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# VETERANS *AND* ENERGY

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OPPORTUNITIES IN THE OIL  
& NATURAL GAS INDUSTRY

FEBRUARY 2017

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# VETERANS AND ENERGY: OPPORTUNITIES IN THE OIL AND NATURAL GAS INDUSTRY

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American Petroleum Institute



Analysis By:  
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## Executive Summary

As more than one million service members transition out of the military over the next four years they will find opportunities for civilian employment in the oil and natural gas industry across a wide variety of occupational areas. To help military trained applicants and civilian employers understand how military training and experience relate to civilian jobs in the oil and natural gas industry, this report and the accompanying crosswalk tool have been designed as tools for understanding the transferability of skills and exploring employment opportunities. This report provides an overview of the organization of the military workforce, addresses the skill sets attained through military service and the qualifications of military applicants, and demonstrates how these skills are applicable to the oil and natural gas industry.

Both the military and the oil and natural gas industry require a wide array of skill sets to operate effectively. Analysis of military occupations related to the top jobs in the oil and natural gas industry shows there are numerous military occupational candidates for oil and natural gas industry jobs and many direct parallels between the duties performed in the military and those in the industry. Many of these direct parallels come from technical skills acquired in military training, particularly experience related to skilled blue collar occupations in the areas of installation, maintenance and repair, and construction and extraction. In addition to technical skills, service members bring valuable nontechnical or “soft” skills to the civilian workforce, including but not limited to teamwork, critical thinking, dependability and leadership skills. Both types of skills bring great value to the oil and natural gas industry.

The [Veterans Energy Pipeline](#) tool was developed in conjunction with this report to provide a crosswalk between military occupations and the top jobs in the oil and natural gas industry. The tool allows service members, veterans, and civilian hiring managers to search by military or civilian occupation to determine the best matches to oil and gas jobs. The tool also indicates how closely related military and civilian occupations are based on a job task analysis that compares job duties and tasks of military occupations to a civilian counterpart.

For those in the oil and natural gas industry charged with evaluating the qualifications of military applicants, this report offers an overview of how the military workforce is organized and which groups of service members and veterans (i.e. enlisted, warrant officers, and commissioned officers) would be best suited to the various types of available oil and natural gas jobs. The report also details information on how military occupations are categorized and the types of skill sets one can assume based on training and experience gained as part of military service.

Military personnel are the beneficiaries of extensive training and experience that advance their occupational skills, all of which can be applied within the oil and natural gas industry. Their skill sets are cultivated through a combination of formal mandatory military training, extensive on-the-job training, and participation in voluntary educational opportunities afforded to them during their military service.

Between FY13 and FY15, nearly one million service members separated from the military. The largest number of separating veterans over this time period had training in military occupations that would allow them to transition well to skilled and semi-skilled blue collar civilian occupations in the oil and natural gas industry (e.g., heavy tractor-trailer truck drivers, pump operators, and maintenance and repair workers). Significant numbers of veterans have already found that their military experience,

technical and nontechnical skills match well with jobs in the oil and natural gas industry, and they are taking advantage of the career opportunities available in the industry. The oil and gas and petrochemical industries consistently employ larger shares of veterans than both the government and the private sector, particularly in the upstream sector of the industry (i.e., exploration and production).

Based on the military occupations of transitioning service members and the millions of working-age veterans already home who have skills related to jobs in the industry, there is an ample supply of veterans who would be an excellent fit to begin a career in the oil and natural gas industry.

## Veterans and Energy: Opportunities in the Oil and Natural Gas Industry

More than one million military service members are expected to transition out of the military over the next four years, the majority of whom will seek civilian employment. Moreover, more than 50 percent of the over 20 million military veterans in the U.S. are under the age of 65 and thus are also potential candidates for civilian jobs. The challenge for these men and women is to find jobs in the civilian workforce that are on par with their military training and experience. With 1.9 million projected job opportunities available through 2035 in a wide variety of occupation areas, the oil & natural gas and petrochemical industries are a great place for veterans to start their civilian career search. As the industry hires more veterans it will reap the benefits of the extensive skills and experience these individuals have gained through military service.

Due to the wide variety of occupational skills required to support the mission of the Armed Forces, the military workforce can be considered a microcosm of the civilian workforce. It is made up of a broad assortment of occupations and includes personnel with diverse skill sets. Moreover, the military spends tens of thousands of dollars on state-of-the-art training for individual service members who are exposed to a variety of challenging work experiences. The extensive technical and nontechnical skills that service members gain through military training and experience have direct applicability to the civilian workforce and to oil and gas jobs in particular, making the oil and gas industry an ideal fit for transitioning service members and veterans.

Understanding the valuable skills that they bring to civilian employment, many oil and gas companies are eager to hire veterans to their workforce. This commitment to veterans is clear in their recruitment and retention efforts: For 2017, 21 of the companies that received the coveted Military Friendly Employer designation were in the energy, extraction, and utilities industries, more than any other except trucking and finance. Including manufacturing, a sector with very close ties to oil and gas, the number of designated military friendly companies jumps to 40. Even more oil and gas companies have partnered with organizations such as NextOp, signed the Statement of Support for the Guard and Reserve, and routinely participate in military-specific recruiting fairs and activities. Once hired, oil and gas companies continue to support veteran workers and their families through career development and mentorship programs designed specifically for veterans.

Consistent with the oil and gas industry's effort to recruit and retain veteran workers, a Society for Human Resource Management (SHRM) poll of civilian employers showed that employers overwhelmingly recognize the potential value of hiring former military personnel. However, they note that translating military training and experience to their hiring needs can be difficult. This report and the accompanying crosswalk tool have been designed to help military trained applicants and civilian employers understand how military training and experience relate to civilian jobs in the oil and natural gas industry.

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*In a 2010 SHRM poll, 60% of employers cited translating military skills to civilian job experience as a challenge to hiring employees with military experience*

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This report provides important information on the organization of the military workforce, how it categorizes military occupations, and the types of skill sets one can assume based on training and

experience gained as part of military service<sup>1</sup>. It also provides valuable information on tools to translate military occupations to oil and natural gas jobs. In addition, the report provides a picture of the industry's current veteran workforce and the steps companies are taking to recruit and retain veterans.

The remainder of this report is divided into the following sections:

- Applicability of Military Occupations to the Oil and Natural Gas Industry
- Understanding the Military Workforce
- Qualifications of Military Trained Applicants
- Veterans and Transitioning Service Members: Finding a Place in the Oil and Natural Gas Industry
- Appendices
  - *Appendix A: Relationship between Military Occupations and Top Jobs in the Oil and Natural Gas Industry: Summary of Key Findings*
  - *Appendix B: Finding Qualified Veterans and Government Programs to Promote Hiring*
  - *Appendix C: Military Ranks by Pay Grade and Service*

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<sup>1</sup> Please note that due to the lack of availability of detailed information on Coast Guard occupations, this report does not address the Coast Guard.



## Applicability of Military Occupations to the Oil and Natural Gas Industry

It takes a wide variety of skill sets to carry out the mission of the Armed Forces. On the enlisted side, military occupations run the gamut from cooks to truck drivers to electricians to petroleum lab specialists. Officer occupations are similarly diverse and can include, to name just a few, engineers, public affairs officers, human resource specialists, and information security analysts. This occupational diversity is also true in the oil and natural gas industry, where the nearly 1.9 million job opportunities projected through 2035 fall under a wide array of job categories, expertise, and education levels. With such a wide range of jobs requiring a variety of skill sets, the oil and natural gas industry can be a natural fit for veterans looking to apply the skills they developed during their military service in a civilian setting.

Because the military classifies its occupations differently than the civilian sector, it can sometimes be difficult to determine which military occupations might apply to oil and natural gas jobs. However, analysis of military occupations related to the top jobs in the oil and natural gas industry shows that there are numerous military occupational candidates for oil and natural gas industry jobs and many direct parallels between the duties performed in the military and those in the industry.

When examining the relevance of military occupations to oil and gas jobs, it is important to recognize that for some military occupations there will be a direct one-for-one correspondence between the military and the civilian job, while for others, military training and experience may apply to a certain portion of the civilian job duties, but not all. This is not unlike what you might experience in hiring someone whose experience is in the civilian sector. Rarely will there be an exact match between the previous job the person held and the one for which he/she is applying. The key is to find the most qualified applicants and to identify where there might be skills gaps that need to be filled. This will allow military trained applicants to be placed in appropriate jobs and to identify training needs.

### Skill Sets Attained Through Military Service

Military service members and veterans have extensive skill sets that encompass both nontechnical and technical skills; both are valuable skill sets to bring to the oil and natural gas industry.

#### Nontechnical Skills

Military service members are often lauded for the nontechnical or “soft” skills that they bring to the civilian workforce. A recent Rand corporation study examined how military training develops the nontechnical skills of military service members,<sup>2</sup> and confirmed that military training advances the specific soft skills noted in Figure 1.

**Figure 1: Nontechnical or “Soft” Skills Gained in the Military**

- Handling work stress
- Dependability and reliability
- Persistence
- Interpersonal skills
- Conscientiousness and attention to detail
- Teamwork and team-building
- Critical thinking
- Leading, motivating, and inspiring others to accomplish organizational goals
- Oral communication
- Written communication
- Decision making/decisiveness
- Training others

<sup>2</sup> Hardison, Chaitra, et. al. *What Veterans Bring to Civilian Workplaces: A Prototype Toolkit for Helping Private-Sector Employers Understand the Nontechnical Skills Taught in the Military*: Rand Corporation, 2015.

These skills are a vital part of the oil and natural gas industry just as they are in the military, and perhaps more so than for many other industries. The unique nature of military service prepares veterans to meet the needs of the oil and natural gas industry in the following ways:

- Veterans have learned to stay focused on objectives while adapting to the changes in missions, requirements, and operating locations.
- Veterans have experience in high stress/high stakes environments and a willingness to learn a variety of tasks.
- Veterans have the capacity to perform effectively when required to work independently, and the ability to be comfortable contributing to teams with diverse compositions.
- Veterans have experience operating under physically demanding and rigorous conditions.
- Veterans have a mature work ethic based on core values such as personal integrity, respect for authority, loyalty to the organization and the mission, and commitment to excellence.
- Veterans from many military occupations are highly trained, experienced, and well-suited to work in hazardous environments around complex machinery.
- Veterans have experience operating in dynamic and volatile environments in which safety is paramount.
- Veterans have had opportunities to develop key interpersonal and leadership skills even at a junior level to include communication skills and inclusion of personnel from differing backgrounds.

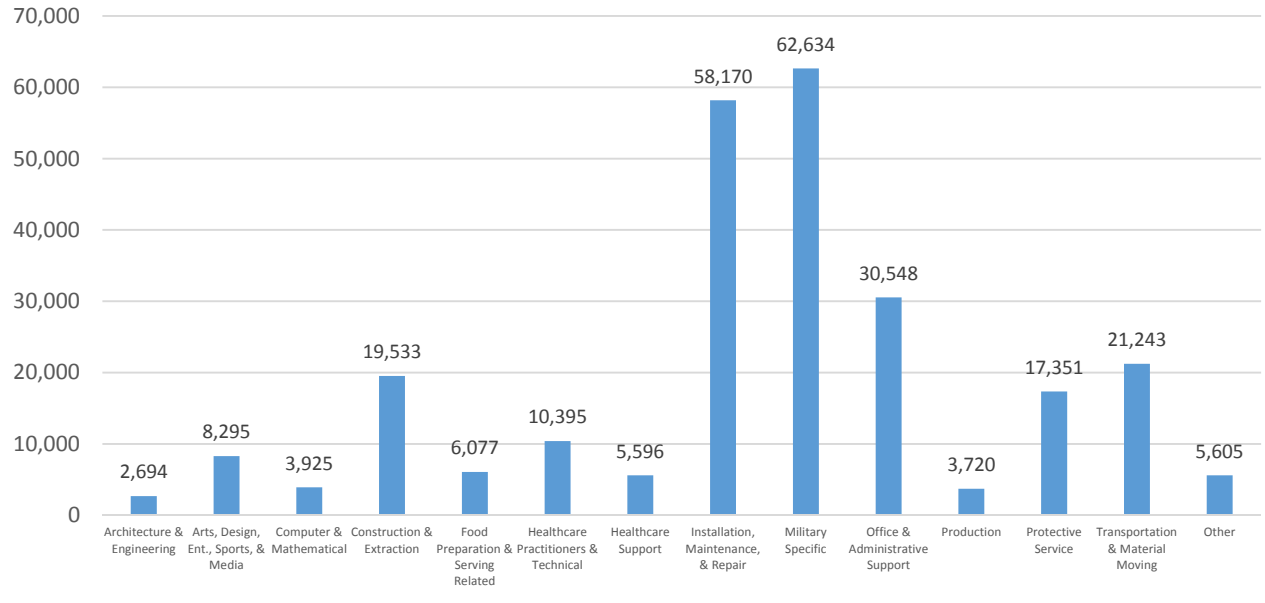
The energy industry is responsible for a precious commodity, and operating efficiently as well as safely is a core value. Veterans understand these concepts of core values and they are inculcated into every aspect of a military member's life. Whether it be the Air Force's core value of "Excellence in All We Do", the Navy's core value of "Commitment", or the Army's sense of "Duty", veterans have learned to be attentive to doing the right thing, not just for themselves but for their "customers"—the people they defend at home and abroad. As stewards of taxpayers' money, operating very sophisticated and expensive machinery, military members understand why safe operations are also efficient operations, and they understand why waste or inefficiencies at any level is a concern at every level.

