Purpose: This unit is designed to expose students to the wonder of flight. Students will have the opportunity to explore the history of flight, the impact of Native Americans on flight and the contributions of Oklahomans to the history of flight.
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Lesson 11: October Sky Lesson Pages 48 – 50
Lesson 12: International Space Station Pages 51 – 53
Additional Resources Page 54
Tips for Educating Native students as the Dust Bowl lessons are presented

Make multicultural activities a norm from the beginning of children’s school experience.

Integrate multicultural activities fully into the school curriculum, rather than restricting them to one-shot or culture-of-the-month sessions.

Involve all students in multicultural activities not just those students belonging to minority cultural groups.

An integrated curriculum is an example of the holistic approach. By combining language arts and social studies, students learn and reinforce language skills by applying them to real-life studies; e.g. team teaching; bring in people from the community; rely less on textbooks. Use primary source materials written and illustrated by Native Americans.

Applied/authentic learning experiences reflect the traditional practice of students learning by doing. Applying math and science skills to real life tasks can be effective in engaging student attention; use examples that are relevant.

Cooperative learning models allow students to work and/or compete in groups; e.g. cross-age tutoring, peer tutoring, reading buddies, and team projects.

Utilize assessment methods that allow students to demonstrate mastery in a variety of ways; e.g. portfolios, presentations, speeches, experiments, essays.

Native students are primarily visual learners but use auditory and kinesthetic modes also; e.g. graphs, films, demonstrations, pictures, beadwork and manipulatives in math, hands-on, laboratory in science.

Allow wait-time for responses.

Promote and provide accurate depictions of Indian people, past and present. Present Native American peoples as appropriate role models to children. Each has unique, separate, distinct cultures.

Community and family involvement is important; e.g. cultural homework.

Role-playing is effective. This may take time to build up to participation.

Praise and incentives are useful if they are given one-on-one.
CLASSROOM STRUCTURE

Lower lighting levels are preferred.

Native students are late morning learners.

A circular arrangement of desks or groups of 2’s / 4’s are recommended.

Frequent breaks are helpful.

An authority figure is needed.

DO’S AND DON’TS

Avoid over-generalized books, curriculum guides, lesson plans, and teaching kits with a “Native American” theme. These group Native Americans too broadly.

Avoid presenting sacred activities in trivial ways; for example, making headbands with feathers out of paper bags and construction paper.

Avoid introducing the topic of Native Americans on Columbus Day or at Thanksgiving. This perpetuates the idea that Native Americans do not exist in the present.

Native American students should not be singled out and asked to describe their families’ traditions or their peoples’ culture(s).

Avoid rhymes, songs, and materials that utilize Native Americans in trivial ways such as “I is for Indian…” counting devices—“One little, two little…” depicting Natives as “savages,” “primitives.”

Teach children about Native Americans in a manner that you would like used to depict your culture and racial/ethnic origin.

Below are some websites with information and lessons on Native Americans.

http://www.educationworld.com/a_special/native_americans.shtml
http://www.education-world.com/a_lesson/lesson038.shtml
http://www.reacheverychild.com/feature/native.html
http://www.oyate.org/aboutus.html
http://www.snowhawk.com/oklahoma.html
The Wright Brothers: Miracle at Kitty Hawk

Purpose: This lesson will introduce students to the history of aviation and the life and times of the Wright Brothers.

Objectives: See attached.

Time: 3 to 5 Class Periods (45 minutes each)

Appropriate age groups: all

Number of participants: Class of 25-30 students

Materials: Internet and library access.

Description:
The lesson gives students the opportunity to explore the history of flight and the first family of flight, the Wright Brothers. Students will research different aviators and present their findings to the class.

Procedure:
Begin the lesson by showing one of two movies: “The Wright Stuff” or “This is America, Charlie Brown – The Wright Brothers at Kitty Hawk”. Both of these movies introduce the students to the lives of these two brothers.

1. At the conclusion of the movie, lead the students in a brief discussion of the film. Have the students take notes on the people and events that are discussed.
2. Divide the class into small groups for the research portion of the lesson. The groups should be comprised of 5-6 students of varying academic abilities.
3. Each group will be assigned one of the following subjects: Wilbur Wright, Orville Wright, Katherine Wright, Kitty Hawk North Carolina, and the Wright Flyer.
4. Allow time to research the subjects. Internet access and library access are needed. The goal of the research is the creation of a written report and oral presentation.
5. Encourage the students to find pictures, images, and stories they want to share with the class.
6. The oral presentation should be between five and seven minutes. Encourage students to make posters and visual aids for their presentations. Advanced students might be able to make slide show presentations using their computer lab resources.
7. The written report should be no more than two pages. Each student should turn in their own written report and their research notes for a grade.
8. At the conclusion of the research period, allow the students time to present their reports to the class.
9. When each group is finished, discuss their presentation. Have students write down notes about the presentations.
Evaluation:
1. Use a simple rubric to evaluate the project, presentation, notes and written report.

Extensions:
1. Create of a drama play that would incorporate each character’s part in the first manned flight at Kitty Hawk, North Carolina. (An example of this can be found at: http://www.faa.gov/education/wright/wright.html)
2. Build your own Wright Flyer:
3. Students design and describe airplanes of the future.

Resources:
1. Books:
   f. The Wright Brothers: From Bicycle to Biplane by Fred C. Fisk and Martin V. Todd, 1990.
   g. Kitty Hawk and Beyond: Wright Brothers and Early Years on Aviation: A Photographic History by Ronald Geibert and Patrick B. Nolan, 1990.
   h. Pendulum: The Story of America’s Three Aviation Pioneers – Wilbur Wright, Orville Wright and Glenn Curtiss, the Henry Ford of Aviation by Jack Carpenter.
   m. Wil and Orv by Walter A. Shulz, 1991.
   o. To Fly: The Story of the Wright Brothers by Wendi Old, 2002.
2. Videos:
   c. **This is America Charlie Brown.** The Wright Brothers at Kitty Hawk.
   d. **Black Aviators: Flying Free.** The History Channel.

3. Magazines:
   a. **Smithsonian Magazine.** April 2003, Volume 34, Number 1. (For reprints call 1-800-766-2149.)
   b. **Air and Space Smithsonian.** February/March 2003, Centennial Edition, Volume 17, Number 6 (1-800-766-2149.)
   d. **Popular Mechanics.** December 2003, “100 Years of Powered Flight” vol. 180, no. 12 (212-586-5562.)
   e. **Smithsonian.** December 2003, Volume 34, Number 9.
   f. **Oklahoma Today.** July/Aug 1998 “The Faces of Aviation” vol. 48 no. 5 (1-800-777-1793.)
   g. **Century of Flight.** (1-800-358-6327.)

4. Internet:
   a. [www.mnaero.com/aved](http://www.mnaero.com/aved)
   b. [www.firttofly.com](http://www.firttofly.com)
Do You Have the Right Stuff?

**Purpose:** The lesson is designed to introduce students to the history of aviation and the role that women played.

**Objectives:** See attached.

**Time:** 3 to 5 Class Periods (45 minutes each)

**Appropriate age groups:** grades 7-12

**Number of participants:** Class of 25-30 students

**Materials:** Internet access

**Description:** The lesson gives students a chance to explore the history of flight and the contributions of women. Students research different aviators and present their findings to the class. They may map out different locations and flight paths.

