

# **JUNIOR MISSILEER PROGRAM**



and

## **TITAN MISSILE NATIONAL HISTORIC LANDMARK**

1580 West Duval Mine Road, Exit 69 off I-19 south  
20 minutes south of Tucson, Arizona

# **WELCOME TO THE TITAN MISSILE MUSEUM!**

The Titan Missile Museum Junior Missileer program is designed to help you understand more about what the Titan II missile was, how it worked, and why the United States needed it.

Complete as many of the following activities as you can. Our docents will help you with anything you cannot answer. When you have finished, one of the guide docents will award your Junior Missileer Badge!

You may look for the answers before, during, and after your museum tour. All of the answers are located somewhere in the museum or on the site.

Good luck, future Junior Missileer!

Compiled by the Titan Missile Museum Education Committee  
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**Titan Missile Museum  
Titan Missile National Historic Landmark  
Sahuarita/Green Valley, Arizona  
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Country Fair White Elephant, Inc.**

# THE MISSION OF THE TITAN MISSILES

For most of the last half of the twentieth century the United States and the former Soviet Union regarded each other with great suspicion and distrust. Both sides feared the other wanted to take over the world. To prevent this, each side armed itself with jet planes, missiles, and nuclear bombs. Each side wanted to have more weapons than the other. This led to what was called an “**arms race**.” Because the two sides were always threatening the other but never actually came to war, this time in history is called the **Cold War**.

The Titan II missiles were part of the Cold War. The Titan II was an intercontinental ballistic missile, or **ICBM**. This means it could fly from one continent to another.

The Titan II missiles were **retaliatory** weapons. This means they would not be used to start a war. The Titan II would be used only to try to stop a war that was started by our enemies.

Our enemies were afraid to attack the United States because they knew we could respond with very powerful weapons. This is called **deterrence**. Peace through deterrence was the primary mission of the Titan II missiles.

The United States had **54** Titan II missiles near three cities: **Tucson**, Arizona; **Little Rock**, Arkansas; and **Wichita**, Kansas.

Each Titan II missile carried one **hydrogen bomb**. Hydrogen bombs, also called H-bombs or nuclear

bombs, are the most powerful and most destructive bombs ever made. Because of their terrible destructive power, the order to launch the Titan II missiles could only come from the **President** of the United States.

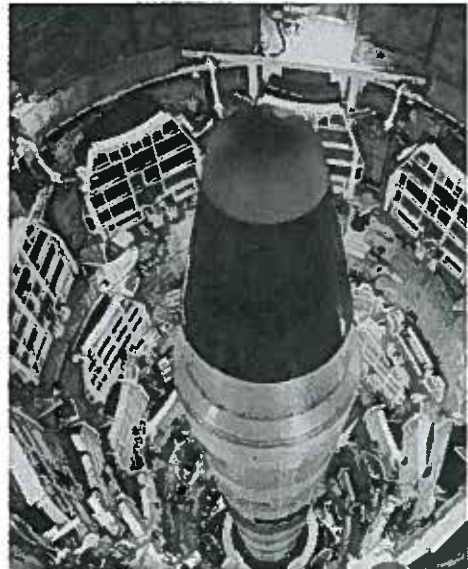
The Titan II missiles could be launched very quickly and were stored in specially built **hardened** silos. This means the silos could withstand the effects of a **near miss**—an enemy nuclear bomb that exploded close by.

A four-person crew was stationed at each site. They kept the missile ready and waited for the order to launch it. The crew consisted of the Missile Combat Crew Commander (**MCCC**), the Deputy Missile Combat Crew Commander (**DMCCC**), the Ballistic Missile Analyst Technician (**BMAT**), and the Missile Facilities Technician (**MFT**).

# QUESTIONS ABOUT THE MISSION OF THE TITAN II MISSILES

Answer the questions below using the word choices located in the WORD BANK at the bottom of the page.

