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Have you ever had the chance to see a dolphin up close? Or maybe even a sea lion? Well, some members of the Navy Base see them every day. The United States Navy Marine Mammal Program was created in order to train animals to perform certain tasks. The Navy initially tested dozens of marine mammals to be used but have settled on two main mammals-the bottlenose dolphin and the California sea lion. These two animals were chosen for their unique capabilities and due to how relatively easy they are to train. The dolphins are typically used for their naturally powerful sonar, which not only beats the sonar that humans have developed, but the dolphin's sonar also isn't detrimental to other marine mammals like the human-made ones are. They are also able to detect the mines in areas that technology cannot, such as in crowded harbors. The sea lions are often used to recover lost objects underwater. Instead of having a very costly mission to send divers down with tools to bring the item back to the surface, the trainers just send a sea lion down with a rope of sorts that they then attach to the object underwater. As soon as the sea lion does this it returns to the surface and the humans on the boat pull the object up, which takes minutes compared to the hours it would take humans. The dolphins and sea lions are used to protect harbors and ships as well. This was seen in action during the Vietnam war when dolphins were trained to find unauthorized divers, and then approach them from behind and place a device on their air tank. It then explodes a buoy attached to the device so that a nearby worker in the Navy sees the intruder. This was done similarly with the sea lions, except they handcuffed the buoy to the intruder and carried it in their mouths. It is even said that the dolphins were used to help locate the vaquita porpoises, which are critically endangered due to the illegal gillnetting taking place in the Gulf of California. The dolphins and the sea lions can also see and hear things underwater that humans could not possibly match with the technology available today. This capability allows them to detect and track targets underwater in the worst of conditions. The animals can also dive hundreds of feet without any of the assistance that humans need, and they don't have to take the time for stops to prevent the "bends" upon the return to the surface. As if that didn't already reduce the time needed for missions, the animals are also much faster than humans in general since their bodies were designed for swimming and they are constantly in the water. One day we will likely complete these missions with underwater vehicles, but at this point in time, these marine animals beat human technology time and time again. They will more than likely continue to have a place in the Navy.

While the role of Marine Mammals will eventually decline, the field of engineering is rapidly expanding, and the branch of electrical engineering is no exception to this. This can be seen in the many recruitment systems that are in place today to bring in more engineers that are so desperately needed. The government has many programs that help to achieve this, among these are the various internship programs. The SEAP and NREIP programs allow high schoolers and college students to get hands-on experience at different naval labs all around the country. Katie Pfeiffer was one of the many students to benefit from the SEAP program. It allowed her to find out exactly what fields of engineering she was interested in, and she even got paid for it. She then knew once she went to college what career she wanted to pursue. She even had an idea of where she wanted to work since she had already interned at the Naval Surface Warfare Center Crane. Once she was at college she soon found out about yet another program, the SMART scholarship. She applied for it her sophomore year but did not get it, but luckily she wanted to try again. When she applied the second time she financially received the scholarship. This allowed her to not have to worry about getting student loans or even buying textbooks. On top of this, the SMART program also pays recipients a stipend on top of their college tuition. With the program you can go to school until you get a Ph.D., and once you graduate you are already guaranteed a job straight out of college. She was also still able to intern at Crane over the summers which gave her even more

hands-on experience with projects directly pertaining to her field of engineering. She is currently still a student at Indiana University and is on the five-year plan where after she gets her undergraduate degree, she will spend one year to get her Master's degree. After this, she intends to work full-time at the Naval Surface Warfare Center Crane. Due to this, I intend to apply for this scholarship as well since I don't want to burden my family with the crazy college tuition that students have to pay today and typically go into debt over. If I were to get this, I would hope to become a Mechanical engineer and work at my local Naval Surface Warfare Center. While I'm focused on Mechanical Engineering, other interesting developments are going on in Engineering.

Nanomaterials are on the rise and have potential uses in practically every field. Nanomaterials are classified as having at least one dimension that is less than 100 nanometers. They can be found in nature, or they can even be man-made. They have many uses in the medical field in particular due to their ability to help target specific organs or cells in medical treatment. Nanomaterials can also help to clean polluted water, which would help the water scarcity problem tremendously and would help to preserve local ecosystems. In the next 15 to 20 years, I truly believe that technology will have completely shifted our daily lives. By 2040, so much more research will have been done on nanomaterials that scientists will have likely found even more uses for them. The incredible potential that nanomaterials possess will hopefully be almost, if not completely, reached by that time. This will mean that the average lifespans of humans will likely be extended by many years, if not decades. The medical advancements that will be made by that time will likely be able to cure almost any ailment quickly and effectively. They may even have been able to create artificial organs so that there is no longer a need for organ donors. In the average person's life, technology like cellphones will likely be made smaller and more efficient. The use of nanomaterials would even have made modern-day cars much lighter and fuel-efficient than those we have today, and maybe cars don't even use fuel anymore. Clothes can even be strengthened by nanomaterials, so even your t-shirts will last longer. For the Navy and Marine Corps, nanomaterials would have likely made the majority of their missions much safer. The small size that nanomaterials can bring to certain technology like underwater mine countermeasures would allow for them to go undetected and could potentially save lives. The massive advances in sensors using nanomaterials would even change what the Navy would be able to detect when scanning for these mines. From a general military perspective, nanomaterials might have become both a blessing and a curse. While they might allow for more effective modes of transportation and weaponry, other countries will likely have access to this as well. By 2040, a conflict will surely have broken out somewhere. The new weapons created by nanomaterials would likely cause such high casualties in a war that it would exceed those of WWII. So while nanomaterials might provide some pretty astounding advancements, that doesn't mean that it does not have the potential to permanently damage the world. Overall, the field of Engineering is incredibly important to the Navy and involves many different aspects that are all incredibly interesting. These different subfields and engineering-related programs allow the Navy to make life-changing strides in science and are enticing young people to join the profession in many different ways.