In combination with their formal technical training and experience, these nontechnical or "soft" skills make veterans valuable assets in the oil and natural gas industry.

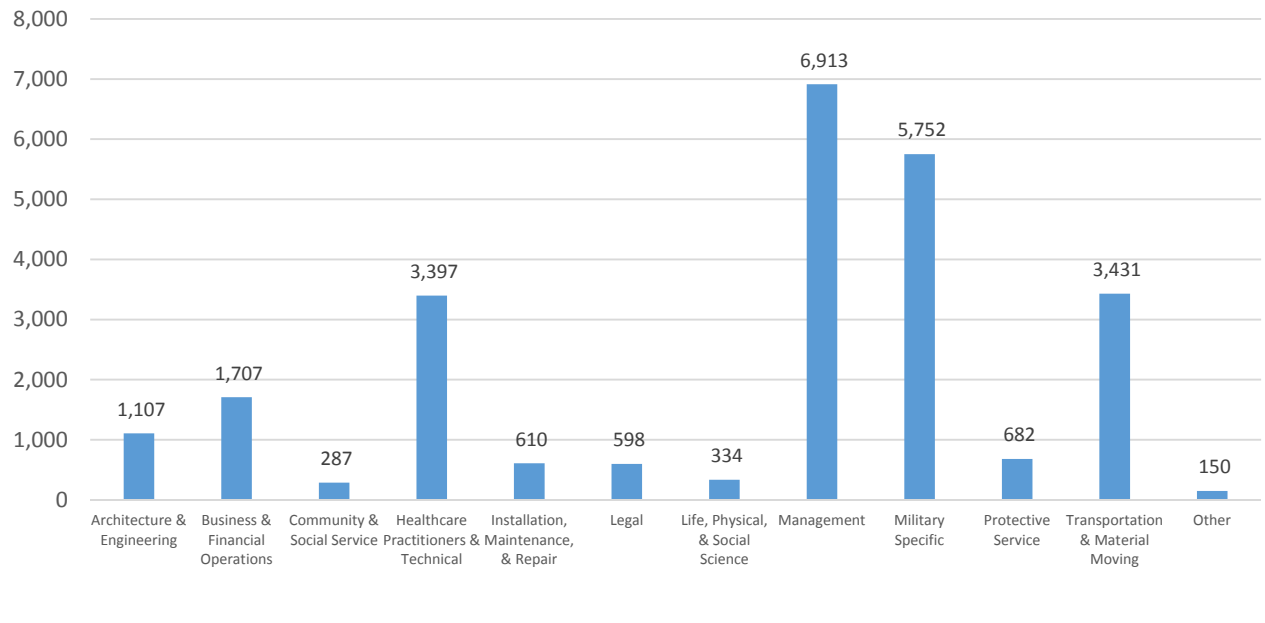
### Technical Skills

In addition to the extensive soft skills that service members possess they also have a wide range of technical skills. As discussed in this report, the military provides intensive occupation-specific training to its service members in a wide range of occupational areas. Service members have an opportunity to apply and hone these skills through on-the-job training and experience in what are often challenging work environments. Over FY13 – FY15, nearly one million service members transitioned out of the military. The range of occupational areas in which these separating service members performed, organized by O\*Net Job Family, is shown in Figures 2 and 3. The largest number of separating enlisted personnel was in Military Specific occupations (e.g. infantry, weapons systems, and command occupations). The largest number of separating officers was classified in Management occupations, followed by Military Specific, Healthcare, and Transportation occupations.

**Figure 2: Number of Separating Enlisted Personnel in FY13 - FY15 by O\*NET Occupational Category**



**Figure 3: Number of Separating Officers in FY13 - FY15 by O\*NET Occupational Category**



## Applying Skill Sets to the Oil and Natural Gas Industry

As shown in Figure 4, the journey of oil and natural gas to a consumer product passes through five stages: Exploration and Production, Transportation, Refining, Delivery, and Consumer. How veterans' military experience may align with each of these stages is briefly discussed below. More information on how military jobs connect to specific oil and gas occupations can be found in Appendix A.

### Exploration and Production

The efforts to access oil and natural gas resources both on and offshore are essential in supplying the energy needs of American consumers, businesses and homeowners. Although military occupations may not have direct operational linkages to exploration and production of oil and natural gas resources, there are veterans from numerous technical specialties whose training and educational backgrounds can be beneficial to these industry demands.

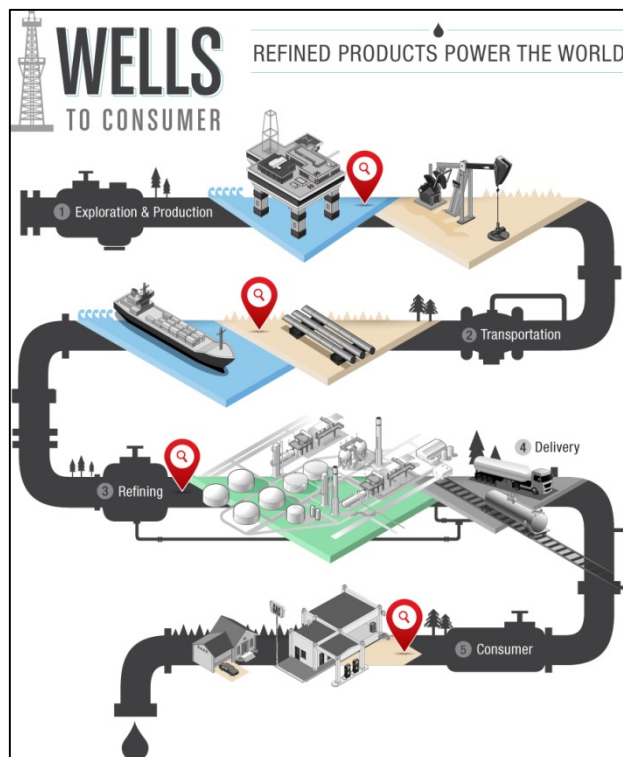
Military veterans from the developmental and research engineering disciplines bring cutting edge engineering and program management capabilities. These veterans are used to working in highly regulated environments with diverse contract support teams to find solutions to challenging issues. The same innovative spirit that military engineers and technicians use to help propel the United States to the preeminent position on the world stage in military warfighting and humanitarian relief technologies can provide needed technical expertise and vigor to the development of advanced technologies for tapping into the techniques and resources of the future.

### Transportation and Delivery

In the military, supplying bulk and packaged petroleum product from source to end user is one of the key components of a successful military mission. The Air Force, Army, Navy and Marine Corps work jointly with their civilian counterparts to ensure safe and efficient transportation of bulk fuel to its final destination. The services use equipment very similar to their civilian counterparts including seafaring vessels, pipelines, rail tank cars, tank trucks, or oil tankers to transport bulk petroleum from source to storage areas. The Air Force even has a petroleum transportation capability that is not seen in the civilian sector. They use large volume aerial tankers that provide for airborne refueling missions. The actual distribution method used to transfer fuel and the role each service plays depends on the source of the fuel and whether the operational area is developed or undeveloped, but the skills acquired by military members in these occupational specialties are very relevant to the civilian oil and gas industry.

Oil tankers are a safe and efficient mode of transporting bulk fuel in both the civilian and military sector. Working closely with Military Sealift Command, the Navy and Army play critical roles in offshore transportation and distribution of bulk petroleum using deep ocean and inland waterways to include environments where operations are time sensitive and no formal offloading infrastructure exists. Service

Figure 4: Wells to Consumers



members are trained to work on platforms that carry fuel and those that work as pumping systems to transfer fuel. Enlisted service members receive specialized training to perform tasks related to transferring fuel ashore from military tankers while observing personal safety precautions, conforming to environmental laws and guidelines related to handling petroleum products, and ensuring quality of the bulk fuel. Senior enlisted personnel and officers supervise, plan and coordinate operational activities. In addition, they inspect and test materials for quality assurance, and ensure environmental laws and guidelines are being followed.

Pipelines serve as a national network to move the energy resources we need from production areas or ports of entry throughout North America to consumers, military bases, airports, and industry. Bulk petroleum is generally most efficiently moved from base terminals and rear storage locations to the combat zone by pipelines. The Army is responsible for moving and distributing fuel using pipelines, hose lines, barges, rail tank cars, tank trucks, and aircraft. Their responsibilities also include management of overland petroleum support, including inland waterways, to U.S. land-based forces of all DoD components. The Army provides the necessary force structure to install, operate, and protect tactical petroleum storage and distribution systems, including pipelines. In addition, enlisted service members are also qualified to work in the construction and maintenance aspects of pipelines, performing such jobs as a pipefitter, welder, lead hand, construction foreman, construction manager, crane operator, heavy equipment operator and mechanic, nozzleman, oiler, and truck driver.

### Refining

While the military does not have crude petroleum refining capability of its own, there are many related occupational skills and experiences that military veterans bring to crude oil and natural gas refinement processes.

Refineries are complex industrial sites that require precise attention to detail by highly trained technicians, supervisors, engineers, and business managers at every stage of the refinement process. As is the case at a refinery, the U.S. military has sophisticated, technical operations going around the clock. Military members and veterans from numerous career fields have both real world operational experience and regular contingency exercise experience at adapting schedules to demanding, 24-hour rotations, austere weather conditions, and critical delivery timelines, while always keeping a sharp focus on attention to detail and safety.

Many operational tasks seen at refineries are exhibited in related military occupations such as Machinists Mates who operate, maintain, and monitor pumps, gauges, and machinery onboard technically sophisticated Navy ships, and Missile Maintenance technicians in the Air Force who keep highly sophisticated nuclear missile facilities up in running all day, every day in challenging onshore environments such as Montana, the Dakotas, and Wyoming.

### Consumer

The oil and natural gas industry plays an immense role in every American's everyday life. It is a vast, world-wide industry with complex, independent and interdependent organizations operating across many geographic and economic sectors. Veterans from all occupational specialties have a unique ability to understand and adapt to these complexities because the United States military is an equally vast and complex organization that depends on finding ways to operate both safely and efficiently on a world-wide stage.

From oil and natural gas industry employees to their consumers, safety is a critical component of every step of the process. Veterans easily adapt to this safety conscious operating environment. From the first day of training to every office and every forward operating location, each military member is trained to recognize safety as a paramount concern. In addition, all veterans can be depended upon to bring an operational understanding of how to apply risk management and mitigation steps to the oil and natural gas industry.

### Tools to Assess the Transferability of Military Skills and Training

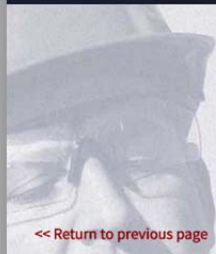
The American Petroleum Institute has developed a tool to make it easier for veterans and civilians alike to identify overlap between military occupations and oil and natural gas jobs. The [Veterans Energy Pipeline](#) tool provides a crosswalk between military occupations and the top jobs in the oil and natural gas industry. It allows service members and veterans to search by military occupations to determine the best matches to oil and gas jobs. The tool also allows individuals to select from among the top jobs in the industry and find out which military occupations have duties that match all or a portion of the duties for the selected industry job. For jobs that only partially match, the tool shows the work activities that may be lacking so individuals can determine where additional training may be needed (as shown below). To learn more about the methodology behind how the tool was developed and for a summary of key findings, see Appendix A.

The tool can be accessed by going to: [www.veteransenergypipeline.com](http://www.veteransenergypipeline.com).

To learn more about how military training and experience match up with civilian occupational credentials, visit the services' Credentialing Opportunities On-Line programs (COOL). Each of the military services sponsors a COOL program that allows active duty service members to attain civilian occupational credentials (certifications and licenses) during military service. The programs provide detailed information on matches between military occupations and civilian certifications on service-specific COOL websites. The websites also provide results of gap analyses comparing military training to civilian credentialing requirements. Anyone can access these sites and use the search features to search for a particular military occupation and find related credentials or search by a civilian occupational area to see related military occupations and credentials.

The COOL websites can be accessed by going to:

- Army COOL – <https://www.cool.army.mil>
- Department of Navy COOL – <https://www.cool.navy.mil>
- Navy COOL – <https://www.cool.navy.mil/usn>
- Marine Corps COOL – <https://www.cool.navy.mil/usmc>
- Air Force COOL - <https://afvec.langley.af.mil/afvec/Public/COOL/Default.aspx>



# CIVILIAN AND MILITARY JOB TASK COMPARISON

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## CIVIL ENGINEERING TECHNICIANS

Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.

