Mapping the *Monitor*

USS *Monitor*'s bulkhead.
Photo: NOAA, *Monitor* Collection

Grade Level

- 4-8

Timeframe

- 1 hour

Materials per Student/Group

- Site Plan Grid
- Artifact Worksheet
- Artifact Cards (optional)
- Student Activity Worksheet
- Pencil or colored pencils

Activity Summary

Students use a coordinate grid system to map the location of *Monitor* artifacts.

Learning Objectives

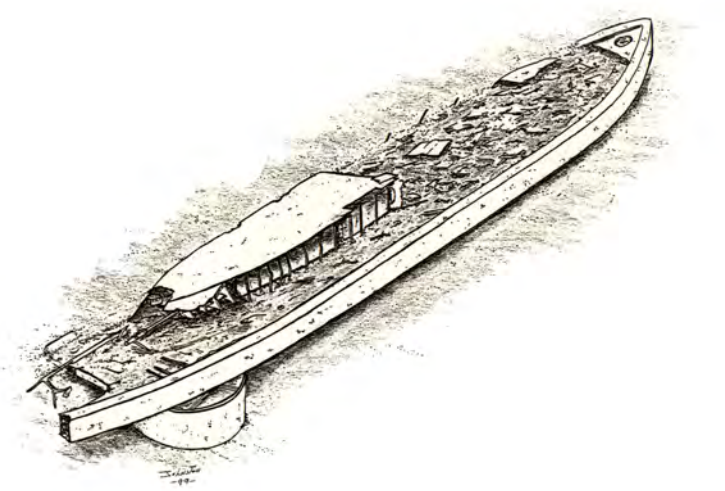
- Have an understanding of plotting coordinates on a grid system
- Use a coordinate grid system to simulate mapping artifacts
- Make observations and inferences about artifacts
- Understand why it is important to carefully map artifacts

Key Words

Artifact, grid, *in situ*, coordinates

National Standards

NG:1 and 3; NCSS:III and VIII; NCTE:1; CCSS.ELA.LIT.RST.7; NCTM:6-8:NO.D; NCTM:6-8:MS.A; NCTM:9-12:G.A and B; NGSS:HS-ETS1.B; OL.6 and 7



Wreck drawing of the USS *Monitor*.
Photo: NOAA, *Monitor* Collection

Background Information

During August 1973, a scientific team on board the Duke University Marine Laboratory research vessel *Eastward* conducted an oceanographic cruise off North Carolina with two objectives: first, a geological study of the Continental Shelf off Cape Hatteras and second, a search for the USS *Monitor*.

Initially, 22 possible targets for the *Monitor* were located. The team ruled out 21 of the targets as "not the *Monitor*." Then on August 27, the last day of the expedition, the team of scientists surveyed a target that was a shipwreck lying in about 230 feet of water, approximately 16 miles south-southeast of Cape Hatteras. After laboriously imaging the site, the scientists observed what they believed to be the *Monitor*'s uniquely shaped hull. However, as the expedition ended, there was just not enough evidence to identify conclusively the wreck as the *Monitor*.

Over the next seven months, the team intensively studied the visual evidence collected. The ironclad was difficult to identify in part because it was lying upside down with its turret, also upside down, separated from the hull and wedged under the port stern. The team decided that they needed more data, and in April 1974, they revisited the site and confirmed the shipwreck as that of the USS M*onitor*.

Since its discovery, many expeditions to the *Monitor* have yielded valuable information about the unique and historic ship. In the 1990s, Congress mandated that NOAA create a plan to recover iconic pieces of the *Monitor* so that generations to come could see and learn about the *Monitor*. After developing a comprehensive plan for the removal of artifacts, maritime archaeologists began the process of recovery. Between 1998 and 2002, recovery included several large artifacts, such as the propeller and 9 feet of shaft, steam engine, condenser, turret and hundreds of smaller artifacts. The Mariners' Museum in Newport News, Virginia, designated in 1987 as the

official repository for *Monitor* artifacts, continuously works to conserve and study each artifact in order to learn more about the ship and life in 1862.

Generally, maritime archaeologists prefer to leave shipwrecks *in situ* so as not to disturb the artifacts because each artifact and its location plays a unique role in telling the story of the ship and her crew. Some ships, such as the *Monitor*, are historically significant or offer insight into the past that cannot be obtained in other ways; therefore, removal of artifacts is acceptable. However, only professional maritime archaeologists should do the removal!

Before removing any artifacts from a shipwreck, maritime archaeologists carefully document each artifact and map its location. To map an artifact, maritime archaeologists use a coordinate grid system and employ measuring and scaling techniques to sketch a drawing of the shipwreck, noting the location of artifacts. Often maritime archaeologists have limited time under water to map a shipwreck due depth or other factors; therefore, they also take video and still photography of the wreck site to aid in their mapping techniques.

One might say that a maritime archaeologist is much like a detective who searches for evidence and analyzes clues to reach a conclusion. By careful documentation and observation, maritime archaeologists can better obtain the goal of understanding the past and connecting the past to real people and everyday life. With thousands of shipwrecks in our ocean, lakes, and rivers waiting to be discovered and studied, maritime archaeology is an exciting career providing many career opportunities based in science, technology, engineering, and mathematics (STEM)!

Activity Summary

Students will use a coordinate grid system to map artifacts found on the USS *Monitor*. They will understand the need for accurate mapping and documenting artifacts in order to tell a ship's complete story.

