Annotated Bibliography

Primary Sources

Interviews

Engle, Joe, Major General. Interview by author. May 7, 2013.

 Major General Engle was a NASA astronaut from 1966 to 1986. He participated in the Challenger disaster investigation and served on the task force with Apollo astronaut General Tom Stafford to help establish U. S. – Russian cooperation for the Shuttle Mir Program. Although he retired in 1986, General Engle still serves as a consultant to NASA and agreed to speak to me on the phone. This interview was extremely helpful because he worked at NASA during the Apollo-Soyuz mission and explained that cooperation had been difficult because of the secrecy that surrounded all of the Soviet activities. He also said that the Shuttle-Mir project was the complete opposite because the Russian Space Agency had been very open with Americans. When General Stafford had worked with the Soviets during the Apollo-Soyuz Mission, the Soviets had driven him around for three hours before taking him to Mission Control so he would not know where it was. During the Shuttle Mir cooperation, they learned that Mission Control was just down the hall from where they had been meeting. I used this information to show the reversal of attitude that occurred between the two missions.

Kranz, Eugene. Interview by author. March 24, 2013.

Eugene Kranz joined NASA in 1960, becoming chief of the Flight Control Operations Branch in 1963. Kranz served as Gemini flight director from 1964-68. He was also the flight director for Apollo and Skylab mission, the most memorable of which include Apollo 11 and 13. In 1974 Kranz was elevated to deputy director of Flight Operations. In 1983 he was promoted to director of Mission Operations until his retirement in 1994. Kranz provided me with some more examples of Soviet-American cooperation, such as the recovery of Apollo 13 when Soviets helped ensure that the Indian Ocean was cleared for their safe landing. He spoke about medical research in space and labeled NASA a “tool” that the government used for diplomacy.

Leonov, Alexey, General. [nstenko@bvcp.ru] Email interview by author. May 8, 2013.

 Natalya Stenko is Alexey Leonov’s secretary and speaks very good English. General Stafford gave me her information and allowed me to say that he had recommended that I contact her to arrange an interview via email with General Leonov. Through her, I was able to ask General Leonov questions about his experience on the Apollo-Soyuz mission and the impact it had on the Soviet Union. Until this mission, General Leonov had the opinion that all Americans were terrible people, but after he met the American astronauts, his opinion of America began to change. He felt that was true to a degree of the Soviet population, too. He has remained a close friend of General Stafford’s, even helping him adopt two Russian boys who are now American citizens. During the three years that he trained with Americans, the Soviets were very wary of American motives and kept much of their information secret. The mission’s greatest accomplishment was that it showed that America and the Soviet Union could work together even though their political ideologies were very different. He helped me understand the Russian perspective of the Apollo-Soyuz mission.

Mark, Hans, Ph.D. Interview by author. March 18, 2013.

In a telephone interview with Dr. Mark on March 18, 2013 he revealed that in February 1969, he was Director of NASA's Ames Research Center, Mountain View, California, where he managed the center's research and applications efforts in aeronautics, space science, life science and space technology. In July 1981, he was Deputy Administrator of NASA. He explained that the real objective of the Apollo-Soyuz program was the “handshake in space” conceived by Henry Kissinger. The handshake symbolized the Nixon administration’s foreign policy of détente with the Russians. He felt that even though the mission did not have any far-reaching technical impact, its symbolic impact ultimately persuaded the Reagan administration to move forward with the space station. I used this information to show the importance of the Apollo-Soyuz mission.

Shireman, Kirk. Interview by author. March 11, 2013.

In a telephone interview with Kirk Shireman on March 11, 2013, he revealed that he is currently NASA's deputy station program manager for the International Space Station. He says that October 31, 2000, may become one of the most important dates in history. That day a Russian Soyuz spacecraft blasted into orbit with one American and two Russian cosmonauts on board, and since then at least three people have stayed in orbit around Earth. He explained that The ISS employs thousands of scientists and engineers from the world's major space agencies. The most difficult part in the beginning was overcoming numerous language barriers and deciding on a system of units to use. He believes that the ISS is the platform from which humans will take their next steps into the solar system. I used this information to explain the importance of the International Space Station as a global collaboration for the advancement of mankind.

Stafford, Tom, Lt. Gen. USAF (Ret.). Interview by author. May 7, 2013.

 General Stafford was Apollo commander on the Apollo-Soyuz mission. He was the astronaut who shook hands in space with Soviet cosmonaut Alexey Leonov. This interview was my most helpful source because General Stafford was able to explain how the Apollo-Soyuz mission was a turning point in history, beyond the symbolic gesture of the hand shake. He said this mission laid the ground work for all subsequent joint missions because all later missions followed the same format and protocol. He also said that this mission had an impact on the Russian people who were able to see him and the other two astronauts as real people while they were training there*. Pravda*, the Soviet newspaper, always had cartoons about how bad Americans were, and this mission helped to improve the Russians’ opinions of us. He feels that the recent funding cuts to NASA will not only affect future missions but will also tarnish our world image as a superpower in space. The International Space Station is already providing the world with knowledge and advancements in science, technology, the environment, and other areas, but he thinks it will take decades to know its full impact on mankind and the earth. I used this information to reinforce my thesis that the hand shake in space was a turning point in history because of the détente it established between the two Cold War rivals.

Internet Interviews

Khrushchev, Sergie. Interview by Saswato R. Das. July 17, 2009. Transcript in “The Moon

Landing Through Soviet Eyes: a Q&A with Sergei Khrushchev, son of former Premier Nikita Khrushchev.” <http://www.scientificamerican.com/article.cfm?id=apollo-moon-khrushchev&page=2> (accessed December 14, 2012).

 On the 40th Anniversary of Apollo 11, Saswato R. Das interviewed Sergei Khrushchev to get the Russian perspective of the moon landing. His father, Nikita Khrushchev, had been president of the Soviet Union at the time. He described how Russia tried to deemphasize the moon landing and described the disorganization of the Soviet Space Program. This interview provided me with Russian perspective of a major turning point in the U.S. – Soviet space race. When Apollo 11 landed a man on the moon, it became a symbol of the end of the space race and America’s victory. This interview helped me understand how Soviets justified their defeat.

Ponomavera, Valentina. Interview by Slava Gerovitch. Moscow, May 17, 2002. http://web.mit.

edu/slava/space/interview/interview-ponomareva.htm (accessed December 14, 2012).

Gerovitch interviewed Valentina Ponomareva about her experience in the Soviet Space Program. Dr. Ponomavera is the head of the Russian History of Aviation and Cosmonautics Section of the Institute for the History of Natural Science and Technology. In March 1962, she became a member of one of the first women’s groups of cosmonauts that included Valentina Tereshkova, the first woman in space. Ponomavera never reached space, but her experience gave me insight on how the Soviet Space Program operated and who its members were. This information helped me understand the Russian perspective of the space race.

Books

Chertok, Boris. *Rockets and People: Creating a Rocket Industry, Vol. II.* Ed. Asif Siddiqi.

Washington, DC: NASA SP-2006-4110, 2006.

Boris Chertok was one of the senior designers of the craft that launched Gagarin into space. Until his information was declassified, his name was never mentioned, but he worked for the Soviet space agency for over sixty years. This book is part of an official NASA history series and begins with the development of the world's first intercontinental ballistic missile (ICBM). It covers the launch of *Sputnik* and the early Moon, Mars, and Venus probes. He discussed the failures, technical problems, and governmental struggles that occurred in the Soviet Union at the beginning of the space race. He also explained that the Soviet program was part of their military, so all of their information was top secret. That is why his name was never released. Information from this book helped me understand the Soviet perspective of *Sputnik’s* success, the problems their space agency faced as the space race continued, and the military nature of their programs.

- - - . *Rockets and People: Hot Days of the Cold War, Vol. III.* Ed. Asif Siddiqi.