**Procedures:**
This part of the unit discusses the role of women in the history of flight. There are 4 major subparts: Amelia Earhart (4 lessons), Mercury 13, Powder Puffs or Heroes?, and Famous Astronauts.

*Louise Thaden, Bobby Trout, Patty Willis, Marvel Crosson, Blanche Noyes, Vera Walker, Amelia Earhart, Marjorie Crawford, Ruth Elder, Pancho Barnes (left-right)*
Amelia Earhart: A Real American Hero
Biography study:

Procedure:
1. Divide the class into several small groups to research the life and achievements of Amelia Earhart.
2. Ask the students: What was the atmosphere at the time? Describe the culture, clothing, music, film stars, sports, athletes, world events, and climate of America.
3. After the discussion, write the following Amelia Earhart quote on the board.
   a. “Women must try to do things as men have tried. When they fail, their failure must be but a challenge to others.”
4. Students free write a response to this quote. After a few minutes, lead a discussion about the possible meanings of the quotation.
5. Write the following questions on the board. It will be the small groups’ responsibility to answer them.
   1. Where was Amelia Earhart born?
   2. What was the name of her copilot?
   3. What do you consider Amelia Earhart’s greatest contribution to aviation?
   4. What words would you use to describe her personality?
   5. How did Amelia Earhart impact the women of her time?
6. At the conclusion of the research, lead a class discussion that incorporates the questions and each groups’ responses to the questions.
7. Biography Links:
Amelia Earhart’s Flight Around the World

On May 20, 1937, Amelia Earhart left Oakland, California on a cross continental journey to become the first woman to fly completely around the world. She disappeared near present day Baker Island, a few days removed from completing this enormous task. Let’s trace her journey.

Follow the instructions below:
1. Plot the following cities below on a world map. Place a bright color dot on each city. A blank map can be found at: [http://www.eduplace.com/ss/maps/world.html](http://www.eduplace.com/ss/maps/world.html)
2. Connect the dots in the order listed below.
3. Color the oceans blue and the continents another color.
4. Title your map.
5. Fill in the attached worksheet with the correct coordinates and mileage between cities.
6. After completing your map, please answer the following questions:
   a. How many oceans and continents did she cross?
   b. What were the names of these continents and oceans?
   c. What islands did she land on?
   d. Which of the countries that Amelia visited have changed since 1937?
   e. How many total miles did Amelia Earhart travel?
Cities:

1. Oakland, CA
2. Tucson, AZ
3. New Orleans, LA
4. Miami, FL
5. San Juan, Puerto Rico
6. Caribio, Venezuela
7. Paramaribo, Dutch Guiana (Suriname)
8. Fortaleza, Brazil
9. Natal, Brazil
10. St. Louis, Senegal
11. Dakar, Senegal
12. Gao, Mali
13. Fort Lamy, Chad
14. El Fasher, Sudan
15. Khartoum, Sudan
16. Massawa, Eritrea
17. Assab, Eritrea (Ethiopia)
18. Karachi, India (Pakistan)
19. Calcutta, India
20. Akyab, Burma
21. Rangoon, Burma
22. Bangkok, Thailand
23. Singapore, Indonesia
24. Timor, Indonesia
25. Port Darwin, Australia
26. Lae, New Guinea
27. Bandoeng, Java
28. Koepang, Island of Timor (Indonesia)
29. Port Darwin, Australia
30. Lae, New Guinea
31. Baker Island (disappeared between Lae and Howland Island, her next intended stop) aka Howland Island, Oceania
### Amelia Earhart’s Trip Around the World

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Courage:

“Decide…. whether or not the goal is worth the risks involved. It if is, stop worrying.”

Amelia Earhart

Procedure/Assessment:

1. Place the students in small groups to discuss personal experiences where they did something brave and daring. The students should express how they felt about that experience and what characteristics they possess that helped them to get through it.

2. Each group will compose a list of characteristics that describe a brave person. Lists are shared with the class and compiled on the board. Have the students write a comparison essay of their life with Amelia Earhart’s life.
The Elektra or Flying Laboratory:
I saw Amelia Earhart yesterday (and other strange phenomenon).

Description:
This part of the lesson will focus on the mystery surrounding her disappearance and other unexplained myths and legends. (SpookLight and Roanoke)

Procedure:
1. Divide the class into small groups of 4-6 students. The groups research the circumstances surrounding Amelia Earhart’s disappearance.
2. Allow students time to research Amelia Earhart and the myths surrounding her death. Some helpful links on this subject:
   f. http://www.tighar.org/forum/Forumfaq.html#21
   g. http://foia.fbi.gov/earhart.htm
   h. http://www.usni.org/NavalHistory/Articles00/nhriley.htm
   i. http://www.wai.org
   k. http://www.tighar.org
3. After the research has been concluded, have the groups present their findings to the class. A list of the findings can be compiled, as well as a list of student beliefs surrounding her death.
4. Begin a discussion on myths, legends, and unexplained phenomenon. Once again, the small groups will be required to research and present on an unexplained phenomenon.
   a. Possible subjects could involve; Bermuda Triangle, Bigfoot, Spooklight, UFO’s, JFK Assassination, the Lost Colony of Roanoke, and other Indian legends.

Extensions:
1. Geography extensions involve the groups mapping out the locations of the strange phenomenon.
2. Students present their findings to the class in the form of a report or oral presentation.
Additional Topics and Links:

1. Spook light:
   h. http://members.aol.com/spooklight13/TheJoplinSpooklightEncounter.htm
   k. http://www.mulvane.org/hsl

2. Roanoke/Lumbee Indians:
   d. http://theshadowlands.net/roanoke.htm

3. Bermuda Triangle:

4. JFK Conspiracy:
   a. http://mcadams.posc.mu.edu/sites.htm
   b. http://www.jfkenndey.8m.com
   c. http://mcadams.posc.mu.edu/home.htm

5. Indian Legends/Myths
Additional Bibliography:

a. *Amelia Earhart, Adventure in the Sky* by Francene Sabin.
d. *Amelia Earhart: Flying for Adventure* by Mary Dodson Wade.
e. *The Usborne Book of Famous Women* by Richard Dungworth and Philippa Wingate.
g. [http://teacher.scholastic.com/earhart/](http://teacher.scholastic.com/earhart/)
h. [http://www.surfnetkids.com/games/earhart-sw.htm](http://www.surfnetkids.com/games/earhart-sw.htm)
Mercury 13:  

Background: This portion of the unit deals with the Mercury 13 astronauts. These astronauts were a group of women who were training to become the first US females in space. Unfortunately, due to their gender, they were disqualified and never allowed into space. This set a precedent that was maintained until the 1980’s when Sally Ride became the first American woman in space. Who were these brave women? Did they ever achieve their dreams? What was their legacy?

Procedure: This lesson will incorporate group work, research, and an oral presentation.

1. Read the background paragraph to the class.
   c. [Website C](http://www.ninety-nines.org/mercury.htm)
   d. [Website D](http://www.iwasm.org/airspace/women.htm)

2. Divide the class into groups of four or five students. Each group will be responsible for researching the physical, mental, and educational requirements of astronauts today.

3. Students will also research the requirements of astronauts in the 50’s and 60’s.
   a. [Website A](http://history.nasa.gov/40thmerc7/documents.htm)
   b. [Website B](http://history.nasa.gov/40thmerc7/intro.htm)

4. After students have found the requirements, compare and contrast the findings. Focus on the differences in requirements between the eras.