Learning Objectives

Students will

- Understanding the plotting of coordinates on graphs.
- Use a coordinate grid system to simulate locating and mapping artifacts on the USS *Monitor*.
- Make inferences about the artifacts and their location on the *Monitor*.
- Understand why it is important to carefully map artifacts.

Teacher Preparation and Implementation

There are two alternative ways to teach this lesson. Read both alternatives and prepare accordingly.

- Standard Lesson Plan: This activity can be completed individually or in small groups of two using only the Site Plan Grid and Artifact Worksheet.
    - For each student or pair, print copies of the USS *Monitor* Site Plan Grid (p. 133), Artifact Worksheet (p. 135), and Student Activity Worksheet (p. 131).
    - See step 5 in Procedures for implementation details.
- Alternative Lesson Plan: In this activity, students work in teams of 3-4 and use an enlarged Site Plan Grid and Artifacts Cards to map the artifacts.
    - For each group, print on cardstock the 14 large Artifact Cards (two per page) (pp. 137-142). Cut apart and laminate if desired.
    - For each group, print on cardstock the 14 smaller Artifact Cards (p. 136). Cut apart and laminate if desired.

Vocabulary

ARCHAEOLOGY — The study of human history and prehistory through the excavation of sites and the analysis of artifacts and other physical remains

ARTIFACT — An object made by a human being, typically an item of cultural or historical interest

BOW — The forward part of the hull of a ship or boat, the point that is usually most forward when the vessel is underway.

GRID SYSTEM — A basic system of reference lines for a region, consisting of straight lines intersecting at right angles; a network of horizontal and perpendicular lines uniformly spaced for locating points on a map or chart

IN SITU — Left in its original place, position

PORT — Left on a ship or boat when looking toward the bow

SCALE FACTOR — Ratio of a scaled figure/image to original figure/image

STARBOARD — Right on a ship or boat when looking toward the bow

STERN — The back or aft-most part of a ship or boat.

- For each group, print a Site Plan Grid (p. 133) increasing the size to approximately 3feet by 18 inches). Print on thick paper and laminate.
- Print the Student Activity Worksheet (p. 132) for each student or group.
- See step 6 in Procedures for implementation details.

Procedure

1. Introduce students to the USS *Monitor* and why the ship is historically significant.
3. Review or explain a coordinate grid and discuss scale.
4. Divide students into groups as appropriate.
5. Standard Lesson Plan
    - ◊ Give each student or pair of students a copy of the Site Plan Grid, Artifact Worksheet, and Standard Student Activity Worksheet.
    - ◊ Have students read the Background Information on the Student Activity Worksheet. Discuss why it is important to carefully document any removal of artifacts from a shipwreck or other cultural site.
    - ◊ Have the students label the bow, stern, port, and starboard of the shipwreck.
    - ◊ Explain that they will use a coordinate grid system to map the artifacts on the USS *Monitor* wreck site (Site Plan Grid). If needed, do one as an example.
    - ◊ Have the students read the Artifact Worksheet to learn about each artifact, and then use a pencil or marker to mark the location of each artifact on the Site Plan Grid and label the artifact.
    - ◊ In their science journals or on the back of the Site Plan Grid, have students describe where each artifact was located on the shipwreck (bow, stern, port, starboard). Have them explain if the location had any significance. For example: Why were shoes and buttons found in the turret? Perhaps sailors took their shoes and coats off in a hurry as they abandoned ship in case they were washed overboard and needed to swim.
6. Alternative Lesson Plan
    - ◊ Give each student an Alternative Student Activity Worksheet.
    - ◊ Give each group a large Site Plan Grid, 14 large Artifact Cards and 14 small Artifact Cards.
    - ◊ Have them locate on the Site Plan Grid the bow, stern, port, and starboard of the shipwreck.
    - ◊ Have the students read the background information on the Student Activity Worksheet and discuss the importance of documenting the removal of artifacts.
    - ◊ Have the students divide the large Artifact Cards and matching small Artifact Cards between the group.
    - ◊ Explain that they will work as a group using a coordinate grid system to map the artifacts recovered from the USS *Monitor* wreck site (Site Plan Grid). If needed, do one as an example.
    - ◊ Have the students read their large Artifact Cards to learn about the artifacts.
    - ◊ Once everyone is finished reading, have the students take turns summarizing and sharing the information about their artifacts.
    - ◊ Once they have shared the artifact's information, have them place the small artifact card on the *Monitor* Site Plan Grid in the appropriate place.
    - ◊ After everyone has had a turn to share and map their artifacts, have the students write in their science journals describing where each artifact was located on the shipwreck (bow, stern, port, starboard). Have them explain if the location had any significance. For example: Why were shoes and buttons found in the turret? Perhaps sailors took their shoes and coats off in a hurry in case they were washed overboard and needed to swim.

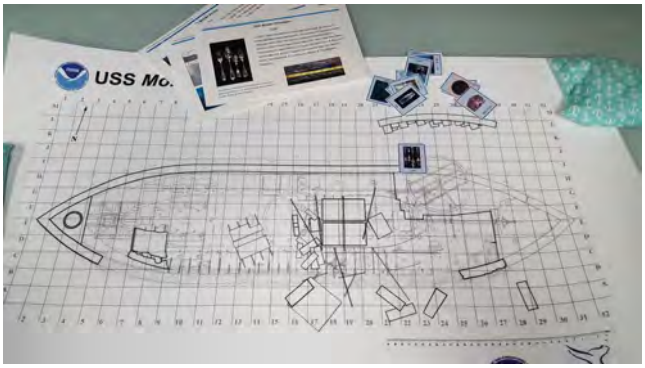
Resources

Websites

Monitor National Marine Sanctuary
Explore this legacy website to learn about the Civil War ironclad, USS *Monitor*, which changed naval warfare forever. Read about the men who made her, the men who commanded her, and the men that served and died on her.
https://monitor.noaa.gov/150th

