

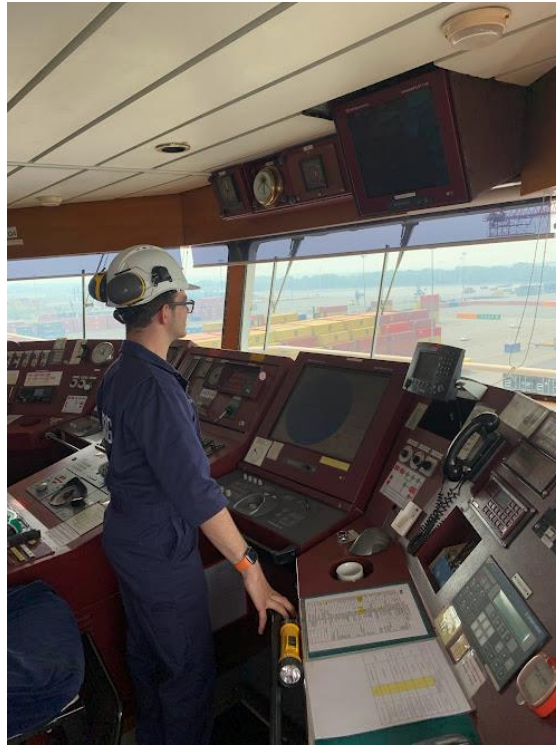
Coutz's Final Briefing of USCG Sector New York

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**Hosting Site:** United States Coast Guard Sector New York

**Mentor:** Mr. John Hillin, Mr. Brendan Dolan

*John Hillin*



One of the big components of my research this summer was gathering different information about cyber hygiene of ships. One of my mentors, Brendan Dolan was able to take the photo above as we were on a container ship. This information was being gathered to have a better understanding of how cyber security is conducted in the Marine Transportation System. The information is being used to develop a full-scale cyber-attack on USCG Sector New York and their area of responsibility. The facilities were the main target for the Cyber Security exercises, that is being conducted in October of 2023, but it is also important for the Coast Guard and the other ports in the harbor because a port can. Only be as safe as the vessel that is coming in. My research and findings lead to a real life modeled cyber-attack scenario which is leading or has led to a successful cyber security exercise. Essentially all the USCG Sector New York is benefiting from this as well as the whole harbor of New York, all the way up to Albany, NY.

## **Coutz's Final Briefing of USCG Sector New York**

### **Introduction**

As an individual deeply committed to safeguarding my country, I have recognized a tremendous opportunity in utilizing my skills to protect national assets. In my dedicated efforts to contribute to the protection of our nation, one of my significant endeavors involved conducting extensive research on the cybersecurity vulnerabilities pertaining to New York Harbor. This comprehensive study has enabled me to develop a highly sophisticated mock cyber-attack, designed specifically for the Coast Guard of Sector New York, with the intention of facilitating an impactful Cyber Security Live Exercise scheduled for October 2023.

Driven by an unwavering passion for working with computers, I have come to understand that the safety of working on a computer is only as strong as the security measures that are in place. Consequently, I have immersed myself in exploring the most effective mitigations to implement to fortify computer systems against potential threats. Additionally, I have dedicated considerable effort in gaining insights into the factors that render computers vulnerable to attacks.

### **The Research**

During the first week of my internship, I was briefed by a couple different people on their objective for a cyber security exercise. The exercise has been called "Operation Shuteye". They told me that I was going to be put in charge of creating the mock cyber-attacks for the exercise. Maritime Industry technology is continuously evolving, for instance, it has allowed industry to start replacing people having to patrol and watch over grounds with CCTV Cameras. This now allows one person to look over enough areas that may have taken multiple patrol teams.

With this all being said, Mr. Hillin wanted me to base the mock cyber-attack around the CCTV cameras systems getting jammed or hacked, which leads the cameras to getting shut down. Along with this, I was also tasked with exploring other cyber vulnerabilities within the Port of New York and New Jersey, and target those, as well so that everyone can get multiple ideas on how their systems can be infiltrated.

A lot of the beginning of my research involved learning everything I could about CCTV Camera Systems. Prior to starting this internship, I did not know anything about CCTV except for they are used for security. Various aspects of the research was trying to understand how and why the cameras can be vulnerable to hacking and how to mitigate it. This led to a lot of other research on how to get access to the cameras. I had to understand how an attacker might work so I could better understand how to develop and build the attack scenario.

Along with doing research on the CCTV Cameras I also worked with by Cyber Specialist Brendan Dolan to create a cyber questionnaire to further understand how CCTV Systems are being used with in Sector New York area of responsibility.

