

The Greatest Shipbuilding Center in the World

Watch the segment online at <http://education.savingthebay.org/the-greatest-shipbuilding-center-in-the-world>

Watch the segment on DVD: Episode 3, 35:24–45:21

Video length: 10 minutes 15 seconds

SUBJECT/S

Science

History

GRADE LEVELS

9–12

CA CONTENT STANDARDS

Grade 11

History–Social Science

11.7.6. Describe major developments in aviation, weaponry, communication, and medicine and the war's impact on the location of American industry and use of resources.

VIDEO OVERVIEW

The San Francisco Bay Area played a critical role in World War II as the “greatest shipbuilding center in the world.”



A welder at the Kaiser Shipyards in Richmond, California in 1944. (Library of Congress)

In this segment you'll learn:

- about the bombing of Pearl Harbor from a Bay Area perspective.
- the significance of Henry Kaiser and San Francisco Bay Area shipyards in World War II.
- the role women played in the shipbuilding industry.

TOPIC BACKGROUND

During World War II, the San Francisco Bay Area arose as the “greatest shipbuilding center in the world.” In fact, shipbuilding was the Bay Area’s main contribution to the war effort. Spread out around the Bay were more than 30 shipyards and many other machine shops and fabricators that worked together to build ships. Between 1940 and 1945, workers in the San Francisco Bay Area built more than 1,400 ships. Several factors contributed to the region’s being a shipbuilding center: local experienced shipyards, ready labor supply and building sites, proximity to the Pacific war, and established railroads to receive supplies.

Henry J. Kaiser, a high school dropout, was a key player in the shipbuilding effort. Kaiser had already proven himself through highway construction and dam-building projects, enabling him to win shipbuilding contracts. For a total cost of \$4 billion dollars, Kaiser built 822 liberty ships, 219 victory ships, 50 escort carriers, and various tankers, tenders, and other craft. Using assembly-line and mass-production techniques, Kaiser’s shipyards built 30 percent of American wartime shipping vessels.

In order to build these ships, hundreds of thousands of workers had to be employed; many of the workers were African American and many more were women, which created major pressures and conflicts. Battles against racial discrimination included a short strike by African American workers at Marinship, resulting in an important court decision outlawing discrimination. The growth in population due to available jobs in the industry caused a housing shortage, overcrowded schools, and an over-burdened infrastructure. Women involved in the war effort were known as “Rosie the Riveter” nationally, but in the shipyards they were called “Wendy the Welder.” Welding required fewer workers than riveting and enabled ships to be built much faster. The record for the fastest ship built was four days, 15 hours, and 27 minutes.

San Francisco’s Fort Mason served as a major port of embarkation for soldiers and supplies leaving for the war in the Pacific. By 1945, 1.6 million troops and 23 million tons of cargo had been shipped to war from the San Francisco Bay Area. Another famous cargo shipped out from San Francisco Bay on the USS *Indianapolis*: the components of an atomic bomb.

VOCABULARY

arid

dry, lacking water

biological productivity

how much organic, or living, material is produced in an area

estuary

a semi-enclosed body of water where fresh water and salt water mix

World War II left the San Francisco Bay Area dramatically altered. The population of the Bay Area had increased by a half million in a mere five years. The environment was also affected as shipyards and other military installations were built on Bay fill and strained sewage systems polluted the Bay.

PRE-VIEWING ACTIVITIES

- Review the chronology of World War II, including key dates and figures.
- Discuss what the San Francisco Bay Area was like before the war. How many people were in the region? What kinds of industries were there? What engineering projects had recently been completed?

VIEWING ACTIVITY

- Students take notes while watching the segment. They should pay special attention to the following topics:
 - The San Francisco Bay Area's role in World War II
 - How San Francisco Bay was changed in wartime
 - The role of women in wartime efforts in the San Francisco Bay Area

POST-VIEWING QUESTIONS

- What role did women play in shipbuilding? How was this a new development in the San Francisco Bay region?
- Explain the saying "If you dropped a quarter on the deck, it would be welded before you could pick it up."
- What was it like in the San Francisco Bay Area during the war? Discuss how the Bay Area is different now.
- In this segment, Roger Lotchin says, "The Oakland estuary was a fire hazard." How could this be? What other negative environmental effects did shipbuilding have on the Bay?
- What lasting effects did World War II have on the San Francisco Bay Area?