Washington, DC: NASA SP-2009-4110, 2009.

In this book, Chertok discussed the Soviet Union’s early bomb tests as a way to even the playing field with America in the area of nuclear weapons. Chertok revealed that early in the Cold War, Soviet scientists were trying to design a shield that would protect Moscow from nuclear attack. He also said that the Soviets blamed Truman for beginning the Cold War. I used this information to discuss the Soviet perspective of early Cold War preparations.

James, Robert Rhodes, ed. *Winston S. Churchill: His Complete Speeches 1897-1963 Volume*

*VII: 1943-1949*. New York: Chelsea House Publishers, 1974.

This book contained all of the speeches made by Winston Churchill. I used the one he

gave at Westminster College in Fulton, Missouri on March 5, 1946, which many people refer to as his “Iron Curtain Speech” because in it he says that an “iron curtain lies across Europe.” I used this in my introduction to document who created the phrase Iron Curtain.

Khrushchev, Sergei. *Memoirs of Nikita Khrushchev: Statesman 1953 – 1964.* University Park,

PA: The Pennsylvania State University Press, 2007.

In his memoirs, Nikita Khrushchev speaks about his role in the Soviet Union at the end of World War II and during the Caribbean Conflict – the U. S. called it the Cuban Missile Crisis. I was able to use several quotes from Khrushchev to give the Soviet point of view on events that occurred during the Cold War.

Mark, Hans. *The Space Station: A Personal Journey.* Durham: Duke University Press, 1987.

 Dr. Mark was the Deputy Administrator of NASA from July 1981 –September 1984. His book covers the events that occurred during the Carter and Reagan administrations, particularly the development of the space shuttle program and President Reagan’s support of the space station. I used information about both administrations to discuss their impact on the space program after the Apollo-Soyuz mission.

Speeches

Kennedy, John F. Inaugural Address. Washington, D.C., January 20, 1961. *John F. Kennedy*

*Presidential Library and Museum*. [http://www.jfklibrary.org/Asset-Viewer/BqXIEM 9F4024nt Fl7SVAjA.aspx?gclid=CLmKs5DXmLUCFYGpPAodym8AJg](http://www.jfklibrary.org/Asset-Viewer/BqXIEM%209F4024nt%20Fl7SVAjA.aspx?gclid=CLmKs5DXmLUCFYGpPAodym8AJg) (accessed December 15, 2012).

This speech is President John Kennedy’s inaugural address to the nation in 1961. I used

information from this speech to show that he reached out to the Soviet Union by saying America and the Soviets could “explore the stars” together.

- - -. “Speech Regarding the Race to the Moon.” Rice University Stadium, Houston, Texas,

September 12, 1962. <http://www.historyplace.com/speeches/jfk-space.htm> (accessed December 14, 2012).

 In his speech given at Rice Stadium in 1962, President John F. Kennedy challenges the United States to place a man on the moon before the decade is out. He defined the race between America and the Soviet Union without mentioning the Soviets by name. President Kennedy described American astronauts as explorers and their competitors as conquerors. This speech helped me understand that tension between the U. S. and the Soviet Union created the Cold War. This speech showed how President Kennedy roused the American people to support his goals in the space race.

- - - . Speech to a Joint Session of Congress, May 25, 1961. [www.space.com/11772-president-kennedy-historic-speech-moon-space.html](http://www.space.com/11772-president-kennedy-historic-speech-moon-space.html). (accessed December 6, 2012)

 In his speech to the Joint Session of Congress, Kennedy states that he wants America to put a man on the moon by the end of the 1960s and asks them to approve the money to achieve that goal. He felt that such an achievement would prove to the world what free people could do and that achievement would help democracy triumph over communism in the world view. I used this to show Kennedy’s commitment to NASA and the space program, which had not been as strong in Eisenhower’s administration. This speech was a major turning point for the American space program.

Congressional Acts

Act of July 29, 1958 (National Aeronautics and Space Act of 1958), Public Law 85-568, 72

STAT 426, ([ARC Identifier: 299868](http://arcweb.archives.gov/arc/action/ExternalIdSearch?id=299868)); Enrolled Acts and Resolutions of Congress, 1789 - 1996; General Records of the United States Government, 1778 - 1992; Record Group 11; National Archives and Records Administration--Southwest Region (Fort Worth, TX).

<http://www.archives.gov/historical-docs/todays-doc/index.html?dod-date=729>. (accessed December 13, 2012).

 This act, which provided for research into the problems of flight within and outside the earth’s atmosphere, founded the National Aeronautics and Space Agency. This helped me understand the beginning goals established for NASA.

Letters

Dr. Glennan to President Eisenhower Regarding Budget Matters, October 20, 1958.

(DDE’s Papers as President, Administration Series, Box 15, Dr. Keith Glennan-NASA).

*Dwight D. Eisenhower Presidential Library and Museum.* http://www.eisenhower. archives.gov/research/onlinedocuments/nasa.html (accessed December 13, 2012).

In this letter, Dr. Glennan states that in order to compete with the Soviets, the government

will have to increase its levels of funding. He also wants to give NASA the management responsibility for the space vehicle development field so they can carry out a rigorous program of research and development on payloads. I was surprised that he said the program would cost over one billion dollars per year to accomplish its goals. This letter helped me understand how expensive the initial space program was and why some groups objected to spending money on space instead of fixing problems that existed in America.

Dr. Glennan to President Eisenhower Regarding Proposal to the Soviet Union, Relating to

Cooperation in Space Research, September 8, 1959. [DDE’s Papers as President, Administration Series, Box 15, Dr. Keith Glennan-NASA].*Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/ online\_documents/nasa.html](http://www.eisenhower.archives.gov/research/%20online_documents/nasa.html) (accessed on December 13, 2012).

In this letter, Dr. Glennan proposes to the President that the U.S. have a joint space

project with the Soviets. On one side, he feels that such a project would lessen world tension and present an opportunity for participation by other nations. It might also lay the groundwork for international space exploration. Even though U. S. allies might object, and commitments to a joint program might lead to a distortion of our own planned programs, he feels like a dialogue on the issue should occur. This helped me understand that even in the early years of NASA, the U.S. could see the benefit of cooperating with other nations in the interest of scientific research.

Maurice Stans to President Eisenhower Regarding H. R. 12575, the National Aeronautics

and Space Act, July 26, 1958. (White House Office: Records Officer Reports to Present on Pending Legislation, Box 124, July 29, 1958 HR 12575). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online \_documents/nasa.html](http://www.eisenhower.archives.gov/research/online%20_documents/nasa.html) (accessed December 13, 2012).

In this letter, Maurice Stans, Director of the Bureau of the Budget, discusses H.R. 12575,

the bill that created NASA. The national Advisory Committee for Aeronautics is the center for the new agency and the new agency’s administrator is responsible to the President alone. It also explains that the national policy for this agency is to “direct space activities to peaceful purposes.” This letter helped me understand how NASA was organized. I used this information to explain that NASA’s primary purpose was for peaceful space exploration.

Khrushchev to Fidel Castro, October 28, 1962, *The National Security Archive, The George*

*Washington University,* http://www.gwu.edu/~nsarchiv/nsa/cuba\_mis\_cri/ 1962102 8caslet.pdf (accessed January 5, 2013).

This letter is a declassified document sent during the Cuban Missile Crisis in which

Khrushchev informed Fidel Castro that President Kennedy had agreed to not invade Cuba with his own force or allow his allies to invade if the Soviets left Cuba. I used this information to show the compromise Kennedy made in order to conclude the crisis peacefully.

Khrushchev to John F. Kennedy, February 21, 1962, as printed in U.S. Congress, Senate,

Committee on Aeronautical and Space Sciences, *Documents on International Aspects of the Exploration and Use of Outer Space, 1954-1962,* 88th Cong., 1st sess., 1963, 232.