NOAA Ocean Service Education
Learn about multibeam and side scan sonar, including a visualization on how sonar data is used to map the ocean.
https://oceanservice.noaa.gov/facts/sonar.html

NOAA Office of Coast Survey
Learn how NOAA uses sonar to map the ocean floor to create nautical charts.
https://www.nauticalcharts.noaa.gov/updates/what-does-the-age-of-the-survey-mean-for-nautical-charts/



Enlarged Site Plan Grid with large and small Artifact Cards. (Alternate Lesson Plan). Photo: NOAA

NOAA USS *Monitor* Legacy Website
Learn more about side scan sonar and the discovery of the USS *Monitor*.
https://monitor.noaa.gov/150th/

Harold "Doc" Edgerton
Read about the life of Doc Edgerton, MIT professor, who designed and developed various underwater instruments including side scan sonar.
http://edgerton-digital-collections.org/stories/features/fathoming-the-oceans-3-under-water-sonar-acoustics

Books

Morrison, Taylor. *The Coast Mappers*. Houghton Mifflin Books for Children, April 2004. ISBN: 10-0618254080.

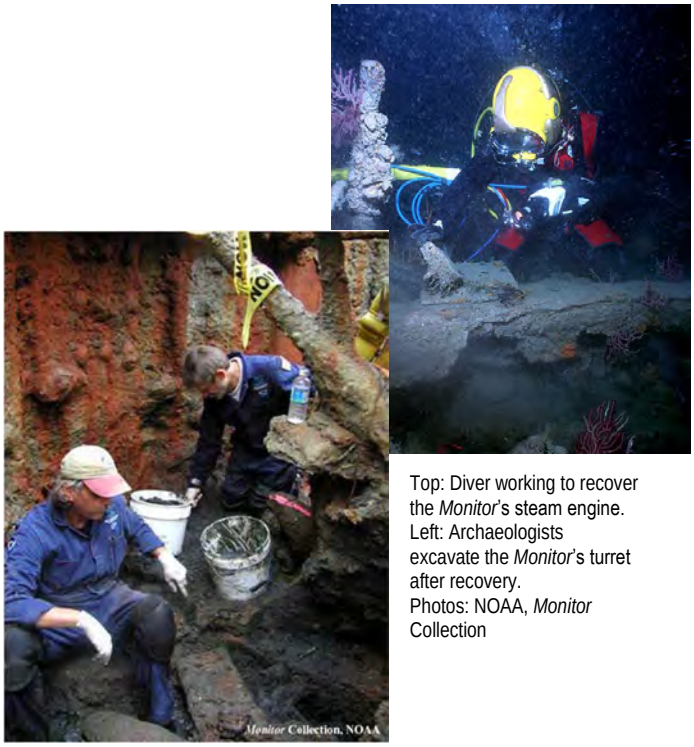
Oleksy, Walter G. *Mapping the Seas (Watts Library: Geography)*. Franklin Watts, March 2003. ISBN 13: 978-0531166345.
Smith, K.C. *Exploring for Shipwrecks (Watts Library).* Franklin Watts, 2000. ISBN 13: 978-0531164716.

Walker, Sally M. *Shipwreck Search: Discovery of the H. L. Hunley (On My Own Science)*. First Avenue Editions, November 30, 2006. ISBN 10: 0822564491.

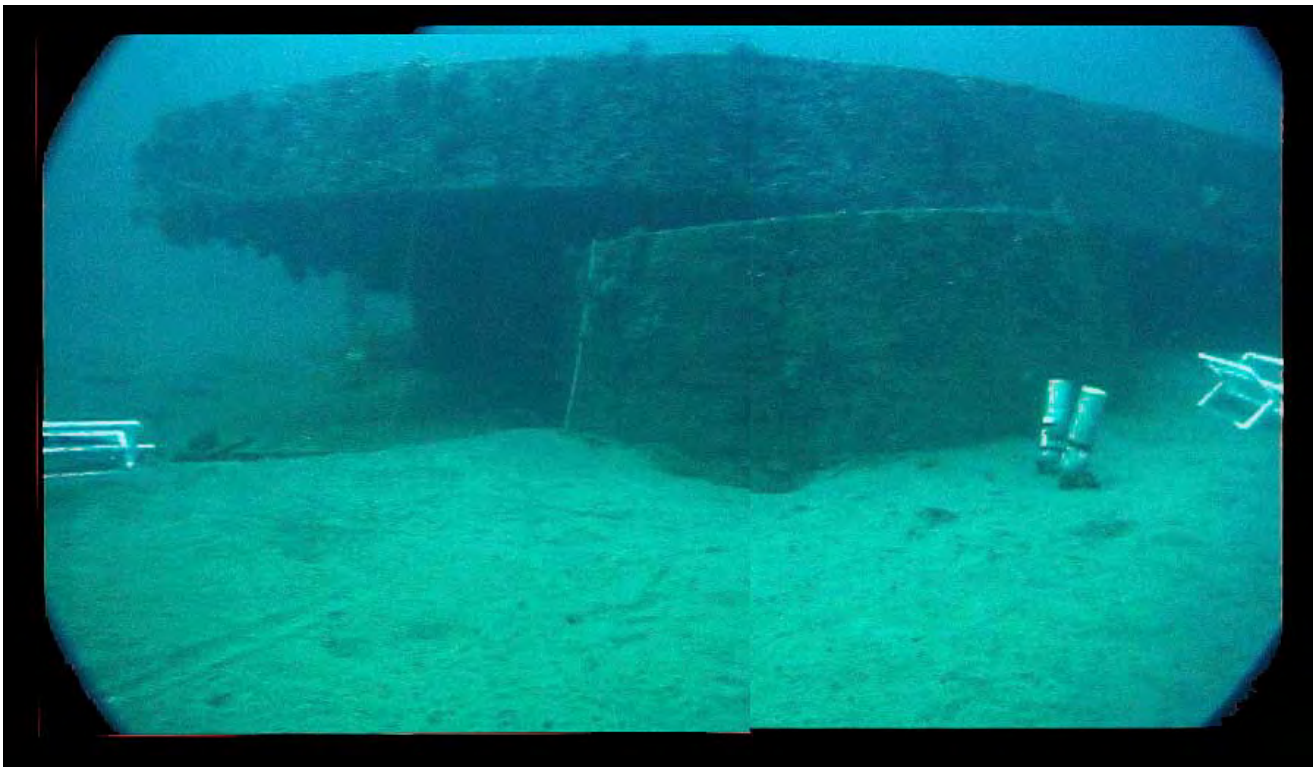
Wall, Julia. *Mapping Shipwrecks with Coordinate Planes (Real World Math: Level 5)*. Capston Press, 2011. ISBN 13: 978-1429666176.

