, 11, and 12 below show the frequency of actions for each hiring authority category and the average, minimum, maximum, median, 25th percentile, and 75th percentile of the number of days to hire for each category in fiscal years 2015 through 2017 and for all three years combined.[1]

Table 9: The Department of Defense Laboratories' Time-to-Hire Data by Hiring Authority Category in Fiscal Year 2015

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
All categories combined	4217	97.5	0.0	643.0	83.0	55.0	125.0
Competitive hiring/delegated examining unit	225	126.9	9.0	382.0	118.0	65.0	173.0
Defense laboratory direct hire authority for advanced degrees	688	88.0	4.0	530.0	75.0	52.0	107.5
Defense laboratory direct hire authority for bachelor's degrees	762	87.2	4.0	643.0	73.5	53.0	108.0
Defense laboratory direct hire authority, other	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Defense laboratory direct hire authority, unspecified[b]	3	37.0	31.0	48.0	32.0	31.0	48.0

[1] For the purpose of calculating time to hire, we excluded records with missing dates and those for which the time-to-hire calculation resulted in negative number (that is, the record's request for personnel action initiation date occurred after the enter-on-duty date). Specifically, we excluded 92 actions for which no request for personnel action initiation date was recorded and 205 actions for which the date occurred after the enter-on-duty date, for a total of 2.57 percent of all hiring actions. We included in our calculation 7 actions for which the request for personnel action initiation date was the same date as the enter-on-duty date, resulting in a time to hire of zero days.

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
Defense laboratory direct hire authority for veterans	167	80.9	12.0	290.0	73.0	47.0	101.0
Expedited hiring authority	517	90.5	0.0	341.0	79.0	56.0	111.0
Government-wide direct hire authorities	427	97.6	4.0	348.0	90.0	61.0	125.0
Internal hiring actions	434	102.9	6.0	464.0	91.5	53.0	137.0
Other[a]	268	97.9	2.0	424.0	80.0	59.0	117.0
Pathways	97	114.5	13.0	327.0	96.0	73.0	153.0
Science, mathematics, and research for transformation (SMART) program	58	45.6	5.0	143.0	37.0	18.0	59.0
Unknown[b]	313	115.4	5.0	347.0	109.0	67.0	152.0
Veterans-related hiring authorities	258	127.0	6.0	339.0	117.0	81.0	164.0

Source: GAO Analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown or unspecified.

Table 10: The Department of Defense Laboratories' Time-to-Hire Data by Hiring Authority Category in Fiscal Year 2016

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
All categories combined	3732	104.2	0.0	762.0	88.0	55.0	133.0
Competitive hiring/delegated examining unit	226	146.3	4.0	762.0	123.0	67.0	199.0
Defense laboratory direct hire authority for advanced degrees	658	104.1	3.0	496.0	82.0	55.0	129.0
Defense laboratory direct hire authority for bachelor's degrees	983	92.5	1.0	447.0	81.0	53.0	118.0
Defense laboratory direct hire authority, other	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Defense laboratory direct hire authority, unspecified[b]	2	148.0	88.0	208.0	148.0	88.0	208.0
Defense laboratory direct hire authority for veterans	138	80.7	4.0	282.0	71.0	42.0	109.0
Expedited hiring authority	476	111.9	9.0	437.0	98.0	68.0	140.0
Government-wide direct hire authorities	196	105.8	5.0	397.0	102.0	68.0	130.5
Internal hiring actions	479	99.4	2.0	460.0	86.0	53.0	138.0
Other[a]	205	103.0	0.0	375.0	86.0	53.0	131.0

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
Pathways	36	171.1	4.0	509.0	136.5	66.0	247.5
Science, mathematics, and research for transformation (SMART) program	78	68.6	11.0	323.0	47.5	18.0	94.0
Unknown[b]	149	103.2	10.0	453.0	96.0	48.0	139.0
Veterans-related hiring authorities	106	143.6	9.0	657.0	131.5	77.0	182.0

Source: GAO Analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown or unspecified.