Learn more about this job »  
(external link: MyNextMove)



## 12T - TECHNICAL ENGINEER

The technical engineer supervises or participates in construction site development to include technical investigation, surveying, drafting, development of construction plans, specifications, and performing quality control inspections.

Explore credentials related to this Military Occupation »  
(external link: Army COOL)

VIEW ALTERNATIVE JOB TITLES

CUSTOMIZE ⓘ

PRINT

## JOB TASK COMPARISON

Resources for finding jobs like this

What's a Job Task Comparison?

● Related    ◐ Somewhat Related

CIVIL ENGINEERING TECHNICIANS DETAILED WORK ACTIVITIES ⓘ	JOB TASKS PERFORMED BY MILITARY CAREER PHASE			
	EARLY ⓘ	MID ⓘ	LATE ⓘ	EXPERIENCE ⓘ
Confer with other personnel to resolve design or operational problems.		◐	●	<input type="checkbox"/>
Confer with technical personnel to prepare designs or operational plans.		◐	●	<input type="checkbox"/>
Create graphical representations of civil structures.	◐	●	●	<input type="checkbox"/>
Create maps.	◐	●	◐	<input type="checkbox"/>
Estimate operational costs.		◐	◐	<input type="checkbox"/>
Estimate technical or resource requirements for development or production projects.		◐	●	<input type="checkbox"/>
Inspect facilities or sites to determine if they meet specifications or standards.		●	●	<input type="checkbox"/>
Prepare detailed work plans.		●	●	<input type="checkbox"/>
Prepare operational reports.		●	●	<input type="checkbox"/>
Review technical documents to plan work.		●	●	<input type="checkbox"/>
Survey land or bodies of water to measure or determine features.	●	●	●	<input type="checkbox"/>
Test characteristics of materials or structures.	●	●	●	<input type="checkbox"/>

## Understanding the Military Workforce

To better understand how military occupations align with jobs in the oil and gas workforce, it is useful to understand how the military organizes its workforce. This can help match service members and veterans to the most related oil and gas jobs based on skills, education, and experience. This section of the report focuses on three unique features of how the military characterizes its workforce and how they might factor into hiring considerations:

- **Military Personnel Categories** – Differences among enlisted personnel, warrant officers, and commissioned officers;
- **Military Occupational Classification Structures** – Formal titles that each service uses to categorize its military occupations; and
- **Military Components: Active Duty, Reserve, and National Guard** – Hiring considerations related to the military component in which a service member served or currently serves.

### Military Personnel Categories

Military service members fall into three major personnel categories: enlisted, warrant officer, and officer. The primary differences among personnel in these categories are their education level upon entry to the service and the types of job duties they perform. Within each of the groups, service members are assigned both a military rank and a pay grade, both of which help identify where they are in terms of career progression.

Military ranks are typically used to denote the level of responsibility the individual has for personnel, equipment, and mission. The rank structure is somewhat analogous to the civilian work force in that enlisted personnel would be considered the first-line labor force and first line supervisors (known as noncommissioned officers, or NCOs and senior NCOs), warrant officers would be specialized technical consultants, and commissioned officers would comprise the management and leadership teams. These divisions of labor often overlap to some degree as NCOs and senior NCOs advance into leadership and management positions, although they remain subordinate in authority to the officer positions. Ranks vary according to both service and personnel category. Pay grades, on the other hand, are administrative classifications that are used primarily to standardize compensation. Ranks and pay grades are fairly closely related. Appendix C provides detailed tables of rank and pay grade for enlisted service members and officers.

In general, it is often easier to translate the skills of military officers to civilian jobs than it is to translate the skills of enlisted personnel. This is because officers enter the military with college degrees that are related to both their military occupations and civilian occupations. Moreover, officer occupations tend to align more closely with civilian occupations.

Enlisted personnel, on the other hand, typically receive most of their occupational training directly from the military. This “non-traditional” form of training, while of very high quality, is not well understood by civilian employers making it harder for them to understand the relevance and level of competence of enlisted military trained applicants. This does not mean that enlisted personnel’s skills and experience are not relevant to or on par with the civilian workforce, it just means that individuals may need to take a little more time to understand how the skills and experience relate.



Table 1: Military Career Options: Personnel Categories			
	Enlisted Personnel	Warrant Officers	Officers
Primary Duties	Carry out technical functions of the military	Highly specialized experts and trainers	Managers, leaders, problem solvers, planners
Percentage of Armed Forces	84%	1%	15%
Education Level Upon Entry <sup>3</sup>	High School Degree or Equivalent	High School Degree or College Degree	College Degree
Pay Grades	E-1 to E-9	WO-1 TO WO-5	O-1 to O-10

### Enlisted Personnel

Enlisted personnel typically have a high school degree or equivalent upon entry to military service and many will earn 2-year or 4-year degrees during the course of their service or when they leave the service. They perform in technical roles and work under the direction of officers. As shown in Table 1, enlisted personnel make up the vast majority of service members (84 percent). Upon entry to the service, they are assigned a pay grade of E-1 and can advance up to E-9.

As enlisted personnel move up in pay grade and rank they take on the title of “noncommissioned officers” or “NCOs.” The Army, Air Force, and Marine Corps use various Sergeant titles for these NCO grades; the Navy uses the term “Petty Officers” to identify equivalent grades (Appendix C). Typically, service members at the pay grade of E-4 or E-5 or higher are considered NCOs; when they reach the pay grade of E-7 or higher, they are considered senior noncommissioned officers.

**Employers looking for technically-trained applicants and first-line laborers and supervisors will find what they are looking for among the enlisted ranks.**

### Warrant Officers

All services except the Air Force have a category of personnel called warrant officers. Warrant officers are considered the technical experts of the military. They differ from commissioned officers in that their development plans lead to a more single-track specialty focus rather than broader, managerial or leadership focus. Thus, they have extensive subject-matter expertise in very specific technical areas, such as aviation, information technology, intelligence, and maintenance to provide needed continuity to the force. Warrant officers typically need only a high school degree to be eligible for appointment (although many hold college degrees) and they are ranked above enlisted service members. Many began their careers as enlisted personnel before becoming warrant officers.

Warrant officers derive that title by virtue of the fact that they are initially designated as an officer by a warrant as opposed to the commission that is received by regular officers. Warrant officers at the lowest

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<sup>3</sup> Many of the service members who enter with a high school degree or equivalent will attain college degrees during military service or post-service.

pay grade (W1) have their warrants approved by the service secretary of their respective branch of service. Once warrant officers reach the rank of Chief Warrant Officer 2 (CW2), they are commissioned by the President of the United States.

**Employers looking for technical experts with vast amounts of specific training and experience would do well to explore candidates from the warrant officer ranks.**

### Officers

The term “officer” typically refers to commissioned officers. In the military organizational structure, they outrank both enlisted personnel and warrant officers and must have a minimum of a four-year bachelor’s degree to gain entry into the officer corps. Officers are assigned through various commissioning programs, which include the service academies, the Reserve Officers’ Training Corps (ROTC), and Officer Candidate School. Like higher level warrant officers, upon initial entry into the service, they receive their commissions from the President of the United States with the Senate’s consent.

Officers are further divided into three categories:

- Company Grade Officers – hold the rank of O-1 to O-3; known as “junior” officers;
- Field Grade Officers – hold the rank of O-4 to O-6; known as “senior” officers;
- General Officers (Admirals for the Navy) – hold the rank of O-7 and above; known as “flag” officers.

**Employers looking for professionals with significant training and experience in managerial and leadership roles as well as high degrees of technical proficiency will find the commissioned officer corps to be an exceptional group to target.**

### Military Occupational Classification Structures

The military services use different classification structures to assign personnel to specific military occupational specialties. Each service has its own classification scheme and the schemes vary for enlisted personnel and officers. Every military occupation is assigned an occupation code that is a few characters in length (generically referred to as Military Occupation Code - MOC); the characters may be alphabetic, numeric, or alphanumeric. Each code is accompanied by a specific occupational title. Table 2 shows the formal terms used by each service to categorize military occupations by personnel category.

Table 2: Military Occupational Classification by Service			
Service	General Term for Service Member	Enlisted Occupational Categories	Officer Occupational Categories
Army	Soldier	Military Occupational Specialty (MOS)	Warrant Officer - MOS (WO MOS) Officer - Area of Concentration (AOC)
Navy	Sailor	Rating	Designator
Air Force	Airman	Air Force Specialty Code (AFSC)	AFSC
Marine Corps	Marine	Military Occupational Specialty (MOS)	MOS

**Examples of Military Occupations: Looking for a Construction Laborer?**

- Army – MOS – 12W – Carpentry and Masonry Specialist
- Navy – Rating – BU – Builder
- Air Force – AFSC – 3E5X1 – Structural Journeyman
- Marines – MOS – 1371 – Operating Engineer



*Note: These are all enlisted MOCs*

**Military Components: Active Duty, Reserve, and National Guard**

The military services are divided into two components – active duty and reserve. The active duty component is made up of service members whose full-time job is serving in the military, while the reserve component is made up of individuals who generally perform a minimum of 39 days of military duty per year and who supplement the active duty military when necessary. The reserve component is further broken down into two sub-categories of part-time service members, Reservists and National Guardsmen.

For civilian employers, the important differentiator between the active and reserve components is that individuals in the reserve component typically hold full-time civilian jobs while maintaining a military service obligation. These individuals have gained skills and experience from both their civilian and military job duties and related training. Individuals who serve in the active duty component, on the other hand, will be potential civilian job candidates upon transition out of the active component.

**Active Duty**

A person who is “active duty” is in the military full-time. They work for the military full-time, may live on a military base, and can be deployed at any time. To assist in career development as well as meet national security needs, most military personnel move frequently from one geographic duty location to another; on average officers move every 2.5-years and enlisted personnel move every 4-years. Wherever they live or are assigned, they remain subject to the Uniform Code of Military Justice (UCMJ) at all times as well as the civil code for the locale in which they live.

## Reserve

Each branch of the military has a reserve component and the Reserve are under the command of their respective military branch (e.g., Army Reserve are under the command of the Army). The purpose of the Reserve is to provide and maintain trained units and qualified persons to be available for active duty in the armed forces when needed. This may be in times of war, in a national emergency, or as the need occurs based on threats to national security. Their presence can be called upon to serve either stateside or overseas. Traditionally the primary job of the Reserve has been to fill the gaps in stateside service positions when the active duty forces ship overseas; however, in recent conflicts, reserve units have deployed directly to overseas locations. As a minimum, members of the Reserve are required to participate in training drills one weekend each month and two consecutive weeks per year. This period of training is commonly referred to as “Drill”.

## National Guard

The National Guard consists of the Army National Guard and the Air Force's Air National Guard. The Navy and Marine Corps do not maintain National Guard units. While federally funded, the National Guard is organized and controlled by the states under the authority of the state governor. However, in times of war or national crisis, the National Guard can become federalized and deployed by federal command authorities. The National Guard engages in a number of activities. During local emergencies, National Guard units assist communities endangered by storms, floods, fires, and other disasters. Specialized National Guard units deployed overseas are prepared for and may see combat action, but more traditionally guard units are directed to work in humanitarian relief or peacekeeping roles such as building schools and hospitals, training local peacekeepers, or teaching local farmers more efficient farming techniques and better ways to use their land. As with the Reserve, the National Guard requires training drills one weekend a month and two weeks per year as a minimum.

The tables below show the number of service members by component for the last three fiscal years. Table 3 shows the total number of service members on active duty and in the reserves, while Table 4 shows the number of service members who separated during the three-year time period. The separating service members are the potential candidates for civilian employment as they transition out of the military.

<b>Table 3: Number of Service Members in Military Components by Fiscal Year</b>						
<b>Component</b>	<b>As of 9/30/13</b>		<b>As of 9/30/14</b>		<b>As of 9/30/15</b>	
	<b>Enlisted</b>	<b>Officer</b>	<b>Enlisted</b>	<b>Officer</b>	<b>Enlisted</b>	<b>Officer</b>
Active Duty	1,131,465	238,864	1,090,939	235,334	1,070,653	230,790
National Guard and Reserve	706,984	127,526	695,754	128,624	689,102	129,960
<b>Total</b>	<b>1,838,449</b>	<b>366,390</b>	<b>1,786,693</b>	<b>363,958</b>	<b>1,759,755</b>	<b>360,750</b>

<b>Table 4: Number of Separating Service Members in Military Components by Fiscal Year</b>						
<b>Component</b>	<b>FY 13</b>		<b>FY 14</b>		<b>FY 15</b>	
	<b>Enlisted</b>	<b>Officer</b>	<b>Enlisted</b>	<b>Officer</b>	<b>Enlisted</b>	<b>Officer</b>
Active Duty	190,862	17,819	186,111	20,168	164,692	20,698
National Guard and Reserve	81,943	7,557	123,804	12,012	118,015	12,007
<b>Total</b>	<b>272,805</b>	<b>25,376</b>	<b>309,915</b>	<b>32,180</b>	<b>282,707</b>	<b>32,705</b>

## Qualifications of Military Trained Applicants

Military personnel are the beneficiaries of extensive training and experience that advance their occupational skills and can be applied within the oil and natural gas industry. As described below, their skill sets are cultivated through a combination of formal mandatory military training, extensive on-the-job training, and participation in voluntary educational opportunities afforded to them during the military service. Employers can request official service documentation of service members and veterans training and experience.