After John Glenn’s successful earth orbit, Khrushchev wrote to President Kennedy and

suggested for the first time that Soviets and Americans should pool “their efforts - scientific, technical, and material - to master the universe.” He thought the partnership would be “beneficial for the advance of science and … benefit man and not be used for "cold war" purposes and the arms race.” This letter helped me understand that Khrushchev decided to offer a partnership after John Glenn’s flight, possibly because he saw the American space program going beyond what the Soviets had accomplished. I used parts of his letter to show the first attempt by Soviets to cooperate with America in space.

President Eisenhower to Nikita Khrushchev. April 8, 1958. In Gerhard Peters and John T.

Woolley, *The American Presidency Project*. [http://www.presidency.ucsb.edu/ ws/?pid=11342](http://www.presidency.ucsb.edu/%20ws/?pid=11342) (accessed January 12, 2013).

In this letter President Eisenhower addresses the issue that the Soviet Union has been

unwilling to accept his Atoms for Peace proposal, but explains that they have other ways to promote peace. Then he refers to a proposal made to Khrushchev and Chairman Bulganin at the United Nations in 1955 proposing and Open Skies policy and another proposal made to Chairman Bulganin in a recent letter. Eisenhower wants to establish the international use of outer space for peaceful purposes and says he is waiting for the Soviets to accept. This letter helped me understand that President Eisenhower made numerous attempts to reach out to the Soviet Union to promote peace in space research, but the Soviets were unresponsive. I used this information to show the lack of cooperation between Soviets and America during Eisenhower’s administration.

President Kennedy to Nikita Khrushchev, March 7, 1962. (Papers of John F. Kennedy, Series 9,

President’s Office Files, #JFKPOF-126-015). *John F. Kennedy Library and Museum.* [http://www.jfklibrary.org/ Asset-Viewer/Archives/JFKPOF-126-015.aspx](http://www.jfklibrary.org/%20Asset-Viewer/Archives/JFKPOF-126-015.aspx) (accessed December 30, 2012).

In this letter to Khrushchev, President Kennedy proposed several opportunities for American

and Soviet space agencies to cooperate, such as early operational weather satellite systems and radio tracking stations. He felt that cooperation would advance research in the field of earth science and experimental communications by satellite. I used this information to explain that President Kennedy was reaching out to the Soviets to get them to participate in joint projects in space.

Memorandums

Memorandum of Conference with the President, Dr. Killian, et al, March 5, 1958. (DDE’s

Papers as President, DDE Diary Series, Box 31, Staff Notes March 1958 (2). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/ research/online\_documents/nasa.html](http://www.eisenhower.archives.gov/%20research/online_documents/nasa.html) (accessed December 13, 2012).

This memorandum covers the organization for the conduct of civil space programs. Dr.

Killian noted that Science Advisory committee recommended to the President that the National Advisory Committee for Aeronautics (NACA) be used as the nucleus for a civilian space agency. From this memorandum, I learned that President Eisenhower felt strongly that the space program for discovery and research should be scientific, not military. Dr. Killian said that the Department of Defense should make missile test facilities available to NASA, but that NASA should call the shots in all space related activities. I used this information to discuss the consolidation of programs and existing government facilities.

Memorandum of Conference with President Eisenhower after Sputnik, October 8, 1957.

*National Archives.* [http://www.archives.gov/global-pages/largerimage.html?i=/education /lessons/sputnik-memo/images/memo-page-1-l.gif&c=/education/lessons/sputnik-memo/ images/memo-page-1.caption.html](http://www.archives.gov/global-pages/largerimage.html?i=/education%20/lessons/sputnik-memo/images/memo-page-1-l.gif&c=/education/lessons/sputnik-memo/%20images/memo-page-1.caption.html) (accessed December 13, 2012).

 This memorandum discussed the issues between the Army and the Navy in the production of an Earth satellite. The Army claimed to be able to erect a satellite in four months while Vanguard would take five. I used this article to discuss the difficulties the United States had early on in the Space Race.

Memorandum for Chairman, Joint Chiefs of Staff Regarding Coordination of Satellite and

Space Vehicle Operation, July 24, 1959. (DDE’s Records as President, Confidential File, Box 44, NASA (7). *Dwight D. Eisenhower Presidential Library and Museum.* <http://www.eisenhower.archives.gov/research/online_documents/nasa.html> (accessed December 13, 2012).

 This memorandum proposes a plan calling for the eventual transfer of the space program

to the military, a plan that opposes the original intent in establishing NASA. What helped me the most was the hand written note, signed by President Eisenhower, that states that this proposal is “going in the wrong direction.” I used this information to show that there are conflicting ideas about who should control the space program.

Memorandum for Dr. Kistiakowsky on 1961 Estimates, November 14, 1959. (DDE’s Records as

President, Confidential File, Box 44, NASA (7). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online\_documents/ nasa.html](http://www.eisenhower.archives.gov/research/online_documents/%20nasa.html) (accessed December 13, 2012).

This memorandum argues that NASA requires more funding than the BOB

recommendations if they are going to have adequate growth during the second year of a major national effort. Basically, the memo says that if the U. S. is serious in its space race initiative, NASA will need a 70% increase in funding. This helped me understand that funding was a big issue in meeting space objectives. In 1961, the government needed to decide just how committed it was going to be to this program.

Memorandum for President from Administrator of NASA and Secretary of Defense Regarding

Responsibility and Organization for Certain Space Activities, October 21, 1959. (DDE’s Records as President, Official File, Box 937, OF 342 NASA (4). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online \_documents/nasa.html](http://www.eisenhower.archives.gov/research/online%20_documents/nasa.html) (accessed December 13, 2012).

In this memorandum, Robert Piland, Chief Assistant to the Director of the Space Task

Group, suggests that until the Bureau of the Budget transfers funds to NASA from ARPA that it will be practically impossible for NASA to lay out a program budget for 1959. This information helped me understand that there had to be a transfer of responsibility from the military to a civilian agency in order to advance U.S. space objectives.

Memorandum for President Regarding Responsibility for Space Program, May 10, 1958.

(DDE’s Records as President, Official File, Box 769, OF 342 NASA (1). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/ research/online\_documents/nasa.html](http://www.eisenhower.archives.gov/%20research/online_documents/nasa.html) (accessed December 13, 2012).

In this memorandum, Maurice Stans, Director of the Bureau of the Budget, explains to

President Eisenhower that he does not want NASA’s budget to be separated from that of the Department of Defense. He feels that this separation will create unnecessary overlaps and duplications that would cost the government money and create a less effective space program. This memorandum helped me understand the conflicting ideas within the government about separating NASA from the Department of Defense and providing it with its own budget.

Memorandum for the Record, President Eisenhower’s Meeting with Senator Lyndon B. Johnson,

July 7, 1958. (DDE Papers as President, DDE Diary Series, box 35, Staff Notes July 1858 (2). *Dwight D. Eisenhower Presidential Library and Museum.* http://www.eisenhower. archives.gov/research/online\_documents/nasa.html (accessed December 13, 2012).

This memorandum discusses a conversation between President Eisenhower and Senator

Lyndon Johnson about the legislation to set up the space agency. President Eisenhower proposed that the agency consist of an advisory group that would answer to the President. This memorandum helped me understand that both political parties were involved in the creation of the space agency and agreed on the major elements of the legislation to set it up. I used this information to show that Johnson had supported NASA since the beginning and continued his support when NASA became part of his administration.

Memorandum from Dr. Killian to President Eisenhower, Progress Report Regarding Missile and

Satellite Programs, December 28, 1957. (DDE’s Papers as President, Administration Series, Box 23, James R. Killian 1957 (2). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online\_documents/ nasa.html](http://www.eisenhower.archives.gov/research/online_documents/%20nasa.html) (accessed December 13, 2012).