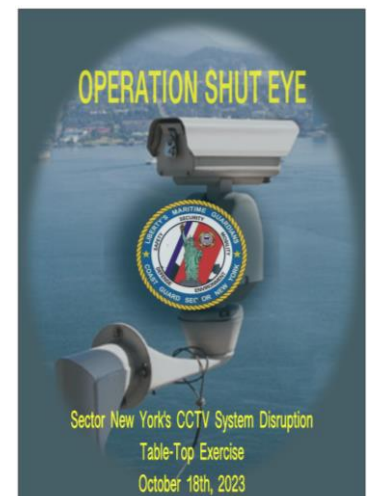
### **Contributions Made**

As written above my main contribution this past summer was building a highly sophisticated mock cyber-attack. This was the most important thing because they relied on it for a full-scale cyber security exercise that they are conducting in October of 2023. Another part of the cyber exercise is that it is going to be one of the first of its kind. Meaning, once the exercise has been performed and worked through, it is going to be used as a model for the rest of the United States Coast Guard to build from and implement in other Sectors and districts throughout the country.

With all the research I am doing within cyber security, it piled up into a lot of different categories. Halfway through my internship Mr. Hillin found a wind farm learning tool made by Stevens Institute. I took some time to build a small html website equivalent for cyber security. This is going to be a tool that will provide an interactive way for the port community to learn about the different aspects of cyber security and current trending threats in a more interesting and engaging approach than reading some boring long document.

Coming into this internship with a little Banking IT Experience, I was able to gain ideas of implementation of cyber security. One of my big projects from last summer, 2022, was converting a bank of about 300 employees to a dual authentication login on all workstations. This gave me more insight on how secure a workstation or computer can be. This allowed me insight needed to give feedback on possible insertions of cyber security checks into their vessel inspection routines. A lot of it was directed towards the bridge of the vessels. As someone who has never looked or worked with these inspection manuals, I was able to look at them with a fresh perspective than what they had.

Within an exercise there is a few different handouts that people get. These handouts involve some different aspects of graphic design. I also was given the opportunity to work on some of the designs for the handouts. There was really no one else working on them, so I was able to fully design a double-sided placemat and the front and back cover of a short packet containing information having to do with the exercise. To the right is the front cover of the packet handout as a sample of the work I did.



### **Skills and Knowledge Gained**

As stated, before I did not have really any understanding of how CCTV Camera Systems work and what attackers can do with them. I now have a better understanding of what needs to be done to ensure they are safe. Through the research of CCTV System hacks and vulnerabilities, I also gained more of an insight that even though commercial CCTV has more of a value to hack, the amount of residential CCTV Cameras getting hacked is just as much as commercial is or can be.

Referring to my IT Help desk at the bank last summer. I also got an experience in many ways dealing with software as well. The experience comes from installing, uninstalling, updating and doing other maintenance to software. From that work I gained a good understanding of how software is handled or works, but it was not until these years that all the knowledge of software got plugged into being understood within a cyber security understanding. I understand now why it is important to install software a specific way and why it is even more important to update software as soon as you can. Once a piece of software has been given an update there are no longer people looking at the outdated software, trying to find bugs and vulnerabilities they would make the software not as strong. This is the whole reason software updates and patches are released, and why it is very important to implement any updates or patches given by reputable sources.

I learned a lot about cyber security mainly through actual application of what the Coast Guard does to understand how cyber security procedures and policies are applied. Because of this, I got to go on a lot of different kinds of vessel exams as well as facility inspections. Before this internship, I heard of the Coast Guard, but I never knew what they did. Not to mention also further into my time with the Coast Guard, they were not just worried and focused on the vessels,

but also the facilities and ports that the vessels go to. After taking a step back and looking at the big picture of the harbor, the ports and facilities are at equal risk for a producing a cyber-attack.

During my time with the Coast Guard, I also got to hear and experience a little bit of what the Coast Guard goes through when dealing with a major incident. On July 5<sup>th</sup>, 2023, there was a Roll-on/Roll-off Ship, RORO for short, that caught on fire. The fire lasted for about 5 days. During this time there was both people working in the office and at the site of the ship fire. Through this experience, I saw first-hand the vulnerabilities and importance of the Marine Transportation System and learned about a couple different tools that will also be used for the Cyber Exercise, Operation Shuteye. This helped me finish up some of the scenario of the mock cyber-attack, because not only did I have some knowledge of what the protocols were, but I also heard how the protocols were being conducted and put into action for an actual live event.