1. The Titan II missiles were built during a time in history known as the \_\_\_\_\_.
2. The \_\_\_\_\_ was the only person who could give the order to launch the Titan II missiles.
3. The Titan II missiles would not be used to start a war. They would be used only if our enemies first attacked us. This means the Titan II missiles were \_\_\_\_\_ weapons.
4. What two countries were involved in the Cold War?  
\_\_\_\_\_ &  
\_\_\_\_\_.
5. What term describes when an enemy nuclear bomb explodes close by?  
\_\_\_\_\_.
6. Where were the Titan II missiles located?  
\_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, and  
\_\_\_\_\_, \_\_\_\_\_.



## WORD BANK

Tucson, Arizona  
Little Rock, Arkansas  
former Soviet Union  
near miss  
President  
Wichita, Kansas  
Cold War  
retaliatory  
United States

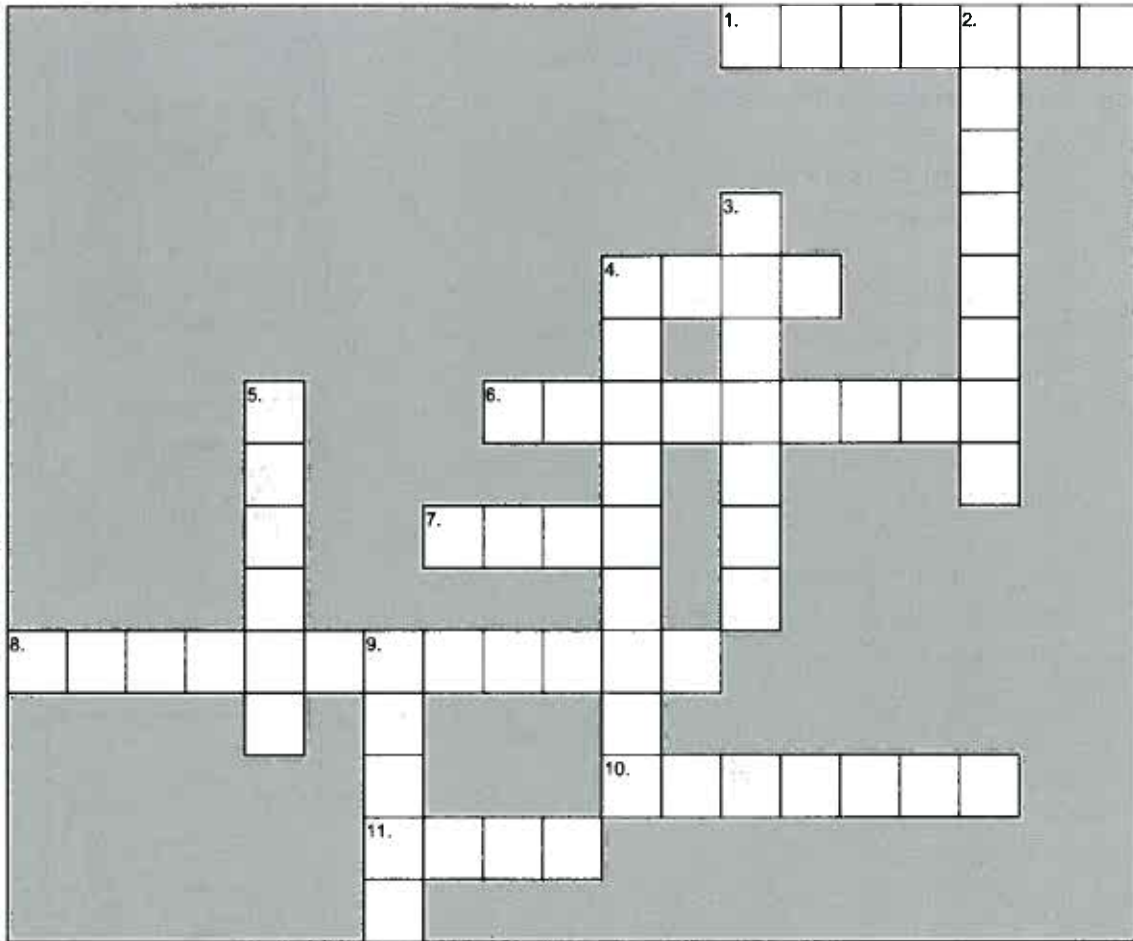
# EXHIBIT GALLERY

Explore in the Exhibit Gallery to find the answers to the following questions.