This memorandum is a brief progress report on the U. S. missile and satellite programs.

He explains that the accusation that the U.S. is behind the Soviets in the missile program is probably true, but the reason for that is due to the fact that the U. S. began its programs later and not because of inferior technology. He also recommends that there should not be an expansion of the Vanguard Program. Instead, he wants the government to put its support behind the Jupiter-C program which is run through the Army. This memorandum helped me understand the pressure our scientists were under to compete with the Soviets. I used this information to explain early U.S. space programs and their shift after the Soviet’s launched Sputnik.

Memorandum from Dr. Kistiakowsky to General Goodpaster Regarding Coordination of

Satellite and Space Vehicle Operations, September 15, 1959. (DDE’s Papers as President, Administration Series, Box 23, Dr. G. B. Kistiakowsky (2).*Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online \_documents/nasa.html](http://www.eisenhower.archives.gov/research/online%20_documents/nasa.html) (accessed December 13, 2012).

In this memorandum, Dr. Kistiakowsky proposes a “coordination of Satellite and Space

Vehicle Operations.” He feels that there is too much duplication within the agencies and that offering clear-cut assignment s of authority to the three services according to their specific functions will solve the problem. This memo helped me understand that clear definitions of responsibility for early space agencies was needed to avoid wasting government funds due to duplications.

Cabinet Minutes

Minutes of Cabinet Meeting, October 18, 1957. (DDE’s Papers as President, Cabinet Series,

Box 9, Cabinet Meeting of October 18, 1957). *Dwight D. Eisenhower Presidential Library and Museum.* [http://www.eisenhower.archives.gov/research/online \_documents/nasa.html](http://www.eisenhower.archives.gov/research/online%20_documents/nasa.html) (accessed December 13, 2012).

In these minutes, Dr. Hagen, Director of the Vanguard Program, explains that the Russian

satellite program was an “integral part of the military program” and that Vanguard had deliberately not pursued being part of a military program in the U.S. From his discussion, I learned that Dr. Hagen felt that the Soviet accomplishment was not comparable to the U. S. program since the U. S. did not use military rockets. I used this information to show the difference between the U. S. and Soviet early satellite programs.

Minutes of Cabinet Meeting, March 14, 1958. (DDE’s Papers as President, Cabinet Series, Box

10, Cabinet Meeting of March 14, 1958). *Dwight D. Eisenhower Presidential Library and Museum.* <http://www.eisenhower.archives.gov/research/online_documents/nasa.html>.

(accessed December 13, 2012).

In these minutes, Dr. Killian, first presidential science advisor, assisted by Dr. Purcell and Dr. York, presented the subsequently released paper “Introduction to Outer Space” and defined the time period and the budget for a sample space program. Dr. Killian also revealed that several committees had agreed that NACA should be the nucleus for the planned civilian space agency. These minutes revealed to me the rapid growth the space program experienced. This early budget was much smaller than the ending price of a leading space program.

Minutes of Cabinet Meeting, August 15, 1958. (DDE’s Papers as President, Cabinet Series, Box

12, Cabinet Meeting of August 15, 1958). *Dwight D. Eisenhower Presidential Library and Museum.* <http://www.eisenhower.archives.gov/research/online_documents/nasa.html>. (accessed December 13, 2012).

In these minutes, National Security Advisor Gordon Gray states that the U. S. has

conclusive evidence that the “Soviets are conducting a high priority outer space program.” Dr. Killian is concerned that Russian achievement in “great rocket thrust” might make it impossible for the U.S. to catch up for several years. He also states that none of our allies are actively pursuing space exploration but that the Chinese Communists are. These comments helped me understand the pressure NASA was under to outperform the Soviets in the space race.

Minutes of Cabinet Meeting, May 15, 1959. (DDE’s Papers as President, Cabinet Series, Box

13, Cabinet Meeting of May 15, 1959). *Dwight D. Eisenhower Presidential Library and Museum.* <http://www.eisenhower.archives.gov/research/online_documents/nasa.html>.

(accessed December 13, 2012).

In these cabinet minutes, Dr. Killian reports on education for the age of science. It

helped me understand the impact that Sputnik had on education. School boards were revising curriculum to meet the need for increased technology and science, and President Eisenhower wanted increased pay for teachers and more scholarship opportunities for students in these fields.

Presidential Papers

Report to the National Security Council, April 12, 1950. President's Secretary's Files, Truman

Papers. *Harry S. Truman Library and Museum.* http://www.trumanlibrary.org/ whistlestop/study\_collections/coldwar/documents/sectioned.php?documentid=10-1&pagenumber=1&groupid=1 (accessed December 15, 2012).

This document is the National Security Council’s top secret report to President Harry

Truman analyzing the communist threat and proposing U. S. objectives and programs to ensure national security. What helped me the most was the comparison of the fundamental ideals and values of communism and democracy. This analysis outlines the risks and states that the United States must respond by “developing a healthy international community” and “containing” the Soviet system. To accomplish these objectives the NSC recommends a “rapid build-up of political, economic, and military strength in the free world.” I used this information to establish the basis for Truman’s containment policy, which dominated U. S. foreign policy during his term in office.

Statement by the President Regarding H. R. 12575, the National Aeronautics and Space Act of

1958, July 29, 1958. (Kevin McCann Collection of Press Releases, Box 21, July 1958). *Dwight D. Eisenhower Presidential Library and Museum.* http://www.eisenhower. archives.gov/research/online\_documents/nasa.html (accessed December 13, 2012).

In this statement, President Eisenhower announces that he has signed H.R. 12575, the

National Aeronautics and Space Act of 1958. The new Act provided that NASA can cooperate with other nations as long as the research is for peaceful purposes. He says the 1915 law establishing NACA was a “decisive step in the advancement of our civil and military aviation” and that this act would have an even greater impact on the future. This helped me understand how important President Eisenhower thought NASA was to the United States.

Transcript of Press Conference Regarding Launching of Soviet Satellite, October 9, 1957.

(DDE’s Papers as President, Press Conference Series, Box 6, Press Conference Oct. 9, 1957). *Dwight D. Eisenhower Presidential Library and Museum.* http://www.eisenhower .archives.gov/research/online\_documents/nasa.html (accessed on December 13, 2012).

 In this press conference, President Eisenhower gives his response to the Soviet’s launching of Sputnik. He begins by praising the Soviets but then says that the launching proves that the Soviets can “hurl and object a considerable distance.” He tries to make Sputnik seem insignificant because he notes that the Soviets have some of the finest scientists in the world who have been working on a space launch for years, and all they have managed to do is “put one small ball in the air.” This information helped me understand how President Eisenhower tried to minimize the effect of Sputnik’s launch even though the United States seemed to be less than competitive.

Government Documents

Flattau, Pamela, et al. The National Defense Education Act of 1958: Selected Outcomes.”

Institute for Defense Analysis, Document D-3306. Science & Technology Policy Institute, 2006.

 This document was prepared for the Office of Science and Technology Policy and examines the effectiveness of P.L. 85-864, The National Defense Education Act, passed in September 1958. What helped the most was learning that this act was a passed in response to the Soviet launching of Sputnik. World opinion changed, putting the Soviets in equal standing with the United States. Eisenhower called it “short-term emergency legislation” to address the so-called Sputnik crisis. Soviets used the shift in opinion to promote socialism and exhibit its equal stance with America in diplomatic settings. I used this information to show some of the impacts Sputnik had on America and world opinion.

International Affairs Seminars of Washington, "American Reactions to Crisis: Examples of Pre-

Sputnik and Post-Sputnik Attitudes and of the Reaction to other Events Perceived as Threats," October 15-16, 1958, U.S. President's Committee on Information Activities Abroad (Sprague Committee Records, 1959-1961, Box 5, A83-10). *Dwight D. Eisenhower Presidential Library and Museum* [http://www.eisenhower.archives.gov/ research/online\_documents/nasa.html](http://www.eisenhower.archives.gov/%20research/online_documents/nasa.html) (accessed on December 13, 2012)..