### Types of Training and Education Provided In-Service

While military required training and job experience often form the core of an enlisted person's skill set, the military also offers numerous voluntary education opportunities that service members can take advantage of to further their skill sets and develop professionally. This includes opportunities to take college courses and attain post-secondary credentials, such as certifications, licenses, and degrees. The following sections are intended to provide a better sense of the overall types of skills, training, education, and experience that service members gain from their military experience and can bring to the oil and natural gas industry.

#### Formal Military Training and On-the-Job Training

Enlisted service members begin their military careers with basic training – commonly known as “boot camp,” which lasts between seven and 12 weeks. It is intended to build physical and mental stamina, develop team building skills, and orient recruits to the military mission, culture, and ethos.

After boot camp, enlisted service members attend initial technical training that is specific to their military occupation. Depending on the military occupation, initial technical training can range in length from eight to more than 40 weeks. Service members attend this training full-time during that period – training is essentially their job and it is conducted at installations constructed much like a school campus with the express intent of providing realistic and applicable training. Upon completion of this skill training they are qualified to hold their military occupational specialty and they are assigned to a field unit to begin on-the-job training, which is conducted much like an apprenticeship program. They are assigned to an experienced NCO who manages their day to day activity and oversees their on-the-job training. There are specific job tasks and qualification standards that each individual service member must check off within a specified period of time in order to advance. At specific phase points throughout enlisted members' careers, they attend in-residence advanced skills and leadership courses as they move up in rank.

Officers have a number of methods of entering the military service, but in order to receive a commission, all are required to have at least a 4-year college degree. Some pursue their commission while simultaneously pursuing their undergraduate degree while others gain their officer commission after completion of their undergraduate studies. Those who attend the military service academies (U.S. Military Academy, U.S. Naval Academy, and U.S. Air Force Academy) gain their initial military training at the same time they are earning their bachelor's degree through the Academy. Similarly, officers who pursue their commission through the Reserve Officer Training Corps (ROTC) programs at colleges and universities across the country receive much of their introduction to the military during their

undergraduate education experience at their respective college or university prior to receiving their commission.

The last primary source of military officer commissioning is Officer Candidate School (OCS) or Officer Training School (OTS). Officer Candidate School is for candidates who have already earned a four-year college degree or greater, but have had no formal military training towards officer candidacy prior to OCS. If selected, these individuals attend OCS prior to receiving their commissions. OCS is typically nine to 17 weeks in length and is intended to develop leadership skills, promote mental and physical stamina, and help them learn about military mission, culture, and ethos. Upon attaining their bachelor's degree and completing their officer commissioning program, officers attend an initial technical training school specific to their chosen military occupation. Periodically throughout their careers, officers, like their enlisted counterparts, have opportunities to attend additional career field technical training programs.

In addition to the formal, occupation-related, technical training that service members receive, they are also the beneficiaries of extensive professional military education (PME) at phase points throughout their careers. Enlisted and officers alike, in all branches of the service, have these PME requirements as part of their individual development plans. For instance, in the Air Force, before an Airman can join the NCO ranks, she must not only show technical competency in her career field as described above, but also complete the Airman Leadership School, the NCO Academy, and finally the Senior NCO Academy in order to progress in rank. All of these courses are in-residence opportunities to reinforce the mission-focus, culture, and ethos of the military, and to teach specific leadership and managerial skills that are necessary at each step up in rank.

### Voluntary Education

In addition to the mandatory training provided to service members, numerous opportunities for professional growth and development are provided through voluntary education. The Department of Defense (DoD) recognizes that investing in the professional development and education of its workforce can provide tangible benefits in that it allows service members to bring a higher level of capability to their jobs. The DoD's voluntary education program makes up one of the largest continuing education programs in the world. It includes a wide variety of programs, including academic skills, college courses and degrees, licensure and certification, and apprenticeship opportunities. Each year, a third of service members enroll in postsecondary education programs leading to associates, bachelors, and advanced degrees. Military service members participating in voluntary education programs are considered non-traditional students in that they are working and going to school at the same time, demonstrating their commitment to continued professional growth.

### Civilian Credential Opportunities

All of the military services have adopted programs to facilitate civilian credentialing of service members, and service members are encouraged to attain professional certifications and licenses related to their military occupational specialties. In addition to paying for credential fees, these credential programs match military occupations to civilian credentials, identify gaps between military training and experience, and provide resources to fill gaps so the service member can attain the certification or license during military service. The programs are viewed by the services as a means of professionalizing the workforce; they also serve as recruiting and retention incentive programs. For service members transitioning to the civilian workforce, certifications and licenses are a means of demonstrating to civilian employers that their skills are on par with those of their civilian counterparts.

Service members have a high success rate in attaining civilian credentials. Navy statistics show that service members have a pass rate on civilian certification and licensure exams of over 85 percent, compared to industry averages of 70 percent. Because civilian credentials demonstrate competency to perform in civilian occupations, the high pass rates demonstrate the relevance of military training and experience to civilian jobs. As an example, service members holding the Navy's enlisted rating "ABF - Aviation Boatswain's Mate, Fuels" play a major part in launching and recovering naval aircraft quickly and safely from land or ships. This includes preparing and fueling planes prior to take-off and after landing. Their military training and experience qualifies them to pursue the American Petroleum Institute's API 510 Pressure Vessel Inspector certification.

### Apprenticeship Programs

Service members in the Navy, Marine Corps, and Coast Guard are provided opportunities to participate in a U.S. Department of Labor registered apprenticeship program. The United Services Military Apprenticeship Program (USMAP) is a formal military training program that provides active service members the opportunity to improve their job skills and to complete their civilian apprenticeship requirements while they are on active duty. The U.S. Department of Labor (DOL) provides the nationally recognized "Certificate of Completion" upon program completion. Some examples of apprenticeship programs that can be completed through USMAP that are particularly relevant to the oil and natural gas industry include Bulk Fuel Specialist, Fuel System Maintenance Worker, Maintenance Mechanic, and Pumper-Gauger.

### Education Levels

Military personnel have a wide range of education levels with many opportunities to continue their education while serving. The tables below display the education levels of active duty service members as of September 2015. As shown in Table 5, across all services more than three-quarters of enlisted personnel are high school graduates. Many have also achieved an Associate's or Bachelor's degree, particularly in the Air Force. Table 6 shows the education level of active duty warrant and commissioned officers. As expected, nearly all have a post-secondary degree<sup>4</sup>. Forty-two percent hold a Bachelor's degree while almost one-third have earned a Master's degree.

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<sup>4</sup> While all commissioned officers must hold a four-year degree, warrant officers come through the enlisted ranks and do not have the same requirement. Table 6 includes both warrant and commissioned officers, which is why not all are shown as having at least a bachelor's degree.



Table 5: Percentage of Enlisted Service Members by Education Level (as of 9/2015)					
	Army	Navy	Marine Corps	Air Force	Total
Non-High School Graduate - Not Attending	11	2	1	0	5
High School Alternate Credential Holder	6	3	1	0	3
High School Graduate	69	81	92	65	75
Associate Degree	6	7	2	24	10
College Graduate - Bachelors	7	7	2	9	7
College Graduate - Masters	1	<1	<1	2	1
College Graduate - Doctorate	0	0	0	0	0
Unknown	<1	<1	1	<1	<1
<b>Total*</b>	100	100	100	100	100

\* Totals may not add to 100 due to rounding error

Table 6: Percentage of Warrant Officer and Officer Service Members by Education Level (as of 9/2015)					
	Army	Navy	Marine Corps	Air Force	Total
Non-High School Graduate - Not Attending	8	<1	<1	0	3
High School Alternate Credential Holder	<1	<1	<1	0	<1
High School Graduate	<1	0	13	<1	1
Associate Degree	3	1	2	<1	2
College Graduate - Bachelors	50	26	66	36	42
College Graduate - Masters	26	30	16	48	32
College Graduate - Doctorate	11	6	1	12	9
Unknown	<1	37	2	3	10
<b>Total*</b>	100	100	100	100	100

\* Totals may not add to 100 due to rounding error

### Documentation of Military Training and Experience

Employers can take advantage of formal documentation that is available to all service members to verify their military training and experience. Table 7 provides an overview of these documents. Service members can request that formal copies of these documents be sent directly to the employer.

Learn more about the documents on [Veterans Energy Pipeline](#).

Table 7: Formal Documentation of Military Training and Experience		
Document	Applicable Services	Primary Value for Employers
Certificate of Release or Discharge from Active Duty (DD Form 214)	All	Verify military service and discharge status
Verification of Military Experience and Training (VMET 2586; Department of Defense Form 2586)	All	Verify military occupations held
Service Transcripts: Joint Service Transcript	Army, Navy, Marine Corps, Coast Guard	Verify military occupations held, military training courses completed, and college level credit for each
Service Transcripts: Community College of the Air Force Transcript	Air Force	

## Veterans and Transitioning Service Members: Finding a Place in the Oil and Natural Gas Industry

Significant numbers of veterans have already found that their military experience, technical and nontechnical skills match well with jobs in the oil and natural gas industry, and they are taking advantage of the career opportunities available in the industry. The nearly 1.9 million projected job opportunities in the oil and natural gas industry through 2035 can provide fulfilling careers for additional veterans as more than one million military service members transition out of the military over the next four years. Like their veteran colleagues before them, these transitioning service members may also find the oil and natural gas industry to be a natural fit. This section provides an overview of veterans who are already working in the industry, as well as the numbers and demographics of transitioning military personnel.

### Veterans Employed in the Oil and Natural Gas Industry

Over the last several years the number of veterans working in the oil and gas and petrochemical industries has been growing with nearly 185,000 veterans employed in 2014. These veterans accounted for 10.5% of the nearly 1.8 million oil and gas employees in 2014, filling positions in all sectors of the industry<sup>5</sup> and across all regions of the country.

The oil and gas and petrochemical industries consistently employ larger shares of veterans than both the government and the private sector<sup>6,7</sup> as shown in Figure 4. While the share of veteran employment in the industry declines slightly over time, similar to the shares of veterans in government and the private sector, the total number of veterans employed by the industry increases over time.

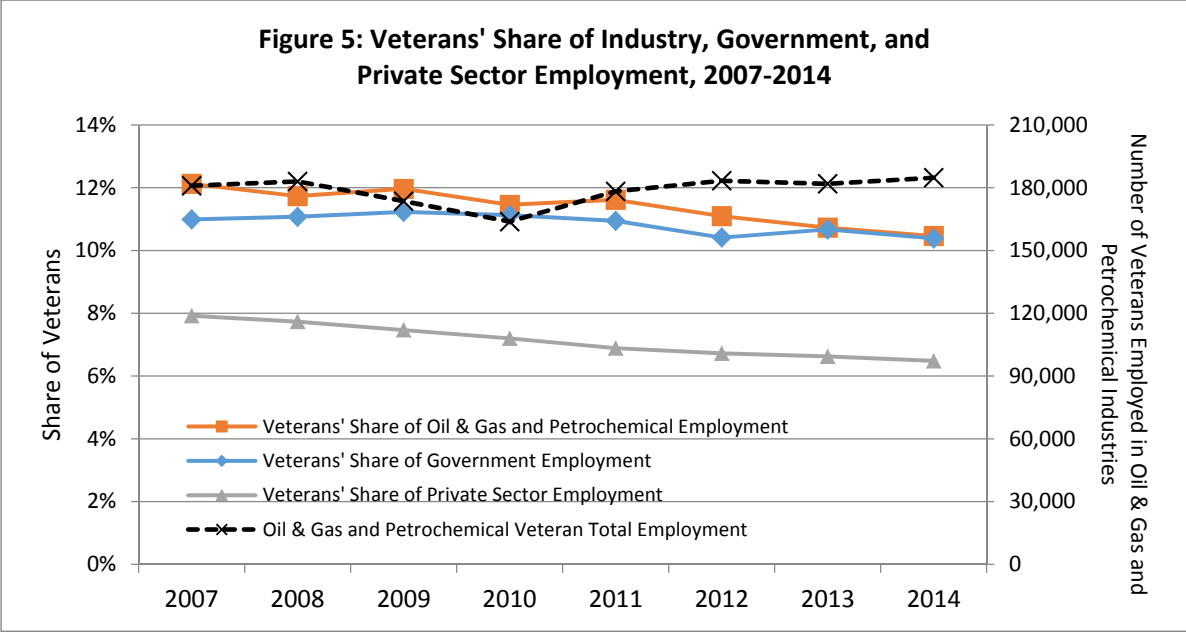
**The oil and gas and petrochemical industries consistently employ larger shares of veterans than both the government and the private sector.**

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<sup>5</sup> The terms “oil and gas” and “industry” in this report refer to the upstream, midstream, and downstream sectors of the oil and natural gas industry and the petrochemical industry. It does not include gas stations.

