

CYBERSECURITY INTERNSHIP

SCSTC DET MIDLANT – US NAVY

Michael A. Gurule

Old Dominion University

CYSE 368

FALL 2023

Contents

The Introduction 3

The Beginning 4

The Management..... 4

The Work..... 5

The Skills..... 6

The Objectives..... 7

The Aspects 8

The Conclusion..... 9

Appendix A..... 11

Appendix B..... 12

References..... 13

The Introduction

From the mottos over the years to the honor that one would gain when serving our country, there are many reasons that one would want to be employed by the US Navy. The feelings are slightly different for me at this point in my life, but I cannot fail to realize how much I have learned and benefitted from the military service. At this point in my career, I have done nearly 10 years of service. With how my rotation works in the Navy, I had been doing the current job I am in for about one and a half years when I started this internship. This would be called the sea/shore rotation. My specific rate in the Navy requires me to do five years at sea and three years on shore duty. At sea would be on a ship, whether that be a Destroyer or Cruiser, and the shore-duty would be any job that doesn't require full-time at sea. This could be a plethora of different jobs ranging from guarding the military jails (brigs) to firearms instructor to my current job, instructor.

I decided that this internship was the one for me because an internship is where you go to learn on the job (OTJ) and gain valuable skills and experience in your field of study, employment practices, leadership and to create a work ethic. I feel like the Navy has bestowed upon me all the aforementioned in great excess. Let's be honest, it is also a huge burden taken off me to conduct my internship in my current place of work, rather than having to find one on top of my work. With that said, the Navy, or just the military in general, is a great environment to learn a great many skills, in employment and in life. I don't think there is a better organization to learn such a diverse set of skills. For any that would disagree, a negative experience is also a learning experience if looked at in the right light. You can learn from both a good leader and a bad leader, what you want to be like and what you don't want to be like. The Navy has given me experience in my career field, leadership experience and given me many opportunities to gain knowledge. This is the organization I want to do my internship with.

For this internship, I want to achieve four objectives during my time with the Surface Combat Systems Training Command (SCSTC) Middle Atlantic detachment, a part of the US Navy located in Norfolk, VA (see Appendix B). Those objectives are as follows: Earn Linux experience with server management and troubleshooting. Earn cybersecurity experience through physical security systems and firewalls/security controls implemented in Linux systems. Earn leadership experience through the instruction of students and management of peers. Earn valuable work experience to apply to future job positions.

The first two objectives go hand in hand and pertain directly to my career field and subject of study at Old Dominion University (ODU). Server management, firewalls, security controls and troubleshooting of Linux systems is a direct duty that I must complete as part of my overall Navy job, Aegis Computer Network Technician (ACNT). This falls under my main course of teaching as an instructor, to teach the newer sailors and future ACNTs about their systems (which include Linux, Unix, and Cisco Systems) and how to manage, control and troubleshoot said systems.

The third and fourth objectives relate directly to my rank in the military and the fact that I am a leader in the classroom setting for students. I will explain a little bit more about rank structure and how the military, namely the Navy, is laid out a little bit later. Earning work experience should come to anyone doing an internship if they are taking it seriously and are trying to gain something from it. All the objectives I want to achieve require a strive to better myself and increase my knowledge, while trying to rid myself of bad habits or poor work ethic and leadership techniques. I believe the objectives to be more than obtainable with a little work.

The Beginning

At the beginning, since I already worked at the employer, I was going to do my internship, I took a little lightly. Once I started the internship and set my objectives, it occurred to me that I haven't been paying attention to all the things that I have been and could be more aware of, such as, learning and training opportunities. I realized that if I started to pay attention and find those learning opportunities, I could end this internship with a higher level of knowledge even though I have been in the Navy for almost 10 years. Before I get too far ahead of myself, I want to explain just what type of organization the Navy is.

Most people know the Navy as the Military machine it is, but few people actually know how the structure within the Navy works. At a very large overarching ideology the Navy is a force for defense, not offense. This can be seen in their Mission Statement:

"The United States is a maritime nation, and the U.S. Navy protects America at sea. Alongside our allies and partners, we defend freedom, preserve economic prosperity, and keep the seas open and free. Our nation is engaged in long-term competition. To defend American interests around the globe, the U.S. Navy must remain prepared to execute our timeless role, as directed by Congress and the President."

The Navy employs 335,187 active-duty personnel and 191,597 civilians. ("U.S. Navy Mission Statement.", 2023) To put that into prospective, statista.com reports that at the end of 2022 Alphabet, the parent company of Google, had 190,234 full-time employees. (Bianchi, 2023) This means that the Navy employs more than three times the amount as one of the biggest tech companies of our time. With that many people, and with changing times, the Navy is moving more toward a business model rather than a strict military model.