Video

The USS *Monitor* and NOAA: A Look Through Time
Travel back to 1862 in this educational video to learn how the USS *Monitor* turned the tide of the Civil War. The video also highlights the *Monitor*'s discovery, designation as a national marine sanctuary, and more.
https://www.youtube.com/watch?v=EX6H3Tp-2yE



Top: Diver working to recover the *Monitor*'s steam engine. Left: Archaeologists excavate the *Monitor*'s turret after recovery. Photos: NOAA, *Monitor* Collection



Turret lies upside down under the *Monitor*, also upside down. NOAA installed sacrificial anodes, mounted on PVC frames, to provide temporary corrosion protection for the *Monitor* while recovery planning was underway. Photo: NOAA, *Monitor* Collection

Name: _____ Date: _____

Mapping the USS *Monitor*
Standard Student Worksheet

Background Information

Generally, maritime archaeologists prefer to leave shipwrecks *in situ* so as not to disturb the artifacts because each artifact and its location plays a unique role in telling the story of the ship and her crew. Some ships, such as the *Monitor*, are historically significant or offer insight into the past that cannot be obtained in other ways; therefore, removal of artifacts is acceptable. However, only professional maritime archaeologists should do the removal!

Before removing any artifacts from a shipwreck, maritime archaeologists carefully document each artifact and map its location. To map an artifact, maritime archaeologists use a coordinate grid system and employ measuring and scaling techniques to sketch a drawing of the shipwreck, noting the location of artifacts. Often maritime archaeologists have limited time underwater to map a shipwreck due to depth or other factors; therefore, they also take video and still photography of the wreck site to aid in their mapping techniques.

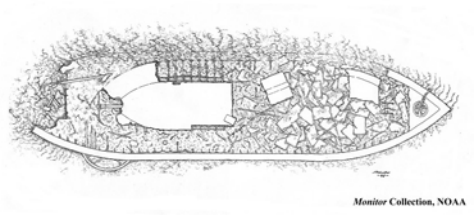
One might say that a maritime archaeologist is much like a detective who searches for evidence and analyzes clues to reach a conclusion. By careful documentation and observation, maritime archaeologists can better obtain the goal of understanding the past and connecting the past to real people and everyday life. With thousands of shipwrecks in our ocean, lakes, and rivers waiting to be discovered and studied, maritime archaeology is an exciting career providing many career opportunities based in science, technology, engineering, and mathematics (STEM)!

Procedure

1. Read the Background Information.
2. Today, you will dive on the USS *Monitor* and map artifacts. Before beginning your dive, orient yourself to the ship by labeling the parts of the ship: bow, stern, port, and starboard.
3. Review the list of artifacts on the Artifact Worksheet. Note the letters and numbers (coordinates) at the front of each description.
4. Using the coordinates (letters and numbers), map each artifact on the Site Plan Grid. For example, the first artifact is the *Monitor*'s engine with the coordinates of E-22. Find "E" on the Site Plan Grid and use your finger to mark the position. Next, find 22 on the grid and mark it with your finger on the other hand. Run your two fingers parallel with their letter/number until they meet. The intersection of the two is where the artifact is/was located.
5. Once the location is found, use a pencil or marker to draw a circle around the location.
6. Label the circle with the either the artifact's name or coordinates.
7. Once all artifacts are mapped and labeled, answer the discussion questions below.

Discussion

1. Why is it important to map the location of artifacts before recovering them?
2. Did all the artifacts appear to be in their "correct" location (where they would have been on the ship)? Why or why not?
3. If archaeologists from Monitor National Marine Sanctuary were to recover additional artifacts, where would you recommend that they search and why?
4. Write a short essay describing your two favorite artifacts.
5. Archaeologists keep a visual record of artifacts by taking photos, videos and drawing them. Draw a picture of two artifacts, write a brief description of each, and note where they were found (coordinates).