<sup>6</sup> Private sector employment comes from the BLS household survey; it includes private sector workers plus the self-employed. The private sector does include the oil and gas sector; if the private sector excluded oil and gas the veteran share would be slightly lower.

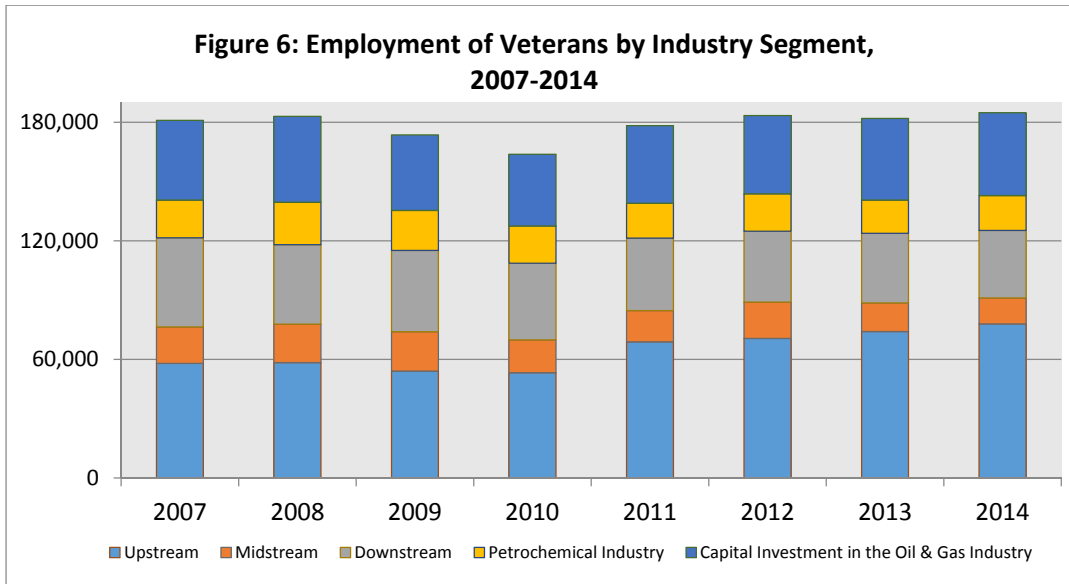
<sup>7</sup> One reason the veteran share of employment in the oil and gas industry is higher than the share of veterans in the rest of the private sector could be that veterans are predominantly male, and the oil and gas industry has more male-dominated occupations than the rest of the private sector on average.



Understanding the valuable skills that they bring to civilian employment, many oil and gas companies are eager to hire veterans to their workforce. This commitment to veterans is clear in their recruitment and retention efforts: In 2017, 21 of the companies that received the coveted Military Friendly Employer designation were in the energy, extraction, & utilities industries, more than any other except trucking and finance. Including manufacturing, a sector with very close ties to oil and gas, the number of designated military friendly companies jumps to 40. Even more oil and gas companies have partnered with organizations such as NextOp, signed the Statement of Support for the Guard and Reserve, and participate in military-specific recruiting fairs and activities. Once hired, oil and gas companies continue to support veteran workers and their families through career development and mentorship programs designed specifically for veterans.

**Industry Occupations**

The largest number of veterans are employed in the upstream sector of the industry as shown in Figure 5 (i.e., exploration and production), consistent with the upstream sector employing the largest number of individuals overall. However, veterans account for an above average share of the workforce in the downstream segment, filling nearly 12% of those jobs in 2014. The share of veterans in the midstream segment was also above average for several years, but has recently declined. Shares of veterans in capital investment and the petrochemical industries have remained relatively stable, declining slightly over time. The share of veterans in detailed occupations is reported in Table 8.



**Table 8: Veterans' Share of Oil and Gas and Petrochemical Industry Detailed Occupations\*, 2014**

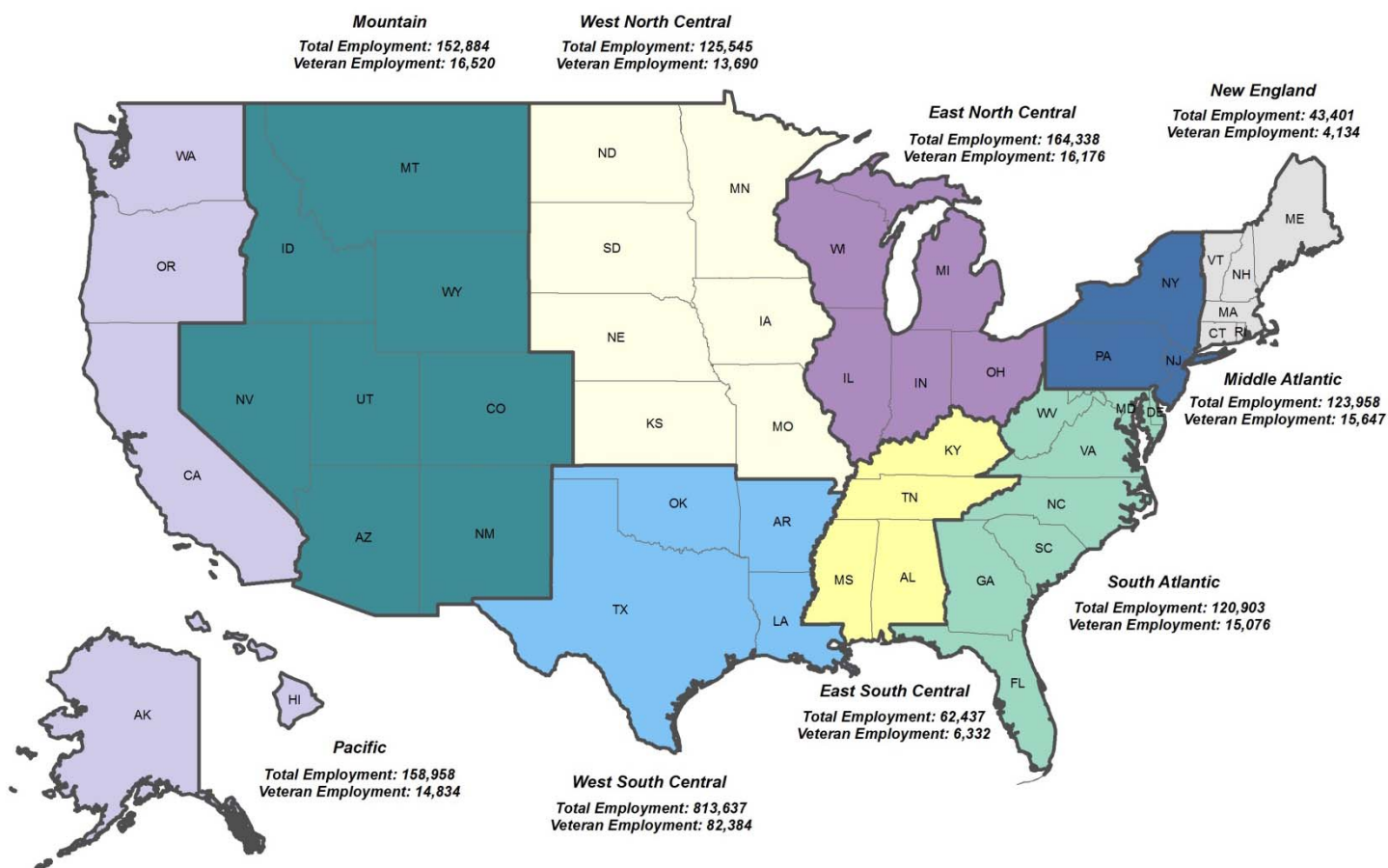
Occupation Categories	Veterans' Share of Occupation
<b>Total Oil and Gas Employment</b>	<b>10.5%</b>
Food preparation and serving related occupations	20.0%
Protective service occupations	18.4%
Transportation and material moving occupations	13.9%
Installation, maintenance, and repair occupations	13.7%
Building and grounds cleaning and maintenance occupations	13.5%
Education, training, and library occupations	12.9%
Management occupations	11.5%
Architecture and engineering occupations	11.5%
Computer and mathematical science occupations	11.3%
Sales and related occupations	11.1%
Construction and extraction occupations	10.4%
Production occupations	10.3%
All other	10.1%
Business and financial operations occupations	9.1%
Life, physical, and social science occupations	8.8%
Office and administrative support occupations	4.8%
Arts, design, entertainment, sports, and media occupations	3.6%
Healthcare practitioner and technical occupations	3.4%
Legal occupations	1.3%

\* As defined by U.S. Department of Labor O\*NET categories

## Regional Distributions

The number of veterans by region, along with the total oil and gas and petrochemical industry employment in that region, are shown in Figure 7.

**Figure 7: Regional Distribution of Veteran Workers in the Oil & Gas and Petrochemical Industries**



About 45% of all the veterans employed in the oil and gas and petrochemical industries are in the West South Central (WSC) region. This makes sense as 46% of all industry jobs are in the WSC region. The Middle Atlantic and South Atlantic regions have the highest shares of veteran employment at 12.6% and 12.5%, respectively. It is not surprising that the South Atlantic region has a high share of veteran employment as the Department of Veterans Affairs reports that this region accounts for 23% of all U.S. veterans.<sup>8</sup> The number and distribution of all U.S. veterans and veterans employed by the oil and gas and petrochemical industries by region are shown in Table 9.

<sup>8</sup> Data on number of veterans by region comes from the Department of Veterans Affairs Population Tables, Tables 6L and 8L. The "U.S." as used here excludes Puerto Rico and Island Areas and Foreign.

**Table 9: U.S. Veterans and Veterans Employed in the Oil & Gas Industry, 2014**

	<b>All U.S. Veterans</b>	<b>Distribution by Region</b>	<b>Veterans Employed in Oil &amp; Gas</b>	<b>Distribution by Region</b>
<b>Total U.S.</b>	<b>21,791,593</b>	<b>100.0%</b>	<b>184,793</b>	<b>100.0%</b>
<b>East North Central</b>	3,136,530	14.4%	16,176	9.3%
<b>East South Central</b>	1,470,946	6.8%	6,332	3.5%
<b>Middle Atlantic</b>	2,259,686	10.4%	15,647	7.0%
<b>Mountain</b>	1,778,500	8.2%	16,520	8.7%
<b>New England</b>	954,654	4.4%	4,134	2.5%
<b>Pacific</b>	2,981,129	13.7%	14,834	9.0%
<b>South Atlantic</b>	5,023,583	23.1%	15,076	6.8%
<b>West North Central</b>	1,589,156	7.3%	13,690	7.1%
<b>West South Central</b>	2,597,408	11.9%	82,384	46.1%

### Transitioning Service Members as Candidates for Top Jobs in the Oil and Natural Gas Industry

While a significant number of veterans are already employed in the oil and natural gas industry, the potential number of transitioning service members and additional veteran candidates for jobs in the oil and natural gas industry is high. Information on tools available to find qualified veterans and government programs oriented towards helping employers train and hire qualified service members and veterans is detailed in Appendix B.

Over FY13 – FY15, nearly one million active duty, guard and reserve service members separated from the military. Based on the military occupations of these transitioning service members, many would be an excellent fit to begin a career in the oil and natural gas industry. Table 10 shows the number of transitioning service members in the top 70 jobs by oil and gas occupation category<sup>9</sup>. Note that because some military occupations match up to more than one of the top 70 oil and gas occupations, there may be some double counting across occupations and categories. The largest numbers of separating service members are in the skilled blue collar and office and administrative support occupational categories.

<sup>9</sup> Based on related military occupation codes.

**Table 10. Number of Separating Service Members in Top 70 Jobs by  
Oil & Gas Industry Occupational Categories**

<b>Occupational Category</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15</b>	<b>Total</b>
Management, Business and Financial	7,450	9,314	9,760	26,524
Professional and Related	9,659	12,968	14,220	36,847
Service	32,436	37,432	32,365	102,233
Office & Administrative Support	51,576	58,549	55,137	165,262
Skilled Blue Collar	109,185	127,939	117,479	354,603
Semi-skilled Blue Collar	28,442	33,982	30,695	93,119
Unskilled Blue Collar	12,382	14,036	13,617	40,035

Note: Because some military occupations match up to more than one of the top 70 oil and gas occupations, there may be some double counting across categories.

Source: Analysis of DoD, Defense Manpower Data Center data

The substantial number of transitioning service members across all of the oil and gas industry occupational categories make them a significant potential labor pool for filling job vacancies in the industry. The breadth and depth of the education, training, and skills that these applicants bring results in well-qualified and experienced job candidates.