POST-VIEWING ACTIVITIES

- Design a poster whose purpose is to recruit people to join in the shipbuilding effort.
- Research the ships built in the Kaiser Shipyards (mostly liberty ships and victory ships). What were they built for? Where did they go? Are any still around?
- What remains of the Kaiser Shipyards? This website provides information on Richmond Shipyard Number Three:
<http://www.nps.gov/nr/travel/wwIIbayarea/ric.htm>
- Investigate areas around the Bay where you can find evidence of a military past. Visit one of these places and write about your experience.
- Choose a key wartime figure from the San Francisco Bay Area to research and write a report on. Present your report to the class.
- Interview family or community members who lived in the Bay Area during the war. What do they remember about that time? How did the war efforts shape their home or livelihood?

ABOUT THE AUTHOR

Phaela Peck is a science teacher, environmental educator, and writer based in San Francisco. She has an M.A. in environmental education and has developed curricula for numerous science and environmental education organizations in the Bay Area.

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ADDITIONAL RESOURCES

Chronology of San Francisco War Events, Virtual Museum of the City of San Francisco

<http://www.sfmuseum.org/1906/ww2.html>

Find a detailed chronology of San Francisco war events, along with links to other virtual museum exhibits.

Liberty Ships and Victory Ships, America's Lifeline in the War, National Park Service

http://www.nps.gov/nr/twhp/wwwlps/lessons/116liberty_victory_ships/116liberty_victory_ships.htm

Find images and more detailed information about liberty ships and victory ships.

USS *Indianapolis* (CA-35), 1932–1945, Selected Views, Naval Historical Center

<http://www.history.navy.mil/photos/sh-usn/usnsh-i/ca35.htm>

Read about the ship that transported the components of the atomic bomb from California to Tinian island and her tragic demise. Images are also available.

World War II in the San Francisco Bay Area, National Park Service

<http://www.nps.gov/nr/travel/wwIIbayarea/index.htm>

This website provides information on locations around the Bay that reflect on the Bay Area's role in World War II. Essays on a variety of war-related topics can also be found here.

World War Two: Summary Outline of Key Events, BBC

http://www.bbc.co.uk/history/worldwars/wwtwo/ww2_summary_01.shtml

The BBC provides this concise outline of World War II events.

CREDITS

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VIDEO TRANSCRIPT

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HAROLD GILLIAM: On December 7, 1941, I was living at the International House on the Berkeley campus, and I heard somebody down below calling up to me. They said something about Pearl Harbor, and I said, “What? What harbor?” They explained to me what had happened and said, “Turn on your radio ...”

RADIO ANNOUNCER: We have witnessed this morning the attack of Pearl Harbor and the severe bombing of Pearl Harbor by army planes, undoubtedly Japanese. It’s no joke. It’s a real war!

GILLIAM: And during the rest of the day, people began to call up to me and asked if I saw the enemy planes overhead—if I saw them coming. So I was there with my binoculars looking out over the Bay, trying to find out what was coming, and of course they didn’t come that day, and they didn’t come at all, but we didn’t know that at that time.

KEVIN STARR: I don’t think these fears were irrational. You could, within the next 30 to 40 to 50 days, see a number of American ships aflame offshore. The Japanese submarines were scouring the whole area.

NARRATOR: In the aftermath of the attack on Pearl Harbor, the San Francisco Bay Area, already on a war footing, took on the feel of an armed camp. In the week between December 18 and 24, eight merchant ships were attacked by Japanese submarines off the California coast. Outside San Francisco Bay, the fishing fleet now required a Coast Guard escort. Above the Golden Gate, Army coast artillery, replete with massive underground bunkers, pointed westward awaiting attack. Inside the Bay, an anti-submarine net stretched across the Bay’s entrance. The atmosphere of war was all-consuming and nowhere more so than in the shipyards of Richmond in the East Bay.

FILM ANNOUNCER: Facilities were completed in 1944 to make Richmond Shipyard the world’s largest, covering 880 acres and four and a half miles of waterfront ...

STEPHEN GILFORD: The Kaiser Shipyards were a battlefield of World War II. And the shipyards were one of the most effective weapons that the U.S. developed.

STARR: Henry J. Kaiser is a genius. He’s a typically American kind of genius. Here you have a person who’s a high school dropout who gets a big paving contract in Cuba in the 1920s. What does he know about paving roads? Nothing. But he knows about bringing people together.

GILFORD: ... and that’s when the next period of his life came, which was building the great dams: Hoover, or Boulder, Dam; Bonneville Dam; and then Grand Coulee Dam, which was the largest public works construction in the history of man.

STARR: And they get the [shipbuilding] contract because he says that same technique of dam building could be used for quick shipbuilding and then he becomes a great shipbuilder.

FILM ANNOUNCER: On April 14, 1941, as piles were being driven, buildings constructed, a mobile crane lowered the first keel plate and a cheer arose.

NARRATOR: By the time of the attack on Pearl Harbor, Kaiser Yard Number One was up and running, constructing awkward, but easily built, cargo vessels. Construction of a second yard to build yet more liberty ships was already under way, and within a year, two more yards for building other vessels followed.