Monitor Collection, NOAA

Name: _____ Date: _____

Mapping the USS *Monitor*
Alternative Student Worksheet

Background Information

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Procedure

1. Read the Background Information.
2. Today, you will dive on the USS *Monitor* and map artifacts. Before beginning your dive, review the Site Plan Grid and orient yourself to the ship by identifying the parts of the ship: bow, stern, port, and starboard.
3. As evenly as possible, divide the large Artifact Cards and the corresponding small Artifact Cards among the divers in your group.
4. Each diver will read his/her artifacts' descriptions. When everyone is finished reading, take turns sharing what each diver learned about his/her artifacts.
5. After a diver shares what they learned, he/she will map that artifact. To map an artifact, note the letters and numbers (coordinates) on each of the Artifact Cards. Using the coordinates (letters and numbers), find the location for each artifact on the Site Plan Grid. For example, the *Monitor*'s engine has coordinates of E-22. Find "E" on the Site Plan Grid and use your finger to mark the position. Next, find 22 on the grid and mark it with your finger on the other hand. Run your two fingers parallel with their letter/number until they meet. The intersection of the two is where the artifact is/was located.
5. Once the location is found, place the small Artifact Card at the location.
6. Once all artifacts are mapped and labeled, answer the discussion questions below.

Discussion

1. Why is it important to map the location of artifacts before recovering them?
2. Did all the artifacts appear to be in their "correct" location (where they would have been on the ship)? Why or why not?
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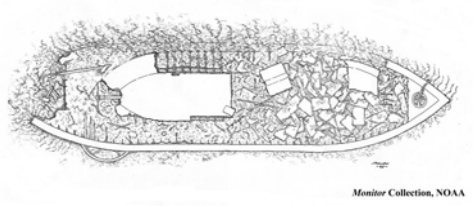
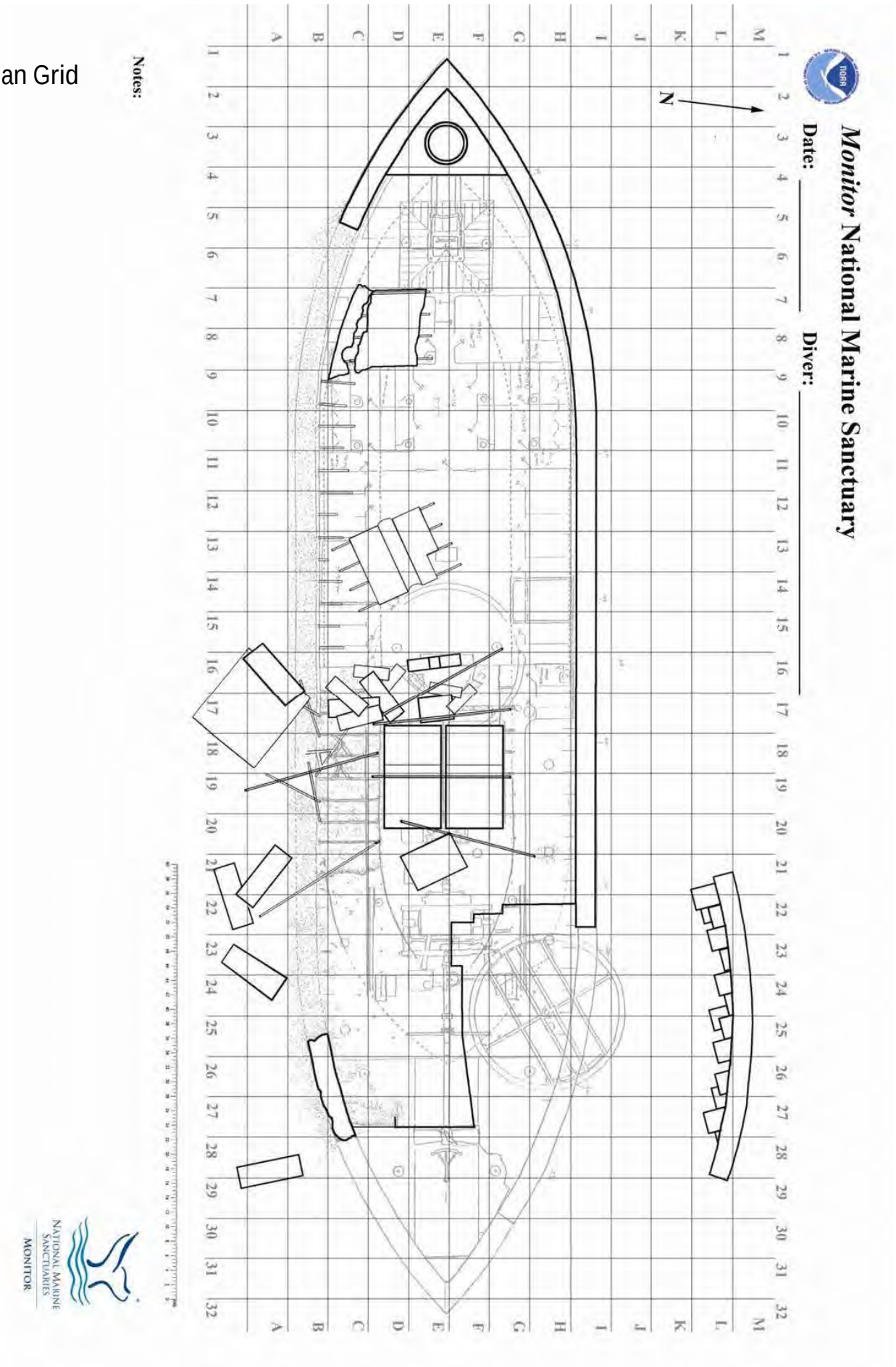


