

**U-505**  
SUBMARINE

MUSEUM  
OF  
SCIENCE  
AND  
INDUSTRY

# MANUAL FOR INSTRUCTORS



**NAVIGATE**



**EXPLORE**



**COMMUNICATE**

*Prepared by*

MUSEUM OF SCIENCE AND INDUSTRY PERSONNEL

**[WWW.MSICHICAGO.ORG](http://WWW.MSICHICAGO.ORG)**

# How to USE THIS GUIDE

Upon completion of the full “U-505 Manual for Instructors,” your students will meet the following standards:

## LANGUAGE ARTS

4A. Listen effectively in formal and informal situations.

5A. Locate, organize and use information from various sources to answer questions, solve problems and communicate ideas.

## MATHEMATICS

8A. Describe numerical relationships using variables and patterns.

## SCIENCE

11A. Know and apply the concepts, principles and processes of scientific inquiry.

13B. Know and apply concepts that describe the interactions between science, technology and society.

## SOCIAL STUDIES

16A. Apply the skills of historical analysis and interpretation.

16B. Understand the development of significant political events.

Don't forget to visit <http://www.msichicago.org/exhibit/U505/index.html> for additional information on the exhibit.

## NAVIGATE: BEFORE YOUR VISIT

Before introducing the U-505 material to your students, please take the time to read the background information about the U-505 and the glossary of submarine terms. It will help you prepare for your field trip and for teaching the lessons.

The Story of the U-505	5
Did you know?	7
Voyage of the U-505 Map	8
A few definitions	9

## EXPLORE: DURING YOUR VISIT

Take advantage of the resources within this guide to make your field trip run smoothly. Please take the time to read about the exhibit, its educational opportunities and tips for visiting. We highly recommend that students use the Surveillance Record during their visit to the U-505 Submarine exhibit. This will help them to get the most out of the exhibit, while also providing you with materials to review back in the classroom.

The New U-505 Experience	11
Interactive Features	12
Exhibit Audio/Visual Features	13
U-505 exhibit map	15
Field Trip Tips	17
Using the “Surveillance Record”	18
Back in the classroom	19
Surveillance Record	22

CONT.

### COMMUNICATE: AFTER YOUR VISIT

The lessons are organized as a “How to” manual for submarine training. Lessons cover a variety of topics and standards. You may choose to handle some of the lessons as pre-visit activities or work on them after returning from the Museum.

The Surveillance Records that your students complete can provide you with several activities to do once you have returned to the classroom. See “Using the Surveillance Record” in the Explore section, for connection activities.

How to...	
Float in water	25
Make fresh water	27
Tell your story	29
Keep secrets	33
Resolve conflict	37
Additional resources	41

# NAVIGATE

**your way through this manual and the  
history of the U-505 submarine**



<b>THE STORY OF THE U-505</b>	<b>5</b>
<b>DID YOU KNOW?</b>	<b>7</b>
<b>VOYAGE OF THE U-505 MAP</b>	<b>8</b>
<b>A FEW DEFINITIONS</b>	<b>9</b>

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# THE STORY OF THE U-505

Early in World War II, thousands of American merchantmen were lost each year to attacks by German U-boats. These submarines destroyed millions of tons of cargo, much of it the raw materials critically needed for the Allied war effort. In 1942, the U-505 submarine itself was responsible for sinking eight Allied ships (three American, two British, one Norwegian, one Dutch and one Columbian). Even more unsettling was that German U-boats often struck frighteningly close to home. In separate attacks just months apart, three Allied freighters were sunk in full view of tourists at Jacksonville Beach, Florida, and Virginia Beach, Virginia.

By 1943 the Allies were faced with an ultimatum: come up with a plan to defeat the U-boats or risk losing the war. Small task forces were sent off to sea, usually consisting of one escort aircraft carrier and four or five destroyer escorts. U.S. naval captain Daniel Gallery, a Chicagoan, led one of these forces. He was determined to not only find a German U-boat on the prowl but to capture one and bring it back intact as a valuable source of enemy intelligence.

Captain Gallery and his *Hunter-Killer* group of six ships were known as the U.S.S. Guadalcanal Task Force 22.3. On June 4, 1944, while on patrol off the coast of West Africa, the task force hit the jackpot. That Sunday morning, the destroyer escort *U.S.S. Chatelain* made sonar contact with the submerged U-505, sitting only 600 yards away. With two Wildcat fighter planes circling overhead and firing into the water to mark the sub's location, the destroyer escort made several depth-charge attacks. Six and one-half minutes after the *U.S.S. Chatelain's* first attack, the U-505 surfaced and its crew surrendered.

The capture was far from over. The attack had jammed the U-505's rudder, the sub was out of control and the German crew had jumped into the water. Waves washed over the sub's deck as it slowly began to sink. The Americans didn't know how long the sub would stay afloat – or if it was booby-trapped inside. Undaunted, a volunteer boarding party of nine men from the *U.S.S. Pillsbury* – only one of whom had been in a submarine before – tumbled down the hatch. Water was pouring in from a sea strainer that had been opened by the fleeing Germans who had attempted to sink the vessel. Thinking quickly – under incredible pressure – Engineer's Mate Zenon Lukosius searched for the scuttle valve and finding it, was able to secure the U-505.

The U-505 was more than a trophy of war. Its seizure was critical in helping the Allies understand German technology and codes. More immediately, by studying the U-boat, the Allies were able to better defend their ships at sea. The boarding party retrieved approximately 900 pounds of German codebooks and publications, as well as two Enigma machines (for encoding German messages) and acoustic torpedoes. With the U-505 hidden in Bermuda, the capture was kept secret until the end of the war.

The U-505 is the only U-boat of its type in the United States, and one of only five left in the world. That the U-505 came to rest in Chicago is no coincidence. Captain Gallery was determined that the U-505 would become a memorial to the 55,000 American sailors who died in Atlantic Ocean battles during WWI and WWII. He campaigned to have the sub moved from the Navy Yard in Portsmouth, New Hampshire, to Chicago. Otherwise, this irreplaceable artifact would likely have been sold for scrap, or, ironically, towed out to sea and sunk. It took an extraordinary feat of engineering in 1954 to get the U-505 through the St. Lawrence Seaway, into the Great Lakes and across the width of Lake Shore Drive. Captain Gallery once remarked that bringing the U-505 to the Museum was perhaps more difficult than its capture. In 1989, the U-505 was declared a National Historic Landmark. It has been the only foreign enemy man-of-war that was boarded and captured on the high seas by the U.S. Navy since the War of 1812.

For more historical information visit

<http://www.msichicago.org/exhibit/U505/history/index.html>



# DID YOU KNOW?

## What is a U-boat?

U-boat is an abbreviation for Unterseeboot, a German word for *undersea boat*.

## How big is the U-505?

*Length:* 252 feet, or as long as a city block.

*Weight:* 750 tons, or 3 times as heavy as the Statue of Liberty.

*Height:* 37 feet, or 3 stories high.

## When was the U-505 built?

The U-505 was constructed in Hamburg, Germany and completed on May 25, 1941.

## How did the U-505 move through the water?

Diesel engines propelled the boat on the surface, while electric motors powered it while it was underwater.

## How fast could it go?

On the surface, the U-505 had a top speed of 18.3 knots but underwater the top speed was only 7 knots. (One knot equals 1.152 miles per hour.)

## How many men were on board when it was captured?

The U-505 had 59 men on board but only 35 bunks. The crew had to take turns sleeping. One person would go to work and another would take his place in the "hot bunk," called that because it was still warm from the previous crew member.

## Were there bathrooms and showers on board?

The U-505 had two bathrooms, one of which was used to store food for the first part of the voyage. There were no showers on board. For the entire two months, the crew never bathed and instead cleaned themselves by swabbing with alcohol.

## What did the men eat on the boat?

Approximately 12 tons of food were loaded onto U-505 before a typical 100-day patrol. The crew ate fresh foods first, and then relied on canned foods once the fresh foods had been consumed or had spoiled. A typical U-boat food supply included:

494 pounds fresh and cooked meats  
 238 pounds sausages  
 4,808 pounds preserved/tinned meats  
 334 pounds preserved fish  
 3,858 pounds potatoes  
 397 pounds dried potatoes  
 3,428 pounds other vegetables  
 1,226 pounds bread dough  
 2,058 pounds preserved breads  
 463 pounds rice and noodles  
 595 pounds fresh eggs  
 917 pounds fresh lemons  
 2,365 pounds other fruits  
 551 pounds butter and margarine  
 611 pounds soup ingredients  
 408 pounds marmalade and honey  
 309 pounds fresh and preserved cheese  
 1,728 pounds powdered milk  
 441 pounds fruit juices  
 154 pounds coffee  
 205 pounds other drinks (including beer)  
 441 pounds sugar  
 132 pounds salt  
 108 pounds chocolates

## Who "drove" the boat?

Unlike driving an automobile, where one driver controls the vehicle's speed and position, maneuvering a U-boat involved many crew members who had to work together in a well-choreographed sequence of actions. For example, some crew members operated the dive planes to control the angle of the ship, some were responsible for its depth, and others maintained its balance.