During my internship, USCG Sector New York was audited by a cyber security auditing team from the Department of Homeland Security. Mr. Hillin let me go with the cyber auditing team for the three days they were here, and we basically shadowed and interviewed every department that Sector New York had. This helped to further my knowledge of what each part of a Coast Guard Sector unit, as well as how much cyber security relates to them.

Even by shadowing around the cyber auditing teams for only 3 days, I got a taste of other jobs involving cyber security. The field of cyber security is not only just about working to prevent or fix attacks. Rather there is a whole other side to it. Being able to have people, from an outside perspective, looking at the work you are doing can be very helpful. It is the same concept when Mr. Hillin wanted me to look at the vessel inspection procedure. With a fresh perspective it is easier to give feedback on improvement.

This opportunity has also taught how valuable past skills and lessons learned can be. Going into the internship, I thought that I was mainly going to be doing stuff that I have never done before. For a big portion of the time, this was the case, but there was also a lot of things I did and agreed to help with that would not have been as successful without the experience that I came in with.

As I was working through building the mock cyber-attack, some of the concepts I got and developed from working IT at the bank, made connecting some dots quicker and more efficient when reading various cyber reports and other cyber findings. Reading about some of the cyber vulnerabilities within reports made complete sense to me after I remembered what I did last year. Also, at the same time after understanding the vulnerabilities, I also have a further understanding of why what I did last year was and is still so important to the bank and companies in general. Once I was able to understand both sides of vulnerabilities and the work of an IT help, the need to implement updates as soon as they are released became so much more important to me.

### **Research Experience Impact on My Academic and Career Planning**

This internship has opened a lot for me. Growing up, I have had big dreams to work in the military. Being a person with a mild case of Cerebral Palsy, serving in the armed forces was not going to be a possibility for me, after talking with several different recruiters. Going into this internship, I did not know how many civilians also worked alongside of active-duty personnel. Through working this summer, I got to talk to a lot of different people, all with different perspectives. I was able to learn and gain some very good advice as far as career paths within both the military for civilians, as well as career paths in the federal government, as well as a combination of both career paths intertwined that have worked out for others.



This internship also brought a whole new perspective to living and transportation. As someone who has not tried to drive before and certain circumstances, driving and getting around my own, outside of walking, is a bit of a challenge. Living in Staten Island there is a lot more access to public transportation. After a couple of weeks, I got comfortable riding public transportation, so I did not have to worry about getting around. I learned that there is a lot of people who could drive but don't because they take public transportation. This will help to better understand where to move to when I move into my own place and what things to look for when finding a job.

While working with my mentor and other coworkers, I heard about a couple of different avenues in which people had to go through their master's education. Most of the undergraduate information I got was that they went to the Coast Guard Academy. Through a few conversations I learned about a scholarship program through the Government.

This consists of the tuition assistance from the government for further education, and then you work for the government the number of years that they helped with funding for your schooling. I never heard of this program before working this past summer and probably would not have found it, as easy, if I did not have those conversation during my internship.

### **Acknowledgements**

With this being my second internship there was still a lot of what the work force has to offer that I did not know about. Even further, I knew minimal information on how the government works and how the United States Coast Guard works and functions.

I would like to first and foremost thank God for the opportunities that I have been given as well as the gifts I have received so far in life. I would not have done any of the work this past summer without him or Christ. Everything I did this summer was to glorify them. I would also

thank God for the opportunities and gift that have been formed and made because of this past summer. I am looking forward to the plans and future that you have in store for me.

I would like to also thank my mentors for the experiences and work you guys had involved in. Thank you, Mr. Hillin, for all your efforts in getting me experience and seeing what the Coast Guard does in a lot of different areas and department. I would say I now have a well-rounded understanding of what happens at least at U.S. Coast Guard Sector New York. One of my favorite days was the day you had me go shadow a cruise ship inspection, I ate good that day!

I want to thank both of my other supervisors and mentors Mr. Brendan Dolan and ENS Carolyn Ziegler. Thank you for all the support and advise you guys gave either on stuff for work or advise given about after college plans and future career advice.

There are so many other people I want to mention. Thank you, United States Coast Guard Sector New York. Everyone was so welcoming when I first started. I am grateful for all the time I got to speak and work with everyone else. It did not take long for me to fit in a feel like a full member in the office. Thank you also for all the hospitality, even outside of the working day. I enjoyed every bit of time I got with anyone.

This experience has truly enhanced my future and my goals for it. I am looking forward to the adventure to come. As always, Semper Paratus!!