Table 11: The Department of Defense Laboratories' Time-to-Hire Data by Hiring Authority Category in Fiscal Year 2017

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
All categories combined	3316	108.1	0.0	783.0	88.0	53.0	146.0
Competitive hiring/delegated examining unit	118	177.2	4.0	679.0	162.5	94.0	251.0
Defense laboratory direct hire authority for advanced degrees	527	100.7	0.0	532.0	81.0	51.0	137.0
Defense laboratory direct hire authority for bachelor's degrees	1142	99.7	3.0	557.0	81.0	49.0	132.0
Defense laboratory direct hire authority, other	4	37.3	21.0	61.0	33.5	21.0	53.5
Defense laboratory direct hire authority, unspecified[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Defense laboratory direct hire authority for veterans	144	89.6	0.0	304.0	74.5	47.0	116.0
Expedited hiring authority	357	121.5	5.0	605.0	101.0	66.0	158.0
Government-wide direct hire authorities	143	112.1	17.0	287.0	96.0	63.0	147.0
Internal hiring actions	416	114.2	5.0	783.0	103.0	53.0	159.0
Other[a]	169	102.1	0.0	290.0	82.0	49.0	145.0
Pathways	10	100.9	12.0	404.0	40.5	32.0	125.0
Science, mathematics, and research for transformation (SMART) program	90	53.7	1.0	236.0	33.0	13.0	81.0
Unknown[b]	107	141.7	2.0	635.0	131.0	49.0	201.0
Veterans-related hiring authorities	89	140.6	31.0	459.0	129.0	67.0	200.0

Source: GAO Analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown or unspecified.

Table 12: The Department of Defense Laboratories' Time-to-Hire Data by Hiring Authority Category for Fiscal Years 2015—2017, Combined

Hiring authority category	Frequency	Average number of days	Minimum number of days	Maximum number of days	Median number of days	25th Percentile	75th Percentile
All categories combined	11265	102.8	0.0	783.0	87.0	54.0	133.0
Competitive hiring/delegated examining unit	569	145.0	4.0	762.0	128.0	69.0	195.0
Defense laboratory direct hire authority for advanced degrees	1873	97.2	0.0	532.0	79.0	54.0	122.0
Defense laboratory direct hire authority for bachelor's degrees	2887	93.9	1.0	643.0	77.0	53.0	119.0
Defense laboratory direct hire authority, other	4	37.3	21.0	61.0	33.5	21.0	53.5
Defense laboratory direct hire authority, unspecified[b]	5	81.4	31.0	208.0	48.0	32.0	88.0
Defense laboratory direct hire authority for veterans	449	83.6	0.0	304.0	74.0	47.0	106.0
Expedited hiring authority	1350	106.3	0.0	605.0	88.0	62.0	132.0
Government-wide direct hire authorities	766	102.4	4.0	397.0	96.0	62.0	131.0
Internal hiring actions	1329	105.2	2.0	783.0	93.0	53.0	143.0
Other[a]	642	100.6	0.0	424.0	82.0	54.0	129.0
Pathways	143	127.8	4.0	509.0	97.0	67.0	174.0
Science, mathematics, and research for transformation (SMART) program	226	56.8	1.0	323.0	35.0	17.0	82.0
Unknown[b]	569	117.1	2.0	635.0	109.0	60.0	159.0
Veterans-related hiring authorities	453	133.6	6.0	657.0	118.0	77.0	175.0

Source: GAO Analysis of Department of Defense data. | GAO-18-417.

[a]Other includes all other hiring authorities used by the defense laboratories.

[b]For some hiring actions, either the data were incomplete, they did not include descriptive text, or the text included errors. As a result, the type of hiring authority used was unknown or unspecified.