## Why are there hatches between compartments on the boat?

Hatches were used to seal off the four bulkheads and the upper conning tower. If a leak occurred in one area, hatches could be closed to keep water out of the other compartments in an effort to prevent the boat from sinking.

## What kind of torpedo did the U-505 fire?

The U-505 had Acoustic T5 torpedoes on board. These torpedoes could detect the sound of enemy ships and direct itself toward its target. To learn more, go to the MSI U-505 and play the online interactive "Command the U-505."  
[www.msichicago.org/exhibit/U505/onlineactivities/index.html](http://www.msichicago.org/exhibit/U505/onlineactivities/index.html)

## How did the capture of the U-505 help the Allies win the war?

In addition to the value of the boat itself, the capture of the U-505 yielded approximately 900 pounds of codebooks and documents, as well as two Enigma machines (which encoded secret German messages) – making it the largest intelligence seizure in the Battle of the Atlantic. This information saved the U.S. Navy code-breaking team an estimated 13,000 computer hours and greatly aided their decoding work during the rest of the war.

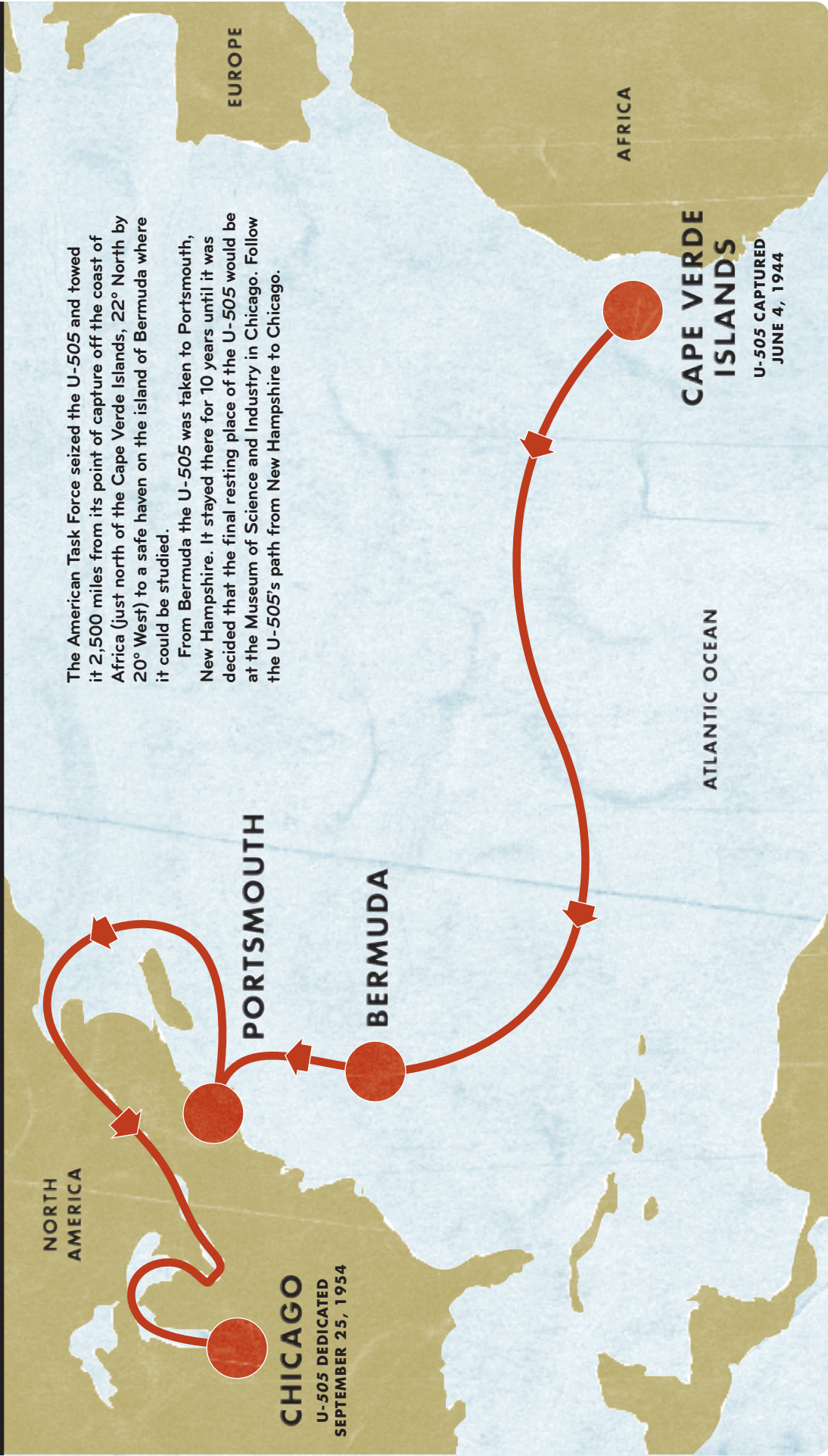
## How did the Museum move the sub underground?

It took 5 days to move the sub from its original location east of the Museum to underground the front lawn. See [www.msichicago.org/exhibit/U505/exhibit/a\\_restoration/03\\_timelapse.html](http://www.msichicago.org/exhibit/U505/exhibit/a_restoration/03_timelapse.html) to view the time-lapse movies of the move.



NAVIGATE

# VOYAGE OF THE U-505



The American Task Force seized the U-505 and towed it 2,500 miles from its point of capture off the coast of Africa (just north of the Cape Verde Islands, 22° North by 20° West) to a safe haven on the island of Bermuda where it could be studied.

From Bermuda the U-505 was taken to Portsmouth, New Hampshire. It stayed there for 10 years until it was decided that the final resting place of the U-505 would be at the Museum of Science and Industry in Chicago. Follow the U-505's path from New Hampshire to Chicago.





# A FEW DEFINITIONS

## **BOW**

The front section of the ship. The opposite of stern.

## **BOW PLANES**

The pair of horizontal rudders at the submarine's bow, which is rigged out during initial submersion to help angle the ship downward, then it is used in coordination with the stern planes to control depth.

## **CONNING TOWER**

The small, heavily armored horizontal hull directly above the control room and below the bridge. It houses the normal steering stand, torpedo data computer (TDC), periscopes, sound receivers and navigational plot. It is where the crew controls torpedo fire. In essence, it is the heart of the ship.

## **CONTROL ROOM**

The midship compartment containing all diving controls, the gyrocompass and its auxiliary, the air search radar, an auxiliary steering stand, the interior communications switchboard and the radio room.

## **CONVOY**

An assembly of Allied merchant ships organized in columns and escorted by warships.

## **DEPTH CHARGE**

An antisubmarine weapon that consists essentially of a drum filled with explosives which is dropped near a target and descends to a predetermined depth where it explodes - also called *depth bomb*.

## **ENIGMA**

The German cipher machine used during World War II. It is also used in reference to the machine's encrypted messages.

## **KRIEGSMARINE (KM)**

The German Navy, 1935-1945.

## **PERISCOPE**

An extendable, tubelike optical instrument containing an arrangement of prisms, mirrors and lenses that permit a submarine to view the surface sea from a submerged position. It is also used on the surface to observe from a higher vantage point.

## **PORT**

The left side of the boat from the perspective of a person located at the stern of the boat, looking toward the bow. The opposite of starboard.

## **SCUTTLE**

To cut a hole through the bottom, deck, or side of (a ship); *specifically* to sink or attempt to sink by making holes through the bottom. Crewman Hans Goebeler attempted to scuttle the U-505 by opening the sea strainer before abandoning the ship.

## **STARBOARD**

The right side of a boat, from the perspective of a person at the stern of the boat and looking toward the bow. The opposite of port.

## **STERN**

The rearmost area of the ship. The opposite of bow.

## **TASK FORCE (HUNTER-KILLER GROUPS)**

A temporary grouping under one leader for the purpose of accomplishing a definite objective. Task Force 22.3 was lead by Captain Daniel Gallery to find and potentially capture the U-505.

## **TOPSIDE**

Exposed or semi-exposed, non watertight area of the ship. The main deck.

## **TRIM**

The balancing of a submarine's weight and equilibrium underwater.