5. Initiate a class discussion that encompasses the findings. List the requirements on the board.

6. Pose the following question, “Why weren’t women allowed to become astronauts?”

7. The students should spend some time discussing the question. The links below should help.

8. Assign each group one of the original Mercury 13 astronauts to research.
   a. (Possible Astronauts: Jerrie Cobb, Jane Hart, Myrtle Cagle, Jan and Marion Dietrich, Wally Funk, Jane Hart, Jean Hixson, Gene Nora Jessen, Irene Leverton, Sarah Gorelick Ratley, Bernice Steadman, Rhea Woltman and Jerri Truhill.)
   b. Possible Links:
      a. [Website A](http://liftoff.msfc.nasa.gov/academy/astronauts/training.htm)
      b. [Website B](http://www.ksc.nasa.gov/facts/faq12.htm)
      c. [Website C](http://www.spacefuture.com/archive/the_pleasure_of_spaceflight.shtml)
      d. [Website D](http://www.space1999.net/metaforms/list-quo/96115dis.htm)
      e. [Website E](http://spacelink.nasa.gov/NASA.Projects/Human.Exploration.and.Development.of.Space/Astronauts/)
      f. [Website F](http://www.spaceflight.nasa.gov/outreach/jobsinfo/astronaut.html)
      g. [Website G](http://www.jsc.nasa.gov/Bios/more.html)
      h. [Website H](http://spaceflight.nasa.gov/shuttle/reference/faq/astronaut.htm)
      i. [Website I](http://www.solarviews.com/eng/astronauts.htm)
      j. [Website J](http://www.iwasm.org/)
      k. [Website K](http://www.mercury13.com/)
Assign students the following astronauts for continued discussion or research.

I. Women firsts in space
1. Valentina Tereshkova
2. Svetlana Savitskaya (first spacewalk)
3. Kathy Sullivan (first American to spacewalk)
   a. http://quest.arc.nasa.gov/people/bios/women/sullivan.html
4. Eileen Collins
5. Sally Ride
   b. http://quest.arc.nasa.gov/space/frontiers/ride.htm
6. Mae Jemison (First African American)
7. Shannon Lucid

II. Space Shuttle disasters: (Women lost in the disasters)
   http://www.geektimes.com/michael/culture/memoriam/challengerSpaceShuttle/fiftyOneEll.htm
   a. Christa Mcauliffe:
      i. http://www.starhop.com/cm_bio.htm

III. Famous Women aviators:
   a. Bessie Coleman:

IV. First African American in space:

V. Black Aviators
   a. http://www.nasm.si.edu/interact/blackwings/
   b. http://www.nasm.si.edu/interact/blackwings/h teach/index.cfm
Powder Puffs or Heroes?

Overview: This lesson will focus on Oklahoma during World War II. It examines the role of women during this time period. A question that needs to be addressed is: Were they domesticated, substitute workers, or outright heroes? Primary sources, articles, and a video will be used to investigate the question, “Were they Powder Puffs or Heroes?”

Geographic Elements: Places, Regions, environment and society

Objectives: The student will:
1. Examine the various roles of women during World War II.
2. Identify the jobs and activities of women in World War II.
3. Examine the role of WACS in Oklahoma and in the United States.
4. Identify “Rosie the Riveter” and her contribution to the home front.
5. Analyze primary documents and articles about women in World War II.
6. Compare and contrast the role of women before, during, and after the war.

PASS Standards:
1. Oklahoma History: Standards 1, 3, 4, 6, and 7
2. World History: Standards 1 and 6
4. World Geography: Standards 1 and 4

Grade Level: (High School 9-12)

Materials needed:
1. Internet
2. Handouts
3. Map of Oklahoma and the United States
   b. [http://www.50states.com/tools/usamap.htm](http://www.50states.com/tools/usamap.htm)
4. Paper
5. Colored pencils or markers
6. VHS tape: “A League of their Own”
Procedure:

1. Students begin the lesson by examining an article on “Rosie the Riveter.” During the analysis of the article, they take notes and write down any relevant information concerning the topic.

   http://www.u.arizona.edu/~kari/rosie.htm

2. Divide the class into groups of four and have them locate primary documents on women in World War II.

Some helpful links are located below.


   b. http://www.mtsu.edu/~kmiddlet/history/women/wh-wwii.html#manu


Additional Links (continued)

a. [http://rs6.loc.gov/cgi-bin/query/r?ammem/fsaall:@filreq(@field(NUMBER+@band(fsac+1a34899))+@field(COLLID+fsac))](http://rs6.loc.gov/cgi-bin/query/r?ammem/fsaall:@filreq(@field(NUMBER+@band(fsac+1a34899))+@field(COLLID+fsac)))


c. [http://members.aol.com/TeacherNet/WWII.html#Women](http://members.aol.com/TeacherNet/WWII.html#Women)

d. [http://www.rosietheriveter.org](http://www.rosietheriveter.org)


f. [http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_18.jpg](http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_18.jpg)


h. [http://www.archives.gov/research_room/research_topics/world_war_2_photos/world_war_2_photos.html](http://www.archives.gov/research_room/research_topics/world_war_2_photos/world_war_2_photos.html)

i. [http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_20.jpg](http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_20.jpg)


k. [http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_22.jpg](http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_22.jpg)

l. [http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_23.jpg](http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/ww2_23.jpg)

m. [http://lcweb.loc.gov/exhibits/wcf/wcf0001.htm](http://lcweb.loc.gov/exhibits/wcf/wcf0001.htm)

n. [http://www.wasp-wwii.org](http://www.wasp-wwii.org)

o. [http://www.wasp-wwii.org/wasp/home.htm](http://www.wasp-wwii.org/wasp/home.htm)


r. [http://wasp-wwii.org/records/article_archive.htm](http://wasp-wwii.org/records/article_archive.htm)

s. [http://www.wasp-wwii.org/wasp/records.htm](http://www.wasp-wwii.org/wasp/records.htm)

A strategy for interpreting these documents is to have the students utilize one of the following methods:

1. **RAFT** (Students analyze a historical document using four components.)
   a. R (role of writer)
   b. A (audience)
   c. F (Format)
   d. T (topic)

2. **Written Document Analysis Worksheet**

3. **AP SOAPS** (interpret a document using 5 different tools.)
   a. S (subject)
   b. O (occasion)
   c. A (audience)
   d. P (Purpose)
   e. S (speaker)

4. Students report their findings to the class.

5. Map out the main military bases that women worked on in Oklahoma and the US during World War II. (Additional research may be required for this portion of the lesson.) A web site to look at:

6. At the conclusion of the activity, show the movie “A League of Their Own”.

7. Facilitate a discussion on the role of women outside of the factories during this time and in baseball in more detail. Additional links concerning this topic are found below:
   a. [http://members.aol.com/legendlady](http://members.aol.com/legendlady)
   b. [http://www.baseballhalloffame.org/education/primary%5Fsources/women/index.htm](http://www.baseballhalloffame.org/education/primary%5Fsources/women/index.htm)
   c. [http://www.baseballhalloffame.org/education/primary%5Fsources/women/document_01_small.htm](http://www.baseballhalloffame.org/education/primary%5Fsources/women/document_01_small.htm)

8. Students take notes concerning the role of women during World War II.


**Assessment:**
1. Each student will analyze 3 articles or documents using one of the 3 document analysis methods.
2. Each student will complete a map of Oklahoma or the United States that shows the locations of military bases or WASP bases where women worked and trained.
3. Each student will complete a one-page essay on the question posed earlier, “Were the women of World War II, Powder Puffs or Heroes?”
Extensions:
1. Students research the role of women in the Armed Services today.
2. Students research the roles of other minorities during World War II. Some examples would be:

I. African Americans (Tuskegee Airmen),

II. Native American (Code Talkers),

15. http://www.yvwi.usdinvnnohii.net/history/usmccode.htm
17. http://www.usmint.gov/mint_programs/medals/navajo/
22. http://codetalkers.info/

III. Asian Americans (interpreters)


3. Interview and record a local “Rosie the Riveter”.
Up, Up, and Away (a look at Clarence Tinker’s Life and Legacy)

Overview: This lesson uses video and Internet articles to give the student an overview of General Clarence Tinker’s life and his legacy. It combines students’ knowledge and skills in geography and history.