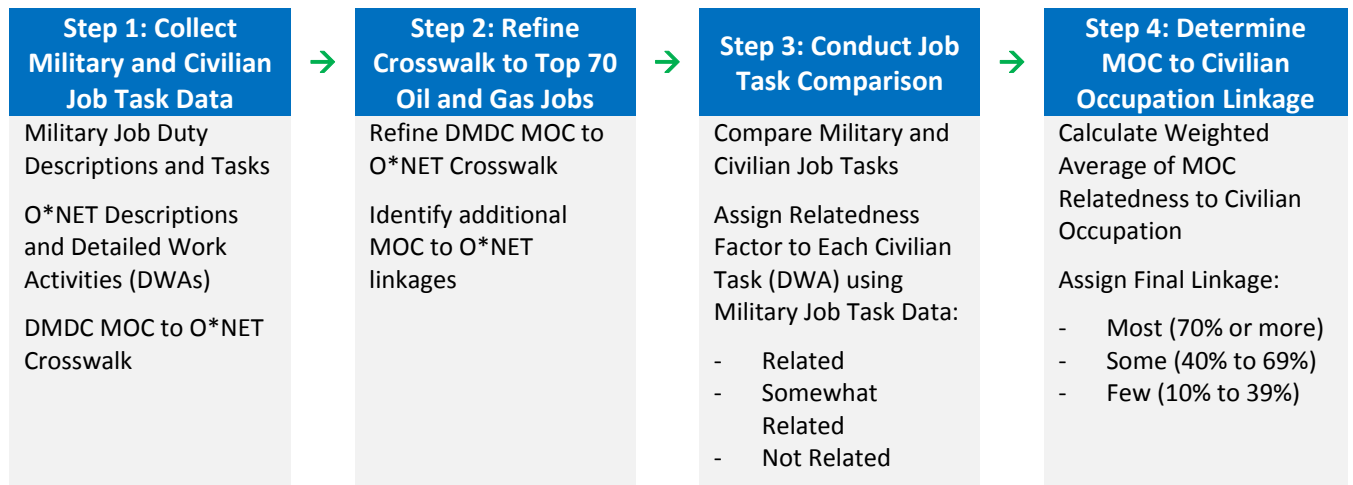
## Appendix A – Relationship between Military Occupations and Top Jobs in the Oil and Natural Gas Industry: Summary of Key Findings

The American Petroleum Institute commissioned Solutions for Information Design, LLC (SOLID) to conduct an analysis to identify specific military occupations related to the top 70 jobs in the oil and natural gas industry. The top 70 oil and gas jobs were taken from the 2014 IHS study *Minority and Female Employment in the Oil & Gas and Petrochemical Industries*. This section provides the methodology of the analysis and summarizes some key considerations related to the 12 broad occupational groupings into which the 70 jobs fall. For occupation-specific information on the top 70 jobs, go to the [Veterans Energy Pipeline](#) tool.

### Methodology

To analyze the relationship between military occupations and top jobs in the oil and natural gas industry, a new methodology was employed using detailed task information for civilian occupations to create a more informative link between military and civilian occupations. The result is a not only a crosswalk between military occupations and civilian occupations in the oil and natural gas industry, but also an indication of how closely related they are based on a job task comparison. Figure A-1 outlines the overall process used in the analysis. A brief discussion of each step follows.

**Figure A-1: Analysis Process**



#### Step 1: Collect Military and Civilian Job Task Data

The first step in the analysis process involved collecting available job task data for the occupations identified in the top 70 jobs in the oil and natural gas industry, job tasks and duties for enlisted and officer personnel in the military, and the most current DMDC MOC to O\*NET crosswalk. Data was gathered from the sources listed below.

**Military Job Task Data:** The primary sources for military job task data were military job duty descriptions and task lists found in military occupational classification documents, training and education documents, and career progression maps. This included the Air Force’s Career Field Education and Training Plans (CFETPs), the MOS Manual and Training and Readiness Manuals from the U.S. Marine Corps, Navy



Enlisted Occupational Standards and Officer Billet Classifications, and Army jobs descriptions by skill level. Career path information was also collected for use in classifying career phases for the analysis.

*O\*NET Occupational Codes and Detailed Work Activities:* Civilian occupational and task information was gathered from the Department of Labor’s Occupational Information Network, known as O\*NET. O\*NET is a standardized database of occupation-specific descriptors that summarizes the knowledge, skills, and abilities of civilian occupations as well as a general understanding of the education, experience, and training requirements typically necessary to perform a job in a given occupational field. O\*NET codes are comprised of an eight-digit code and an occupational title. Each of the top 70 jobs in the oil and natural gas industry has an O\*NET code. The 70 jobs were organized into twelve job families for analysis and summary purposes.

*O\*NET Detailed Work Activities:* An additional level of data available from O\*NET used for the analysis was the Detailed Work Activities (DWAs) assigned to each O\*NET code. O\*NET describes DWAs as simple work activity statements that help provide information on the types of tasks typically required in that occupation. Examples of DWAs include: Fabricate parts or components, Prepare employee work schedules, or Repair electrical equipment. Taken together, the DWAs form a specific list of job tasks common to a particular occupation that were the basis for determining how closely military and civilian jobs were related.

#### *Step 2: Refine Crosswalk to Top 70 Oil and Gas Jobs*

Upon completion of data collection, the second step in the analysis was review and refinement of existing military to civilian occupational crosswalks. The Defense Manpower Data Center (DMDC) maintains a crosswalk that links military occupations to primary and secondary O\*NET codes and is the starting point in any military to civilian occupational matching. Because service members perform many tasks, military occupations can often be mapped to more than two O\*NET codes. In this step, the DMDC crosswalk was reviewed for appropriateness and additional linkages were added as necessary.

#### *Step 3: Conduct Job Task Comparison between Military and Civilian Job Tasks*

Upon completion of the crosswalk, a job task comparison was conducted between the military and civilian job tasks using military job duties and descriptions and civilian occupation DWAs. Using the detailed work activities as the common base, each DWA was evaluated against known military job duties of an MOC and assigned a relatedness factor of Related, Somewhat Related or Not Related. The results of the comparison show where the job tasks overlap (Related), where the job tasks are similar but not exact (Somewhat Related), and where civilian job tasks are not performed by the military job (Not Related).

A job task comparison was conducted for each MOC and O\*NET linkage. In addition, for enlisted personnel, the job task comparison was conducted for three career phases to better demonstrate how or when detailed work activities may be performed in a service member’s career. Those career phases are “Early” (junior enlisted), “Mid” (noncommissioned officer), and “Late” (senior noncommissioned officer).

**Figure A-2: Relatedness of DWA to Military MOC**

- Related
- Somewhat Related
- Not Related

#### Step 4: Determine MOC to Civilian Occupation Linkage

The final step in the analysis process was to determine the overall linkage between the military and civilian occupations using the results of the job task comparison. First, a relatedness percentage in the form of a weighted average was calculated for each MOC-civilian occupation combination using the formula in Figure A-3. For enlisted personnel, a relatedness percentage was calculated for each career phase.

Next, a linkage category was assigned based on the relatedness percentage. The linkage categories are defined as:

**Figure A-3: Relatedness Percentage Weighted Average Formula**

$$\frac{(\# \text{ of Related DWAs}) + .5(\# \text{ of Somewhat Related DWAs})}{\text{Total number of DWAs}}$$

- **Most:** Most tasks performed in civilian occupation (70 percent or more) are duties performed by service members in the corresponding military job.
- **Some:** Some tasks performed in civilian occupation (between 40 to 69 percent) are duties performed by service members in the corresponding military job. These occupations may require additional training, education, or experience.
- **Few:** Some, but fewer tasks performed in civilian occupation (between 10 to 39 percent) are duties performed by service members in the corresponding military job. These occupations are likely to require additional training, education, or experience.

Military occupations with a relatedness percentage of ten percent or less were considered to be not linked. For enlisted personnel with multiple career phases and multiple relatedness percentages, the highest percentage was used to determine the overall linkage type.

#### Analysis Notes, Assumptions, and Limitations

As with any analysis, it is important to document any assumptions made or limitations of the results. First, the results of the job task comparison are dependent on the depth of information available for a military occupation. Detailed job task information was not available for every MOC; some MOCs were analyzed on job descriptions alone.

A second item of note related to military documentation is that not all military tasks are documented at the same level of detail as the DWAs. Service members were assumed to have performed selected DWAs even if not explicitly stated in the available documentation. For example, one DWA is “Clean work areas.” Although not addressed in job descriptions or task lists, it is assumed that service members are able, and required, to keep clean work areas; this DWA was marked as “Related.” Other assumptions were made on supervising and training others at the mid and late career level.

A final note related to military training is that individual experiences in a military occupation will vary. Duty stations, types of assignments, career specialties, and training courses attended all combine to create the unique skill set of an individual service member.

A few O\*NET codes on the top oil and gas jobs were not analyzed at the DWA level due to special circumstances. The General and Operations Manager O\*NET code is one example. Due to the extensive leadership and management training received at different phases of military careers, service members in a variety of military occupations are well suited to adapt their unique skills and experiences to serve as General and Operations Managers in the oil and gas industry. An understanding of the military

leadership and management training is more valuable than a job task analysis in understanding the management experience and capabilities of service members. The web tool contains notes for civilian occupations not analyzed at the DWA level.

### Summary of 12 Broad Occupational Groupings

The following tables provide a summary of the results of the analyses that were conducted to match military jobs to the top jobs in the oil and natural gas (ONG) Industry. The tables are organized according to the O\*NET job families. Each table includes a list of the related O\*NET codes and titles associated with the top ONG jobs in that job family along with a summary of how the military and civilian jobs compare.

<b>Architecture and Engineer Occupations</b>	
<b>Related Top Jobs in ONG Industry</b>	17-1011.00 - Architects, Except Landscape and Naval 17-1022.00 - Surveyors 17-1022.01 - Geodetic Surveyors 17-2051.00 - Civil Engineers 17-2051.01 - Transportation Engineers 17-2071.00 - Electrical Engineers 17-2141.00 - Mechanical Engineers 17-2141.01 - Fuel Cell Engineers 17-2141.02 - Automotive Engineers 17-2171.00 - Petroleum Engineers 17-2199.01 - Biochemical Engineers 17-2199.02 - Validation Engineers 17-2199.03 - Energy Engineers 17-2199.04 - Manufacturing Engineers 17-2199.05 - Mechatronics Engineers 17-2199.06 - Microsystems Engineers 17-2199.07 - Photonics Engineers 17-2199.08 - Robotics Engineers 17-2199.09 - Nanosystems Engineers 17-3011.01 - Architectural Drafters 17-3011.02 - Civil Drafters 17-3022.00 - Civil Engineering Technicians 17-3031.01 - Surveying Technicians 17-3031.02 - Mapping Technicians
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>The military services are leading-edge developers and implementers of new technologies which necessitates high levels of technical expertise within their respective work forces. Among the ranks of military personnel, there are many enlisted MOCs that have members with significant levels of experience and training in engineering related technologies which could be related to the oil and gas industry, but the majority of enlisted personnel do not meet the formal education requirements necessary to be considered for most of the occupations in this particular job family. Officers would be the primary target for these engineering related occupations.</p> <p>Entry level requirement for military officers in the various engineering MOCs across the services is a 4-year degree in an engineering discipline, and many also earn their Professional Engineer (PE) license even though it is not a job</p>

<b>Architecture and Engineer Occupations</b>	
	<p>requirement for military occupations. The range of related military engineering disciplines include Civil Engineers, Electrical/Electronic Engineers, Computer Systems Engineers, Project Engineers, and Mechanical Engineers as well as the specialty engineers for unique military missions such as Nuclear Engineers for the Navy, Aeronautical Engineers for the Air Force, and Astronautical Engineers for all Services as it pertains to their development and employment of space related systems.</p> <p>Military officers serving in Program or Project Engineer capacities or in Developmental Engineer positions would be particularly well suited to adapt their unique skills and experiences to a wide range of these specialized engineering occupations in the oil and gas industry. These military engineers are required to plan, organize, manage and implement systems engineering processes to ensure required capability over the life cycle of various systems. Thus, regardless of the academic engineering discipline, military engineers that serve in program/project oversight capacities have experience in the same sorts of job tasks seen in the more specific engineering specialties.</p>

<b>Building and Grounds Cleaning and Maintenance</b>	
<b>Related Top Jobs in ONG Industry</b>	37-2011.00 - Janitors and Cleaners, Except Maids and Housekeeping Cleaners
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>This occupation does not have any directly related military occupations. The vast majority of the routine tasks performed in this occupation are performed by civilian contractors on military bases. However, even though military personnel do not perform these tasks as a part of their military occupations, all military personnel have a good degree of training and experience in the majority of the occupational tasks and would be well prepared to work in the career field. During military basic training and initial technical training nearly all soldiers, sailors, airmen, and marines are responsible for policing their common areas and facilities to include grounds maintenance and routine facility maintenance and inspection. Throughout military members' careers, no matter which duty location and MOC they are assigned to they are expected to continue to perform such common tasks as snow removal in front of work spaces and maintenance of a professional work environment as well as living environment for those who live on the military installation.</p>