I will not go all the way back to the time I joined the Navy as a whole, but my initial reactions to the job I have now were very positive. When I arrived, everyone was welcoming, and it seemed to be a much more upbeat and happier environment than my previous command. Everyone said hello and was helpful in setting me up for success. The guidance came from my peers and my supervisors, and I was able to hit the ground running with their assistance. I was able to get to a position where I was qualified and able to do my job efficiently and without much supervision. Then, when at that point, I was given the freedom to do so. Everything was set to complete my objectives as the internship started.

The Management

The hierarchy is a little complicated, but I will do my best to explain. There are two types of leadership positions in the Navy, those earned by rank and those that come with a position, positional authority. For rank, I am an E6. If you look at the guide in Appendix A you will see just where that position is located on the rank hierarchy. Keep in mind that Appendix A is only Enlisted and Officers will be of higher rank than almost all enlisted, though there are special circumstances but not many. The higher you move up in rank the more responsibility you are given, the more authority that comes with that rank, and the more subordinates you usually have. Now putting rank aside for a minute, there are positions held at every separate command in the navy that hold greater responsibility, and therefore, greater authority. How does that look in my job? I am an E6 Instructor at SCSTC Detachment Middle Atlantic. Right away I have anyone over my rank that can exercise authority and give me orders if they

are legitimate orders. Without looking at rank, I have an immediate supervisor called a Leading Petty Officer (LPO). This is usually one of my peers that has shown an ability to lead their peers. I then have a Leading Chief Petty Officer (LCPO) that is an E7 or above. Next, I have a Department Head (DH) that is a senior officer that runs my specific department (not unlike a department manager). The next level up contains what we call the Triad. In order of hierarchy: Senior Enlisted Leader (SEL) is an E9, Assistant Officer in Charge (AOIC) is a senior officer, and the Officer in Charge (OIC) is a senior officer and the top of our chain-of-command. From there it goes out to our domain chain-of-command (training) and then to the higher echelons of the Naval chain-of-command eventually ending at the President of the United States.

Now to delve into a little bit more detail about my management, specifically. Sometimes it is a little difficult to have someone who is newer to the command than myself being in a position of leadership over me. I do understand from them and throughout my time that sometimes you must learn to follow and find ways to deal with different types of subordinates. I see the way he treats me as if I am the “new guy” and I haven’t been doing this longer than him. It is frustrating, but it gives me insight into how to treat people like me when I am in his position in the future. Since leadership was one of my objectives to meet in this internship, I paid close attention to all the different types of leaders just within my field of view. Prognosis: Everyone, leader and subordinate alike, are different and require different methods of command and control. My two next tier supervisors, my LCPO and DH, both arrived after I did as well. They came on quite strong until they got a feel for the people, which needed constant monitoring, and which acted efficiently without it. I think they did a good job as leaders to back off when they figured out that some people work more effectively with less over-the-shoulder supervision. I will take that aspect with me when I move on to new employment. I will admit that I have learned more about the kind of leader I do not want to be rather than the type of leader I do want to be while I have been in the Navy, but all-in-all it has been a molding experience that has given me much insight.

There is also a different kind of leadership that I was able to be a part of, instructing. As the instructor and subject matter expert (SME) it is a different feeling to have the newer or less knowledgeable look to you for advice and guidance. I enjoyed the feeling of being able to help someone start to understand information they just didn’t before. It was even wonderful when you taught that little piece of information that is only learned through long hours of working with the material to the more senior students. Just that one piece of advice or a certain way to accomplish a task that they may remember you for as being the person that gave them that seed of knowledge. It is a much different type of leadership that can only be experienced through someone looking to you for that knowledge that they don’t have. I was able to use this internship to focus on that feeling and what was required of me to give them what they needed.

The Work

Being in the Navy comes with a certain standard of duties and responsibilities inherent to military service. That is, I am an E6 in the Navy, therefore I must participate in our association activities, physical training, writing evaluations, and participating in ceremonies. There is also my Navy assigned job that I was trained for to better the military machine. This specific job could go from Boatswain Mates handling lines and painting ships (among many other duties) to Cryptologic Technicians specializing in intelligence gathering and analysis (secret squirrel stuff we like to call it). My job in the Navy is more toward the technical end of the spectrum. As an Aegis Computer Network Technician, my job revolves

around combat networks on ships and running computer and display systems at the technical level. This is inherently important to this internship because, though I am technically an instructor, my teaching is centered around where my experience lies.