 This document is an official assessment of the impact of U. S. and Soviet space programs on world opinion. It helped me understand that Sputnik drastically changed world opinion about the Soviet Union, placing it on an equal level with the United States. Some countries are concerned that the Soviets have superior military capabilities. I used information from this source to discuss world opinion after the launch of Sputnik.

Newspaper Articles

Jorden, William J. “Soviet Fires Earth Satellite Into Space.” *New York Times,* October 5, 1957.

This news article talks about the success of Sputnik. I used information about how the Soviets were using the news to show how their new socialist society had turned the “boldest dreams of mankind into reality.” It also shifted the way the world looked at the United States.

Magazine Articles

“Cold War: A New Temperature.” *Time*, August 2, 1963. [www.time.com/time/subscriber/ printout/0,8816,870319,00.html](http://www.time.com/time/subscriber/%20printout/0%2C8816%2C870319%2C00.html) (accessed March 2, 2013).

This article talks about the beginning of the discussion on the nuclear test ban treaty which would “prohibit, to prevent and not to carry out any nuclear weapons test explosions or any other nuclear explosion.” I used this information to discuss the first move made by the Soviets and Americans to limit nuclear weapons.

“The Moon: Awe, Hope, and Skepticism on Planet Earth.” *Time,* July 25, 1969. www.time. com/time/subscriber/printout/0,8816,901105,00.html (accessed March 2, 2013).

 This article talks about the reaction to Americans landing on the moon. I used information about the astronauts taking the medal of two Soviet cosmonauts with them to honor the Soviet achievements to show another small joint venture. I also used information about objections to the money spent on the space program to show another point of view.

“Space: Face the Race.” *Time,* February 1, 1960. [www.time.com/time/magazine/article/ 0,9171,826033.00.html](http://www.time.com/time/magazine/article/%200%2C9171%2C826033.00.html) (accessed March 1, 2013).

 This article says that the soviet success with *Sputnik* has seriously damaged U. S. prestige in the world. Now the overwhelming opinion is that the Soviets are ahead of the U. S. in science and technology. I used this to show the world reaction to the *Sputnik* launch.

“Space: Still Moonward Bound.” *Time*, July 19, 1963. [www.time.com/time/subscriber/ printout/0,8816,896865,00.html](http://www.time.com/time/subscriber/%20printout/0%2C8816%2C896865%2C00.html) (accessed March 16, 2013).

This article discussed the expense of the man to the moon mission. President Eisenhower

thought that spending forty billion dollars to race to the moon just for American prestige “was nuts.” However, Congress said space was an “arena of world politics” so America had to compete in it. This helped me understand that the price tag for space exploration divided American leaders on its value. I used this information to show why interest in space declined after the moon landing.

Internet Sources

“Former Astronaut Recalls Historic *Apollo-Soyuz* Mission,” *NASA,* NASA Dryden News

Releases, July 21, 2000, [http://www.nasa.gov/centers/dryden/news/News Releases/ 2000/00-53\_pf.html](http://www.nasa.gov/centers/dryden/news/News%20Releases/%202000/00-53_pf.html) (accessed March 8, 2013).

In this news release, Vance Brand, the Deputy Director of Aerospace Projects at NASA’s

Dryden Flight Research Center in California, talked about his experience as one of the astronauts on the Apollo-Soyuz mission. He said that even though the political environment was unstable, the mission proved that international cooperation could be achieved. Brand believed that their mission laid the foundation for the International Space Station because they “opened a crack in the door regarding communication between the two superpowers.” I used this information to show the impact of the *Apollo-Soyuz* mission.

Korolev, Sergey P. “Synopsis of Report on Development of Conceptual Design of an Artificial

Earth Satellite (1956).” September 25, 1956. http://www.nebraskastudies.org /0900/stories/0901\_0105\_03.html (accessed December 14, 2012).

 Sergey Korolev was lead Soviet rocket engineer and spacecraft designer in the 1950s and 1960s. In this report, he discussed some of the basic designs of a Russian satellite and helped me understand the Russian perspective of the space race. I used this information to show how Soviet Space Program developed Sputnik before America could produce a successful launch.

Krieger, F. J. “Announcement of the First Satellite.” *Pravda,* October 5, 1957.

<http://www.nebraskastudies.org/0900/stories/0901_0105_02.html> (accessed December

20, 2012)

This article is a press release provided by the Soviet government and published in the Soviet paper *Pravda* following the launch of Sputnik. It detailed the launch of Sputnik and its travels orbiting the Earth. This helped me understand the Russian use of propaganda to enhance their achievement and provided me with the Russian perspective of Sputnik’s success.

President’s Science Advisory Committee. “Introduction to Outer Space.” NASA History

Division, Reference Collection, NASA History Office, NASA Headquarters, Washington, D.C. March 26, 1958. [http://www.nebraskastudies.org/0900/ stories/0901\_0105\_06.html](http://www.nebraskastudies.org/0900/%20stories/0901_0105_06.html) (accessed December 14, 2012).

 In this brief statement, the President’s Science Advisory Committee provides information to the public about the goals and factors driving the upcoming space program. This helped me understand some of the reasons for creating NASA.

“Reporting the Space Race.” <http://www.nebraskastudies.org/0900/stories/0901_0105_01.html>

(accessed on December 14, 2012).

 This sight contained primary source images of two American newspapers’ headlines. The first was the *New York Times* proclaiming Sputnik’s success in a bold three line headline. The second was *The Daily Herald* announcing America’s attempt to launch a satellite, calling it a “Flopnik.” These images showed me that the American public had little faith in the American space program in its early years. These contrasting articles helped me understand that the success of Sputnik made Americans aware that the U.S. was behind in space exploration and that a race to be first was beginning.

Roipeik, David. “The Rise of Nuclear Fear.” *Scientific American.* June 15, 2012.

<http://blogs.scientificamerican.com/guest-blog/2012/06/15/the-rise-of-nuclear-fear-how-we-learned-to-fear-the-bomb> (accessed December 15, 2012).

Roipeik described his experiences as a civilian during the Cold War, including the safety measures taken by the American people and their fear of nuclear weapons and radiation. The explained that the use of radium bombs transformed the term “radiation” in the eyes of the public from a new energy source to a frightful substance. This article was most helpful in helping me understand the perspective of an American civilian in Cold War America.

Sagdeev, Roald, and Susan Eisenhower. “United States-Soviet Space Cooperation During the

Cold War.” *NASA.* May 28, 2008. [www.nasa.gov/50th/50th\_magazine/coldWar CoOp.html](http://www.nasa.gov/50th/50th_magazine/coldWar%20CoOp.html) (accessed December 18, 2012).

Roald Sagdeev is the former head of the Russian Space Research Institute and is now the

director of the University of Maryland’s East-West Space Science Center. His wife is Susan Eisenhower, President Dwight Eisenhower’s granddaughter, who represents the Eisenhower Institute. This article helped me understand the differences between American and Soviet space agencies and gave information about some of the organizations where both agencies cooperated. I used information from this article to explain why early cooperation efforts were difficult to accomplish and to show the impact that the Apollo program had on the Soviets.

Appendix Images

“*Life* Cover.” *NASA.* <http://www.hq.nasa.gov/alsj/a12/A12LifeCover.jpg> (accessed January 5,

2013).

This is a photo of the cover of *Life* magazine, showing Apollo 12 astronauts walking on the moon. I used this photo in my appendix to show the American reaction in the press to the American accomplishment that ended the space race.