1. The first man-made satellite to orbit the earth was \_\_\_\_\_.
2. On July 21, 1969, this astronaut, who later became the first person to walk on the moon, took his first space flight on a Titan II missile as part of the Gemini 8 mission. \_\_\_\_\_
3. Which level of the silo contains the diesel generator? Level \_\_\_\_\_
4. Which levels of the silo contain the 100,000-gallon water storage tank?  
Level \_\_\_\_\_ and Level \_\_\_\_\_
5. The launch keys and codes were stored in the \_\_\_\_\_.
6. What does RFHCO stand for? \_\_\_\_\_  
\_\_\_\_\_
7. When was RFHCO worn? \_\_\_\_\_  
\_\_\_\_\_
8. The \_\_\_\_\_ was designed to protect the warhead from heat and stress during re-entry.
9. The nuclear triad consisted of land based ICBMs like the \_\_\_\_\_ and \_\_\_\_\_ land based bombers like the \_\_\_\_\_, and Sea Launched Ballistic Missiles carried on \_\_\_\_\_.
10. After deactivation, some Titan IIs were used for what purpose?  
\_\_\_\_\_
11. What Star Trek movie was filmed, in part, at the Titan Missile Museum?  
\_\_\_\_\_

# TOPSIDE

The answers to the crossword puzzle can be found by carefully reading the signs near each exhibit on the surface.



## ACROSS

1. Where the propellants meet and burn.
4. The type of helicopter used by the Missile Wing.
6. Where fresh air was brought underground for the crew.
7. The silo door weighs 760 of these.
8. The crew entered the underground complex through this.
10. The TIPSIES operated on this principle.
11. Unsymmetrical Dimethyl Hydrazine (abbreviation).

## DOWN

2. \_\_\_\_\_ tetroxide.
3. Vehicle that carried the weapon.
4. Propellants are loaded into the missile at these locations.
5. Stage One engine produces 430,000 lbs. of this.
9. The name of this antennae tells how it worked.

# ACCESS PORTAL AND CONTROL CENTER

Write the letter of the correct picture for each description in the blanks.

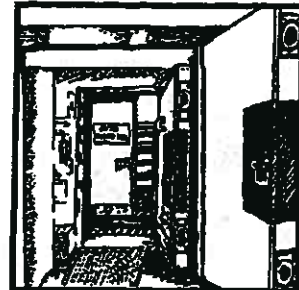
\_\_\_\_\_ Blast doors protected the crew from nuclear explosions and from the missile.

A.



\_\_\_\_\_ The Launch Control Center Facilities Console (LCCFC) was used to monitor the condition of the missile, the silo, and other facilities.

B.

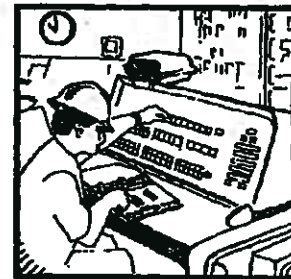


\_\_\_\_\_ Giant springs protected the crew and equipment from shock waves and vibrations.

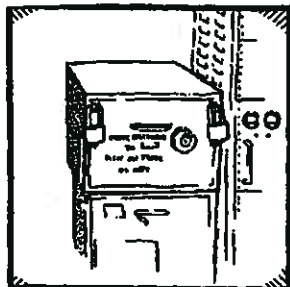
\_\_\_\_\_ To enter the launch complex the commander needed to "code in" while inside the "entrapment area."