Monitor Collection, NOAA

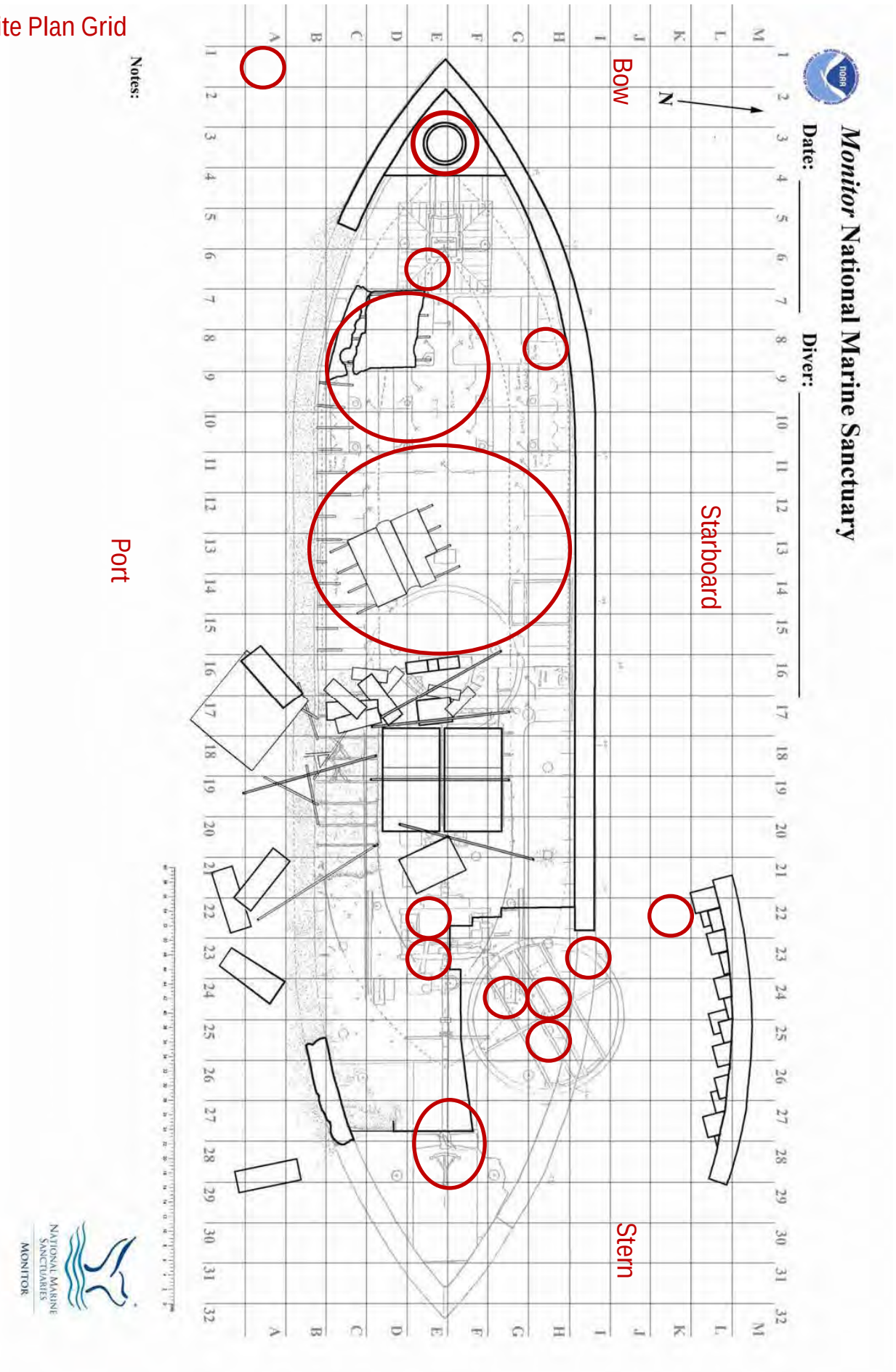
USS *Monitor*

Student Site Plan Grid



USS *Monitor* Site Plan Grid

Answer Key



Mapping the *Monitor* — Artifact Worksheet

E-22 *Monitor*'s engine - It was classified as the vibrating side lever engine. It weighed 30 tons and had 400 horsepower.

A-1 *Monitor*'s anchor - It weighed about 1,350 pounds and was recovered in 1983 approximately 495 feet south-southwest of the bow of the ship.

E-F—27-28 *Monitor*'s propeller - It had four blades and it weighed about 4,600 pounds. It had cast iron screws that were 9 feet in diameter.

H-24 *Monitor*'s Turret - It is 22 feet in diameter and 9 feet tall, it was constructed of eight 1 inch iron plates. It weighed 120 tons and was able to rotate with the help of two steam engines that used a crank to turn four gears.

K-22 *Monitor*'s Lantern - It was used as a distress signal towards the USS *Rhode Island* which was towing the USS *Monitor* in the Atlantic Ocean off Cape Hatteras, North Carolina

E-23 *Monitor*'s Engine Register - The middle disk has six rectangular spaces where numerical digits could be seen. This showed how many hours the ship engine had.

H-25 Buttons - That were found in the turret, they could have come off anything like shirts and even underwear!

G-24 Shoes - A single brown boot that probably belonged to an officer, which was left behind during the *Monitor*'s sinking.

H-8 Mustard Condiment Bottles - These were found along with plate fragments.

I (i)-23 Silverware - Some were engraved with the initials or names of the crew.

E-F—3 Anchor well - Where the anchor was tied up when the ship was underway.