## **U-BOAT**

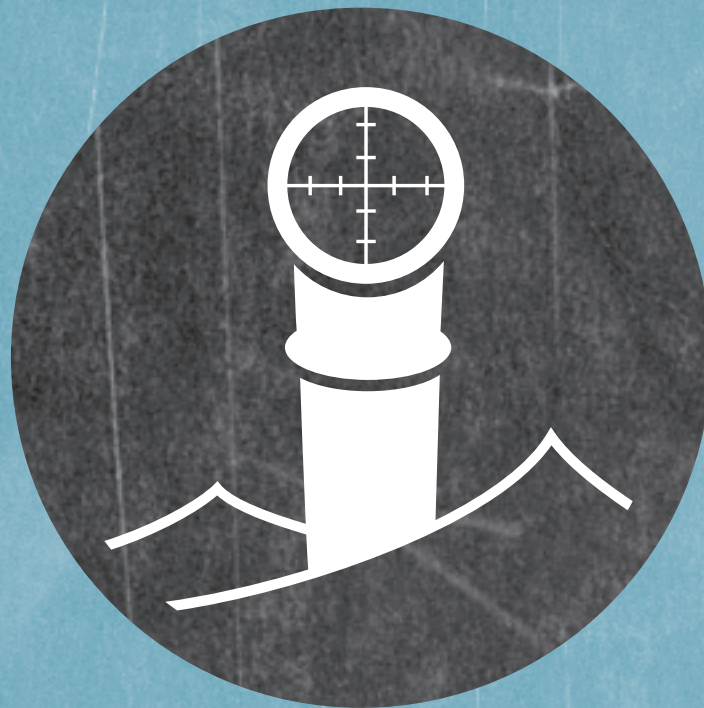
A German submarine, generally larger than 200 tons. *Unterseeboot* - "submarine," or "undersea boat" in German, abbreviated as U-Boat in English.

## **WOLF PACKS**

A gathering of submarines to target and attack an enemy ship.

# EXPLORE

the Museum of Science and Industry  
and the *U-505 Submarine* exhibit



<b>THE NEW <i>U-505 SUBMARINE</i> EXHIBIT</b>	<b>11</b>
<b>U-505 EXHIBIT MAP</b>	<b>15</b>
<b>FIELD TRIP TIPS</b>	<b>17</b>
<b>USING THE "SURVEILLANCE RECORD"</b>	<b>18</b>
<b>BACK IN THE CLASSROOM</b>	<b>19</b>
<b>SURVEILLANCE RECORD (EXHIBIT SELF-GUIDE)</b>	<b>22</b>

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## The New **U-505 EXPERIENCE**

More than 15,000 people gathered to watch the U-505 come ashore to the Museum of Science and Industry on the evening of September 3, 1954. Since it was installed as an exhibit, an estimated 24 million people have toured the inside of the submarine, learning about what life was like on a sub and how the wartime capture took place. In April 2004, the Museum took the unprecedented step of relocating the 700-ton U-505, that had been exposed to the elements for 50 years, to an underground exhibit hall so that it could be preserved for generations to come.

The new 35,000 square-foot, underground exhibit is the result of the largest exhibit conservation effort in the Museum's history and required more than seven years of planning, restoration, relocation and construction. The vessel is now part of a bold, contemporary exhibit that pays tribute to the brave men and women of both World Wars. It also gives future generations a hands-on opportunity to experience what is considered a critical moment in world history, with an understanding that goes beyond standard textbook instruction.

Students are immersed in the dramatic story of the search for, and the heroic capture of, the U-505. Before entering the U-boat to experience it firsthand, students learn about America's entry into WWII, the gripping events surrounding the Battle for the Atlantic and the daring plan to seize a German war vessel on the high seas. This tale is told through archival photos, newspapers and radio transmissions; re-enactments of key events; special effects; a series of murals; and audio narratives from veterans who made the capture.

Students can examine an Enigma machine captured from the U-505, a T5 acoustic torpedo, one of the two original periscopes unearthed at San Diego's Artic Submarine Laboratory in 2002 and nearly 200 additional artifacts. Interactive challenges that include dive training, buoyancy exercises and navigation by periscope will explain a sub's operation and technology.

With the onboard tour (optional for an additional fee), students can take a journey back in time, to see just how the crew of a submarine lived and worked on the high seas during World War II. Led by an exhibit interpreter, students are able to view the new, authentically recreated crewmen bunks and

the galley, wedged in among the intricate mechanical workings of the sub. German commands barked out by the sub's captain, jazz records playing in the crew's quarters and authentic lighting help to illustrate the rich history of this remarkable vessel.

The U-505 is not only an authentic piece of naval technology that your students can see and touch, but it is also a rare fragment of world history. It is an example of what the Museum does best – present unforgettable experiences that are one-of-a-kind.

## INTERACTIVE FEATURES

Surrounding the sub (on the lower floor of the exhibit), several interactive units explain how a submarine like the U-505 navigated the seas and engaged the enemy.

### DIVE TRAINER

In a recreation of the sub's control room, students can challenge one another to maneuver the sub through a controlled dive by adjusting the bow and stern dive planes, while battling against dangerous depth charges that could force the vessel to surface.

### LIFE ON BOARD

Students will be exposed to the sights, sounds and surroundings of the sub's close quarters during wartime. They can try to maneuver in a recreation of the sub's tiny galley, swing through the hatch and hear the background noises that represented military life on board a submarine on patrol in 1944.

### BUOYANCY TANK CHALLENGE

Here, students will learn about buoyancy – the principle by which a submarine is able to adjust its depth. In an 11-foot tall tank of water, visitors can participate in a timed challenge to affect the buoyancy of a model of the sub by adding water or air to its ballast tanks.

### **PERISCOPE INTERACTIVE**

A recreated portion of the sub's conning tower features both an attack periscope and a navigational periscope. Through the use of these periscopes, students will attempt to launch a torpedo, as well as determine the vessel's bearings and decide whether it is safe to surface.

### **ENIGMA MACHINES**

Students will be able to view the Enigma machine, used by the Germans to code and decode messages during World War II. Breaking this code was a critical factor in defeating the U-boats. Students will also be able to send Enigma encoded messages themselves! Participants in the exhibit can send messages to each other via two computer stations or send coded messages to friends and family elsewhere via email.

### **STORYTELLING KIOSK**

You and your students can share your thoughts on WWII, conflict, war, inspiration and life on a sub by leaving a short video message at the Storytelling Kiosk. Tell us who inspires you or how you have experienced conflict in your lives. Then explore other visitor's thoughts on these topics by watching previously made videos.

## **EXHIBIT AUDIO/VISUAL FEATURES**

Below is a brief overview of many of the videos in the exhibit that help tell the story of the U-505.

### **THE WORLD AT WAR**

This first video takes us through the beginnings of World War II, Hitler's rise to power, the formation of the Axis powers and the attack on Pearl Harbor on December 7th 1941.

### **THE BATTLE OF THE ATLANTIC**

In 1942, the American Navy struggles to get their men and supplies across to Europe. German U-boats – unseen predators from beneath the waves – reek havoc on the Atlantic Ocean by sinking hundreds of Allied ships.

### **A PLAN OF ACTION**

Early in 1943, the Allied forces devise a plan to defeat the U-boats or risk losing the war.

### **WAVES OF INTELLIGENCE**

We see inside a secret tracking room where, on May 14th 1944, the WAVES (**W**omen **A**cepted for **V**olunteer **E**mergency **S**ervice) intercept a U-boat radio transmission.

### **BOARDERS AWAY**

In both a combination of actual and recreated footage we observe the immediate events that lead to the capture of the U-505 on June 4th 1944.

### **THE VOYAGE TO BERMUDA**

The brave American men board the stricken submarine in an attempt to gather classified materials and save the submarine from sinking. They are successful. A line is attached from a carrier ship to the bow of the submarine and it is towed over 2,500 miles to Bermuda completely undetected.

### **POWS OF THE U-505**

Through German films and archival footage, we see the harsh realities of life onboard the U-boat from the German perspective.

### **GALLERY/LANGE THEATRE**

Twenty years after the war, from inside the U-505 at the Museum of Science & Industry, Captain Gallery – now Admiral Gallery, and the skipper of the U-505, retired Captain Harald Lange, meet once again and discuss that eventful morning of June 4th 1944.

### **FINAL JOURNEY**

This section shows a time-lapse video of the U-505's final move in April 2005 from its former location outside the Museum to its new facility underground below the Museum's front lawn.



EXPLORE

# U-505 EXHIBIT MAP

BOARDING PARTY

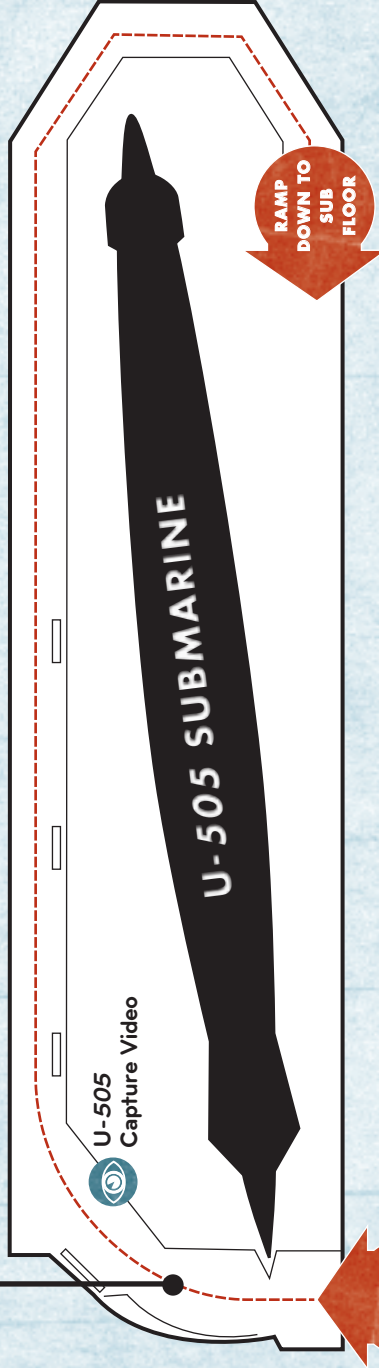


Exhibit Artifact  
see U-505 Website



Audio/Visual Feature  
pages 13-14



Elevator

2  
SUB VIEWING FLOOR

TO SUB VIEWING FLOOR

BOARDERS AWAY

WAVES OF INTELLIGENCE

"LOOSE LIPS SINK SHIPS" POSTER

PLAN OF ACTION

BATTLE OF THE ATLANTIC

WORLD AT WAR

EXHIBIT ENTRANCE AND EXIT

1  
MAIN MUSEUM FLOOR



STORYTELLING KIOSK

Gallery/Lange Theater

BUOYANCY

LIFE ON BOARD

DIVE TRAINER

ENIGMA MACHINE

Piston

20mm Deck Gun

Periscope

Torpedoes

U-505 SUBMARINE

Voyage to Bermuda

Final Journey

PERISCOPE INTERACTIVE

TOUR ENTRANCE (PRE-PAID IN ADVANCE)