Appendix VI: Comments from the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3030 DEFENSE PENTAGON
WASHINGTON, DC 20301-3030

RESEARCH AND ENGINEERING

MAY 21 2018

Ms. Brenda Farrell
Director, Defense Capabilities Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Farrell,

This is the Department of Defense (DoD) response to the Government Accountability Office (GAO) Draft Report, GAO-18-417, "DOD Personnel: Further Actions Needed to Strengthen Oversight and Coordination of Defense Laboratories' Hiring Efforts," dated April 19, 2018 (GAO Code 101259). The DoD concurs with each of the three recommendations provided by GAO in the GAO Draft Report, GAO-18-417. The DoD response to each recommendation is provided as an enclosure to this letter.

The primary action officer concerning this matter, is Dr. Jagadeesh Pamulapati, whom you may reach at (571) 372-6372 or by email at jagadeesh.pamulapati.civ@mail.mil.

Sincerely,

For

Mary J. Miller
Performing the Duties of the
Assistant Secretary of Defense
for Research and Engineering

Enclosure:
As stated

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3030 DEFENSE PENTAGON
WASHINGTON, DC 20301-3030

RESEARCH
AND ENGINEERING

GAO DRAFT REPORT DATED APRIL 19, 2018
GAO-18-417 (GAO CODE 101259)

"DOD PERSONNEL: FURTHER ACTIONS NEEDED TO STRENGTHEN OVERSIGHT AND COORDINATION OF DEFENSE LABORATORIES' HIRING EFFORTS"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office routinely obtain and monitor defense laboratory hiring data to improve the oversight of the defense laboratories' use of hiring authorities.

DoD RESPONSE: The Department of Defense concurs with the recommendation. The Defense Laboratories Office will work with the Laboratory Quality Enhancement Program Personnel Subpanel to determine appropriate hiring data to be collected and will establish routine reporting requirements, starting with a meeting scheduled for June 2018.

RECOMMENDATION 2: The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office develop performance measures to evaluate the effectiveness of the defense laboratories' use of hiring authorities as part of the labs' overall hiring to better inform future decision making about hiring efforts and policies.

DoD RESPONSE: The Department of Defense concurs with the recommendation. The Defense Laboratories Office, in collaboration with the Laboratory Quality Enhancement Program Personnel Subpanel, has established a working group tasked with developing performance measures to evaluate the effectiveness of various defense laboratories authorities to include evaluation of the hiring authorities. The development of these performance measures will standardize time-to-hire metrics across the components and enhance benchmarking and the comparative analysis process. The first meeting of this working group will occur in May 2018, and will continue to meet until the necessary performance measures have been developed.

RECOMMENDATION 3: The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office, in collaboration with the Under Secretary of Defense for Personnel and Readiness and the Laboratory Quality Enhancement Panel's Personnel Subpanel, establish and document timeframes for its coordination process to direct efforts across the relevant offices and help ensure the timely approval and implementation of hiring authorities.

DoD RESPONSE: The Department of Defense concurs with the recommendation. The Defense Laboratories Office, in collaboration with the Under Secretary of Defense Personnel and Readiness, and Laboratory Quality Enhancement Program Personnel Subpanel, will establish and

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document coordination process timeframes in the new Under Secretary of Defense for Research and Engineering (USD(R&E)), Management of Science and Technology Reinvention Laboratory (STRL), Personnel Demonstration Projects DoD Instruction (DoDI). Draft timelines have been proposed in the USD(R&E) Management of STRL Personnel Demonstration Projects DoDI and will be agreed upon by the offices involved during coordination of the DoDI.

Appendix VII: Contact and Staff Acknowledgments

GAO Contact:

Brenda S. Farrell, (202) 512-3604 or farrellb@gao.gov

Staff Acknowledgments:

In addition to the contact named above, Vincent Balloon (Assistant Director), Isabel Band, Vincent Buquicchio, Joseph Cook, Charles Culverwell, Serena Epstein, Christopher Falcone, Robert Goldenkoff, Cynthia Grant, Chelsa Gurkin, Amie Lesser, Oliver Richard, Michael Silver, John Van Schaik, Jennifer Weber, and Cheryl Weissman made key contributions to this report.