Objectives: The student will:
1. Use maps to trace the movement of Clarence Tinker during his lifetime.
2. Construct a timeline of his life.
3. Examine Clarence Tinker’s life to determine his legacy.
4. Examine his role and contributions to U.S. Air Force History.
5. Determine Tinker’s role in the creation of Tinker AFB.

PASS Standards:
1. Oklahoma History: Standards 1 and 3.4
2. World History: Standards 1 and 6
4. World Geography: Standards 1 and 4

Geographic Themes: Movement, Place and Region

Connections: English, Literature, Reading, Oklahoma History, World History, World Geography and American History

Grade Level: Secondary High School (Grades 9-12)

Materials Needed:
1. Internet articles
2. Handouts
3. Maps of Oklahoma, World, United States, Hawaii, Pacific Ocean, World War II Theater
4. Paper for Timelines
5. Colored pencils or markers
6. VHS Tape “Osage Aviator”- Tinker AFB video
Procedures:
1. Students begin this lesson by examining several articles on General Tinker’s life
   b. http://www.ok-history.mus.ok.us/enc/tinker.htm
   g. http://www.stripes.com/article.asp?section=125&article=18886&archive=true
   h. http://www.shsu.edu/~his_ncp/NAWWII.htm

2. During the analysis of these articles, students write down the important events in Tinker’s life and the places he lived during his lifetime.
3. Show the movie “Osage Aviator,” available through the OCIC library, and students add to their notes any other information or locations concerning Tinker’s life.
4. Have them circle events they consider important and underline any geographic locations that were mentioned in their notes.
5. Using the notes, students will construct a timeline on Tinker’s life.
6. When the timeline is complete, have students refer to the locations that were underlined in their notes. Map out these locations on the blank maps provided.
   k. http://coehp.boisestate.edu/compass/Facultyroom/MapFolder/USOutline.htm
1. Possible Locations:
   a. Oklahoma: Pawhuska, Tinker AFB
   b. US: Honolulu HI, Sacramento CA, Lexington MO, Kelly Field TX, Florida, Lawrence KS
   c. World Map: Hawaii, Midway Island

2. Students report to the class on their timelines and one map (their choice.)
3. Lead the class in a discussion of Tinker’s life and pose the following question, ”Did Tinker leave a legacy?”
4. Students write an essay discussing his life and their answer to the question above.

Assessment:
1. Each student constructs a timeline on Tinker’s life.
2. Each student completes three maps on Tinker’s life.
3. Each student writes a one page essay on Tinker’s life and legacy

Extensions:
1. Students research Tinker AFB and its impact on Oklahoma.
   a. [http://www.tinker-af.org/history.htm](http://www.tinker-af.org/history.htm)
2. Study the lives of other famous Oklahomans or Native Americans who fought in World War II and serve in our current military.
   c. [http://www.dod.mil/specials/nativeam02/wwii.html](http://www.dod.mil/specials/nativeam02/wwii.html)
3. Interview and record a veteran’s first-hand account of their war experiences.
4. Research and design a B-24 Liberator Plane.
5. Research the Florida connection to General Tinker’s life.
7. Research the city of Pawhuska, General Tinker’s birthplace.
8. Research the names of military bases and their histories.
   a. [http://www.tinker-af.org/history.htm](http://www.tinker-af.org/history.htm)
   c. [http://www.shaw.af.mil/20fw/history/group.html](http://www.shaw.af.mil/20fw/history/group.html)

Resources:
1. “Osage Aviator” video (available online and for check out.)
2. Native Americans and Military Article March 1984
   a. [www.redoaktree.org](http://www.redoaktree.org)
   b. [http://redoaktree.org/family/photos/t64.htm](http://redoaktree.org/family/photos/t64.htm)
3. Osage General by James Crowder.
Oklahomans in Aviation

Overview: This lesson introduces Oklahoman’s contributions to the history of flight.

Objectives: See attached.

Time: Various

Appropriate age groups: All

Number of participants: Class of 25-30 students

Materials needed: Internet access, newspaper and magazine articles, periodicals, worksheets and art supplies.

Description: This lesson gives students the opportunity to explore the history of flight from an Oklahoman’s standpoint. Students research different aviators and present their findings to the class.

Procedure:
1. Write the following names on the board: Will Rogers, Wiley Post, Clarence Tinker, Jerrie Cobb, Thomas Stafford, Shannon Lucid, John Bennett Herrington, Art Goebel, Tom Allen, and Wally Funk.
2. Have students write the names down on a piece of paper. After the names have been copied down, the students write down a sentence or two about these famous people. If they do not know who these people are, they should leave them blank.
3. After five minutes of brainstorming, have students share the connections that these people share. (For example: Wiley Post and Will Rogers flew together, John Harrington and Thomas Stafford are astronauts).
4. Give students time to discuss and write down the connections. The major theme that connects all these people is that they are from Oklahoma.
5. Assign each student one of the people above for a mini research unit. Their unit should include the following:
   a. Historical background information
   b. Accomplishments in flight
   c. Hometown information
   d. Pictures, stories, posters, slides,
Wiley Post was born on November 22, 1898, in Texas. The family soon moved to a farm in southern Oklahoma, near Maysville. Wiley dropped out of school at the age of 12. He hated farming and dreamed of something different; he decided to attend a mechanic school in Kansas City.

In 1921, Wiley’s life took a turn for the worse as he took up a life of crime in a small town near Chickasha. His brush with the law was due to stealing cars. He would throw tires in the middle of a rural road, which would cause the driver to stop. When the driver got out of the car, he would take the car. His unlawful career ended when he tried to hijack a carload of hunters. They turned the tables on him. He was convicted of robbery and sentenced to ten years in prison, at the ripe old age of 23. He was paroled 13 years later when the famous Oklahoma Governor “Alfalfa” Bill Murray gave him a full pardon.

With his criminal life behind him, Wiley Post became a jumper with a barnstormer named Burrell Tibbs. This job allowed him to receive pilot instruction, and a love for airplanes was sparked. Even though he nearly crashed on his first flight, Wiley become obsessed with owning his own airplane. By working the oil fields around Seminole, Wiley earned the money he needed to purchase his own plane. While working at this job, he suffered a life changing accident. A roughneck swung a sledgehammer on an iron bolt, causing a chip to lodge in Wiley’s eye. The eye became infected and it had to be removed. Wiley was a 28-year-old man with one eye and a fifth grade education. How could he ever become a pilot? The answer: he was determined! He was able to train the good eye to perceive depth, and through a loophole in the law, he was allowed to obtain his license. After 700 flight hours, Wiley Post earned license #3259, signed by Orville Wright himself.