RAMP DOWN TO SUB FLOOR

ELEVATORS TO EXHIBIT EXIT ON MAIN MUSEUM FLOOR

- Interactive Feature pages 12-13
- Exhibit Artifact see U-505 Website
- Audio/Visual Feature pages 13-14
- Restrooms

3

SUB FLOOR





# FIELD TRIP TIPS

## BEFORE ARRIVING

- It is advised that teachers visit the exhibit before arriving with their class. *Remember that with an Illinois Teacher ID, teachers receive complimentary admission to the Museum. The U-505 exhibit is included with general admission. (The optional on-board tour of the U-505 Submarine is an additional fee.)*
- Have the class assemble “Surveillance Records” before arriving.
- It can be a long walk from the Group Center to the entrance of the exhibit. Plan on at least a 10-minute walk for the entire class.
- Plan to spend about one hour in the *U-505 Submarine* exhibit, add an additional half hour or hour if you schedule a sub tour.
- The exhibit is free, however sub tours are \$4 per person for school groups. To reserve your sub tour, please call (773) 684-1414 at least two weeks before your visit.
- Sub tours are conducted in groups of 12–14. Plan in advance as to how you will divide your group. Keep in mind that if you come with a large group, some students may have to wait outside the sub while others are allowed inside for the tour.
- If you schedule a sub tour, plan to arrive at the Museum *at least 30 minutes* before your first tour is scheduled.

## TOURING THE EXHIBIT

- You may want to begin the exhibit as a whole group or in your individual chaperoned groups. The exhibit begins with several videos chronicling WWII and the Battle of the Atlantic.
- After the introductory galleries, there is a close encounter with the sub. It is at this point that you may enter the sub for your tour. If you choose not to participate in a sub tour, just bypass the entrance and go directly to the ground floor to complete the Surveillance Record.
- The sub tour is an exciting experience that simulates what it would be like to be on the sub during its capture. It is a confined space with occasional loud noises and moments of darkness. Please take this into consideration if you have young students or those who might be uncomfortable aboard the ship.
- Once you’ve walked around the sub or completed your tour inside, you will be deposited on the ground floor. At this point, there are several interactives for students to explore on their own. This is also the best time for students to work on the Surveillance Record.
- There are bathrooms and a water fountain available at the end of the exhibit on the ground floor.



# Using the "SURVEILLANCE RECORD"

By participating in this self-guide, your students will learn the U-505 story, while also gaining techniques on how to examine objects and make good use of Museum resources.

As a result, students will be better able to use the following skills:

#### SCIENCE

Observation, recording, estimation and measurement.

#### LANGUAGE

Writing, reading, descriptive and thematic.

#### HISTORY

Descriptive, compare/contrast, analytical and making inferences.

**TEACHERS:** The enclosed "Surveillance Record" is a self-guide for your students to use within the *U-505 Submarine* exhibit. This guide will not detail the entire exhibit, as there are many visual, audio and interactive components to occupy your students' time. It will, however, focus students on the history of the U-505 and the personal stories of the sailors of World War II.

## HOW TO PREPARE THE SURVEILLANCE RECORDS

Please prepare enough copies of the two-page Surveillance Record for all of your students.

- Explain to students that they will be touring the exhibit during their field trip and they will be responsible for completing their Surveillance Record. They will be taking on the role of a historian by looking closely at and studying a historic artifact. Discuss with students what an artifact is, "*any object that was made by humans that provides information about human behavior in the past.*"
- Artifacts can come in many different forms. Review some of the U-505 artifacts on the Museum's U-505 website, [www.msichicago.org/exhibit/U505/exhibit/b\\_artifacts/index.html](http://www.msichicago.org/exhibit/U505/exhibit/b_artifacts/index.html)
- In the classroom have students cut the four panels out of both pages. Then put the pages in order (each panel has a page number in the upper right hand corner). Then staple the pages together at the top as indicated on the front page.
- Allow students to review the directions and questions before arriving.
- Collect booklets and return them to students once they've arrived at the *U-505 Submarine* exhibit.
- Teacher's Note: You may want to have a few blank copies of the Surveillance Record on hand during your field trip for students who finish early or want to do more than one.

## AT THE MUSEUM

Encourage students to take their time passing through the exhibit. Most of the artifact cases are at the end of the exhibit (ground floor).

As a class, review the artifact map, pointing out where most of them can be found. Because many students will be tempted to study the first artifact they find, you may want to pre-assign cases or different artifacts for groups of students to review.

## BACK IN THE CLASSROOM

There are multiple ways to culminate this activity in the classroom after your visit. The following activities can be used in a variety of subject areas.

### HISTORY

#### **SUGGESTED ACTIVITY: CREATE YOUR OWN *U-505 SUBMARINE* EXHIBIT**

Students present the artifacts they studied at the Museum and explain their findings to the class. By examining all of the artifacts recorded, students discuss the various categories into which they can be placed (e.g. German artifacts, American artifacts, daily life, military, postwar history, technology, etc.) Students then select a few categories they would like to include in their own *U-505 Submarine* exhibit. They should decide in what order the categories should go and what section the visitors should tour first, middle and last. Afterwards, place the artifacts into the appropriate sections. This activity could be conducted on paper or could be recreated on a smaller scale by making replicas of the artifacts.

What does your classroom's exhibit say about WWII and the capture of the *U-505*? How is your exhibit different than the one at the Museum of Science and Industry? What story does it tell? Have your class present their exhibit to other students or to classrooms that did not attend the field trip to the Museum.

*Additional activities:*

- Compare and contrast the importance of each artifact to U-505 operations.
- Present a history of this artifact – how was it invented, used and changed over time.
- Acting as a WWII correspondent, write a newspaper article discussing the importance of this artifact to the war effort.

**SCIENCE****SUGGESTED ACTIVITY: HOW HAS THIS TECHNOLOGY ADVANCED?**

Research how this artifact has changed since 1944. How was it used during WWII? How did this technology influence the outcome of the war? Do we still use things like this today? If not, what has replaced it? Present and discuss the findings to the class.

*Additional activities:*

- Research the material from which the artifact is made. How would it be different if another material was used? (e.g., wood, ceramics, cotton or metal)
- Present and record everyone's findings. Graph or analyze the findings.
  - Which artifacts appeared the most?
  - Which were found to be the most interesting?
  - How many had logos?
  - How many artifacts were German? American?
- Redesign the artifact so that it is more effective for use today.

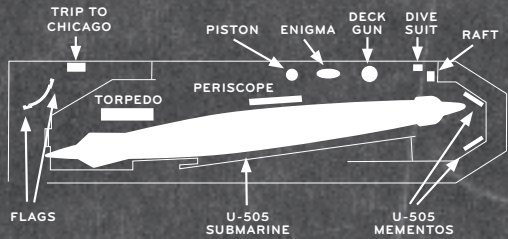
**LANGUAGE ARTS****SUGGESTED ACTIVITY: LETTER WRITING**

Acting as a WWII soldier or a member of WAVES, write a letter home telling your family about your job, your living quarters, your friends, etc. Explain to your family the importance of the object you focused on from the exhibit. How does it make your life or job easier or more enjoyable? Why is it important to you?

*Additional activities:*

- Tell the story of the artifact you have chosen. Where did it come from? What is its purpose? How did it get to the U-505? How did it get to the Museum of Science and Industry?
- Compare and contrast the collected artifacts by debating their importance to the crewmen.
- Based on the artifacts you saw in the exhibit, what would you bring with you if you were a submarine crewman?

# U-505 SURVEILLANCE RECORD



**TRAINEE NAME:** \_\_\_\_\_

Welcome to your U-505 Surveillance Record. Take your time going through the exhibit. Your Record begins once you encounter the U-505 submarine.

What three words would you use to describe the sub's size to someone who has never seen it?

Now that you've seen the sub, find another historical artifact in the exhibit that interests you.