Appendix VIII: Accessible Data

Data Tables

Data Table for Figure 2: Department of Defense Laboratory Survey Responses about Helpfulness of Various Hiring Authorities in Hiring Highly Qualified Candidates

	Did not use	Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped
Direct hire for candidates with a bachelor's degree	0	0	0	0	1	1	0	14
Direct hire for candidates with an advanced degree	0	0	0	0	1	0	4	11
Direct hire for veterans	0	0	0	0	1	3	4	8
Expedited hiring	3	0	0	0	0	5	1	7
SMART	2	0	0	0	0	2	6	4
Delegated examining unit	1	2	5	2	0	2	2	2
Pathways Program recent graduate	4	1	0	1	3	4	1	2
Pathways Program student intern	2	4	1	2	0	3	4	0
Pathways Program Presidential Management Fellowship Program	15	0	0	0	0	0	0	0

Data Table for Figure 3: Department of Defense Laboratory Survey Responses about Helpfulness of Various Hiring Authorities in Hiring Quickly

	Did not use	Very much hindered	Somewhat hindered	Slightly hindered	Neither hindered nor helped	Slightly helped	Somewhat helped	Very much helped
Direct hire for candidates with a bachelor's degree	0	0	0	0	0	0	1	15
Direct hire for candidates with an advanced degree	0	0	0	0	1	0	2	13
Direct hire for veterans	0	0	0	0	1	1	3	11
Expedited hiring	3	0	0	0	0	4	3	6
SMART	2	0	0	0	3	1	5	3
Delegated examining unit	1	9	1	2	0	1	2	0
Pathways Program recent graduate	4	1	1	1	3	1	3	2
Pathways Program student intern	2	4	3	1	2	3	1	0
Pathways Program Presidential Management Fellowship Program	15	0	0	0	0	0	0	0

Data Table for Figure 4: Department of Defense Laboratory Survey Responses about Helpfulness of Various Incentives in Hiring Highly Qualified Candidates

	Very much helped	Somewhat helped	Slightly helped	Not at all helped	Don't know	Did not use
Pay setting under Lab Demonstration Project ("lab demo")	13	1	1	1	0	0
Opportunities for educational advancement, other than Student Loan Repayment, for example, tuition assistance	7	5	3	1	0	0
Recruitment Bonuses	6	2	6	0	1	1
Relocation Bonuses	6	1	5	0	2	2
Student Loan Repayment Program	5	4	3	0	0	4
Government benefits package	4	8	4	0	0	0

	Very much helped	Somewhat helped	Slightly helped	Not at all helped	Don't know	Did not use
Paid travel for candidates for job interviews at lab	3	6	1	2	4	0
Annual leave credit for prior work experience	3	5	3	1	1	3
Sabbaticals (authorized absences from duty for study or work experience)	1	4	1	0	4	6

Data Table for Figure 5: Department of Defense Laboratory Survey Responses about Challenges in Hiring Highly Qualified Candidates

	Yes	No	Don't know
Losing quality candidates to private sector	15	0	1
Government-wide hiring freeze	15	1	0
Delays with processing of security clearances	15	1	0
Cannot extend firm job offer until final transcript is received	14	2	0
Delays with processing the personnel action by external HR office	13	3	0
Total length of the hiring process, from initiation of request for personnel action to making a firm offer to the candidate	12	4	0
Geographic proximity to organizations competing for your candidates	10	5	1
Finding highly qualified candidates	10	6	0
Location of the laboratory	9	7	0
Losing quality candidates to federal agencies outside DOD	9	5	2
Losing quality candidates to other military laboratories	8	6	2
DOD, service, command, or lab-specific hiring restrictions	7	9	0
Restrictions on use of permanent appointments	5	10	1
Candidates do not qualify for the requirements of the hiring authority	5	11	0
Statutory limits on the number of hires that can be made using a specific hiring authority in a given year based on percentage of total workforce	5	11	0
Discouraged by leadership at any level from using any specific hiring authorities	3	13	0

