

ELECTRICAL SAFETY PROGRAM PROTECTS USS KITTY HAWK

The USS Kitty Hawk (CV 63) is America's oldest active warship, and the Navy's



USS Kitty Hawk is like a floating city.

only permanently forward-deployed aircraft carrier. The ship has a crew of more than 5,500 sailors and marines who live and work on eight decks and 11 levels. The carrier, affectionately nicknamed *Battle Cat* by her crew, even has an onboard radio station, KTTY radio.

The *Battle Cat* is larger than many of the cities in the United States and resembles a floating city that is 1,069 feet long and 252 feet wide that displaces over 86,000

tons of water. She has a fuel capacity of four million gallons, room for more than 75 airplanes to take off and land on a flight deck that covers more than four acres, and an electrical system capacity of 14 million watts.

The *Battle Cat's* electrical power distribution system carries power from the generator switchboards to every part of the ship. The system consists of feeders, mains, submains, load center panels, and distribution boxes. The most important auxiliaries are supplied with normal, alternate, and emergency feeders through automatic bus transfer units, each with a separate power source. Casualty power systems provide electrical connections when both ship's service and emergency electrical systems are damaged.



USS Kitty Hawk, shown here getting underway, has an electrical system capacity of 14 million watts.

The combination of high humidity, metal structures, ship motion, high voltage electricity, and saltwater increases the risk of electric shock injury and electrocution aboard ships. The Navy's Electrical Safety Program helps sailors to recognize electrical hazards and estimate the risk of injuries as well as damage to the ship. Electrical Safety Programs aboard US Navy ships play a key role in keeping sailors out of harm's way. The *Battle Cat's* Electrical Safety Program comes from Navy instructions, the Kitty Hawk's instruction manual, and the Naval Ships Technical Manual, all readily available to any crewmember

via the ship's Intranet. The regulations define electrical safety program requirements and responsibilities.



Interior Communications Electrician troubleshoots a faulty component on an over-speed trip panel circuit card from the number 4 Main Machinery Room aboard USS Kitty Hawk.

"The Electrical Safety Program is very important because electricity is unforgiving," said Electrician's Mate 1st Class, Surface Warfare and Air Warfare qualified, Carlito Soriano, the Leading Petty Officer in Kitty Hawk's Electrical Safety Division. "Even though electricity has made our lives easier, if you don't understand electricity, or you are not following procedures, it can kill you." Soriano pointed out, "Everyone who comes to serve with us must attend the electrical safety portion of the Command Indoctrination Course. This is the very first step for them to become aware of how to be safe around electricity while aboard the Kitty Hawk."

The *Battle Cat's* Electrical Safety Program indoctrinates newly assigned Sailors about electrical safety as soon as they report aboard ship. The Sailors are instructed on the basics of electrical safety, including shipboard electrical equipment and systems. Training provides information

about electricity, generators, shipboard power distributions, motors, controllers, batteries, portable electrical equipment, shipboard electrical systems and connections, and electrical safety equipment, such as rubber insulating equipment and personal protective equipment. Instruction also includes recognizing electrical shock, electrical shock trauma, and providing emergency first aid. Every ship has a certified cardio-pulmonary resuscitation (CPR) instructor, and at least half of all electrical and electronics technicians are certified in basic life support.

Division officers ensure that the sailors assigned to them keep up on basic electrical safety. They visually inspect all portable electrical equipment for safety hazards every time they use it. Every electrical and electronic item, except for personal equipment, is inspected at least quarterly by the



Once this Airman, a new Sailor assigned to USS Kitty Hawk, comes aboard, he will be indoctrinated in the Electrical Safety Program.

ship's Safety Department. Any sailor who experiences an electrical shock is required to report the incident to his or her division officer and to Medical.



Kitty Hawk's Chief Electrician's Mate trains an Electrician's Mate Fireman in the ship's Number 2 auxiliary machinery room.

According to Commander McAplin, Kitty Hawk's safety officer, the ship's Electrical Safety Program is geared not just for the sailors who work directly with electrical or electronic equipment. "Everyone is exposed to potential electrical hazards every day," he said. "From an operations specialist using an electric buffer to shine the deck to an electrician's mate repairing a power panel, we all have to be aware of how to protect ourselves from getting hurt by electricity."

"As in all other safety-related programs, electrical safety is everybody's responsibility, without exception," stated McAplin. "Our safety department has only 13 people. We cannot be everywhere, so everyone has to be on the lookout for electrical safety hazards and report them immediately to the Safety Department, their supervisors, or the command duty officer for correction."

Some of the electrical hazards that may typically be encountered on board include broken electrical tools, damaged power cords, electrical power tools that are overdue for inspection to ensure that they are safe to use, and power cords that are routed over sharp edges, which can cut them or through doorways and hatches where they could be damaged if a door or hatch is closed on them.

An Electrician's Mate usually de-energizes equipment completely to ensure protection from electrical hazards. He does that by removing the fuses and tagging as "out of service" circuit breaker switches and fuses from the power supply circuit breaker or switch for that piece of equipment. The Electrician's Mate then checks the equipment with a voltmeter to be certain that the equipment is completely de-energized and safe for starting routine and emergency maintenance or repair work.



Interior Communications Electrician Fireman rigs a casualty power cable during a General Quarters Battle Drill scenario.

All work on energized electrical equipment, except for tasks specifically approved by equipment technical manuals, the Planned Maintenance System, established troubleshooting procedures, and inspections, testing, measuring, and adjustments that require the equipment to be energized, requires the approval of the Kitty Hawk's Commanding Officer. All damaged electrical and electronic equipment is considered energized until it is proven to be de-energized.



Electrician's Mate measures the resistance of a fan coil unit motor.

Other electrical hazards to look for include open electrical junction boxes and exposed cables, McAplin explained. "With all the repair work, cleaning, removal and installation of equipment, we have to remain especially vigilant to electrical hazards, such as dead-ended cables and unsecured power sources." Petty Officer Soriano

agreed that, "It's everybody's responsibility to be safe." McAlpin added, "The Electrical Safety Program is an important factor in achieving that goal. Electrical safety training and knowledge help to prevent electrical shock injuries, which keeps our sailors healthy and available to do their jobs."

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