## QUESTION 2

How would you describe this artifact to someone who has never seen it before?

## GUIDING QUESTION

What artifact have you chosen and why do you find it interesting?

## QUESTION 1

Draw or sketch your artifact.

## QUESTION 3

Estimate its measurements. Is it big or small? Wide or narrow? Height? Weight? (Use the simple tool on the side of this page to guide you)

**QUESTION 4**

Look for any symbols, signs or logos on your artifact. Why are these important? What do you think they mean?

**QUESTION 5**

Where is the artifact from and what was it used for? Do we use things like this today? If yes, how? If no, then what has replaced it?

**QUESTION 6**

Can you figure out who would have used this artifact? Who were they and what do you know about them?

**CONCLUSION**

Do you find this artifact more or less interesting now that you have looked at it more closely?

Back in the classroom: Imagine that a group of educators did not want students to view this artifact. These educators said that there was nothing to learn from looking at it. Make an argument for what there is to learn from studying this artifact.

# COMMUNICATE

information and ideas to your students  
through the following lessons

You may choose to do some of these lessons before or after your U-505 field trip.



## HOW TO...

FLOAT IN WATER	25
MAKE FRESH WATER	27
TELL YOUR STORY	29
KEEP SECRETS	33
RESOLVE CONFLICT	37
ADDITIONAL RESOURCES	41



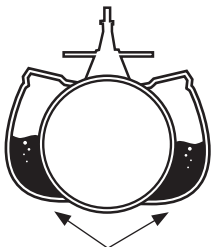


# How to FLOAT IN THE WATER

## STANDARDS: 11A, 13B

### U-505

This cross section demonstrates how the hull of the U-505 would fill with water during its submersion



Ballast tanks would fill with water during submersion

### THEN AND NOW

Cornelius van Drebel, a Dutch inventor, is often credited with building the first submarine. His vessel was made of a wood frame wrapped in leather and was tested in England between 1620–24.

The U-505, built in 1941, could descend to a maximum depth of 600 feet.

The Alvin submersible, operated by Woods Hole Oceanographic Institutions, was built in 1964. It can dive as much as 13,124 feet!

Today scientists have developed prototype subs that “fly” through water like an airplane flies through the air.

<http://www.deepflight.com/subs/df1.htm>

### STUDENTS WILL BE BETTER ABLE TO

- Understand and describe the principal of buoyancy and density.

### MATERIALS

1 one- or two-liter plastic soda bottle with a cap (or enough bottles for everyone in the class.)

1 eye dropper (or enough for everyone in the class)

**\*Note:** If your dropper is top heavy it will not float vertically. Try a glass dropper.

Tall open glass or jar

U-505 shell image

DIVE IN!

## DISCUSSION

- How do you float in water?
- How does a boat float on water?

Archimedes’ principle is the law of buoyancy. It states that “any body partially or completely submerged in a fluid is buoyed up by a force equal to the weight of the fluid displaced by the body.” Density is defined as weight per volume. If the density of an object exceeds the density of water, the object will sink.

<http://www.onr.navy.mil/focus/blowballast/sub/work2.htm>

- How do you think a submarine dives under water?

## PROCEDURE

1. To calibrate the eye dropper, fill a tall glass with water. Fill the eye dropper about half full of water from the glass. Test the eye dropper in the glass of water to see if it floats straight up. Add or subtract water from the eye dropper until the top of it barely breaks the surface of the water.\* (See image on page 26.)
2. Now fill the soda bottle with cold water almost to the top. Let the container stand a few minutes to remove any air bubbles from the water.
3. Transfer the eye dropper to the bottle being careful not to lose any water.

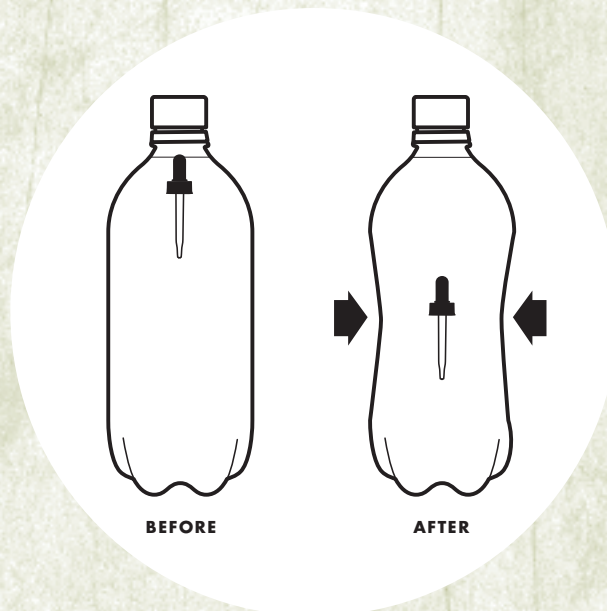
CONT.

**EXTENSION:**

Is it easier to float in salt water or fresh water? Fill a clear glass half full with tap water and place a golf ball in the water. What happens? Now add a cup (or more) of coarse salt into the water and stir until the golf ball floats. Why is it easier for the ball to float in the salty water? What does that tell you about the density of the fresh water versus the salt water?

Don't forget to check out the Buoyancy Challenge in the *U-505 Submarine* exhibit!

4. Screw the cap on tightly.
5. To make the diver dive, squeeze the sides of the plastic container.
6. Ask students to hypothesize what is happening. Answer: The eye dropper sinks because the compression of the bottle squeezes the air bubble inside the diver into a smaller space. The decrease in the size of the air bubble in the dropper is noticeable. Water is not compressible. Hence, the bubble displaces less water, and the diver sinks. When the student lets go of the bottle, the air expands and pushes the extra water out of the diver. The diver becomes more buoyant and rises.
7. Note: After a few days your diver may sink due to pressure changes in the bottle. Unscrew the cap. If your diver does not rise, you must refloat it, using the directions above.
8. At the Museum test out the Buoyancy Challenge in the *U-505 Submarine* exhibit!

**CONCLUSION****How does your body float in water?**



# How to MAKE FRESH WATER

## STANDARDS

11A

### U-505

U-505 submarine crewmen had to make fresh water from salt water for eating, drinking and cooling the diesel engines.

The U-505 was equipped with a machine that would perform a similar procedure, but on a much faster and grander scale.

### THEN AND NOW

Just north of Chicago's Navy Pier is where our drinking water enters the city (some of it on its way to the suburbs). Extracted from several miles offshore, the water is brought to the filtration plant by a pipeline under the bed of Lake Michigan. The metropolitan water filtration plant processes nearly a billion gallons of water each day. It takes seven hours for the water to be processed, from the time it gets sucked into the intake cribs to the time it runs out of someone's hose or faucet in Chicagoland.

*"Jardine Water Filtration Plant," Chicago Architecture Info*  
<http://www.chicagoarchitecture.info>  
 © Artefaqs. All Rights Reserved.

### STUDENTS WILL BE BETTER ABLE TO

- Demonstrate the process of distilling fresh water.
- Investigate the process of current water filtration.

### MATERIALS

- |                      |                            |
|----------------------|----------------------------|
| 1 stove or hot plate | Salt                       |
| 1 tea kettle         | Pot holder                 |
| 1 metal spoon        | 1 clear drinking container |
| Water                |                            |

DIVE IN!

## DISCUSSION

- How do you get fresh water for drinking? (Sink tap, bottles, water fountain, etc.)
- What is the difference between salt water and fresh water?
- Why do you need fresh water?

## PROCEDURE

**TEACHER'S NOTE:** This activity involves hot materials and should be preformed by an adult or by older students in a lab environment.

1. Ask students: "How do you think the U-505 crewmen got fresh drinking water when they were surrounded by salt water?" "For what reason did they need fresh water?"
2. Explain to students that there is a way to make fresh water from salt water; you just need to remove the salt.
3. Fill the kettle with water.
4. Add at least 5 tablespoons of salt to the kettle.
5. Place the kettle on the hot plate or stove.

CONT.

**EXTENSION**

Research water distillers for your city.

6. Turn the stove to high and boil water until steam begins to escape from the spout.
7. Use the pot holder to hold the end of a cool metal spoon in front of the escaping steam.
8. Collect the water condensing on the metal by dripping it into the drinking container.
9. Collect about 1 inch of water in the glass and taste it.

**CONCLUSION**

**How does your town get its fresh drinking water?**





# How to TELL YOUR STORY

## STANDARDS

4A, 5A

### U-505

Oberfunkmaat Gottfried Fischer, the Signalman first class of the U-505, was most likely the writer of an anonymous diary that was picked up by the American Navy. Fischer was the only casualty of the capture on June 4, 1944.

See his diary at:  
[http://www.history.navy.mil/library/special/u505\\_personal\\_diary.htm](http://www.history.navy.mil/library/special/u505_personal_diary.htm)

### THEN AND NOW

It could often be months before a letter from a U-505 crewman got home to his family. Today submariners can use technology such as e-mail to talk with family. However this can only be done above water and there are strict guidelines to prevent confidential information from going out to the public.