\_\_\_\_\_ The Emergency War Orders Safe contained decoding information and launch keys.

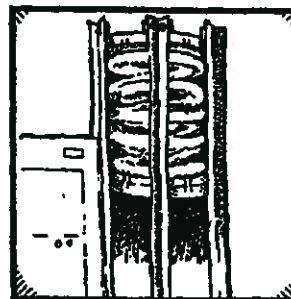
C.



D.



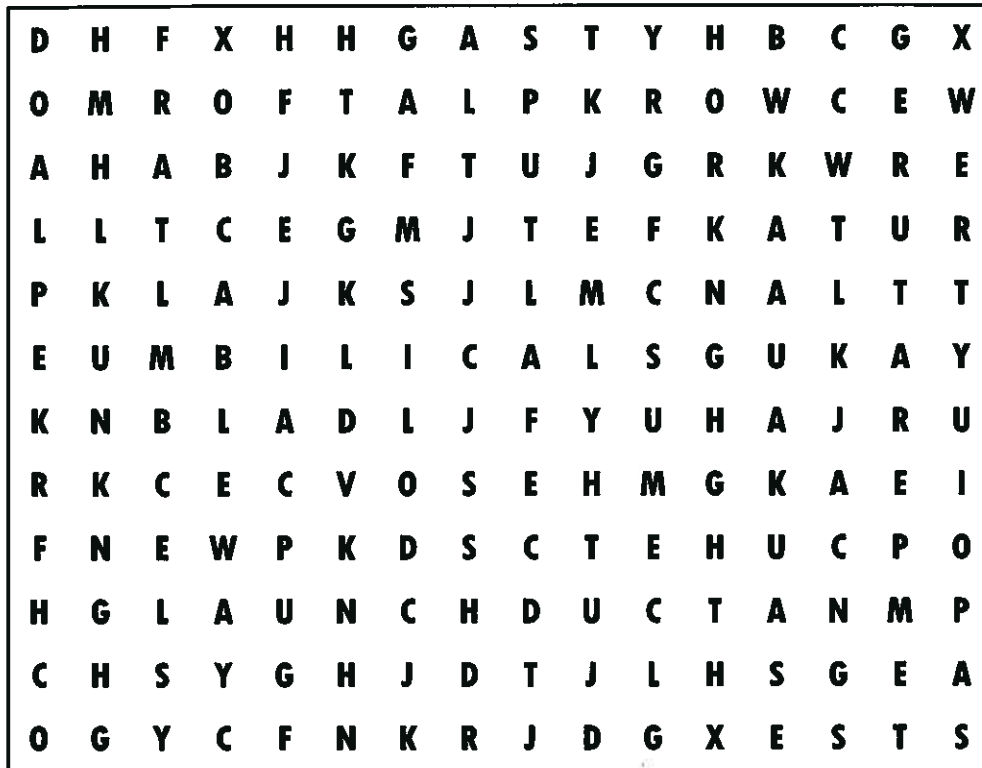
E.



# SILO

## Word Search!

Find the hidden words. They can be horizontal or vertical, upside down or backwards!



Words to look for:

**SILO**  
**TEMPERATURE**  
**CABLEWAY**

**LAUNCH DUCT**  
**UMBILICALS**  
**RFHCO**

**WORK PLATFORM**

**Silo:** The 146 foot deep shaft that contains the missile and much of the equipment needed to keep it ready.

**RFHCO:** Rocket Fuel Handler's Clothing Outfit.

**Cableway:** The long steel tunnel that connects the Control Center with the Silo.

**Work Platform:** A temporary floor that permits the crews to inspect the missile and perform maintenance.

**Launch Duct:** The inner portion of the silo that actually contains the missile.

**Temperature:** A measure of how hot or cold something is.

**Umbilicals:** Cables that carry electric power, data and commands between the Control Center and the missile.



## **FIND OUT MORE!**

If you would like to find out more about Titan missiles, the Cold War, or nuclear weapons, your public library and the World Wide Web are terrific resources.