“Armstrong Walks on the Moon.” *MSNBC.* <http://msnbcmedia2.msn.com/j/MSNBC/>

Components/Photo/\_new/110525-Kennedy2-hmed-0210p.grid-6x2.jpg (accessed January 5, 2013).

This is a photo of Neil Armstrong when he walked on the moon. I used this photo in my appendix to show the end of the space race.

“Handshake in Space.” *NASA.* <http://www.nasa.gov/images/content/434029main_astp12.jpg>

(accessed January 8, 2013).

 This is a photo of the American and Soviet astronauts shaking hands in space. I used it in my appendix to show the symbol of cooperation between the two Cold War superpowers, which was a major goal of the joint Apollo-Soyuz project.

“Invasion USA.” *Harvard College Library.* http://hcl.harvard.edu/hfa/images/films/2006 winter/cold\_iusa.jpg (accessed December 15, 2012).

 This is a photo of a movie poster from the 1950s showing the result of atomic bombs being dropped on America. I used this photo in my appendix to show one of the films produced during the Red Scare in America that made people fear a communist attack.

“Men Walk on the Moon, *New York Times* Cover Page.” *New York Times.* http://graphics8. nytimes.com/images/section/learning/general/onthisday/big/0720\_big.gif (accessed January 6, 2013).

 This is a photo of the *New York Times* front page showing the astronauts on the moon. I used this photo to show the reaction of the American press to the end of the space race.

*“Pravda* Front Page.” *USSR Airspace.* http://www.ussr/airspace.com/catalog/images/ al/57/27105120.jpg (accessed January 8, 2013).

 This is a photo of the front page story from the Soviet newspaper *Pravda* showing the

astronauts and cosmonauts who participated in the Apollo-Soyuz project. I used this photo in my appendix to show the reaction of the Soviet press to the joint mission.

“*Pravda* Headline on Sputnik Launch.” *National Public Radio.* [http://media.npr.org/assets/img/ 2011/02/10/pravda-sputnik-14f0f06779879b3908316f539990dddbe960be0d-s6-c10.jpg](http://media.npr.org/assets/img/%202011/02/10/pravda-sputnik-14f0f06779879b3908316f539990dddbe960be0d-s6-c10.jpg) (accessed January 3, 2013).

 This is a photo of the headline published in the Soviet newspaper *Pravda* showing the launch of Sputnik and its tracking by ham radio operators around the world. I used this photo in my appendix to show the Soviet reaction to the successful orbit of Sputnik.

“Soviets Fire Earth Satellite into Space; It is Circling the Globe at 18,000 M.P.H; Sphere

Tracked in Four Crossings Over U.S.” *New York Times* October 31, 1957. *Knight*

*Science Journalism, Massachusetts Institute of Technology.* <http://ksj.mit.edu/>sites/ default/files/images/tracker/2007/sputniknythed2.jpg (accessed December 12, 2012).

 This is a photo of the front page of the *New York Times* reporting on the launch of the Soviet satellite Sputnik. I used this photo in my appendix to show the American reaction to Sputnik’s success.

“Sputnik.” *NASA.* http://www.nasa.gov/images/content/201353 main\_rs\_image\_feature\_ 924\_946x710.jpg (accessed December 14, 2012).

 This is a photo of Sputnik, the Soviet satellite that circled the earth in 1957. I used this photo in my appendix to show the first major turning point that started the space race and changed world opinion about America’s superiority in technology.

“Temporary Basement Fallout Shelter.” *National Archives.* [www.archives.gov/education/ lessons/fallout-docs/images/shelter-drawing.gif](http://www.archives.gov/education/%20lessons/fallout-docs/images/shelter-drawing.gif) (accessed December 15, 2012).

 This is a drawing of a temporary fallout shelter that can be built in an existing basement.

I used this image in my appendix to show one of the ways Americans reacted to the threat of an atomic bomb during the 1950s.

“Space Spectacular *Time* Cover.” *Time.* <http://search.time.com/results.html?Ntt=apollo+soyuz>+ handshake&N=0&Nty=1&p=0&cmd=tags (accessed January 8, 2013).

 This is a photo of the cover of *Time* Magazine showing the symbol of a handshake that

occurred during the Apollo-Soyuz mission. I used this photo in my appendix to show the symbolic image used in the American press to show the turning point in American-Soviet relations because of the joint project between their space agencies.

“Welcome to the New Duck and Cover.” *National Space Studies Center.*

http://nationalspacestudiescenter.wordpress.com/ (accessed December 12, 2012).

This collage of photos shows the Duck and Cover drill used in public schools during the 1950s to teach students how to react if an atomic bomb fell on their town. I used this in my appendix to show American reaction to the threat of annihilation during 1950s America.

Secondary Sources

Government Documents

Logsdon, John M., and James R. Millar, eds. “U.S.-Russian Cooperation in Human Space

Flight: Assessing the Impacts.” February, 2001. *Institute for European, Russian and*

*Eurasian Studies,* Elliott School of International Affairs, the George Washington University, Washington, D.C.

This document provides information presented at a workshop at George Washington

University involving experts from the United States, Russia, Georgia and Canada. They were assessing the value of expanding U.S.-Russian cooperative projects in space, particularly the space station. I used some of the information in this study to explain the goals of the George H.W. Bush and Bill Clinton administrations for expanding cooperation between American and Soviet space agencies.

Books

Brooks, Courtney G., Ivan D. Ertel. *The Apollo Spacecraft: A Chronology, Volume III.*

Washington, D.C: U. S. Government Printing Office, 1976.

This book gives a day-by-day chronology of the Apollo Program from October 1964 to January 1966. It helped me establish the key events that occurred at NASA during the time that America was trying to accomplish its goal of putting a man on the moon. I used some of the event to show the progress being made at NASA during this time frame.

Brooks, Courtney G., James M. Grimwood, and Lloyd S. Swenson, Jr. *Chariots for Apollo: A*

*History of Manned Lunar Spacecraft.* Washington, D.C.: U. S. Government Printing Office, 1979.

 This book is a complete history of the Apollo program. It helped me understand the progress that was made through each phase of the program.

Chaikin, Andrew. *A Man on the Moon.* New York: Penguin Books, 2007.

This book covers from the beginning of NASA and gives detailed descriptions of all of the missions through Apollo, except for Apollo-Soyuz. It helped me get a basic understanding of NASA and its programs, and I used this information to create a timeline of events.

Dick, Seven J., and Roger D. Launius, eds. *Societal Impact of Spaceflight.* Washington, D.C.:

National Aeronautics and Space Administration, 2007.

 Each chapter in this book is by people at NASA, and they cover all aspects of spaceflight, including its impact on society, the economy, foreign policy, and research. The chapter that helped me the most was written by John. M. Logsdon and was on space after the Cold War ended. What helped me the most was his discussion about each president’s policies toward the Soviets during and after the Cold War. I used information from this chapter to discuss shifts in American policies that led to cooperation in space with Soviet space agencies.

Fox, William T. R. *Superpowers: the United States, Britain, and the Soviet Union.* New York:

Harcourt Brace, 1944.

Fox was a foreign policy professor at Columbia University. In this book the first used the term “superpowers” to describe the United States and the Soviet Union. I used this information to show where the term began.

Ezell, Edward Clinton, and Linda Neuman Ezell. *The Partnership: A History of the Apollo-*

*Soyuz Test Project.* Washington, D.C.: U. S. Government Printing Office, 1978.

This book covers the Apollo-Soyuz Test Project from its beginning, including primary source documents and conversations. What helped me the most were the conversations between the teams during the actual docking which helped me create the turning point for my paper. I used a quote from President Brezhnev to show the Soviet reaction to the partnership.

Rees, David. *The Age of Containment: The Cold War.*  New York: St. Martin’s Press, 1967.

 This book discussed the Cold War from 1945 – 1965. It helped me understand some of the issues that caused tension between the Soviet Union and the United States. I used some of the information to establish why there was tension between the two countries and the strategies they used to fight each other without having a direct war.