Wiley Post married Mae Laine. He became the company pilot for F.C. Hall in Chickasha, where he bought his first plane, a Lockheed Vega. Wiley named the Vega, Winnie Mae, after his daughter. He began a new chapter in his life when he met navigator Harold Gatty. Gatty encouraged him to embark on an around the world flight. The two men left New York City in the fog and rain. Their trip included Newfoundland, Canada, England, Germany, Moscow, and Siberia in the USSR, Alaska, Central Canada and back to New York. President Herbert Hoover welcomed them to the White House after a long ticker tape parade. Wiley and Harold’s flight had broken the old record of transcontinental flight, 21 days, by a whopping 13 days! Their joint effort was completed in just 8 days.
Wiley’s next challenge was to make the round the world trip solo. Forty-one people contributed $41,000 in support of his solo effort. At dawn on July 15, 1933, Wiley Post departed Floyd Bennett Field in Long Island aboard the Winnie Mae. Will Rogers joked that he wished he were flying with Wiley instead of that “robot”. The “robot” was a reference to the first automatic pilot used in flight. His flight was not without incident. When he landed in Berlin, Germany, a squad of German soldiers kept crowds away from him and his plane. This was a result of the new leader in Germany, Adolph Hitler. His next stop was Moscow. It was here that he had to thread his way through the Ural Mountains, which were 6,000 feet higher than the capacity his Winnie Mae was capable of flying. Rain and fog added to his problems as he headed to Novosibirsk, Russia. He later remarked that if he had a parachute with him during this part of his journey, he would have used it to jump out. Flying from Siberia to Alaska, Wiley became hopelessly lost. He was trying to find Nome, Alaska. He finally settled for Flat, Alaska, where upon landing, he skidded into a ditch, which caused damage to the right landing gear and propeller. This led to the replacement of both parts, which were shipped from a nearby lumber camp. When the Winnie Mae was repaired, he headed to Canada. An exhausted Wiley Post used a finger tied to a stick to wake him up as he flew. When he fell asleep, the stick jerked is finger, which caused him to wake up. He estimated that he fell asleep 200 times during his entire trip.

When he arrived in New York on July 22, 1933, he was hailed as a one-eyed superman. Fifty thousand people cheered as he rose up out of the cockpit. Wiley had broken his own record by 21 hours, completing the flight in 7 days, 18 hours and 49 minutes. Wiley became the first man to fly around the world twice, once with Harold Gatty and the other time solo, by himself. The President who welcomed him this time was Franklin Delano Roosevelt.

Wiley’s new dream was a bit different. He wanted to break the world altitude record. The Winnie Mae was not pressurized for high altitude, so Wiley designed the first pressurized suit. This suit allowed the pilot to maintain normal atmospheric pressure and oxygen content in the stratosphere, which allowed the pilot to breathe normally and withstand the high pressures of the Earth’s upper atmosphere. With the help and sponsorship of Frank Phillips and the Philips Petroleum Company, Wiley took off from Bartlesville, Oklahoma, in his attempt to break the world’s altitude record. He reached an altitude of 55,000 feet, which was a new world altitude record. His pressurized suit would become the prototype for the suits that astronauts would use and need in the future as they traveled in space.

The Winnie Mae was retired in 1935 and it was placed in the Smithsonian Air And Space Museum in Washington, D.C., where you can visit it today. In August 1935, Wiley Post and Will Rogers set out to test a new Orion-Explorer aircraft. They were going to make a trip to Alaska. On August 15, 1935, they landed on a shallow river by an Eskimo sealing camp, 15 miles from Point Barrow. The men received directions to Point Barrow and they took off. Two hundred feet above the ground, the engine caught fire, sputtered, made an eerie roaring noise, then silence as the plane fell to the ground. Both men were killed instantly. The nation mourned. The U.S. Congress approved the burial of Wiley Post in the National Cemetery at Arlington, Virginia. His wife chose to bury him in Memorial Park Cemetery in Oklahoma City.

The following excerpt was taken from the Daily Oklahoman on August 17, 1935:

“The tragedy that darted down from Artic clouds claimed men who had entrenched themselves in the love and admiration of the whole world... no greater birdman has ever defied and conquered skies and seas. It is supremely bitter in the fields of broomcorn and among the derricks where Wiley Post first caught the eagle’s spirit and resolved to cross clouds and sky.”

Wiley Post’s legacy lives on today in Oklahoma and the world. He truly was ahead of his time.
On Tuesday morning, August 16, 1927, mist hovered over the Oakland Airport. Only eight (not fifteen) small aircraft lined up on a runway. Aviation was still new in 1927 and pineapple magnate, James D. Dole, was offering a prize of $35,000 for the first airplane to fly 2,400 miles to Honolulu, Hawaii.

But the story of the Dole Pineapple Race, started before August 16, 1927. On August 6th, there were fifteen airplanes listed for the competition. Position #13 went to Navy Lt. George D. Covell and R.S. Waggener. They were to fly an unnamed “mystery monoplane”, supposed to be one of the best. But in August they took off from San Diego, heading to the start in Oakland. They flew into fog and crashed into an ocean cliff fifteen minutes into the flight, killing both men.

Another entrant, Captain Arthur V. Rogers, a veteran of WWI, took his monoplane named Angel up for a test flight near Los Angeles. He circled in preparation for landing; then suddenly plunged one hundred twenty-five feet to the ground. His wife and infant daughter watched his plummet to death.

Mildred Doran, a twenty-two year old teacher from Michigan, was another competitor. Mildred wore five fraternity pins on her flight suit, but admitted the boys were just dancing partners. On the way to the race, Miss Doran’s plane came down in a San Joaquin Valley wheat field after suffering sparkplug problems.

Captain J.L. Giffin and navigator, Theodore S. Lundgren, flew in from Long Beach. As they neared the Oakland field, their craft fell into the bay one hundred feet off shore. Giffin and Lundgren were not hurt, but they were out of the race.

The eight competitors that misty August 16th morning were:

- **The Aloha**, pilot: Martin Jensen and navigator, Captain Paul Schuluter. Martin is said to have quipped, “I’ll make it or die in the attempt!”
- **The Woolaroc**, pilot: Joe Goebel and navigator, Lt. William V. Davis. The Woolaroc was financed by Frank Phillips of Phillips 66 in Bartlesville, OK.
- **The Miss Doran**, with Mildred aboard; pilot: Pedlar and navigator, Knope.
- **The Oklahoma**, a sister ship of the Woolaroc; pilot: Bennett Griffin and navigator, Al Henley.
- **The Dallas Spirit**, pilot: Captain William P. Erwin, WWI combat pilot and navigator, Alvin Eichamldt.
- **El Encanto**, a metal, monoplane; pilot: Navy Lt. Norman A. Goddard and Lt. Kenneth C. Hawkins. The El Encanto was heavily favored to win.
The crowd of 100,000 cheered the small group of aircraft off just before noon. The cheers turned quickly to shrieks as *El Encanto* veered off to the right of the runway and onto her left wing. Goddard and Hawkins were not hurt, but were out of the race.