For this internship, my main job and duties are that of an instructor. In essence, I am a teacher. I do this both in town and on travel to other cities or even countries. I also teach in a classic classroom setting and as more of an OTJ training onboard the ships. Everything that I teach specifically would be considered under the category "SECRET". During the time covered by this internship, most of my teaching was done onboard a ship not in my local area. I am covering topics that relate to computer systems such as operating, maintaining, and troubleshooting. With that comes the need for cybersecurity policies and procedures, as defined by the US Government (since, you know, we are on a government-owned asset). We also teach and discuss network topography, peripheral systems, and general computer knowledge for Linux systems. This is the heart of what we bring to the Navy Fleet, training on how to use our systems correctly to defend each other, the United States, and the world. With more knowledge, our shipmates are more likely to survive when they must fight the inevitable fight.

My secondary project during this timeframe is to manage a new training system that has been installed on our campus. I oversee system updates, software configuration, data entry and transfer, training system operation, full system troubleshooting, and bringing my coworkers up to speed on all aspects of the system. This system has been the most technical fun I have had in keeping with my career field that I have chosen at ODU. This is also a very important training system that allows sailors to utilize features that they will see onboard their ship in a tactical environment. Being able to manage one of only five of these systems in the world is a great learning experience and brings me the belief that I am aiding the future of the Navy.

The Skills

I have alluded to it throughout this writing, but my skills have been honed throughout my time in the Navy, but I have begun to take a step back and actually pay attention to what is going on around me and to me. Being able to say that I am looking at myself for the sake of an internship has allowed me to notice how I am as an employee and a leader. One skill that I brought with me to the workplace was how to look at a situation from an interdisciplinary perspective. I have realized new ways to teach my students because I have expanded the way I think and am able to take into better consideration how they learn. I have taken interdisciplinary courses throughout my education path at ODU and I'm not going to lie, I thought it was kind of stupid. I thought to myself, "I don't even really want to work with other people. I just want to get into penetration testing and leave all that social stuff to the other guys." Thinking about things from a broader perspective while in this internship has even widened my outlook on my future career. I have stepped back and looked at my time in this career and have begun to realize all the skills and assets I have been learning and storing for future use.

The technical side of my education has had an impact on me as well in my work. I used to think that there was no reason in passing on information that the student didn't really need to know. Now, I try to give them all the information and knowledge I can spare to aid them not only in their regular work but maybe in one single case or emergency where they can use it. I have been able to take things that I have learned in school, such as commands for Linux or networking knowledge, and pass it down to them

in a way that they can start understanding the inner workings of their equipment. It is a great feeling, and it has become part of my teaching method.

The other aspect of my work life that is very important to me is leadership, that is, how other leaders behave around me and my leadership techniques. While at ODU I took a cybersecurity ethics course. This course has aided me in understanding what kind of people good and bad leaders are and how decisions made can be constituted as good or bad depending on the situation. I remember it specifically and think about the different ethical philosophies as I watch my leaders make decisions every day. Leadership, as one of my objectives for this internship, has been at the forefront of my mind. Ethics also opened my mind to allowing different ways of thinking to be processed and used to reach the proper outcome to a situation. It is a good thing for a leader to be open to new ideas and ways to complete even the most mundane tasks. ODU has opened my eyes to a more inclusive and expanded way of thinking. My job and the Navy in general can use more leaders that are able to do that on a day-to-day basis. I am glad I have learned these skills and will be forever thankful.

The Objectives

The only real expectations I had when I started this internship was to meet or exceed my objectives and walk away with some experience. I believe that my expectations have been met or surpassed for each of my objectives. I aimed to earn server management and troubleshooting experience, as well as experience with physical security systems and firewalls/security controls. This was achieved with the enterprise Linux systems that I taught to my students daily. I also received an extra dose of this experience when I went on travel and was aboard a destroyer for over two weeks. During that time, I helped my students manage their system and peripherals and conduct maintenance and troubleshooting. This ranged from physically verifying environmental systems (i.e., cooling, power, and mechanical control systems) to conducting LAN, VLAN, and topography verification checks. I also paid close attention to the new firewall settings that will allow future connectivity. With my objectives in mind, I found a new appreciation for the physical security systems required to even gain access to the workspace that houses the computer equipment. Though I had walked this path time and time again, I was paying greater attention to the details that are required when building a physical security plan to maintain access control to critical workspaces. Another aspect was the training system on which I conducted troubleshooting and training. This is a newly installed system so the experience I gained from working on it was an unexpected, but appreciated, turn of events. During the troubleshooting of the training system, I was able to check and adjust the settings for the VM firewalls, push LDAP password updates, and run PowerShell commands to gain access to controlled parts of the system. This was a fantastic learning experience and increased my overall knowledge and confidence while earning me valuable work skills.