Newspapers

Broad, William J. “From the Start, the Space Race Was an Arms Race.” *New York Times,*

September 27, 2007. [www.nytimes.com/2007/09/25/science/space/25mili.html? pagewanted=all&\_r=0](http://www.nytimes.com/2007/09/25/science/space/25mili.html?%20pagewanted=all&_r=0) (accessed 16 March 2013).

This article claims that Sputnik forced President Eisenhower to consider the possibility of

having weapons in space so he could either work for peace or arm for war. President Reagan in 1983 researched the possibility of making enemy missiles “impotent and obsolete” by targeting them from space. His initiative was referred to as Star Wars. The Clinton administration fought the initiative, but in 2007, President Bush is now considering the possibility of putting weapons in space again. Public opinion wants his efforts aimed at peace talks, instead. This helped me understand the shift in priorities between the different presidents.

Magazines

Kluger, Jeffrey. “The Shuttle Has Landed: Welcome to America’s Soyuz Era.” *Time,* July 21,

2011. [www.time.com/time/subscriber/printout/0,8816,2084341,00.html](http://www.time.com/time/subscriber/printout/0%2C8816%2C2084341%2C00.html) (accessed March

16, 2013).

 This article covers the end of the 30 year space shuttle program with the landing of Atlantis at the Kennedy Space Center. The problem is that American astronauts are still working on the International Space Station and need a way to get back and forth. Now America will use Russia’s Soyuz to transport them, forming a new kind of partnership in space. This helped me understand that America’s priorities have shifted again and that NASA will not be its top priority.

Lemonick, Michael D. “Space: Goodbye to NASA’s Glory Days.” *Time* February 22, 1988.

[www.time.com/time/subscriber/printout/0,8816,966750,00.html](http://www.time.com/time/subscriber/printout/0%2C8816%2C966750%2C00.html) (accessed March 16, 2013).

This article talks about decisions the Reagan administration made after the Challenger

disaster. President Reagan said America was still committed to working in space, but that the private sector needed to be involved to help offset the costs. NASA was in favor of an Industrial Space Facility, but the high costs made Congress look at cooperative projects instead. This helped me understand the shift in priorities after the Challenger disaster that put America back on the path to cooperation with the Soviet Union.

“Space: To Moon or Not to Moon,” *Time,* May 31, 1963. [www.time.com/time/subscriber/ printout/0,8816,896833,00.html](http://www.time.com/time/subscriber/%20printout/0%2C8816%2C896833%2C00.html) (accessed March 16, 2013).

This article had information on the American Association for the Advancement of Science. This group objected to spending money on expensive space programs and wanted the money to go to public education, colleges, and medical schools. I used this information to discuss opposition to the funds Congress gave NASA for the space race.

“World: The Start of SALT.” *Time,* November 21, 1969.

[www.time.com/time/subscriber/](http://www.time.com/time/subscriber/%20printout/0%2C8816%2C841628%2C00..html)

[printout/0,8816,841628,00..html](http://www.time.com/time/subscriber/%20printout/0%2C8816%2C841628%2C00..html) (accessed March 16, 2013).

 This article explains that in 1963 America and the Soviets signed a limited test-ban treaty to stop nuclear testing in the atmosphere. This move reduced the problem of radioactive fallout in the atmosphere. In 1968 they signed another treaty to stop the spread of atomic weapons beyond the five nations that already possessed them: Britain, China, France, America and the Soviet Union. They also signed treaties to ban nuclear weapons in outer space and in Antarctica. The SALT talks are now going to address the nuclear threat of their own nuclear weapons. This article helped me understand some of the steps America and the Soviet Union took to protect against nuclear war. I used this information to discuss how both nations agreed on treaties that would protect the world from a devastating nuclear war.

 Internet Sources

“American Reactions to Crisis: Examples of Pre-Sputnik and Post-Sputnik Attitudes and of the

Reaction to other Events Perceived as Threats.” [http://www.nebraskastudies.org/0900/ stories/0901\_0105\_04.html](http://www.nebraskastudies.org/0900/%20stories/0901_0105_04.html) (accessed December 14, 2012).

 This article revealed how little the public knew about space exploration before the launching of Sputnik and other Earth satellites. This article helped me understand that the Soviet launching of Sputnik was a turning point for the American public and a wake-up call for the U. S. government. After Sputnik, the U.S actively began space research in order to compete.

“Bay of Pigs.” *John F. Kennedy Presidential Library and Museum.* http://www.jfklibrary.org /JFK/JFK-in-History/The-Bay-of-Pigs.aspx (accessed December 14, 2012).

This article helped me understand that John Kennedy inherited the Bay of Pigs plan from

the Eisenhower administration. Because the mission failed, the Kennedy administration faced humiliation.

Bizony, Piers. “Leading the Race to Space.” [http://www.nasa.gov/offices/oce/appel/ask/ issues/42/42s\_leading\_race\_to\_space.html](http://www.nasa.gov/offices/oce/appel/ask/%20issues/42/42s_leading_race_to_space.html) (accessed January 2, 2013).

 This article explained how NASA Administrator James Webb and the Soviet Space Program leader, Sergei Korolev, managed their programs respectively. Rivalry between Valentin Glushko and Korolev hindered the Soviet Space program because their conflicting ideas about how to succeed in the space race. Glushko’s denunciation of Korolev in Stalin’s camp only heightened their hatred for each other. After Korolev’s death in 1966, his rivals destroyed the program. Ironically, James Webb management of NASA was almost communist in nature. The centralization of NASA allowed America to place a man on the moon before the disorganized Soviets. This article was most helpful in understanding the structure of the parallel space programs.

Boyle, Alan. “Sputnik Started Space Race Anxiety.” [http://www.msnbc.msn.com/id/3077890/ ns/technology\_and\_science-space/t/sputnik-started-space-raceanxiety/#.UOUOou32BUs](http://www.msnbc.msn.com/id/3077890/%20ns/technology_and_science-space/t/sputnik-started-space-raceanxiety/#.UOUOou32BUs) (accessed December 14, 2012).

 This article explained how Sputnik was a turning point in the Space Race and satellite technology. Soon after Sputnik, commercial satellites were launched into space. This article helped me to understand that the space race had a widespread effect.

“Cold War and American Society.” [http://admin.bhbl.neric.org/~mmosall/ushistory/ textbook/Chapter%2026%20Cold%20War%20Begins/ch%2026%20sect%203%20American%20Society.pdf](http://admin.bhbl.neric.org/~mmosall/ushistory/%20textbook/Chapter%2026%20Cold%20War%20Begins/ch%2026%20sect%203%20American%20Society.pdf) (accessed November 22, 2012).

 This section described how the Cold War increased Americans’ fear of Communist spies and atomic bombings, and it gave some examples of the actions that were taken to get rid of Communist spies and sympathizers. This article helped me understand how deeply the Red Scare affected the American public.

“Committee on Space Research (COSPAR).” November 26, 2012. [http://cosparhq.cnes.fr/ About/about.htm](http://cosparhq.cnes.fr/%20About/about.htm) (assessed January 5, 2013).

 This site gave me information about when COSPAR was founded and explained its purpose and goals. It helped me understand the role this organization played in providing a place for all scientists to meet and discuss issues about space research without having the deal with Cold War politics. I used this to explain how and why COSPAR was founded.

“Epilogue.” *NASA*. <http://www.hq.nasa.gov/pao/History/SP-4209/epilog.htm> (accessed March

13, 2013).

This article incorporated interviews from people who were involved in the Apollo-Soyuz project. Once this project was complete, that ended the Apollo program and NASA shifted from single-flight vehicles to reusable space craft. It helped me understand that NASA’s programs reflected the tone of current foreign affair so all future cooperation in space will be “anchored in politics.” It also explained that cooperation was important because space exploration had become too expensive for the two nations to duplicate their efforts . I used this information to explain how Cold War politics hindered cooperation in space until the Soviet Union collapsed.