GILFORD: There's a photograph of Yard Three under construction and there are ships in the shipway, but in front of the shipway, instead of there being water, there's land. The ships are landlocked. They'll get that open later, but right now they wanted the place to build the ship.

NARRATOR: The strategy was simple enough: build ships faster than the enemy could sink them.

ROGER LOTCHIN: One of the things that Kaiser did was to find ways to mass-produce these ships, and that meant to mechanize on the one hand and to de-skill on the other.

FILM ANNOUNCER: Job simplification and the training of a half million persons were without a doubt the most incredible achievements of the entire shipbuilding program.

LOTCHIN: So at the lower end of the order they got rid of riveting because that was a skilled job, so they did that with welding.

RADIO ANNOUNCER: Here's a little song that one of the boys in the shipyard cooked up. Ready girls? Take it away ...

SINGERS (music): *"If you want the best construction and the speediest production ..."*

NARRATOR: By the middle of the war, nearly 25 percent of the employees at the Kaiser yards were women. Heralded in the popular press as "Rosie the Riveter," in the shipyards, Rosie was a welder.

SINGERS (music): *"... or even build a skyway, call Henry Kaiser!"*

PHYLLIS GOULD: I went to the employment office and got my social security card and signed up for welding school at Richmond High School from 4:00 to 8:00 in the morning.

FILM ANNOUNCER: Each learned to do his special task skillfully, and the combined result turned out ships faster than any generation had imagined possible.

GOULD: It was about two weeks, I think; they said I was ready ...

LOTCHIN: When they first started building those liberty ships up in the North Bay, they got it down to fewer and fewer days, and pretty soon they had it down to an average of 17 days.

GILFORD: ... and then came the four-and-a-half-day ship.

FILM ANNOUNCER: On the morning of the fourth day, the launching anchors were hauled aboard and *Hull 440* was made ready for her maiden splash into the Bay.

MARY PEACE HEAD: They had three shifts, so when your eight hours was up, then somebody is standing right behind you to walk into your space.

GILFORD: Somebody who was working down there said that if you dropped a quarter on the deck, it would be welded before you could pick it up.

FILM ANNOUNCER: When *Hull 440* slid triumphantly down the ways, a cheer went up that echoed around the world: a tribute to the determined men and women who had accomplished the amazing feat of launching a 92 percent completed ship in four days, 15 hours, and 27 minutes, an all-time record.

GILFORD: When these kinds of records would reach the Japanese war office, they didn't believe it at first. They thought it was impossible that anybody could be producing ships at this rate.

NARRATOR: Building the ships to win the war would require more than 100,000 workers at the Kaiser yards alone. Another 45,000 were employed to the north at Mare Island, another 22,000 at Marinship, 35,000 more at Hunter's Point Naval Shipyard in San Francisco, and another 35,000 at Moore Dry Dock in Oakland. Nearly overnight, it seemed, San Francisco Bay had emerged as the greatest shipbuilding center in the world.

GILFORD: People started to come in from all over the country, and that still wasn't enough. Kaiser had to go out and recruit. And they actually sent trains out all over and they recruited people and had these trains that they put them on and sent them back.

BETTY REID SOSKIN: So we'd watch those people pouring in hour after hour, day after day, and stood on our front porch and waved them into town.

NARRATOR: The biggest impact on the Bay would be the sudden dramatic increase of the population surrounding it. Between 1940 and 1945, the Bay Area's population exploded—outpacing even Los Angeles and increasing by more than a half million.

GILFORD: People were living in cars; people were sleeping out. There were terribly unsanitary conditions where people made camps and ... built outhouses that overflowed during the rainy season.

MARION SOUSA: There was a terrible smell to the Bay. I don't think that we had complete sewage systems then. It was just awful! It took your breath away!

LOTCHIN: The Oakland estuary supposedly was a huge fire hazard at the time because there was so much oil and gasoline and material floating around in it there.

FILM ANNOUNCER: The great Port of San Francisco was naturally the jumping-off point for most of the stuff heading west.

NARRATOR: Intersecting with unprecedented war production was the process of getting troops and supplies to the war itself. By July 1945, the Army's San Francisco Port of Embarkation shipped out a total of one and a half million troops and everything they needed to fight: tanks, landing craft, and endless tons of food. That same month, under tight security, another cargo arrived at Hamilton Field where it was quickly shuttled south to the Hunter's Point Naval Shipyard. At dawn the following morning, the cruiser USS *Indianapolis* slipped under the Golden Gate Bridge and departed the West Coast carrying the components of an atomic bomb. Three weeks later, it was detonated over the Japanese city of Hiroshima. On August 14, the deadliest war in human history was over.