Data Table for Figure 6: Department of Defense Laboratory Survey Responses about the Top Challenges

	Not a challenge	Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered
Losing quality candidates to private sector	0	0	3	9	3
Government-wide hiring freeze	1	0	2	2	11
Delays with processing of security clearances	1	0	3	4	8
Cannot extend firm job offer until final transcript is received	2	0	4	7	3

	Not a challenge	Not at all hindered	Slightly hindered	Somewhat hindered	Very much hindered
Delays with processing the personnel action by external Human Resource Office	3	0	4	4	5
Total length of the hiring process, from initiation of request for personnel action to making a firm offer to the candidate	4	0	1	7	4

Agency Comment Letter

Appendix VI: Comments from the Department of Defense

Page 1

Ms. Brenda Farrell

Director, Defense Capabilities Management

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548 Dear Ms. Farrell,

This is the Department of Defense (DoD) response to the Government Accountability Office (GAO) Draft Report, GAO-18-417, "DOD Personnel: Further Actions Needed to Strengthen Oversight and Coordination of Defense Laboratories' Hiring Efforts," dated April 19, 2018 (GAO Code 101259). The DoD concurs with each of the three recommendations provided by GAO in the GAO Draft Report, GAO-18-417. The DoD response to each recommendation is provided as an enclosure to this letter.

The primary action officer concerning this matter, is Dr. Jagadeesh Pamulapati, whom you may reach at (571) 372-6372 or by email at jagadeesh.pamulapati.civ@mail.mil.

Sincerely,

Marty Mueller

Performing the Duties of the

Assistant Secretary of Defense for Research and Engineering

Enclosure: As stated

Page 2

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1:

The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office routinely obtain and monitor defense laboratory hiring data to improve the oversight of the defense laboratories' use of hiring authorities.

DoD RESPONSE:

The Department of Defense concurs with the recommendation. The Defense Laboratories Office will work with the Laboratory Quality Enhancement Program Personnel Subpanel to determine appropriate hiring data to be collected and will establish routine reporting requirements, starting with a meeting scheduled for June 2018.

RECOMMENDATION 2:

The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office develop performance measures to evaluate the effectiveness of the defense laboratories' use of hiring authorities as part of the labs' overall hiring to better inform future decision making about hiring efforts and policies.

DoD RESPONSE:

The Department of Defense concurs with the recommendation. The Defense Laboratories Office, in collaboration with the Laboratory Quality Enhancement Program Personnel Subpanel, has established a working group tasked with developing performance measures to evaluate the effectiveness of various defense laboratories authorities to include evaluation of the hiring authorities. The development of these performance measures will standardize time-to-hire metrics across the components and enhance benchmarking and the comparative analysis process. The first meeting of this working group will occur in May

2018, and will continue to meet until the necessary performance measures have been developed.

RECOMMENDATION 3:

The GAO recommends the Secretary of Defense ensure that the Defense Laboratories Office, in collaboration with the Under Secretary of Defense for Personnel and Readiness and the Laboratory Quality Enhancement Panel's Personnel Subpanel, establish and document timeframes for its coordination process to direct efforts across the relevant offices and help ensure the timely approval and implementation of hiring authorities.

DoD RESPONSE:

The Department of Defense concurs with the recommendation. The Defense Laboratories Office, in collaboration with the Under Secretary of Defense Personnel and Readiness, and Laboratory Quality Enhancement Program Personnel Subpanel, will establish and

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document coordination process timeframes in the new Under Secretary of Defense for Research and Engineering (USD(R&E)), Management of Science and Technology Reinvention Laboratory (STRL), Personnel Demonstration Projects DoD Instruction (DoDI). Draft timelines have been proposed in the USD(R&E) Management of STRL Personnel Demonstration Projects DoDI and will be agreed upon by the offices involved during coordination of the DoDI.

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