“Federal Role in Education.” *U.S. Department of Education.* [http://www2.ed.gov/about /overview/fed/role.html](http://www2.ed.gov/about%20/overview/fed/role.html) (accessed December 14, 2012).

This overview explained the role of the federal government in public education. The most important piece of information was that the Cold War stimulated the first example of “comprehensive Federal education legislation.” Congress passed The National Defense Education Act (NDEA) in direct response to the Soviet’s launch of Sputnik. I used this information to explain one of the turning points in the space race. The goal of this act was to ensure that the American education system would produce individuals who could compete with the Soviet Union in the fields of science and technology.

Garber, Steve and Roger Launius.“ A Brief History of NASA.” *NASA*. [http://www.hq.nasa.gov/ office/pao/History/printFriendly/factsheet.htm](http://www.hq.nasa.gov/%20office/pao/History/printFriendly/factsheet.htm) (accessed December 15, 2012).

 This document gives an overview of NASA’s history, beginning with its founding on October 1, 1958, and ending with the creation of the International Space Station. This information gave me a basic overview of how and why NASA was created and helped me create a timeline of important events.

“Harry S. Truman – Foreign Policies.” *Profiles of U. S. Presidents.* http://www.presidentprofiles. com/Grant-Eisenhower/Harry-S-Truman-Foreign-policies.html (accessed November 5, 2012).

This site explained President Truman’s policies after World War II and into the Korean

War. He had trouble with General MacArthur because MacArthur thought the way to prevent the Soviets and Chinese from taking over Southeast Asia was to drop nuclear weapons across the 38th Parallel. Truman knew that he had to fight a new kind of war because of the possibility of nuclear war had devastating consequences. He finally had to fire McArthur. His greatest achievements were The Truman Doctrine, The Marshall Plan, and NATO. I used information about Truman’s decision to send American troops to Korea to explain how he responded to the new type of warfare nuclear weapons demanded. His police action, though, also showed his determination to contain communism’s spread.

Irvine, Tom. “The Cold War & Space Race Era.” March 11, 2006.

<http://www.vibrationdata.com/SpaceRace.htm> (accessed December 14, 2012).

 This article provided a brief history of the Cold War and the Space Program, beginning with early rocket development and ending with Richard Nixon’s resignation. I used information from this article to show some of the turning points in the race to the moon.

“Kennedy Proposal for a Joint Moon Flight.” SP-4209. The Partnership: A History of the

Apollo-Soyuz Test Project. *NASA*. [www.hq.nasa.gov/pao/History/SP-4209/ch2-4.htm](http://www.hq.nasa.gov/pao/History/SP-4209/ch2-4.htm) (accessed March 13, 2013).

This article talked about the joint proposal Kennedy asked the Soviets to consider after resolving the Cuban Missile Crisis. The Russians were unresponsive, but Congress objected and stipulated that no money they allocated could be spent on a joint venture with the Soviets without Congressional approval. I used this to show the reaction to Kennedy’s proposal.

“Living Under a Mushroom Cloud: Fear and Hope in the Atomic Age.” *The Wisconsin*

*Historical Museum*. <http://www.wisconsinhistory.org/museum/atomic/fear.asp> (accessed December 15, 2012).

 This museum exhibit explained the American public’s fear of communist nuclear attack by describing several science fiction movies produced during the time. This information helped me understand how science fiction movie created fear of nuclear weapons during the early stages of the Cold War.

Mahone, Glenn, and Doc Mirelson. “NASA Acknowledges Historic Space Flight.”

<http://www.nasa.gov/home/hqnews/2004/apr/HQ_04123_historic_flight.html> (accessed March 13, 2013).

This NASA article explains that the first cooperative space project was the Apollo-Soyuz,

and that opened the door to future cooperative efforts between America and the Soviet Union. In 1975 that event was the international symbol of cooperation between two Cold War enemies. Today the International Space Station is the universal symbol of peaceful international cooperation. I used this information to discuss the impact that the Apollo-Soyuz mission had on cooperation in space.

Pike, John. “National Security Council [NCS] Truman Administration (1947-1953)”

<http://www.fas.org/irp/offdocs/nsc-hst/index.html> (accessed December 15, 2012).

 This article explained that the National Security Council was created on July 26, 1947 to advise the president on matters of national security. In 1950, this council issued NSC-68, which

outlined United States Objectives and Programs for National Security. I used this information to discuss the formation of the National Security Council during the beginning of the Cold War.

“Race for Space” *Gerald R. Ford Library and Museum.* http://www.fordlibrarymuseum. gov/museum/exhibits/ColdWAr/SpaceRace.html (accessed December 13, 2012).

 This brief background and history of the Space Race provided quotes about the space race and described President Eisenhower’s actions regarding NASA. I used this for background information on the space race.

“Space Race.” <http://library.thinkquest.org/21149/exploration/spaceright.htm> (accessed

December 13, 2012).

 This article described some of the effects of Sputnik. It calls the Russian satellite and “October surprise” and “a wakeup call”. I used this information to show that Sputnik was a turning point in the space race.

 “Teaching With Documents: Memorandum of a Conference with President Eisenhower after

Sputnik.” [http://www.archives.gov/education/lessons/sputnik-memo](http://www.archives.gov/education/lessons/sputnik-memo%20) (accessed December 13, 2012).

 This article explained the background of the Cold War and the Space Race and described some of the issues in launching the first American Earth satellite. The Navy was charged with creating the first satellite so the Army could not advance ahead of them in satellite technology. This rivalry created many delays in the production of Vanguard, which ultimately failed. I used this information to discuss the early problems in American space research.

“Turning Point in American History: The Space Program.” *History Since 1945*. March 4, 2011.

<http://www.historysince1945.blogspot.com/2011/03/space-program.html> (accessed December 13, 2012).

 This article provided a history of the Space Program supported by images. I found that President Eisenhower proposed the Open Sky Policy. This article was particularly helpful in finding images for the appendix.

“Vanguard Project.” *U.S. Naval Research Laboratory.* [http://www.nrl.navy.mil/ accomplishments/rockets/vanguard-project](http://www.nrl.navy.mil/%20accomplishments/rockets/vanguard-project%20) (accessed December 15, 2012).

The NRL is the Navy’s corporate library. This document contains information about the Vanguard Project, a program initiated at NRL to represent the U. S. in the International Geophysical Year (July 1957 – December 1958) by placing an artificial satellite in orbit. In 1957, satellite launching facilities were not available, so NRL build the first on at Cape Canaveral, Florida. On March 17, 1958, NRL launched the Vanguard I satellite into earth’s orbit and it reached the highest altitude of any man-made object at that time. In July 1958, NRL became part of NASA. I used this information to document the first U. S. satellites and the creation of NASA.

“What Was the Cold War?” *History Learning Site.* [http://www.historylearningsite.co.uk/ what%20was%20the%20cold%20war.htm](http://www.historylearningsite.co.uk/%20what%20was%20the%20cold%20war.htm) (accessed December 13, 2012).

 This article provided me with a definition of the Cold War. The basic communism vs. democracy issue was intensified by the physical damage each country could inflict on the other. It helped me understand what created the tensions between the United States and the Soviet Russia.

Zak, Anatoly. “The Aftermath of the Sputnik Launch.” *Russian Space Web.*

<http://www.russianspaceweb.com/sputnik_aftermath.html> (accessed January 31, 2013).

This site gave me the Russian perspective on the Sputnik launch and the effect that it had

on Americans and the Soviet Union. I was able to use a chart from this site in my appendix that shows what the Soviets view as the political shifts that occurred because of the launch.