

BATTLESHIP TEXAS

KAPOK: AMERICA'S LIFESAVER

VIRTUAL LESSON

OVERVIEW

In the early 1900s, the United States Navy relied on life jackets made from cork; however, they were heavy and rigid, which could cause injuries to the wearer when jumping into water. In 1915, the United States Navy began using kapok fiber, a soft, lightweight fiber from a tropical tree, to help save the lives of those who traveled by sea throughout two world wars.

ESSENTIAL QUESTIONS

Why did the U.S. Navy move away from using cork in life jackets? How did World War I influence the use of kapok life jackets? What were some challenges the U.S. faced when kapok supplies became limited during World War II, and what was the reason for replacing the material?

OBJECTIVES

Throughout this activity, students will be able to:

1. Analysis

Analyze, compare, and contrast the provided materials and life jackets, examining their various properties and characteristics.

2. Knowledge

Learn about the materials used in the evolution of United States Navy life jackets and their importance in the war effort and saving lives.

3. Discussion

Discuss the importance of a kapok life jacket during both World Wars, and how world events affected its use and production.

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HISTORY

HEAVY, BLOCKY, CORK

Throughout the late nineteenth and early twentieth centuries, various nations used cork life jackets aboard small fishing boats and large ocean liners, such as the RMS Titanic. The cork was sourced from the bark of the *Quercus suber* tree, which grows in large numbers across southwestern Europe and northern Africa, including Portugal, Spain, Italy, Algeria, and Morocco. The bark could be harvested without harming the tree, so the tree would not have to be cut down. Instead, the bark was carefully harvested, allowing most trees to live for several years and continue producing more bark for future harvests.

Those bark pieces, assembled into a rectangular block, were placed into a canvas vest or life jacket, giving these jackets a distinctive, rigid, blocky shape. However, despite the cork's high buoyancy, the slabs were bulky and heavy, and many wearers found them uncomfortable. Additionally, those forced to abandon ship and jump into the ocean could sustain serious injuries to the neck, arms, and collarbones. The United States Navy considered these shortcomings when seeking a material for its new life jacket.

PRE-WORLD WAR I

As early as 1915, the United States Navy began using kapok, a vegetable fiber filler, to produce its life preservers and jackets. The fiber was sourced from the pods of a kapok tree, or *Ceiba Pentandra*, native to tropical regions with distinct dry and rainy seasons, including Java, India, Burma, and the Philippines. Inside the tree's pods is a lightweight, silky fiber with a water-resistant, waxy outer coating, which helps disperse the seeds when the pod blooms. The material was extremely buoyant, pliable, and could resist water for lengthy periods when wet, making it a near-perfect fit for the Navy's needs.

In 1916, President Woodrow Wilson, a firm believer in neutrality, authorized the Naval Act of 1916 to increase the number of ships in the fleet. Shortly after the United States declared war against Germany in April 1917, the President signed the Selective Service Act of 1917 into law, federalizing the National Guard and making all male citizens between the ages of 21 and 31 liable for the draft, or required to enlist in military service. The increase in the armed forces of the United States meant that all ships

would need to carry a life jacket for every soldier, sailor, and marine headed to war "over there".

WORLD WAR I

When the United States entered World War I, a waistcoat-like garment filled with kapok fiber would debut within the United States Navy. Secured around the wearer with cotton ties, a large collar behind the wearer's head, and two patch pockets on each side, the Navy's kapok life jacket was born. Those equipped with the new life jacket would soon realize its importance as submarine warfare now threatened to sink every ship traveling between the United States and Europe.

On May 31, 1918, the ocean liner, now a troop transport, USS PRESIDENT LINCOLN, was underway to New York from Brest, France, when a German U-boat attacked it. Sinking rapidly from the three enemy submarine torpedoes, the crew and passengers donned their life jackets, lowered the lifeboats, and prepared to abandon ship. Forced to jump into the North Atlantic Ocean, the men relied on the life jackets to keep them afloat as they swam away from the sinking ship and towards a lifeboat or raft. Miraculously, of the seven hundred crew and passengers, only twenty-six were lost, with the survivors rescued by the destroyers USS WARRINGTON (DD-30) and USS SMITH (DD-17) after eighteen hours of being stranded at sea.

*"I was relieved at eight and went directly to the mess hall for breakfast. After breakfast I went to my quarters to stow my gear. I heard and felt an explosion. I first thought maybe one of the gun crews was having target practice. Then there were two more explosions and the battle alarm was sounded. I rushed to my bunk, picked up a **life vest**, and went to my battle station. It was then and only then that I realized we were sinking. You could look down the cargo batch and see the water rising. Whitey Cramer, the senior NCO, passed the word along after it came down from the bridge, "All hands, abandon ship." -Samuel Hart, USS President Lincoln crew member.*

WORLD WAR II

In 1940, the United States passed the Two-Ocean Navy Act, which expanded the nation's naval force by 70 percent, increasing demand for strategic and critical materials for life jacket production for the thousands of service members who would serve aboard the growing fleet. The continued expansion of the Japanese Empire throughout the Pacific in late 1941 meant the United States had lost access to the Dutch East Indies, the colony responsible for providing ninety-five percent of the country's imported kapok. This loss of a major supplier caused the United States to continue collecting and stockpiling as much of the resource as possible. By the end of 1941, a familiar life

jacket, with little change from its predecessor, was worn by sailors from a nation at war it did not want.