### EXTENSION

Submit your oral histories to a local history museum or library. Submit stories of war veterans to the Library of Congress.

<http://www.loc.gov/vets/youth-resources.html>

### STUDENTS WILL BE BETTER ABLE TO

- Learn about history through primary sources.

### MATERIALS

Oral history of Wolfgang Schiller, U-505 crewman  
 Oral history guidelines

**DIVE IN!**

## DISCUSSION

- How do you tell your story? (Diaries, letters, art, Web blogs, etc.)
- How do you tell your story to future generations?
- What are some ways we learn about the past?

## PROCEDURE

1. Read oral history of U-505 crewman. [Teacher's Note: You may read all or some of the oral history of Wolfgang Schiller.]
2. Discuss: What are the key things we learned from this history?
3. List the questions from the passages read. Why are these questions useful (not yes or no answers, specific, etc.)?
4. Tell students they are going to conduct their own oral history of a friend or relative. They should start by picking someone who has experienced something significant or has interesting memories to share. Then they should think about what they want to know from him or her.
5. Ask the class: "In addition to some of the questions we heard in the oral history, what are some other questions we should ask someone talking about their memories?"
6. Provide students with oral history guidelines.
7. Have students share collected stories.
8. At the Museum tell your own story at the Storytelling Kiosk in the U-505 Submarine exhibit.

## CONCLUSION

**How would you tell your story?**

# ORAL HISTORY GUIDELINES

TRAINEE NAME: \_\_\_\_\_

1. Select a person who has experienced something significant or has interesting memories to share.
2. Set up a time and place to meet with your interview subject.
3. Write up a list of interview questions.
  - A. Create questions that require more than a “yes” or “no” answer. For example, instead of “Did you enjoy fighting in WWII?”, ask “What was life like during WWII?”
  - B. Start with general questions: “Tell me about a time you fought with a friend?”
  - C. Then ask more specific questions: “How did you solve that conflict?” or “How did the war affect your life when you got home?”
4. Be prompt and don’t forget your list of questions and notepad!
5. Remember that your list of questions is a guideline for you to follow. Sometimes the person being interviewed has a special story he or she would like to share. Sometimes these are funny stories, while others are very sad. Be prepared to welcome these unexpected stories.
6. Keep the session to 20–30 minutes so that both you and your subject don’t get tired.
7. Make sure you thank your subject and let him or her know you appreciate the stories shared.

## INTERVIEW QUESTIONS

# Wolfgang Schiller U-505 crewman ORAL HISTORY

Interviewed March 1, 1999 at the Museum of Science and Industry. This interview was conducted inside the U-505. Content has been edited for length.

## Could you tell me a little bit about what it was like to live in the torpedo room?

**WS:** Of course it was very narrow. You can't think of it as it is today – we're standing practically in an empty room. There, where we're standing was a torpedo! On the torpedo was our – our table – you could say where we ate. We sat with our bottom on the bunk and ate on this wooden plank that sat on the torpedo. As for the sleeping situation, I can say the following: the individual people who went on watch had rotation bunks. The bunks were never cold. They were always warm. One got out, and the next got in, because every four hours they had to be rotated. The people had to go on watch, and there were a limited number of bunks. The first people aboard the sub were lying somehow on a sack or in a hammock – for example the Smutje [cook] hung here mostly, in the middle, over the torpedo – because he didn't have a bunk either. They were the so-called free watchmen, the free-runners got no bunk. Although I got a special bunk, and that was this one over here. This bunk here wasn't taken enthusiastically by anyone, because you couldn't relax in it. You had to lie only on your back, you couldn't turn over, because of this thick pipe up there, you see. And naturally, that was a situation, too, that you could only lay on your back for a little while, mostly. And during rough seas, I always steadied myself on it [the pipe] with my knee. And one day, during really rough seas, I flew right out, along with the whole bunk, out of the mountings, and fell onto the back of the next guy.

## What did you do when you were off-duty? Did you read? Did you listen to music? Play cards?

**WS:** Free time can be expressed as follows: I'm a bookworm, still am today. Today I read English books, too. Back then, I also made the effort to read as much as I could. I had a great deal of success making myself comfortable in that fashion. To keep my nerves. And if we were able to have a card game, and that wasn't possible at all because of the watch shifts, we would have been pretty lucky. To add something about

music or entertainment – back then we had a record player on board, and the record player could play German records and songs for us. So we listened to a little music. I can't recall anymore whether we could receive radio music over the antenna. If so, at best American or Spanish, right in that area where we were. But now I can't say any longer.

## And reading, for example, was that only for fun, or was it also technical – for studying?

**WS:** As far as I can remember, we naturally had our homework to do. In terms of “refreshing our knowledge,” what we had learned at torpedo school. We knew to master our tasks practically on the submarine, in life. For the sub, it was important for each individual not only to fill his own position, but also others, to be able to help in case of difficulty. Everyone filled in for everyone else. It was a necessity. Also, if for example during whatever engagement someone went down, others had to be able to take over. So, we were very well-rounded in that respect, and that interested us as well, and we got the material right in our hand, so that we could act in the respective manner.

## The music – were they operas or-

**WS:** I can only remember “Lili Marlene” and such things – a light music was perhaps predominant. I hardly think that as young people we had much interest in operas and operettas, if you want to say it like that – an expression in German like “am Hut haben” [“have it on the hat”]. So we probably had more light music. Back then the pop songs were already getting big – 1942 – we had the chance once in a while to hear American or English records. Maybe you can remember “Lili Marlene” and such things. That was naturally a little soothing for the nerves for us, you could say.

## Tell me about when you dived for the first time.

**WS:** In one particular diving situation I happened to be standing in the central command room, and when the submarine submerged at a pretty acute angle, I could see



from the central command room into the bow torpedo room. It was as if I were looking down into a cellar where wine bottles are stored. [Laughs]

**What did it feel like? What was going through your mind?**

**WS:** Eh...it is a slight uneasy feeling, because you don't know how long a sub can stay at an incline. Since we were submerging using engine power, i.e., we were oscillating out at 60 meters, and at an order "Dive!" the first diving tank was flooded, and then it went off pretty fast, and this angle was very quickly reached. And for a young man, that was a little um...like on a roller coaster maybe. A very uneasy feeling.

**Can you describe what it was like, that feeling of being depth-charged (bombs that detonate in the water at a preset depth)? Can you relive that for us?**

**WS:** The experience with depth charges was of various kinds. Sometime they fell closer, sometime further away. I actually know that the depth charges during our capture hit us or sank nearby, that they caused our glass to shatter. Other depth charges were further away. And I know one other situation: we were at a depth of 40 to 60 meters. We were attacked during surfacing – when the radioman signaled the Commander, "The ship is turning around and is headed toward us again" – we had just gotten five depth charges. And then no more depth charges fell, but we always got more depth charges in a certain safety zone. At the time they weren't all set as deeply as we could submerge.

**People were talking about the U-505 – that it wasn't a lucky sub, that they had a lot of bad luck. Did you personally have such a feeling?**

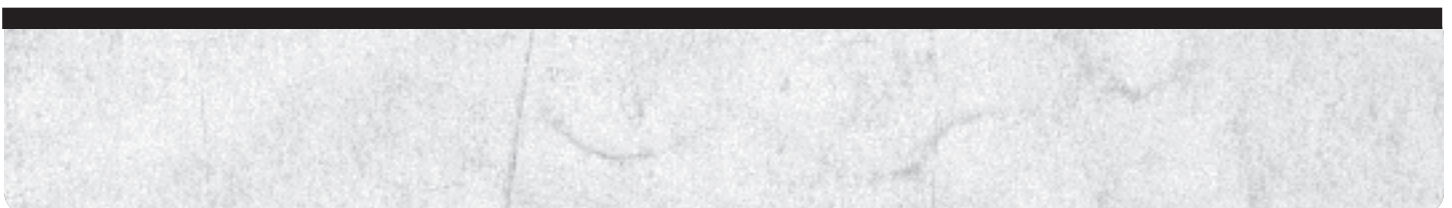
**WS:** About the sub I can only say the following: I lived through this bombing voyage, and after this bombing voyage nothing on the submarine worked any more. Every time we're ready to embark, we were about to submerge, mostly we came right back to the shipyard. When we set out, we came back again with oil damage or whatever other damages. So we made the attempt four or five times to get to the theater of operations, and for this reason the assumption naturally arose that the submarine was a bad-luck sub. But we were always lucky. Everyone saw that, you know, we're still alive!

**When the U-505 was captured, you told a story about being in the water with Hans Goebeler. Can you tell us about that?**

**WS:** Yes. When I was pretty lost, swimming alone in the sea, a destroyer came toward me. A sailor tossed me a line. But I was [fortunate] not to have caught the line, otherwise the line would have pulled me into the propeller, under the circumstances. So I swam further to the big boat, which many people already sat in. And as I neared the boat, I was asked if I was still in good shape and capable of swimming to someone else who was crying for help, and then I said, "If someone swims with me." Then – the voice went: "I'm coming with you," because with Hans Goebeler I had a very congenial relationship. We were good buddies. So then we swam over there, and the strap of my life preserver wasn't tightened in the excitement, and I only had shorts on and bare calves, and the strap was always snapping between my feet, and I couldn't figure out what this sensation was. And then I shouted to Hans Goebeler, "Is there a shark?" "Is there a shark behind me?" And he said: "No, no," that is "Nein," and I believed I was seeing in the sea, in the waves, through the sunshine, like gray shadows, and that's why I thought a shark is after me. And then we swam over to him, and when he told us he's OK, we should just come to him, we made him swim behind us! If he could still swim. And so this episode was over.