The final objective I wanted to meet or exceed was gaining vital leadership experience. This one is on a slightly different plane than the others because it is aimed more toward becoming the employer rather than a better, more valuable employee. I know it sounds a little crazy but if you want to be a great leader you must strive for the top where there is nowhere else to reach. For a business, that would be the founder of the business itself. I will always strive to take the position of the person above me while training the person below me to take my position. I have gained experience with leadership of all types while in this position. I would love to say that every leader I have had has been an inspiration to me in a positive way, that just isn't feasible. Learn from those that do, also learn from those that don't. I have

had good leadership in the command I am now, and they have helped me prepare for the next step in my life and the next employment hurdles I face. I do wish they would have groomed me a little better to take their positions, but I have learned from what they haven't taught me as well. I specifically called out leadership in my objectives so that would hold me to a goal and force me to take a detailed look at every leader and leadership type around me. I was able to aid new incoming peers in something called a mentorship program. I was in contact with them before they arrived and throughout the time, they were checking in. I was also able to get them set up for becoming an instructor and let them know what to expect and how to achieve their goals. I was also able to introduce them to everyone in the command and try my best to make a good impression of the command on them. I was also in charge of the entire budget and spending for the command. I have been designated by the Navy as a purchase card holder and allowed to use government funds for command purchases. This gave me ample opportunity to work with the upper chain of command and interact with other civilian managers daily.

The final stage of leadership experience for me is my instructor status and the teaching of my students. I feel that it is easy to command or instruct a subordinate to carry out a task, no matter how menial. It is much harder to earn the respect and attention of students that are only required to be with you for a short period of time. I feel like I had to use many facets of leadership that I don't usually use to achieve my goals for my class and students. I must be understanding of students who may have trouble understanding the material. I must be stern, yet flexible to make students pay attention and not lose them completely due to a conflict of personalities. I have learned a lot from this aspect of my job and feel like I appreciate this above all else.

The Aspects

There are two sides to every coin. For this internship that means that some things were motivating and exciting and others were discouraging. As I have stated before, this internship was completed at my current place of work. This kind of gets rid of the "exciting" part of being able to go into a new place, meet new people, and learn all new things. It makes it slightly redundant. I would suppose that for a person unfamiliar with the work force and finally getting to see what work in their field of study is going to be like must be an exciting opportunity. I am kind of sad that I couldn't do this internship in a completely separate job or profession, I may have gotten some of that excitement. That doesn't mean the whole thing was just a dreary, mundane experience. Once I had objectives and goals (thanks to the internship) set in stone, I was able to get "a new wind". I was able to gain the motivation I needed to look at my work and find the aspects of it that I needed to learn and create knowledge. Now that I sit here and look back on my work experience throughout the internship, I am excited to see all the things that I have learned, even in a job that I have been doing for years. Not only am I excited about the new experience and knowledge, but I am even more excited about the prospect of moving into my new career and learning even more new information. Just the thought of taking everything I have learned and applying to something new makes me very happy.

I would say there is a tie for the most discouraging aspects of the internship: downtime and poor leadership. I have mentioned leadership quite a few times throughout this paper but that is just how much it means to me. I see it as the single most important thing in my future. When you ask someone what they think makes a great leader, you will get different responses each time. This is because what people want in their leader differs due to circumstances and a life of good and bad leaders. Most of the leaders I have encountered throughout my career have been the ones you want to learn what not to do

from. The same can be said for most of this internship as well. I will be honest though, most of the time it's not really their fault. They are thrown into a position of power with little to no training or without first acquiring the skills to be in that position. Just seeing this, watching them struggle, and seeing the people above them just throw one out and install another if they fail has been very discouraging. Most people would say, "Well, it's not like that everywhere," but I wonder if good leaders are hard to find no matter where you are. I will now come off of my soapbox and bring my aim more toward the timeframe of just the internship. During this time there was a lot of work to be done but there was also a lot of downtime. I am not a fan of days that go by without getting anything done. I do like my relaxation time, but I feel that if I am going to get up, sit in traffic, and try to make it to work on-time, there should be something to do there. Everyone loves the feeling of accomplishment. That, along with the money, is why most people are able to get up and go to work with a positive attitude. That is why a "dead-end job" is considered a bad thing. I hope that when I get to my new career field I don't have to be at work with just downtime. When I go in, I want to accomplish tasks and hit goals then go home and be with my family to relax and have my downtime.