The *Pabco Flyer* lifted up next, hovered momentarily, and fell back just 7,000 feet from the start. The *Miss Doran*, battered from the earlier crash, managed to rise up but was back in about ten minutes. *Oklahoma* came back, also, with a ripped fuselage. *The Dallas Spirit*, when it was her turn, made it up and away. But, something went wrong with her tail assembly, so Erwin and Eichwaldt brought her back. *Aloha* flew off without incident and so did the *Woolaroc*. Two of the false starters tried again. The *Miss Doran* rose slowly with its crew of three and disappeared; the *Pabco Flyer* crashed again. So, after weeks of fanfare, only four airplanes actually took part in the race. They were the *Golden Eagle, Aloha, Woolaroc, and Miss Doran*. The hopes and prayers of thousands went with them.

The *Woolaroc*, with Goebel and Davis, arrived first in twenty-six hours and seventeen minutes. The *Aloha*, with Jensen and Shuluter, arrived in twenty-eight hours, sixteen minutes for second place. The *Golden Eagle* and the *Miss Doran* were never seen again. Five lives were lost during the adventure. But, it wasn’t over yet! Three days later, Ervin and Eichwaldt having fixed their tail assembly took off for Honolulu to find the lost ships. They, along with the *Dallas Spirit* were lost at sea. Ten lives were lost before, during, and after the race.

Credit to: San Francisco Call-Bulletin

Using an atlas or world map, students find the coordinates for all of the Hawaiian Islands.

Chart an air route from Oakland to Honolulu.

Find how large the island of Oahu is. How difficult would it be in 1927 to find and land in Honolulu? Discuss.

Name each major volcano of each island and locate it on a map of the Hawaiian Islands.

Research Phillips Petroleum and its connection with aviation, as well as Art Goebel and the race. Write a summary paragraph about the relationship of the three.
Thomas Cox Allen and Herman Benning became the first black pilots to fly across the North American continent from Los Angeles to New York. The two men flew a rebuilt Alexander Englerock biplane, hoping to win the $1,000.00 prize for being the first black pilots to complete a transcontinental flight.

The trip was not a typical flight. The two men took turns being the pilot, and stopping to seek donations to enable them to continue their journey. Whenever they landed, one would stay to work on the plane and the other visited black pool halls or churches asking for money to make the next leg of the flight. When things were especially bad, Thomas Allen sold his suit for $10.00 so they could continue on to El Reno.

Upon reaching New York, the men discovered the prize was a hoax. Nobody admitted offering the $1,000.00, but the men did meet celebrities Cab Calloway, Billie Holiday, and Duke Ellington.

Herman Benning died soon after their record flight, in a plane crash in California.

Thomas Cox Allen became a mechanic for Douglas Aircraft in California. Later, he was a lecturer at Oklahoma’s Air & Space Museum in Oklahoma City. He discussed with audiences the difficulties experienced by black pilots. He spoke often of advice he was given by Amelia Earhart. She told him, “Don’t ever fight your opposition. Use your energy to get where you want to go.”

Thomas Cox Allen died in 1989.

Using a U.S. map, plot the flight line that Thomas Allen and Herman Benning might have flown.

Using a map or atlas, find the distance of their flight.
Wally Funk

Wally Funk has flown professionally since 1957, logging over 16,800 hours. She received her Bachelor of Science degree, her Commercial, Single-Engine land, Multi-engine land, Single-Engine Sea, Instrumental, Flight Instruction’s and all Ground Instructor’s rulings from Oklahoma State University. While flying at OSU, Wally was a member of the “Flying Aggies” and flew in International Collegiate meets. She received the “Outstanding Female Pilot” trophy, the flying Aggie Top Pilot, and Alfred Alder Memorial trophy two years in a row. After graduation, Wally became a civilian flight instructor for the U.S. army. She has soloed more than 700 students.

In February 1961, twenty-one year old Wally Funk volunteered for the “Women in Space” program. She was one of twenty-five women chosen to take the difficult mental and physical tests. The women were given the exact same tests the men had received a year earlier. For the high G-force test, Wally asked her mother for a “merry widow” to help keep the blood up in her head. Even at 5-G’s, Wally never blacked out. Wally and thirteen other women scored high on the tests, sometimes surpassing the scores of the men candidates. They became the Mercury Thirteen. The women also had an advantage of being lighter in weight than the men and consumed less food, a very important consideration since it takes one thousand pounds of thrust for every pound of payload. The Mercury Thirteen Program was later scrubbed because NASA felt that the country was not ready for female astronauts.

Since the ending of the Mercury Thirteen Program, Wally Funk has accomplished a multitude of feats. She has flown the C.S.T, Apollo Static Space Station Simulator at Edward’s Air Force Base Flight Test Center, and has been a flight instructor and pilot for many organizations. She was the first woman to successfully complete the FAA General Aviation Operations Inspector Academy course, first woman to hold the position of FAA SWAP (Systems Worthiness Analysis Program), and the first woman to hold the position of Air Safety Investigator with the National Transportation Safety Board in Washington, DC. She is a much sought after speaker, lecturer, educator, and safety expert. She has entered and placed in various air races and won the 1975 Pacific Air Race from San Diego, CA, to Santa Rosa, CA, in her red and white Citabria.

Wally was offered the chance of a lifetime in 2000 to follow her dream of space flight by training at the Yuri Gargarin Cosmonaut Training Center, Star City, Russia. At the close of her training, Igo Rudyaev, the Star City Deputy Chief, honored her with medallions. Nearly forty years after the Mercury Thirteen, she flew in the Ilyshin seventy-six airplane and experienced ten parabolic arcs from thirty-five thousand to fifteen thousand feet, which put her in a zero-G weightlessness state. She returned in 2001 and 2002 to further her training in Star City.

In 2001 Randa Milliron, DCO of Interorbital Systems Corporation, began looking for a test pilot. She heard of Wally Funk and decided Wally was the most qualified rocket pilot for the Solaris X. The Solaris X will be the only entry from a company led by a woman and with a woman pilot. Milliron wanted someone who would be able to think on her feet for an activity like this – the first successful civilian rocket launch. Wally’s focus today is on the Solaris X; tests of the rocket engine were planned for September 2003. With eighteen months of successful tests, Wally could make her maiden suborbital flight. She is determined to win the prize. “I plan to keep flying until I’m 90,” says Wally Funk. “I’m in top physical condition and I don’t have any glitches.”
Study Questions:

Find Star City on a world map or atlas.

Find out what the area around Star City, Russia is like.

What other countries are close to Russia?

What is the capital of Russia?

What are some of the rivers in Russia?

What can you find out about the area of Russia named Siberia?

The Solaris X is being developed at the Mojave Civilian Flight Test Center. In what state is this area? Why would this be a good area to test rocket engines?
Wilbur & Orville Wright

Wilbur Wright, September 3, 1900, stated, “It is my belief that flight is possible and while I am taking up the investigation for pleasure rather than profit, I think there is a slight possibility of achieving fame and fortune from it.”