**Did you have a sponsor city?**

**WS:** Our sponsor town was Bad Weisse [Germany]. That's a little town, a town for...how can I put it, where today skiers and people go for relaxation. A very nice town with a lake and everything that goes with it, with beautiful hotels, and we were invited there. Right after the bombing voyage. I participated in this vacation, and then the Bavarians saw for the first time the "Navy on Skis." Of course for us it was an experience, and we were young people, and we were also able to pull a few things off in that town, so that the folks were always amused by us, right. And we – I also have the picture with me – we were invited by another town that was in the area, to a party, and there our submarine crew was photographed with the Party bigwigs. You know what a "ParteigröÙe" (Party bigwig) is?







# How to KEEP SECRETS

## STANDARDS

5A, 13B, 8A

### U-505

The U.S. Navy knew that if they were able to capture a German submarine it would provide them with some of the most useful and secretive information in the German Navy. The U-505 sub was more than a war vehicle; it was a treasure trove of intelligence information. With the capture of the U-505, the U.S. collected approximately 900 pounds of codebooks, publications and two of the elusive Enigma machines.

### THEN & NOW

People use codes and acronyms more and more in their daily lives, but do you know the difference between a code and an acronym?

**Codes:** Symbols or words that replace a whole word or phrase.

10-4: O.K.

411: Information

**Acronyms:** A word formed from the first letters of multiple words.

U.S.A.: *United States of America*

L.O.L.: *Laugh out loud*

### STUDENTS WILL BE BETTER ABLE TO

- Identify between codes and ciphers.
- Discuss the importance of codes during WWII and today.

### MATERIALS

Enigma Photo

Scissors

Password Decoding worksheet

Paper Fasteners

Decoding Messages worksheet

DIVE  
IN!

## DISCUSSION

- How do you keep secrets?
- What is a code?
- Do you ever write in code?
- Is a password a code? (Yes, like a code, a password is a means of keeping outsiders from getting to secretive information.)

## PROCEDURE

1. Distribute the Password Decoding worksheet and let students work individually.
2. Once everyone is finished, have students share some of the passwords they came up with for Question One. Did some passwords come up multiple times? Why did this happen?
3. Explain to students that a good alternative is to create passwords made up of unrelated single words that are easy to visualize and remember (PIZZABOOK, HANDCOLA).
4. Explain to students that another way to keep people from discovering secretive information is to use a cipher. Unlike a code, which switches a whole word or phrase with a different word or symbol (e.g., at becomes @), ciphers are a means of switching one symbol for another. For example, the letter A becomes T, or A become 4, or A becomes >.

CONT.

**WAVES**

During WWII, women were not allowed to fight on the war front, so women who wanted to help the war effort often joined the military by performing secretarial services. WAVES was a female branch of the United States Navy. It stands for Women Accepted for Volunteer Emergency Service. Though most jobs were secretarial, a small number were involved helping the U.S. government to break enemy codes and decipher the Enigma messages.

**EXTENSION**

Discuss when to keep a secret and when to tell one.

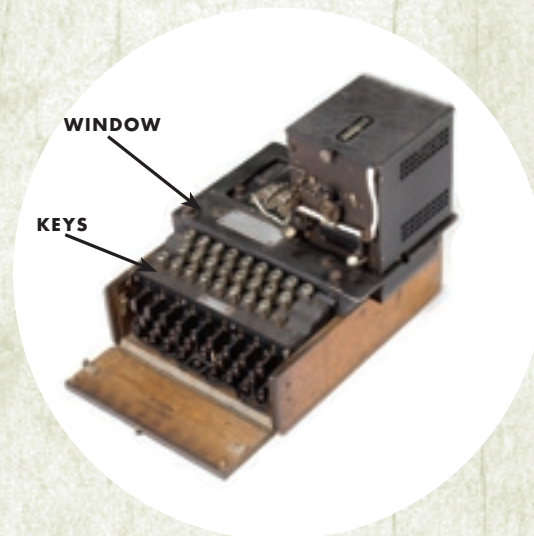
Have students make up their own codes and challenge the class to break them.

Don't forget to try out the Enigma interactive at the *U-505 Submarine* exhibit!

5. Write the following on the board (this is also the code on the “Deciphering Messages” worksheet):

15 2 2 6 3 15 25 13 6 6 25 21 10 6 17 25 13 6

6. Ask your students: “Can you decipher the message?” Probably not. “What if you knew the key was A=5?” Write the key A=5 on the board.
7. Still having trouble? Distribute the Deciphering Messages worksheet and put together your cipher wheel. Now can you figure out the message?
8. Answer: Loose Lips Sink Ships. On your Museum field trip you'll find this poster down the stairwell to WAVES.
9. Don't forget to tryout the Enigma interactive at the *U-505 Submarine* exhibit!

**CONCLUSION****How do you protect your secret information?****1 OF 2 ENIGMA MACHINES FOUND ABOARD U-505**

The German Enigma was a simple cipher machine that resembled a typewriter. Containing anywhere between 3–5 rotors, the resulting code was nearly impossible to break. Polish mathematicians first broke the Enigma code and shared their information with the British. As a result, British analysts deciphered thousands of intercepted messages at their code-breaking headquarters at Bletchley Park in England. This helped to shorten the war, perhaps by as much as two years.

# PASSWORD DECODING

TRAINEE NAME: \_\_\_\_\_

When it comes to choosing a password, many people select something that is easy to remember and a part of their everyday life. Passwords are often birth dates, family names or hobbies. But how secure are these passwords?

1. Read the following biographies. For each one, think about possible 4–10 letter passwords they might use for their e-mail, computers or credit cards.
  - A. Ms. Ana Lopez is a fifth grade teacher.
  - B. Steven Thompson is a high school baseball player.
  - C. Jerome loves math and has one sister, Ashleigh. His two dogs are Tiger and Jasper.
2. Share your suggestions with the people around you. Did anyone come up with some of the same passwords you did? Write down the ones that showed up multiple times.
3. What makes a password difficult to guess? Explain the qualities that make a password unbreakable.

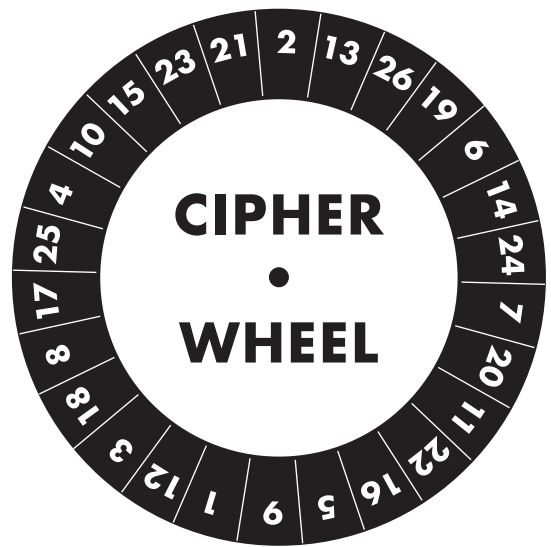
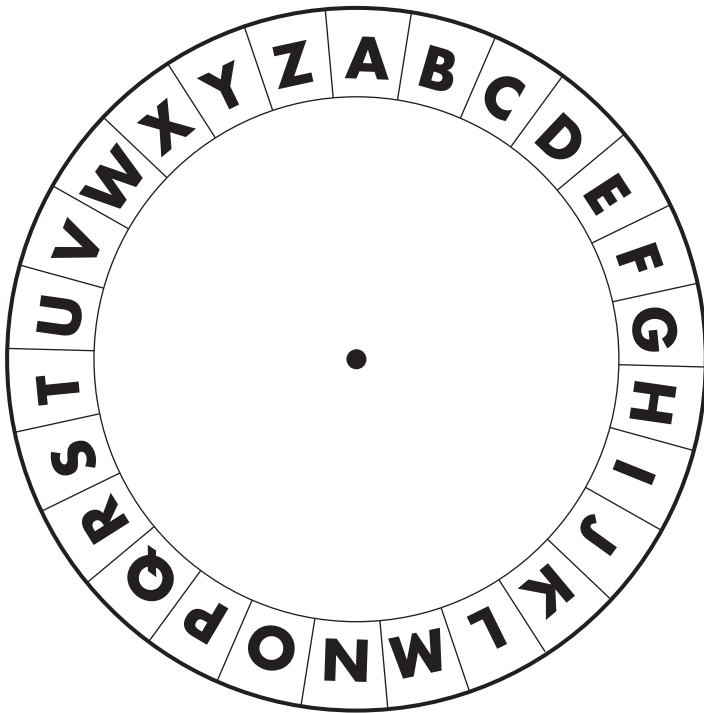
For what reasons do you use passwords? Are any of your passwords easy to guess? Think of some new passwords that are easy to remember, but hard to guess.