It is a little difficult for me to give recommendations for future students about going through this internship. We were on different levels of experience and at different stages in our lives. I think there will be more time to get something out of the experience they receive if this is split into two required internships. I kind of hated the thought of having to write my feelings about my job as if it was all new to me but for them, I think it is a great experience and knowledge gainer. It plays to directly affect their work ethic and even if it was hard on them for two semesters, work is going to be hard on them for the rest of their lives. It teaches a person something when they have to try, endure, work, and succeed, or even fail. They are all teachers of different aspects of life. I know at a minimum; this internship opened my eyes to understanding how the things around me played a part in building me up for my future. Students should have to go through a prerequisite course on work ethic and leadership before stepping into this internship. This will help enable them to understand how they can use all of the information around them to build themselves up and create a better employee and leader when they are finished.

The Conclusion

The biggest takeaway that I have from my time in this internship is to keep my eyes and mind open to the learning opportunities taking place all the time. Having set goals allowed me to focus on what I could learn from everything I did. This would be a great skill to refine and take with me to my next employer. Being able to learn on the fly, not just about the job itself, but the people, and adjust as needed would be a fine skill. Being able to begin learning that, I was able to start seeing the employee and leader I want to become through this internship. It just takes a push to get you out of a rut that you may feel you are in.

I only have one more semester left at ODU, but I hope I am able to better myself as much as possible in the short amount of time I have. I will make goals to meet by the time I leave ODU and work my hardest to obtain them. I will do this all while doing the same thing in my job now. Using both the information about what your career life should be and what it actually is will allow me to meld the two into realistic and obtainable goals. I will be able to become a better leader and, with my work experience, hopefully become a manager of some sort. I want to use my knowledge and keep increasing it until I become a subject matter expert. I will listen to my people and not treat them as if they were

expendable. I will keep gaining experience and better myself at every chance I get. This is thanks to my time in this internship. I will be taking these skills and moving on to the next phase of my life and career.

Appendix A

NAVY ENLISTED RANK STRUCTURE










INSIGNIA	OFFICAL TITLE	GO-BY	RANK ABBREVIATION
	SEAMAN RECRUIT	“SEAMAN”	E-1 (SR)
	SEAMAN APPRENTICE	“SEAMAN”	E-2 (SA)
	SEAMAN	“SEAMAN”	E-3 (SN)
<small>HAT / COLLAR</small> 	PETTY OFFICER 3RD CLASS	“PETTY OFFICER”	E-4 (PO3)
<small>HAT / COLLAR</small> 	PETTY OFFICER 2ND CLASS	“PETTY OFFICER”	E-5 (PO2)
<small>HAT / COLLAR</small> 	PETTY OFFICER 1ST CLASS	“PETTY OFFICER”	E-6 (PO1)
<small>HAT / COLLAR</small> 	CHIEF PETTY OFFICER	“CHIEF”	E-7 (CPO)
<small>HAT / COLLAR</small> 	SENIOR CHIEF PETTY OFFICER	“SENIOR CHIEF”	E-8 (SCPO)
<small>HAT / COLLAR</small> 	MASTER CHIEF PETTY OFFICER	“MASTER CHIEF”	E-9 (MCPO)

Figure 1: Naval Enlisted Rank Structure Courtesy of the U.S. Department of Defense

Appendix B



Figure 2: Surface Combat Systems Training Command (SCSTC) Logo Courtesy of Naval Education Training Command

Mission

“Provide the United States Navy and our allies with highly trained warfighters to maintain, operate, and tactically employ surface combat systems across the spectrum of operations.” (“Surface Combat Systems Training Command.”, 2023)

Vision

“By 2027, provide Sailors and Officers that are better trained, more proficient, and effective at delivering credible combat power across the surface fleet and partner nations to protect our national interests and defend the global commons.” (“Surface Combat Systems Training Command.”, 2023)

References

- Bianchi, Tiago. "Alphabet: Number of Employees 2022." *Statista*, 20 Sept. 2023,
www.statista.com/statistics/273744/number-of-full-time-google-employees/.
- "Surface Combat Systems Training Command." *NETC*, 29 Sept. 2023, www.netc.navy.mil/SCSTC/.
- "U.S. Military Rank Insignia." *U.S. Department of Defense*,
www.defense.gov/Resources/Insignia/#enlisted-insignia. Accessed 1 Dec. 2023.
- "U.S. Navy Mission Statement." *U.S. Department of Defense*, 30 Nov. 2023,
www.navy.mil/About/Mission/.