B-H—11-15 Crew Quarters - Area where the crew resided.

C-F—7-10 Officer Quarters - Area where the officer's slept.

E-6 Pilot House - Where the captain would sit to pilot the *Monitor.*

Mapping the *Monitor*
Small Artifact Cards

E-22

A-1

E-F — 27-28

H-24

K-22

E-23

H-25

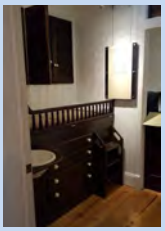
G-24

H-8

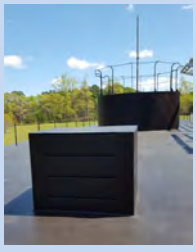
I-23

E-F-3

B-H — 11-15



C-F — 7-10

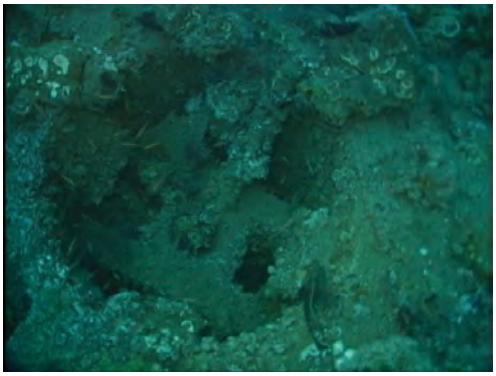


E-6

USS *Monitor* Anchor Well

E-F-3

An anchor is a heavy device attached to a boat or ship by a rope or chain. It is thrown into the water to hold the boat or ship in place. The anchor well is the hole in the ship where an anchor is lowered and raised. Usually, it is placed in the forward overhang of a ship. Maritime archaeologists easily identified the *Monitor*'s anchor well.



Monitor's anchor (left) on display at The Mariners' Museum in Newport News, Virginia. *Monitor*'s anchor well (right). Photos: NOAA, M*onitor* Collection

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Anchor

A-1

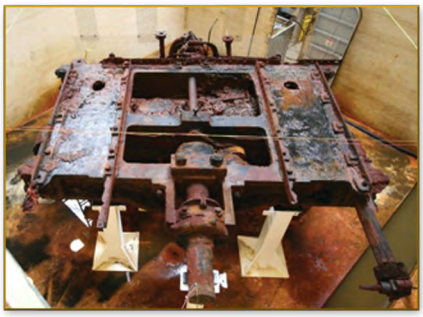
The *Monitor*'s anchor was a short, flour-fluked anchor weighing over 1,000 pounds. It was unique in its design. The anchor was recovered in 1983, just south of the bow of the wreck. It was still attached to the ship and the anchor chain had to be cut in order to raise the anchor.

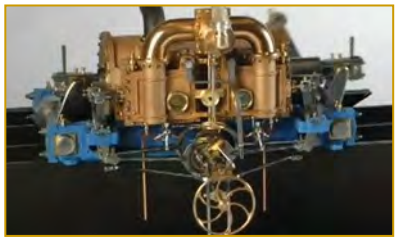
Conservators restored the anchor, and it is currently on display at The Mariners' Museum in Newport News, Virginia.

The *Monitor*'s anchor (left) underwent three years of treatment to remove corrosion before being placed on display (right). Photos: NOAA, *Monitor* Collection

USS *Monitor* Engine

E-22





Top: *Monitor*'s engine in conservation tank. Below: A 1/16 scale operating model of the engine . Photos: NOAA

Swedish-American, John Ericsson, designed the *Monitor*'s engine as a "vibrating side-lever engine." Most steam engines of the time had pistons that operated in a vertical motion, which took up a lot of space on a ship. They were also more likely to be destroyed by enemy fire because they were partially above the waterline. However, *Monitor*'s 30-ton, 400-horsepower engine had pistons that moved horizontally, which allowed it to be mounted below the waterline.

The engine was recovered from the wreck site in 2001. It is now resting upside-down in a conservation tank at The Mariners' Museum being preserved.

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Engine Register

E-23

The conserved engine register displays how many hours were on the *Monitor*'s engine when the ship sank. Photo: NOAA

Mounted to the *Monitor*'s coal-fired steam engine, the circular engine register was recovered in 2001. It was the first, and currently only, artifact recovered from the wreck bearing the ship's name. Small metal disks on the register would slowly click over to show the engineer how many hours were on the ship's engine.

The engine register underwent conservation and is now on display at The Mariners' Museum in Newport News, Virginia.

USS *Monitor* Lantern

K-22

While being towed to Beaufort, North Carolina, the *Monitor* was caught in a severe storm on New Year's Eve, December 31, 1862. When the ship was in extreme distress, the captain raised this red lantern on top of the turret as a final distress signal. It was the last object seen by the *Monitor*'s crew, and later became the first object recovered from the wreck site.

In 1977, the lantern was seen rolling across the ocean bottom next to the turret. It was recovered and conserved at the Smithsonian Institution. It is now on display at The Mariners' Museum in Newport News, Virginia.

In 1977, the red signal lantern was recovered and underwent seven years of restoration. Photo: NOAA, *Monitor* Collection

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Mustard Bottle

H-8

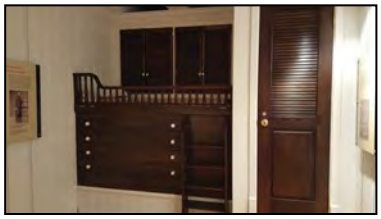
While searching the *Monitor*'s wreck forward of the mid-ship's bulkhead, six condiment bottles were recovered along with a plate fragment. These items were exposed because of severe hull deterioration, most likely due to currents flowing over the hull. One of the bottles was a "Hartell's Guaranteed Air Tight" storage jar that was filled with pickle relish. Amazingly, the wax seal was still intact and the relish still looked and smelled relatively fresh!