# CIPHER WHEEL

TRAINEE NAME: \_\_\_\_\_

## DIRECTIONS

1. Cut out both wheels
2. Place the small wheel (numbers) on top of the larger wheel (letters)
3. Use a paper fastener to connect the two wheels through the center so that one turns on the other. Make sure to line up the centers of both wheels exactly or your letters and numbers will be off.



## TO USE

Turn the wheel so that "A" is above the key number (in this case 5.) All the other letters now have their own numbers. By keeping

"A" and "5" lined up and without moving the wheel, you can now decipher the rest of the message.

**5**  
**A**

KEY

15	2	2	6	3

15	25	13	6

6	25	21	10

6	17	25	13	6

LATER

With a friend decide what number "A" will be and continue to write new secret messages.



# How to RESOLVE CONFLICT

## STANDARDS

16A, 16B

### U-505

The U-505 sparked conflict on the Atlantic by seeking and destroying Allied Merchant Ships. In the beginning of the war prior to mid-1943, German submarines successfully hunted Allied ships. It was not until American Task Force Groups were formed that the hunters became the hunted.

### THEN AND NOW

The United Nations (UN) was created on January 1, 1942 when 26 countries formally banded together. It was conceived as an organization of "peace-loving" nations, who were joining forces to prevent future aggression and for other humanitarian purposes.

What is the role of the UN today? [www.un.org](http://www.un.org)

### EXTENSION

Teachers can write classroom-specific scenarios. If your students are having difficulty dealing with specific kinds of conflict in the classroom, write your own scenario that the class can discuss and debate.

### STUDENTS WILL BE BETTER ABLE TO

- Debate ethical questions using their critical thinking and persuasive speaking skills.
- Reflect upon their own experiences and choices when confronting conflict

### MATERIALS

*What would you do?* Handout

DIVE IN!

## DISCUSSION

- How do you define conflict?
- How do you experience conflict in your life? (On the playground, with siblings, etc.)
- What are some ways the U-505 submarine crewmen could have experienced conflict? (Conflicts with other crewmen, conflict with politics, conflict with Allied powers.)

## PROCEDURE

1. Ask students to give examples of when they had to make difficult decisions. What impact did their decisions have?
2. Divide the class into groups of four and ask them to each choose a role (mediator, recorder, timekeeper and reporter.)
3. Give students 15 minutes to read, discuss and record their decision-making process, final decision and the explanation for it.
4. Have each group present its findings and let the class debate their conclusions before moving on to the next group.
5. Read aloud to the class what really happened. (see page 35)

## CONCLUSION

**How do you deal with conflict?**

CONT.

### WHAT REALLY HAPPENED

Josef Hauser was the Chief Engineer for the U-505. Shortly after the attack began on June 4, 1944, both the Captain and First Watch Officer were critically injured and Hauser was left in command. He was the only man left in the boat who could set the demolition charges. Instead he chose to leave as soon as the boat reached the surface, claiming later he did so because he believed the boat was going to sink at any moment. This was a poor decision both for the morale of the crew he left behind in the boat and for the safety of the top-secret materials. Some believe Hauser would have had plenty of time to set the charges and leave the boat before it sunk. If he had done this, it may have caused the U-505 to sink shortly before the Americans were able to reach the sub and have prevented the capture of his boat and the top-secret materials that helped the Allies win the war.

# WHAT WOULD YOU DO?

TRAINEE NAME: \_\_\_\_\_

## DIRECTIONS

1. Select Job Assignments
2. Read the Situation Report
3. As a group, discuss and record what you would do and why.
4. Share and defend your choice with the class

## JOB ASSIGNMENTS

### Mediator:

Starts conversation and keeps discussion on topic. If arguments arise, it is the mediator's job to help solve them.

### Timekeeper:

Watches the clock and makes sure the group knows how much time they have left and when to wrap things up.

### Recorder:

Keeps notes during the discussion and shares them with the spokesperson.

### Spokesperson:

Using the notes from the recorder, the reporter shares the group's findings with the class. However it is everyone's job to defend the group's conclusions.

## NOTES

# WHAT WOULD YOU DO?

## DIRECTIONS

1. Select Job Assignments
2. Read the Situation Report
3. As a group, discuss and record what you would do and why.
4. Share and defend your choice with the class

## SITUATION REPORT

You are the Chief Engineer of the German submarine U-505. You hold many key responsibilities for running the sub. You are also third in command. Only the First Watch Officer and Captain have a higher rank.

It is the morning of June 4, 1944 and your submarine is on its way home after a long underwater mission. Suddenly you are surprised by that familiar and terrifying sound of depth-charge bombs exploding in the water surrounding your sub. You are being attacked! The sub has now gone black, with the lights going out, and begins to shake over and over. The Captain has ordered the sub to return to the surface and for all men to abandon the badly damaged boat. In order to ensure that the enemy does not reach the top-secret information aboard the sub, it must be sunk.

As the Chief Engineer, it is your responsibility to sink the sub and be the last to leave the boat. You must carefully set the booby-traps and demolition charges to go off after you exit the sub, but before the Americans can reach it. Unfortunately, setting the charges is often extremely dangerous and the boat already appears to be sinking quickly.

### WHAT WOULD YOU DO?

**DO YOU FOLLOW ORDERS AND RISK YOUR LIFE BY SETTING THE CHARGES AND BEING THE LAST TO LEAVE THE SINKING SUB?**

or

**DO YOU GET OUT OF THE SINKING SUBMARINE AS SOON AS POSSIBLE?**





# ADDITIONAL RESOURCES

## BOOKS (Most available through Amazon.com)

*Hunt and Kill: U505 and the U-boat War in the Atlantic* by Theodore P. Savas (Adult). Available at [www.msichicago.org](http://www.msichicago.org)

*Steel Boats, Iron Hearts* by Hans Goebeler (Adult). Available at [www.msichicago.org](http://www.msichicago.org)

*Admiral Dan Gallery: The Life and Wit of a Navy Original* by Herbert Gilliland, Daniel Gallery, Robert Shenk (Adult).

*Life on a Submarine* by Gregory Payan (Ages 9–12).

*A World War II Submarine* by Richard Humble and Mark Bergin (Ages 9–12).

*Submarines and Underwater Exploration* by Bruce Lafontaine (Ages 9–12).

*The Good Fight: How World War II Was Won* by Steven Ambrose (Young Adult).

*Remember World War II: Kids Who Survived to Tell Their Stories* by Dorinda Makanaonalaï Nicholson (Ages 9–12).

*World War II (Letter from the Home Front)* by Virginia Schomp (Ages 9–12).

*Left for Dead* by Peter Nelson (Young Adult).

*Top Secret: A Handbook of Codes, Ciphers, and Secret Writing* by Paul B. Janeczko and Jenna LaReau (Ages 9–12).

## WEBSITES

**U-505 Submarine (Museum of Science and Industry)**  
[www.msichicago.org/exhibit/U505/index.html](http://www.msichicago.org/exhibit/U505/index.html)

**Uboat.net**  
[www.uboat.net](http://www.uboat.net)

**U-Boat War 1935 to 1945**  
[www.uboatwar.net](http://www.uboatwar.net)

**United States Navy**  
[www.navy.mil](http://www.navy.mil)

**Naval Historical Center**  
[www.history.navy.mil/](http://www.history.navy.mil/)

**BBC-History World War II (A comprehensive British site on WWII)**  
[www.bbc.co.uk/history/war/wwtwo](http://www.bbc.co.uk/history/war/wwtwo)

**National WWII Memorial**  
[www.wwiimemorial.com/](http://www.wwiimemorial.com/)

**NOVA Online: Submarines, Secrets and Spies**  
[www.pbs.org/wgbh/nova/subsecrets/](http://www.pbs.org/wgbh/nova/subsecrets/)

**Submarines: How They Work (Office of Naval Research)**  
[www.onr.navy.mil/focus/blowballast/sub/work2.htm](http://www.onr.navy.mil/focus/blowballast/sub/work2.htm)

**U-505 Personal Diary**  
[www.history.navy.mil/library/special/u505\\_personal\\_diary.htm](http://www.history.navy.mil/library/special/u505_personal_diary.htm)

**Veterans History Project (Library of Congress)**  
[www.loc.gov/vets/youth-resources.html](http://www.loc.gov/vets/youth-resources.html)

**Deep Flight**  
[www.deepflight.com/subs/df1.htm](http://www.deepflight.com/subs/df1.htm)

## SITES OF INTEREST

Cantigny First Division War Museum (in Wheaton, Illinois)

Wisconsin Maritime Museum (in Manitowoc, Wisconsin)

## VIDEOS ON DVD

“Battle of the Atlantic”

“Attack and Capture: The Story of U-boat 505”. Available at [www.msichicago.org](http://www.msichicago.org)