Wilbur Wright was born in 1867 near Richmond, IN. The family moved to Dayton, OH, in 1869, and Orville was born in 1871. When Wilbur was eleven and Orville was seven, their father gave them a toy helicopter that could fly. This was the toy that sparked their interest in flight. As young men, Wilbur and Orville started out in the newspaper business by building their own printing press using a tombstone and buggy parts. Meanwhile, as a sideline, the brothers began to repair and race bicycles. In 1892, the brothers opened a bicycle shop named the Wright Brothers Manufacturing Company, which made two models: the ‘Van Cleve” and the “St. Clair”. In 1899, the brothers began to study flying by reading everything they could find on the subject. This led to the building of their first glider in 1900. The glider had 2 wings, about 17 feet long and 5 feet deep. One set was about 4 feet above the other. Both wings were made of tightly woven white material stretched over a light wooden frame. Wire bracing kept the structure tight. There was an open space in the lower wing where the pilot rides, lying on his stomach. They needed a place that was steep with strong, steady winds to test their glider. The weather bureau suggested the sand dunes at Kitty Hawk, NC. The glider, which weighed almost one hundred pounds with the chains, just floated in the air as the strong breezes blew, taking the glider 500-600 feet. Orville struggled to hold onto the cables that controlled the direction of flight. Wilbur was behind the glider pulling on another set of wires; the wings twisted and the glider tilted and drifted to the side. This control was truly wonderful but, the brothers hauled the heavy glider up the hill over and over, carefully watching how it descended each time. When they packed up to return to Dayton, they left the glider behind. It was too heavy to take back with them. A local woman took the sateen fabric off the wings and made dresses for her daughters.

In 1901, the Wright brothers returned to Kill Devil Hills with a much larger glider. The wings were 7 feet by 22 feet. The glider itself weighed 100 pounds. The brothers used data from Otto Lilienthal to design the new wings, but the glider was disappointing. It only glided about 300 feet. The front rudder didn’t have much control of the pitch and then when the wings were warped, to turn the glider, it settled backward and spun out of control. At the end of the 2 weeks, the brothers returned to Dayton very discouraged.

In 1902, Orville used a machine very much like a wind tunnel to test the shape of the 1901 glider. He found that Otto Lilienthal’s data tables were faulty. When the brothers arrived in Kill Devil Hills in 1902, the new glider had a wingspan of 32 feet and the width has decreased to 5 feet. A device called a hip cradle allowed the pilot to operate controls for the wing warping by moving his hips. The new glider weighed about 120 pounds and performed much better than the previous one. However, 1 out of every 50 flights spun out of control. Wilbur and Orville reasoned that in low-speed turns, the tail was acting like a vertical wing. It provided a sideways force that caused the glider to spin. They worked on the difficulty and achieved better and better results with the control of the glider. The brothers felt that the only thing their craft needed was an engine and propellers.

In 1903, Wilbur and Orville Wright built a 12 horsepower engine weighing 170 pounds for their aircraft. Neither of them had ever built an engine before. They spent 5 months designing the propellers to be shaped like rotating wings.
On Dec. 14th the brothers hoisted the red flag to signal for the Lifesaving crew to come. With the restraining ropes in place, they started the motor and propellers. The brothers flipped a coin to see who would be the first pilot; Wilbur won. He pulled the nose up a bit too sharply and it stalled, settled back in the sand, breaking a few parts. It was airborne for 3 seconds.

On Dec. 17, 1903, the red flag was again hoisted. The wind was blowing much harder and it was Orville’s turn to be the pilot. The wind was blowing so strong that Wilbur ran alongside the airplane to steady the wing as Orville took off. Orville flew 12 seconds for a distance of 120 feet. Three more flights were made that day, the longest of which was 59 seconds, covering 852 feet. As the brothers prepared for a 5th flight, a huge gust of wind picked the airplane up and rolled it. It was so damaged that more flights were not possible. The Wrights walked 4 miles up the beach to telegraph their father of their success.

Why didn’t the brothers attempt to fly their glider or airplane in Dayton, OH?

Where else could they have attempted such flights?

How far did they travel to get from Dayton to Kill Devil Hills?

Later, the Wright brothers went to France, Germany, Austria, Italy, and England to sell their invention. Find all of these countries and their capitals on the map. List the country with its capital.

In 1906, the Wright brothers were granted a patent on their airplane design. Using the Internet, find out how to apply for a patent today. Find out how a patent protects the inventor under the law and any other information you think is important about patents.
Lt. General Thomas A. Stafford

Thomas A. Stafford, Lt. General USAF and NASA astronaut, was born in Weatherford, OK. He graduated with honors in 1952 from the U.S. Naval Academy, Annapolis, Maryland. He was commissioned in the US Air Force. In 1953, he received his pilot wings at Connally AFB, Waco, TX. He finished advanced interceptor training and was assigned to the 54th Fighter Interceptor Squadron at Ellsworth AFB in South Dakota. In 1955, he was assigned to the 496th Fighter Squadron at Hahn AFB, Germany, where his duties included flying F-86s. He served as pilot, flight leader, and maintenance leader.

General Stafford was in the second group of astronauts chosen by NASA to participate in the Gemini and Apollo Projects. In December of 1965, he piloted Gemini VI, the first craft to rendezvous in space. In June 1966, he commanded Gemini IX. From August 1966 to October 1968, he headed mission-planning analysis for Project Apollo. General Stafford was commander of Apollo 10 in May of 1969. It was the first flight of the lunar module to the moon. The first rendezvous around the moon and it was the first practice of the procedures that would be used to land the lunar module. General Stafford was in the Guinness Book of World Records for the highest speed ever reached by a man, which was attained during his Apollo 10 reentry at 24,791-statute mph.

In 1970, General Stafford became Deputy Director of Flight Crew Operations. However, in July of 1975, he took to the skies again as Commander of the Apollo-Soyuz Test Project mission. It was a historic, joint space flight venture; the 1st mission between American astronauts and Soviet cosmonauts. General Stafford was promoted to Lieutenant General, March 15, 1978. He retired in 1979. In June of 1990, Vice President Quayle asked General Stafford to chair a team to advise NASA on President Bush’s vision to return man to the moon and start the exploration of Mars.

Throughout his distinguished career, General Stafford earned many special honors, including the following: NASA Distinguished Service Medal, 2 NASA Exceptional Service Medals, the Air Force Distinguished Service Medal with 3 oak leaf clusters and the Congressional Space Medal of Honor. He was inducted into the Oklahoma Commerce and Industry Hall of Fame, the National Hall of Fame and the Aerospace Walk of Honor.
Colonel Stuart Allen Roosa

Stuart Allen Roosa, Colonel USAF and NASA astronaut, was born August 16, 1933, in Durango, Colorado. He moved to Claremore, Oklahoma, and later studied at Oklahoma State University. He eventually went to the University of Arizona and University of Colorado, where he graduated with honors.

Stuart Roosa’s active duty in the Air Force was from 1953 to 1976. He was an experimental test pilot at Edwards Air Force Base, CA. He was a maintenance flight test pilot at Olmstead Air Force Base, PA, flying F-101 aircraft. During his Air Force career, he was also assigned to Langley Air Force Base flying F-84’s and F-100’s. He logged 5,500 hours flying time during his stay at Langley.

Colonel Roosa was one of nineteen astronauts in April 1955. He was on the support crew for Apollo 9. His first space flight was aboard Apollo 14 in 1971. Roosa remained in the lunar orbit aboard the command module, “Kitty hawk”. While in orbit, Roosa performed visual and photographic assignments.

On the moon, Shepard and Mitchell deployed and activated scientific equipment and experiments. They eventually collected about 100 pounds of lunar samples to take back to Earth. Apollo 14 achieved the first use of the MET (Mobile Equipment Transporter.) Colonel Roosa was a backup command pilot for Apollo 16 and 17 and was later assigned to the STS program. He retired from NASA in 1976. He worked for different agencies until his death on December 12, 1994.