The United States Government authorized a total procurement of 16,980,000 pounds of fiber from both foreign and domestic stockpiles, limiting its use during wartime and restricting the use of higher-quality grades of kapok for life preserver use by 1944. Meanwhile, the Department of the Navy obtained an additional 1,752,189 pounds of Java kapok to be placed in a special reserve and used in its manufacturing facilities. By 1945, the Navy required nearly seven million pounds of the fiber for use in its life jackets, and all existing stocks were expected to become exhausted at the end of the year.

INVASION OF FRANCE

The Allied invasion of northern France on June 6, 1944, was a success, and troops advanced inland thanks to the support of the large naval bombardment force positioned off the coast. On June 25, 1944, a naval task force was sent to Cherbourg, France, to destroy the large-caliber coastal guns that could prevent the Allies from taking the much-needed port. The USS TEXAS (BB-35), a World War I veteran, was steaming towards the objective, carrying a crew of over 1,600 men. Engaging with the battery, the battleship was hit twice by German fire, resulting in several injuries and the ship's only combat fatality. As enemy shells continued to straddle the ship, one sailor had noticed a rip in another sailor's kapok life jacket, and upon further investigation, discovered a piece of shrapnel lodged in the neck piece. The life jacket had prevented the stray shrapnel from injuring the wearer, possibly saving his life without ever touching the water.

*"Tony said, 'What did you do to your life jacket?' And I said, 'I don't know. What are you talking about?' He said, 'It has a rip in it.' And, I took it off and I don't remember anything. He started poking around and got a piece of shrapnel about that long and that wide. Still had rings on it from firing from the shore gun. And it was buried in the neck in the **life jacket**." - John Harberthier, Jr., USS TEXAS crew member.*

REPLACING KAPOK

While kapok proved an excellent material for life jackets, the United States Navy searched for available substitutes throughout the war. Investigations were conducted on alternative natural materials available in the country, such as milkweed floss, wax-treated cotton, and cattail floss, which showed promise but were never utilized in large quantities. Even synthetic alternatives, such as fibrous glass, underwent testing and evaluation, providing favorable characteristics. Adoption of a fibrous glass filler as a replacement for kapok in Navy lifesaving equipment in 1945 led to the end of its use in future life jackets.



KAPOK: AMERICA'S LIFESAVER

LESSON WORKSHEET

1. What part of the world did cork come from?
2. How was it used in the maritime world in the late 1800s and early 1900s?
3. What were some of the problems with cork life vests?
4. What fiber was used in the new Navy life jackets starting in 1915?
5. What was a significant threat to ships traveling to and from Europe in WWI, and how did that make personal life jackets important?
6. List some ways the United States would expand the nation's naval force and increase the need for life jackets in WWI and WWII.
7. What major event would pull the United States into World War II, and how did that affect the import of kapok?
8. What ultimately led to replacing the kapok fiber life jackets?

APPLICABLE TEXAS ESSENTIAL KNOWLEDGE AND SKILLS (TEKS)

Texas Essential Knowledge and Skills for Social Studies - 113.41 United States History Since 1877

113.41.d.4.

(E) analyze the impact of machine guns, airplanes, tanks, poison gas, and trench warfare as significant technological innovations in World War I on the Western Front

113.41.d.7.

(A) identify reasons for U.S. involvement in World War II, including the aggression of Italian, German, and Japanese dictatorships, especially the attack on Pearl Harbor

113.41.d.7.

(D) analyze major military events of World War II, including fighting the war on multiple fronts, the Bataan Death March, the U.S. military advancement through the Pacific Islands, the Battle of Midway, the invasion of Normandy, and the liberation of concentration camps

113.41.d.17.

(A) describe the economic effects of World War II on the home front such as mobilization, the end of the Great Depression, rationing, and increased opportunity for women and minority employment

113.41.d.28.

(A) analyze primary and secondary sources such as maps, graphs, speeches, political cartoons, and artifacts to acquire information to answer historical questions

Texas Essential Knowledge and Skills for Social Studies - 113.42 World History Studies

113.42.d.10.

(B) identify major characteristics of World War I, including total war, trench warfare, modern military technology, and high casualty rates

113.42.d.12.

(C) explain the major causes and events of World War II, including the German invasions of Poland and the Soviet Union, the Holocaust, the attack on Pearl Harbor, the Normandy landings, and the dropping of the atomic bombs.