

*History of Space*

Part 3 Notes

\* Please note, the following notes concerning the slides within Part 3 are ‘additional’ notes to those found to be on the slides as they already exist. The following simply helps compile the slides chronology and associations as well as adding additional info for pertinent slides.

**Slide 1:** a simple graphic ‘genealogy’ to help show how tech transfer influenced concepts and designs for ‘to follow’ vehicles. You should be able to show the students what vehicles have been discussed to date so they can see where they are in America’s space/war efforts.

**Slides 2&3:** provide a quick synopsis of the comparisons of satellite and launch vehicle developments and successes. Easy to see U.S. is falling behind Russia at the beginning of ‘Part 3’.

**Slide 4:** discusses/shows some of the aspects of the U.S. Army’s study for a lunar outpost titled: Project Horizon. Within the study are launch vehicles, launch/flight paths, Extra Vehicular Activity equipment, launch facilities on earth, lunar bases and space docks.

**Slides 5-8:** Show the U.S. Air Force’s proposal for ‘man on the moon’. Proposal included Project 7969. Project 7969 included Manned Guided Rocket System and Task 27544 – manned ballistic missile system. The manned guided rocket research system began the famous ‘X’ plane designs and testing. From Dyna Soar to X-15, these vehicles carried some of the first humans to the edge of space. This is also the primer for the ‘Space Transport System’ – or what was known as the orbiter or shuttle. Task 27544 was the research completed to design the Mercury capsule – which led to the Gemini and Apollo capsule designs. It should be apparent that, a great deal of what NASA did in the early years, were actually concepts and proposals already studied within America’s Armed Forces.

**Slides 9&10:** Discuss NACA’s evolution to become NASA.

**Slide 11:** Shows U.S. and Russian designs for moon lander.

**Slide 12-16:** Shows Russia’s successes with Vostok vehicle as upper stage lofts man rated Vostok capsule, proven ‘man rated’ during earlier ‘dog’ flights, to orbit with Yuri Gagarin – first human in orbit.

**Slides 17-28:** Shows the beginning of the Mercury Program. Capsule based upon Task 27544. One manned capsule. Mercury program had three ‘goals’ to accomplish during flights. Original seven astronauts chosen from military test pilots. Human flight began with chimpanzees instead of dogs. Alan Shepard first American into space on ballistic flight – not orbital. Early Mercury launches used Redstone as launch vehicle…later to be replaced by Atlas.

**Slide 29:** shows summary of Russian Vostok Program – single man to orbit as U.S. Mercury.

**Slide 30:** shows summary of U.S. Mercury program. Single man to orbit. Began with ballistic flights; but finished with orbital on Atlas rocket. Redstone was SRB missile; Atlas was the U.S. first true ICBM.

**Slides 31-40:** introduces the Atlas rocket and reviews the six Mercury flights. Finishes with information concerning first U.S. astronaut to make orbital flight of Atlas rocket – John Glenn.

**Slides 41&42:** introduces the Russian’s Voskhod Program – also historically noted as the Vokshod. I feel the correct spelling is Voskhod. Voskhod was a larger capsule, man rated for two cosmonauts, and a larger booster on the same R-7 heavy lift vehicle that launched Sputnik and Vostok capsules.

**Slides 43-45:** introduces NASA’s Gemini Program. A program with specific goals; and, to loft two astronauts at a time requiring larger Gemini capsule and more capable launch vehicle – the Titan.

**Slide 46:** introduces the “New Nine” astronauts to complete the astronaut crews needed for Gemini and Apollo.

**Slides 47-52:** Introduces the Voskhod capsule and launch vehicle. Note the booster is the same R-7 unit learned previously.

**Slides 53-57:** introduces Gemini capsule and Titan ICBM – another military vehicle being used by a non-military agency. It was hoped that the U.S. would be perceived as ‘non-threatening’ by using NASA as non-military agency.

**Slide 58:** Review of Voskhod flights.

**Slide 59**: Review of Gemini flights.

**Slides 60-65:** Shows images from Gemini VI and VII flights. Note the rendezvous maneuvers being accomplished by the two capsules. Also, shows images of first U.S. spacewalk/EVA.

**Slide 66:** completes review of Gemini flights.

**Slide 67-74:** shows images of Gemini XI as it docks with Agena ‘upper stage’ and sets new altitude record by igniting Agena motor and boosting to new orbit.

**Slide 75:** Shows a synopsis of Mercury and Gemini programs. Note that the Russians were reducing the number of flights within their programs. Sergei Korolev was being pushed to keep creating ‘firsts’ for the motherland – first satellite in orbit, first dog in orbit, first human in orbit, first female in orbit, first two humans in orbit, first spacewalk. However, Korolev was not being given time to develop technologies for the future; nor, continue flights to help understand physics and harshness of space as he kept being pushed forward by politics.

**Slide 76:** ignore.