<b>Business and Financial Operations Occupations</b>	
<b>Related Top Jobs in ONG Industry</b>	13-1051.00 - Cost Estimators 13-2011.01 - Accountants 13-2011.02 - Auditors
<b>How Military Jobs Relate to Oil and Gas Industry</b>	<p>Military Finance and Accounting managers perform tasks similar to those performed in the civilian industry. These military duties are typically performed by officers and sometimes by warrant officers and enlisted personnel. Officers meet the educational requirements and are very well trained in government fiscal accounting, auditing and cost estimation processes.</p> <p>One particular experience and training that would serve military officers well in this industry is their work in the Program Objective Memorandum (POM) cycle. This is the process by which military finance and accounting officers help senior executive level leaders (all the way up to the Secretary of Defense) plan, project, and allocate resources across a Future Year Defense Program (FYDP); this experience makes them well suited for the deliberate budget planning processes employed by both large and small companies in the oil and gas industry. Duties are typically performed by officers and sometimes by warrant officers and enlisted personnel.</p>

<b>Construction and Extraction</b>	
<b>Related Top Jobs in ONG Industry</b>	47-1011.00 - First-Line Supervisors of Construction Trades and Extraction Workers 47-1011.03 - Solar Energy Installation Managers 47-2031.01 - Construction Carpenters 47-2031.02 - Rough Carpenters 47-2051.00 - Cement Masons and Concrete Finishers 47-2061.00 - Construction Laborers 47-2071.00 - Paving, Surfacing, and Tamping Equipment Operators 47-2073.00 - Operating Engineers and Other Construction Equipment Operators 47-2111.00 - Electricians 47-2152.01 - Pipe Fitters and Steamfitters 47-2152.02 - Plumbers 47-4031.00 - Fence Erectors 47-5011.00 - Derrick Operators, Oil and Gas 47-5071.00 - Roustabouts, Oil and Gas 47-5081.00 - Helpers – Extraction Workers
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>For this broad-ranging job family there are several military occupations that meet at least some if not most of the detailed work activities and tasks of the various, more technically challenging occupations.</p> <p>First-Line Laborer occupational areas critical to oil and gas extraction such as roustabouts, derrick operators, construction laborers, and helpers are all jobs that service members from most MOCs could transition into with minimal amounts of training. Beyond their technical expertise in their respective military career fields, military members have other skills that are desirable in these occupations: For example, military members work well on teams, have good decision-making and</p>

<b>Construction and Extraction</b>	
	problem-solving skills, communication skills, flexibility, physical fitness and stamina, experience in high stress/high stakes environments, and a willingness to learn a variety of tasks. Military service members are also highly trained, experienced, and well-suited to work in hazardous environments around complex machinery. The military always emphasizes safety as an imperative, which is inculcated into the work ethic of military members. This is an essential element of work in many of these occupations in the oil and gas industry.

<b>Installation, Maintenance, and Repair</b>	
<b>Related Top Jobs in ONG Industry</b>	49-3042.00 - Heavy Mobile Equipment Mechanics, Except Engines 49-9041.00 - Industrial Machinery Mechanics 49-9071.00 - Maintenance and Repair Workers, General
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>In the military, maintenance and repair skills are used on a vast array of complex and sophisticated machinery including aircraft, aviation equipment, weapons systems, ship propulsion systems, engines, military-specific vehicles (e.g., tanks), and construction vehicles. Those mechanical skills transfer well to the civilian sector, particularly these occupations in the oil and gas industry.</p> <p>Although the Mobile Heavy Equipment category excludes engines, many of the MOCs linked to it include training for engine work which would be beneficial to any employer.</p> <p>Due to the strenuous and demanding nature of many oil and gas industry work environments, military members are often likely to be well-suited to handle those challenges more so than other non-military candidates. Service members are accustomed to working in hazardous environments and conditions, and they are well trained and experienced in an organizational culture that makes safety a paramount concern.</p>

<b>Life, Physical, and Social Sciences</b>	
<b>Related Top Jobs in ONG Industry</b>	19-2042.00 - Geoscientists, Except Hydrologists and Geographers 19-4041.01 - Geophysical Data Technicians 19-4041.02 - Geological Sample Test Technicians
<b>How Military Jobs Relate to ONG Industry Jobs</b>	Military occupations do not have direct experience in geophysical, earth science specific technologies as they relate to oil and gas industry operations; however, several MOCs do have scientific and technical expertise with related skills, scientific knowledge and understanding of operational applications of scientific processes and information in similar areas. While they are not involved directly with the study of the Earth's internal composition, or its magnetic, electrical, and gravitational forces, some military officer occupations have extensive knowledge related to scientific, meteorological forecasting and climatology which provides similar skill sets and has related educational requirements. For example, the Navy has officers who provide meteorological, oceanographic, and Geospatial Information and Systems (GI&S) support to the fleet on a daily basis, and Air Force weather officers are vital team members for predicting weather patterns and using

<b>Life, Physical, and Social Sciences</b>	
	<p>scientific models to assist leaders in making critical operational planning assessments. Most of them are required to have a bachelor’s degree in meteorology or physical oceanography fields or science, math or engineering curricula.</p> <p>Additionally, from an operational perspective, military ships, aircraft, and vehicles use a large amount of fuel and lubricants which require high degrees of technical expertise in storage and shipment of bulk or packaged petroleum-based products. Petroleum specialists and bulk fuel specialists direct and conduct tests and inspections, and supervise maintenance of prescribed quality control programs. Those MOCs related to Petroleum Technicians and Data Sample Technicians have significant experience in numerous directly related critical tasks:</p> <ul style="list-style-type: none"> <li>• Ensuring adherence to environmental policies, procedures, laws and regulations.</li> <li>• Operating, inspecting, and maintaining equipment to include lab equipment.</li> <li>• Maintaining quality control of fuel and cryogenic products.</li> <li>• Collecting and analyzing product samples from receipt sources, bulk storage tanks, and dispensing equipment.</li> <li>• Documenting test results and conducting trend analysis on product quality.</li> <li>• Establishing sample correlation programs with the Aerospace Fuels Laboratory to validate the integrity of the local analysis procedures.</li> <li>• Collecting fuel samples from crashed aircraft and submitting them to the Aerospace Fuels Laboratory for analysis.</li> <li>• Ensuring effective product segregation and recovery programs are implemented, and establishing and managing a “lock out/tag out” program for accountability.</li> </ul>

<b>Management Occupations</b>	
<b>Related Top Jobs in ONG Industry</b>	11-1021.00 - General and Operations Managers 11-9021.00 - Construction Managers 11-9041.00 - Architectural and Engineering Managers 11-9041.01 - Biofuels/Biodiesel Technology and Product Development Managers
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>In the military, regardless of occupational area, leadership and management training is part of an individual’s career development and progression. There is continuous Professional Military Education (PME) at phase points throughout a military member’s career that provides training in leadership and management in addition to the many occupational technical training schools military members attend.</p> <p>Being that the oil and gas industry is a highly regulated industry and requires attention to detail, it is a natural fit for most military manager/leaders. Through PME, formal technical training, and on-the-job training and experience, military</p>

### Management Occupations

members are trained to be very detail oriented and develop heightened organizational skills that would allow them to be effective in the oil and gas industry. Those in late career phases are particularly well-suited having been involved in strategic planning, resource allocation, human resources modeling, leadership techniques, report writing and communications, and effective management of people and resources.

Initially all commissioned officers attend one of three officer commissioning training programs, Reserve Officer Training Corps (ROTC), Officer Candidate School (OTS), or a military service academy. They learn the foundational skills of leadership and managing others while, if entering engineering or construction oriented MOCs, they also earn undergraduate degrees from schools accredited by the National Architectural Accrediting Board (NAAB) or by the Accreditation Board for Engineering and Technology (ABET).

Warrant officers are specialized experts and trainers in their career field. While their primary task is to serve as technical experts, they undergo leadership training courses and may administer, manage, maintain and operate systems and equipment, as well as lead, coach, train and counsel subordinates.

For senior enlisted personnel who may not have the formal education (4-year degree) that officers have, they still attain significant levels of leadership responsibility in the following areas:

- Direct daily unit work activities (e.g., Schedule personnel tasks, monitor progress, evaluate results, & communicate to the next level management)
- Manage day to day operations (e.g., Order unit supplies, maintain operating documentation, train personnel, and monitor quality assurance, training and safety programs)
- At more advanced stages they prioritize department work, prepare and submit budgets, manage staffing resources, prepare instructions and directives to implement policies, and develop training programs.

Service members who serve in specialty military units such as Air Force “Red Horse” teams and Navy Construction Battalions gain significant levels of experience in many aspects of construction management and related architectural review and oversight processes related to the oil and gas industry. This experience is applicable to occupations such as Construction Manager and Architectural and Engineering Manager.

Finally, while there are no military specific career fields directly related to Biofuel Technology and Product Development, there are military developmental engineers and basic scientists with advanced degrees who perform high levels of research and process development for military specific products (weapons systems or support systems). Examples of these military occupations include Air Force 62Ex (Developmental Engineers) and 61Sx (Scientists) whose duties include conducting or managing programs, projects, and activities to perform research and product design. Research includes defining a problem, selecting methods of approach,



<b>Management Occupations</b>	
	performing experiments, accumulating and interpreting data, and publishing results. Research management includes formulating, planning, fiscal programming, monitoring, evaluating, coordinating, and administering programs, projects, and activities. Officers from military occupations such as these could likely adapt their research, development, and management experiences into developing technical processes and products for enterprises in the biofuels/biodiesel job market.

<b>Office and Administrative Specialists</b>	
<b>Related Top Jobs in ONG Industry</b>	43-1011.00 - First-Line Supervisors of Office and Administrative Support Workers 43-3031.00 - Bookkeeping, Accounting, and Auditing Clerks 43-6011.00 - Executive Secretaries and Executive Administrative Assistants 43-9061.00 - Office Clerks, General
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>Being that the oil and gas industry is highly regulated and requires attention to detail even in professional office settings, it is a natural fit for most military members. No matter their military career field service members attend significant amounts of Professional Military Education (PME) at phase points throughout their careers in addition to their robust military occupation technical training. Through PME formal training and on-the-job training and experience, military members are trained to be very detail oriented and develop heightened organizational skills that would allow them to be effective in oil and gas industry administrative positions.</p> <p>Those in late military career phases are particularly well-suited for these positions having been involved in strategic planning, resource allocation, human resources modeling, leadership techniques, report writing and communications, and effective management of people and resources. As it pertains to accounting, auditing, and bookkeeping, there are some related military occupations that manage financial aspects directly, however there are many more military occupations in which supply and material accounting, inventory control, and auditing skills are frequently practiced.</p>

<b>Production</b>	
<b>Related Top Jobs in ONG Industry</b>	51-4121.06 - Welders, Cutters, and Welder Fitters 51-4121.07 - Solderers and Brazers 51-8093.00 - Petroleum Pump System Operators, Refinery Operators, and Gaugers 51-9061.00 - Inspectors, Testers, Sorters, Samplers, and Weighers
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>There are numerous military career fields that are directly related to these civilian occupations. Beyond their technical expertise, military service members in related occupational fields have additional skills employers in the oil and gas industry desire, including working well on teams, good decision-making and problem-solving skills, communication skills, flexibility, physical fitness and stamina, experience in high stress/high stakes environments, and a willingness to learn a variety of tasks.</p> <p>Facing working environments similar to what front-line laborers in the oil and gas industry experience, military service members are highly trained, experienced, and well-suited to work in hazardous environments around complex machinery. The military always emphasizes safety, which is an essential element of work in the oil and gas industry.</p> <p>Based on these skills and the minimal formal education requirements for these positions, these occupational areas would be good for enlisted military personnel coming from other indirectly related military specialties.</p>

<b>Protective Services</b>	
<b>Related Top Jobs in ONG Industry</b>	33-9032.00 - Security Guards
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>Of the MOCs linked to this job family, two categories have skills, training, and experience that are directly transferrable: Military police/security/special forces, and Correctional specialists/guards.</p> <p>Important skills and qualities military members bring to this occupational area are decision-making, critical thinking, patience, observation, and physical strength requirements necessary for military operations.</p> <p>Many other military occupations besides the two specifically mentioned above could be considered candidates for these jobs, such as infantry and “combat arms” MOCs. Military personnel in those MOCs are more likely to perform security duties as part of an offensive or defensive mission as opposed to protecting public safety; however, although security related tasks are not the primary tasks of these MOCs, they possess many of the skill sets necessary for civilian security guard tasks.</p> <p>Additionally, all military members must fire and qualify with small arms/weapons as a matter of initial job qualification. They must also periodically maintain marksmanship standards. The frequency of requalification depends on the MOC. Combat Arms/Infantry related MOCs as well as military police/security forces maintain constant proficiency as a job requirement. All military members must</p>

<b>Protective Services</b>	
	clear at least a National Agency Check with Law and Credit (NACLC) in order to be granted enlistment and then have periodic reviews.