**<http://www.titanmissilemuseum.org>**

This website is all about the Titan Missile Museum in Sahuarita, Arizona.

**<http://www.atomicmuseum.com/>**

National Atomic Museum.

Located in Albuquerque, New Mexico, the mission of the National Atomic Museum is to serve as America's resource for nuclear history and science. The Museum presents exhibits and educational programs that convey the diversity of individuals and events that shape the historical and technical context of the nuclear age.

**<http://www.life.com/Life/space/giantleap>**

From Life Magazine online, this site explores the Cold War space race.

**<http://home.teleport.com/~boelling/titan.html>**

This web site by a former crewmember has information about the Titan II ICBM.

**<http://www.cnn.com/SPECIALS/cold.war>**

This is the companion site to CNN's TV series on the Cold War. It contains the scripts and other useful information, including suggestions for use in the classroom.

**<http://www.pbs.org/wgbh/amex/bomb>**

This is the companion site to PBS's TV series "The American Experience, Race for the Superbomb". It contains information from the original series as well as suggestions for use in the classroom.

**<http://www.seattletimes.com/trinity/articles/part1.html>**

This is a series of articles originally printed in the Seattle Times about the early nuclear testing and development.

**<http://nasakids.com/>**

Learn about rockets and airplanes, and have fun at the same time!

# ANSWER KEY

## Questions about the Mission of the Titan II Missiles...

1. Cold War
2. President
3. Retaliatory
4. United States and former Soviet Union
5. Near miss
6. Tucson, AZ; Little Rock, AK; Wichita, KS

## Exhibit Gallery

1. Sputnik
2. Neil Armstrong
3. Level 3
4. Levels 3-7
5. Red safe
6. Rocket Fuel Handler's Clothing Outfit
7. During fueling and defueling operations
8. Re-entry vehicle
9. Titan II and Minuteman, B52s, submarines
10. Launching satellites
11. Star Trek: First Contact

## Topside Crossword

### ACROSS

1. Engines
4. Huey
6. Air intake
7. Tons
8. Access portal
10. Doppler
11. UDMH

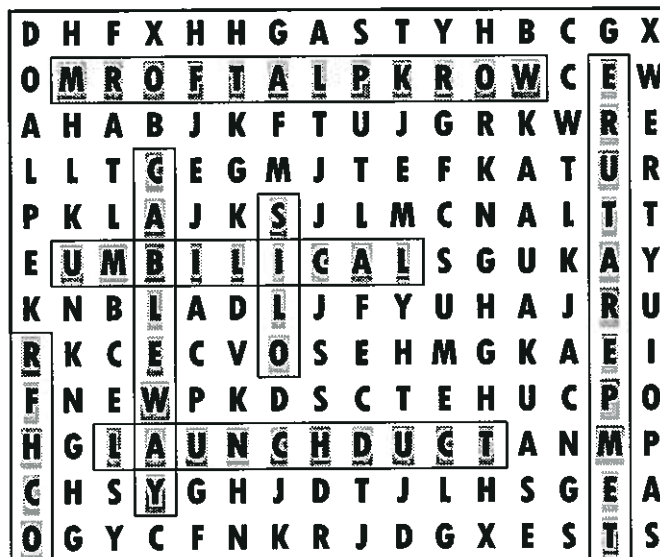
### DOWN

2. Nitrogen
3. Reentry
4. Hardstand
5. Thrust
9. Popup

## Access Portal and Control Center

1. B
2. C
3. E
4. A
5. D

## Silo Word Search





# JUNIOR MISSILEER

This designation has been awarded to:



For successful completion of the Junior Missileer  
Program Workbook!

Signature

Date