Mustard bottle (left) and a jar filled with pickle relish (center) were recovered from the *Monitor*. Condiment jars (right) on display at The Mariners' Museum. Photos: NOAA *Monitor* Collection

USS *Monitor* **Officers' Quarters**

C-F—7-10

The *Monitor* was the first U.S. Navy warship to house all officers and crewmen in the same section of the ship. Because all space aft of the amidships bulkhead was occupied by the engine, boilers, galley, and auxiliary machinery, there was no room for the officers, who normally occupied cabins in the stern. Instead, officers' cabins were well forward, opening into a wardroom. Because the officers and crew were required to spend most of their time below decks, the *Monitor* was equipped with a forced-air ventilation system and the world's first below-the-waterline flushing toilets.

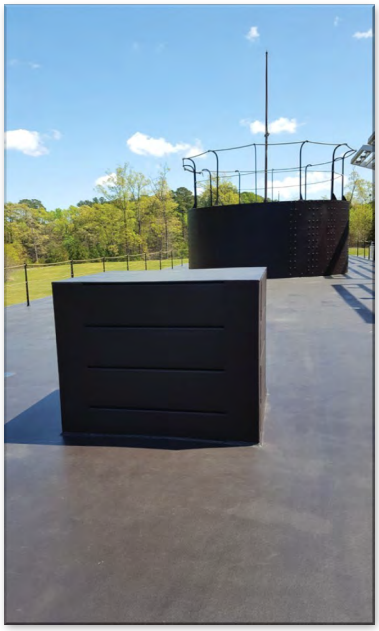


Artist illustration of the officer's wardroom (left); recreation of an officer's stateroom (center); recreation of the captain's cabin (right) with flushing toilet (door on right). Photos: Left: Harper's Weekly; Center and Right: Ricles, NOAA

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Pilot House

B-H—11-15



John Ericsson designed the *Monitor* to present the smallest target possible to enemy gunfire. Therefore, most of the ship was below the water, meaning there were no portholes (windows). In order for the Captain to command the ship during a battle, he needed to see the action. To allow the captain to view the battle, but remain protected, Ericsson built a small armored pilothouse on the upper deck towards the bow. However, its position prevented *Monitor* from firing her guns straightforward.

Replica of the pilot house on a full scale model of the USS *Monitor* located at The Mariners' Museum in Newport News, Virginia. Photo: Ricles, NOAA

USS *Monitor* **Sailors' Shoes**

G-24

When the turret was recovered, archaeologists found a variety of objects inside, many of them personal, such as shoes and boots. One item was a Wellington boot (left). It, along with several other shoes, were most likely discarded by the sailors when they exited the ship as it was sinking. If the sailors were swept overboard, shoes and heavy coats would make it more difficult to swim, so they were left behind.

Shoes were made from leather, an organic material, and usually deteriorate quickly in a marine environment. However, because these were buried in coal and sediment for over 100 years, they survived fairly in tact.

Wellington boot (top) and a shoe (bottom) recovered from the turret. Photos: NOAA, M*onitor* Collection

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Propeller

E-F—27-28

The *Monitor*'s propeller was designed by John Ericsson as a four-blade, 4,600-pound, cast-iron screw propeller that was nine feet in diameter. Ericsson's revolutionary design was more efficient than a paddlewheel and allowed the engine to be mounted below the waterline so that it was protected from enemy fire.

The propeller and a section of the shaft were recovered in 1998. Conservators placed the propeller in a tank and after six years of conservation, it was placed on display at The Mariners' Museum in Newport News, Virginia .

The *Monitor*'s propeller (above) underwent six years of treatment to remove corrosion before being placed on display (right). Photo: NOAA, *Monitor* Collection

USS *Monitor* Silverware

I-23

In 2002, when the *Monitor*'s turret was excavated, 24 pieces of silver tableware were discovered. The handles of five pieces were engraved with either the name or initials of crewmembers or officers. One of these bears the initials "JN," which was most likely the property of Jacob Nicklis, a 21-year-old sailor from Buffalo, New York. Nicklis was one of the 16 sailors that died the night the *Monitor* sank. The silverware is currently on display at The Mariners' Museum in Newport News, Virginia.

Four pieces of silverware from the Monitor's turret (top) after conservation. A fork as found inside the turret (right). Photos: NOAA, M*onitor* Collection

Monitor National Marine Sanctuary: USS *Monitor* and the Civil War

USS *Monitor* Turret

H-24

When constructed in 1862, the *Monitor*'s rotating gun turret was the first of its kind. While John Ericsson, *Monitor*'s designer, was not the first to envision a revolving turret, his design was the first completed. The turret is 21.5 feet in diameter and nine feet tall. It was constructed of eight one-inch thick iron plates and weighed about 120 tons.

The turret was recovered in 2002, and placed in a specially designed conservation tank where it is undergoing a 15-20 year conservation process at The Mariners' Museum in Newport News, Virginia.

On July 9, 1862, *Monitor*'s officers relaxed on the deck beside the turret (top left). U.S. Navy salvage divers assisted with the recovery of the turret (bottom left), and it was raised from the water on August 5, 2002 (right). Photos: Top Left: Library of Congress. Bottom left and right: NOAA, *Monitor* Collection