<b>Sales</b>	
<b>Related Top Jobs in ONG Industry</b>	41-4011.00 - Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products 41-4011.07 - Solar Sales Representatives and Assessors
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>Personnel who serve in military acquisitions, procurement, and contracting occupations are tasked with developing contract specifications, projecting costs, and period of service parameters which are critical elements of effective sales programs. Noncommissioned officers from these career fields with some industry specific training should be able to transfer those skills from the procurement environment to the sales environment.</p> <p>Service members who were military recruiters will have more directly related sales and sales management skills. Military recruiters, especially those who have "career recruiter" status, will have had significant amounts of formal sales education and training as well as sales and sales management experience to include planning, marketing, lead generation, prospecting techniques, sales, and system management.</p>

<b>Transportation</b>	
<b>Related Top Jobs in ONG Industry</b>	53-3032.00 - Heavy and Tractor-Trailer Truck Drivers 53-7021.00 - Crane and Tower Operators 53-7032.00 - Excavating and Loading Machine and Dragline Operators 53-7062.00 - Laborers and Freight, Stock, and Material Movers, Hand 53-7072.00 - Pump Operators, Except Wellhead Pumpers 53-7073.00 - Wellhead Pumpers
<b>How Military Jobs Relate to ONG Industry Jobs</b>	<p>While in many instances the equipment differs between the oil and gas industry and the military, the skill sets and experience acquired by military members in related MOCs could provide highly skilled and reliable employees.</p> <p>An example of a closely related civilian occupation is Heavy and Tractor-Trailer Truck Drivers. Army MOS 88M - Motor Transport Operator has most job tasks related, but other MOSs such as 91B - Wheeled Vehicle Repairer and 13M - Multiple Launch Rocket System/High Mobility Artillery Rocket System Crewmembers have some related job tasks that with additional training would make them excellent candidates for this occupational area.</p> <p>This is one of many examples where job tasks performed by civilians in the oil and gas transportation job sector largely parallel the tasks performed by military members in related MOCs.</p> <p>A less obvious example is the Pump Operators civilian career field. Service members do not perform the task of operating power pumps and auxiliary</p>

### Transportation

equipment to produce flow of oil or gas from wells in an oil or gas field. However, those trained as bulk fuel technicians or specialists help with bulk transfer of petroleum, oil, and lubricants directly from an offshore tanker to a beach termination unit. They operate valves, manifolds, pumps, and other petroleum transfer storage and reclamation equipment, so they could easily be trained to meet the civilian standards.

More specifically, service members in general have the top 5 skills required to perform the Wellhead Operator or Pump Operator Job and can function in the role of Pipeline Operator, those being operation monitoring, operation and control, critical thinking, writing, public safety and security, and mechanical.

Service members meet all the key physical dexterity requirements and can perform the key tasks required by the Laborers and Freight, Stock, and Material Movers occupations. They are capable at performing general physical activities; handling and moving objects, identifying objects, actions, and events; operating and maintaining vehicles, mechanized devices, or equipment; evaluating information to determine compliance with standards; communicating with supervisors, peers, or subordinates; and establishing and maintaining interpersonal relationships.

Moreover, service members are accustomed to working in hazardous environments and conditions. They are well trained and experienced in an organizational culture that makes safety of paramount concern.

## Appendix B – Resources: Finding Qualified Veterans and Government Programs to Promote Hiring

There are a number of private and public sector resources available to help employers find qualified veterans. Highlighted below are a few of the key resources that representatives of the oil and natural gas industry might tap into to help fill their hiring needs with qualified military trained applicants. Also provided is an overview of information on federal government programs oriented towards employers to promote the hiring of veterans. These programs can provide a win-win for employers and veterans in that they provide sponsorship opportunities for additional training and placement opportunities for veterans who participate.

### Finding Qualified Veterans

#### Oil and Gas Workforce Website

The Oil and Gas Workforce website is an API resource that provides information on opportunities for jobs, education, certification, and training in the oil and natural gas industry.

The *Oil and Gas Workforce website* can be accessed by going to: <http://www.oilgasworkforce.com/>

#### Department of Veterans Affairs' Veterans Employment Center

The U.S. Department of Veterans Affairs has created the Veterans Employment Center website for employers seeking qualified veterans and for veterans seeking civilian employment opportunities. The tool allows employers to search veteran profiles, post jobs, and make a commitment to hiring veterans and transitioning service members. Veterans are able to post their resumes and other relevant information about themselves.

The *Veterans Employment Center* can be accessed by going to:

<https://www.ebenefits.va.gov/ebenefits/jobs>

#### American Job Centers

American Job Centers are funded by the U.S. Department of Labor and provide a full array of job placement and training-related services to both job seekers and employers. The American Job Centers in each state operate under names assigned by the responsible state agencies, which administer over 2,400 local offices serving urban and rural areas nationwide. The staff at many American Job Center local offices includes one or more veterans' representatives, commonly known as "vet reps," whose work efforts are specifically devoted to veteran job seekers and to employers seeking to hire veterans. The veterans' representatives who typically serve employers seeking to hire veterans are known as Local Veterans Employment Representatives (LVERs), while the veterans' representatives who typically serve veteran jobseekers are known as Disabled Veterans' Outreach Program specialists (DVOPs).

You can find an *American Job Center* near you by going to:

<http://www.careeronestop.org/businesscenter/findjobcenters/american-job-center-finder.aspx>

## Government Programs to Prepare Service Members and Veterans for Civilian Careers

The federal government has numerous programs that promote the civilian career preparation of service members and veterans by partnering with employers. The sections below highlight some of these programs. To find out more about the programs visit [Veterans Energy Pipeline](#).

### Military Partnerships with Employers

The military services and the Department of Defense operate targeted programs that partner with employers to provide both active duty and transitioning service members with opportunities to gain civilian sector skills and experience. For example, the Army operates the Partnership for Youth Success (PaYS) Program, which soldiers can access early in their military careers. Participating soldiers agree to maintain communication with specific employers for the duration of their military careers and are guaranteed a job interview with the partnering employers upon discharge. The Army also operates the Training with Industry (TWI) program for commissioned and noncommissioned officers. Participating service members spend a specified number of months on-site with a civilian employer to gain knowledge and skills not available to them from their military training and experience.

The Department of Defense coordinates with all the military services to operate the SkillBridge program, in partnership with civilian employers and other industry organizations. SkillBridge sponsors have the opportunity to provide civilian sector training and internships to transitioning service members during the final six months of their military careers. The service members are eligible to participate in full-time training or internships in place of their normal military duties, while continuing to receive full military pay and benefits. SkillBridge sponsors bear the costs of the training or internships provided.

### Department of Veterans Affairs Benefits

The Department of Veterans Affairs (VA) administers a wide range of benefits for veterans. VA's primary education and training benefit is widely known as the "GI Bill." Over the years, Congress has enacted different versions of this key benefit, which is best known for providing tuition and living expenses for veterans seeking academic degrees. The Post 9/11 GI Bill is the version of the benefit that currently applies to most veterans. In addition to supporting veterans seeking academic degrees, the Post 9/11 GI Bill also includes On-the-Job Training (OJT)/Registered Apprenticeship benefit options, which support veterans seeking occupational training. The VA administers these two benefit options as the [On-The-Job Training & Apprenticeship Approval](#). Under both options, veteran trainees/apprentices receive entry level wages from the employers/sponsors and also are eligible to receive the GI Bill Monthly Housing Allowance, according to a sliding scale that decreases as the wages paid to the trainees/apprentices increase. Under the OJT option, an employer's training program is required to receive advance approval by VA. Under the Registered Apprenticeship option, a sponsor's program is required to receive advance approval by the U.S. Department of Labor, but is not required to be approved by VA. These two benefit options are especially helpful to employers and veterans to overcome the "earnings gap" that many veterans experience upon leaving military service and beginning to learn a new civilian career.

### Department of Labor Programs

The Department of Labor (DOL) awards grants to state workforce agencies to provide job placement and occupational skills training to jobseekers, including veterans, who are struggling to gain employment. As indicated above, employers interested in hiring veterans who are participating in DOL funded programs can contact LVERs at the American Job Centers that serve their areas.

## Appendix C – Military Ranks by Pay Grade and Service

### Enlisted Ranks by Pay Grade and Service

Grade	Rank									
	Army		Navy/Coast Guard		Marine Corps		Air Force			
E1	Private		Seaman Recruit (SR)		Private		Airman Basic			
E2	Private E-2 (PV2)		Seaman Apprentice(SA)		Private First Class (PFC)		Airman (Amn)			
E3	Private First Class(PFC)		Seaman (SN)		Lance Corporal(LCpl)		Airman First Class(A1C)			
E4	Corporal (CPL)	Specialist (SPC)	Petty Officer Third Class (PO3)		Corporal (Cpl)		Senior Airman (SrA)			
Leadership responsibility significantly increases in the mid-level enlisted ranks. This responsibility is given formal recognition by use of the terms noncommissioned officer and petty officer. An Army sergeant, an Air Force staff sergeant, and a Marine corporal are considered NCO ranks. The Navy NCO equivalent, petty officer, is achieved at the rank of petty officer third class.										
E5	Sergeant (SGT)		Petty Officer Second Class (PO2)		Sergeant (Sgt)		Staff Sergeant (SSgt)			
E6	Staff Sergeant (SSG)		Petty Officer First Class (PO1)		Staff Sergeant (SSgt)		Technical Sergeant (TSgt)			
E7	Sergeant First Class (SFC)		Chief Petty Officer (CPO)		Gunnery Sergeant (GySgt)		Master Sergeant (MSgt)	First Sergeant		
At the E-8 level, the Army, Marines and Air Force have two positions at the same pay grade. Whether one is, for example, a senior master sergeant or a first sergeant in the Air Force depends on the person's job. The same is true for the positions at the E-9 level. Marine Corps master gunnery sergeants and sergeants major receive the same pay but have different responsibilities. All told, E-8s and E-9s have 15 to 30 years on the job, and are commanders' senior advisers for enlisted matters.										
A third E-9 element is the senior enlisted person of each service. The sergeant major of the Army, the sergeant major of the Marine Corps, the master chief petty officer of the Navy and the chief master sergeant of the Air Force are the spokespersons of the enlisted force at the highest levels of their services.										
E8	Master Sergeant (MSG)	First Sergeant (1SG)	Senior Chief Petty Officer (SCPO)		Master Sergeant (MSgt)	First Sergeant	Senior Master Sergeant (SMSgt)	First Sergeant		
E9	Sergeant Major (SGM)	Command Sergeant Major (CSM)	Master Chief Petty Officer (MCPO)	Fleet/Command Master Chief Petty Officer	Master Gunnery Sergeant (MGySgt)	Sergeant Major (SgtMaj)	Chief Master Sergeant (CMSgt)	First Sergeant	Command Chief Master Sergeant	
E9	<a href="#">Sergeant Major of the Army (SMA)</a>		<a href="#">Master Chief Petty Officer of the Navy (MCPON)</a> and <a href="#">Coast Guard (MCPOCG)</a>		<a href="#">Sergeant Major of the Marine Corps (SgtMajMC)</a>		<a href="#">Chief Master Sergeant of the Air Force (CMSAF)</a>			

## Officer Ranks by Pay Grade and Service

<b>Grade</b>	<b>Army</b>	<b>Navy/Coast Guard</b>	<b>Marine Corps</b>	<b>Air Force</b>
W1	Warrant Officer 1 WO1	USN Warrant Officer 1 — WO1	Warrant Officer 1 WO	NO WARRANT
W2	Chief Warrant Officer 2 CW2	USN Chief Warrant Officer 2 — CWO2	USN Chief Warrant Officer 2 — CWO2	NO WARRANT
W3	Chief Warrant Officer 3 CW3	USN Chief Warrant Officer 3 — CWO3	Chief Warrant Officer 3 CWO3	NO WARRANT
W4	Chief Warrant Officer 4 CW4	USN Chief Warrant Officer 4 — CWO4	Chief Warrant Officer 4 CWO4	NO WARRANT
W5	Chief Warrant Officer CW5	USN Chief Warrant Officer CWO5	Chief Warrant Officer 5 CWO5	NO WARRANT
O1	Second Lieutenant 2LT	Ensign ENS	Second Lieutenant 2ndLt	Second Lieutenant 2d Lt
O2	First Lieutenant 1LT	Lieutenant Junior Grade LTJG	First Lieutenant 1stLt	First Lieutenant 1st Lt
O3	Captain CPT	Lieutenant LT	Captain Capt	Captain Capt
O4	Major MAJ	Lieutenant Commander LCDR	Major Maj	Major Maj
O5	Lieutenant Colonel LTC	Commander CDR	Lieutenant Colonel LtCol	Lieutenant Colonel Lt Col
O6	Colonel COL	Captain CAPT	Colonel Col	Colonel Col
O7	Brigadier General BG	Rear Admiral Lower Half RDML	Brigadier General BGen	Brigadier General Brig Gen
O8	Major General MG	Rear Admiral Upper Half RADM	Major General MajGen	Major General Maj Gen
O9	Lieutenant General LTG	Vice Admiral VADM	Lieutenant General LtGen	Lieutenant General Lt Gen
O10	General GEN Army Chief of Staff	Admiral ADM Chief of Naval Operations and Commandant of the Coast Guard	General Gen Commandant of the Marine Corps	General Gen Air Force Chief of Staff





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