Among many special honors Mr. Roosa received were: NASA Distinguished Service Medal, the Air Force Commendation Medal, the Air Force Distinguished Service Medal, the Robert Goddard Trophy; he was inducted into the Oklahoma Aviation and Space Hall of Fame.
Owen Garriot was born November 22, 1930, in Enid, Oklahoma. He graduated from Enid High School, received a BS from the University of Oklahoma, and his MS and PhD from Stanford University. He completed one year in the U.S. Air Force Pilot Training program. He served as electronics officer for the U.S. Navy from 1953 to 1956. In 1965, he was one of the first six scientists/astronauts that were selected by NASA. His first space flight was aboard Skylab in 1973. While aboard Skylab, he set a new record of 60 days in space. The focus of the flight was to study the sun, earth resources, and human adaptation to weightlessness in space.

Between his flights, Garriot served as Director of Science Applications at JSC. From 1984 to 1986, he held the position of Project Scientist in the Space Station Project Office. He advised the project on the scientific suitability of the Space Station design. Mr. Garriot’s second flight was aboard Spacelab 1 in 1983. This lasted for ten days. Over 70 experiments in six disciplines were conducted. He operated the first amateur radio station from space, W5LFL, which is now common aboard STS flights and ISS.

Later, Garriot served on NASA and National Research Council Committees. He was Vice President of Space Programs for Teledyne Brown Engineering. This division provided payload integration for all Spacelab projects and was involved with the US laboratory for the ISS.

Much of Owen Garriot’s time has also been spent assisting in various charity activities in Enid, Oklahoma. He has served as an adjunct Professor in the Laboratory for Structural Biology at the University of Alabama. His focus of study has been microbes. His research has taken him to exotic places such as the Azores and Antarctica. During his time in Antarctica, they retrieved meteorites for further study. He has been the recipient of many special honors. These include: the National Science Foundation fellowship, NASA’s Distinguished Service Medal, NASA’s Space Flight Medal and the Goddard Memorial Trophy. He was inducted into the Oklahoma Air and Space Hall of Fame, the US Astronaut Hall of Fame, and the Oklahoma Military Hall of Fame.
Colonel William Pogue

William Reid Pogue, Colonel in the U.S. Air Force and NASA astronaut, was born January 23, 1930, in Okemah, Oklahoma. He now resides in Sand Springs, Oklahoma. He is an honorary board member for the Tulsa Air and Space Museum. He received a BS degree from Oklahoma Baptist University and a Master of Science degree in Mathematics from Oklahoma State University. Colonel Pogue enlisted in the Air Force in 1951 and he was commissioned in 1952. He spent two years fighting in Korea as a pilot. He used those years of experience to become a member of the Air Force’s elite flight demonstration team, the Thunderbirds. During his tenure in the Air Force, he was able to fly over 50 types of American and British aircraft.

Colonel Pogue was one of 19 astronauts selected by NASA in April of 1966. He was a member of the astronaut support crews for Apollo 7, 11, and 14. On November 16, 1973, he was appointed the pilot of Skylab 4, the final manned visit to the Skylab orbital workshop. His mission concluded February 8, 1974. His flight set a new record for the longest manned flight—84 days, one hour, and 15 minutes. It covered a record 34.5 million miles. They successfully completed 56 experiments, 26 science demonstrations, 15 subsystem detailed objectives, and 13 student investigations. They acquired extensive Earth resource observations, as well as information on long-term physiological effects of weightlessness on crewmembers.

William Pogue retired from the USAF on September 1, 1975, and is now retired from NASA. He is currently self-employed as a consultant and producer for aerospace videos on space flight. Colonel Pogue received the following honors during his career: NASA Distinguished Service Award, Johnson Space Center Superior Achievement Award, the Air Medal, the Air Force Commendation Medal, the Dr. Robert Goddard Memorial Trophy, the Air Force Distinguished Service Medal, the General Thomas White USAF Space Trophy, and he was inducted into the Oklahoma Aviation and Space Hall of Fame.
Shannon W. Lucid, PhD.

Shannon W. Lucid, chief scientist at NASA headquarters, was born on January 14, 1943, in Shanghai, China. Her family eventually moved to Bethany, Oklahoma, which she considers her hometown today. She graduated from Bethany High School in 1960 and she later received a BS in chemistry from the University of Oklahoma in 1963. She continued her education earning a Master of Science and Doctor of Philosophy in biochemistry from OU in 1970 and 1973, respectively.

Dr. Lucid’s career includes a wide variety of experiences. She was a teaching assistant at the University of Oklahoma, senior laboratory technician for Oklahoma Medical Research Foundation, a chemist at Kerr-McGee, and a graduate assistant at the University of Oklahoma Health and Science Center. It was here that she began her dream of becoming an astronaut.

Dr. Lucid was selected by NASA in January 1978 to enter the astronaut-training program. She officially became an astronaut in 1979. She is classified as a mission specialist on Space Shuttle flight crews. Dr. Lucid is a veteran of five space shuttle flights for a total of 5,354 hours (223 days) in space. Her missions included:

- STS-51G June 17-24, 1985
- STS-34 October 18-23, 1989
- STS-43 August 2-11, 1991
- STS-58 October 18-November 1, 1993

Her most recent flight was as a Board Engineer on Russia’s Space Station Mir that was launched March 22, 1996, aboard STS-76 and returning September 26, 1996, aboard STS-79. Dr. Lucid holds the international record for the most flight hours in orbit by any non-Russian and the record for most flight hours in orbit by any woman in the world. Her last mission on the Mir resulted in her logging 75.2 million miles in 188 days, 4 hours, and 14 seconds in space.

In February 2002, Dr. Lucid was selected as NASA’s Chief Scientist. She is currently stationed at NASA headquarters in Washington, D.C. Her responsibilities include developing and communicating the agencies’ science and research goals and objectives to the outside world. She is the recipient of numerous awards, including: the Congressional Space Medal of Honor by the President of the United States (the first woman ever to receive this award), the Order of Friendship Medal by Russian President Boris Yeltsin (this is the highest award that can be given to a civilian),
Commander John Bennett Herrington

John Bennett Herrington, Commander US Navy and NASA astronaut, was born September 14, 1958, in Wetumka, Oklahoma. He later lived in Colorado, Wyoming, and Texas. He received his BS degree from the University of Colorado in 1983 and a Master of Science in aeronautical engineering from the U.S. Naval Postgraduate School in 1995.

John Herrington received his commission from Aviation Officer Candidate School and he was designated as a Naval aviator in 1985. His first operational assignment was with Patrol Squadron Forty-Eight, where he made three operational deployments. He later became a squadron instructor pilot. During his assignments he was able to attend Naval Test Pilot school.

NASA selected Commander Herrington for the astronaut corps in April 1996. He trained for two years at Johnson Space Center and he was assigned to the flight support branch of the astronaut office. He served on the astronaut support personnel team where his job responsibilities included overseeing shuttle launches and landings. He recently flew aboard STS-113, logging 330 hours in space and three EVA's for a total of 19 hours, 55 minutes. STS 113 brought home the Expedition 5 crew from their six-month mission onboard the International Space Station. STS-113 spent 13 days, 18 hours, and 47 minutes in space.

In his relatively short career, Commander Herrington has received the following awards: the Navy Commendation Medal, the Navy Meritorious Unit Commendation, the Coast Guard Meritorious Unit Commendation, the National Defense Medal and three Sea Service Deployment Ribbons. He is currently in the NASA astronaut program.