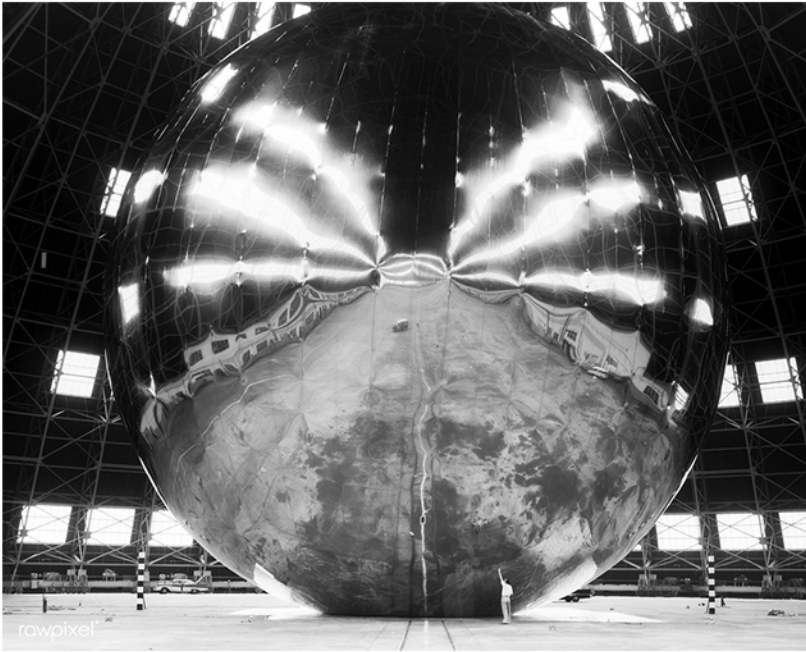


Echo-1 A



Project Echo was the first passive communications satellite experiment. Each of the two American spacecraft, launched in 1960 and 1964, was a metalized balloon satellite acting as a passive reflector of microwave signals. Communication signals were bounced off them from one point on Earth to another.

The balloon satellite functioned as a reflector, not a transceiver, so after it was placed in a low Earth orbit a signal could be sent to it, reflected by its surface, and returned to Earth.

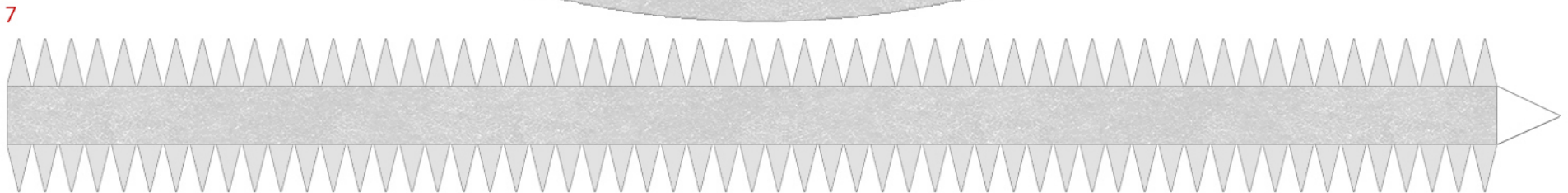
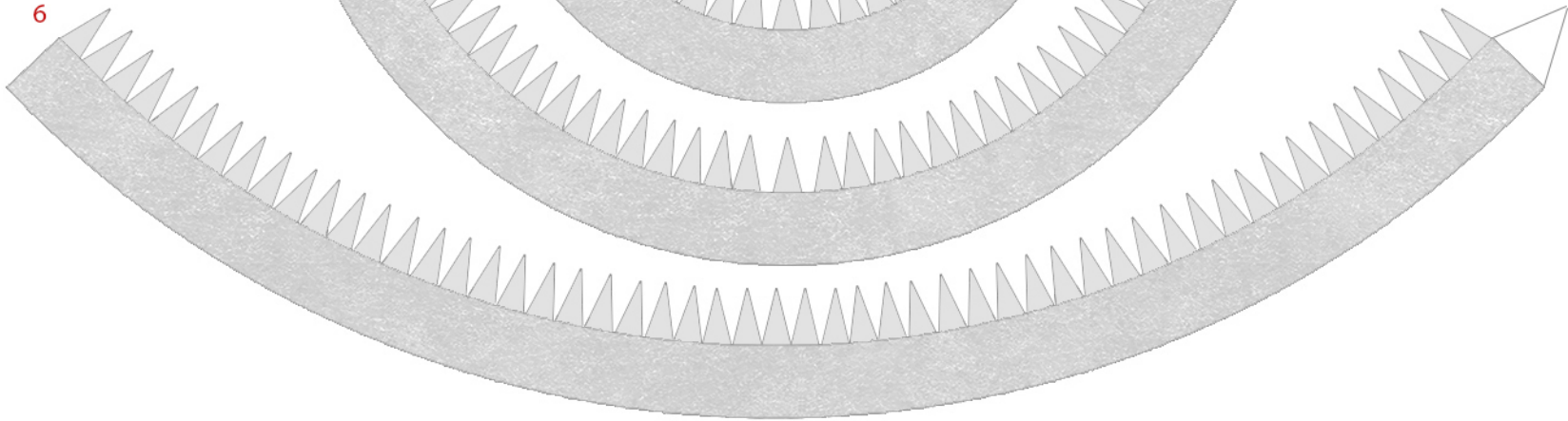
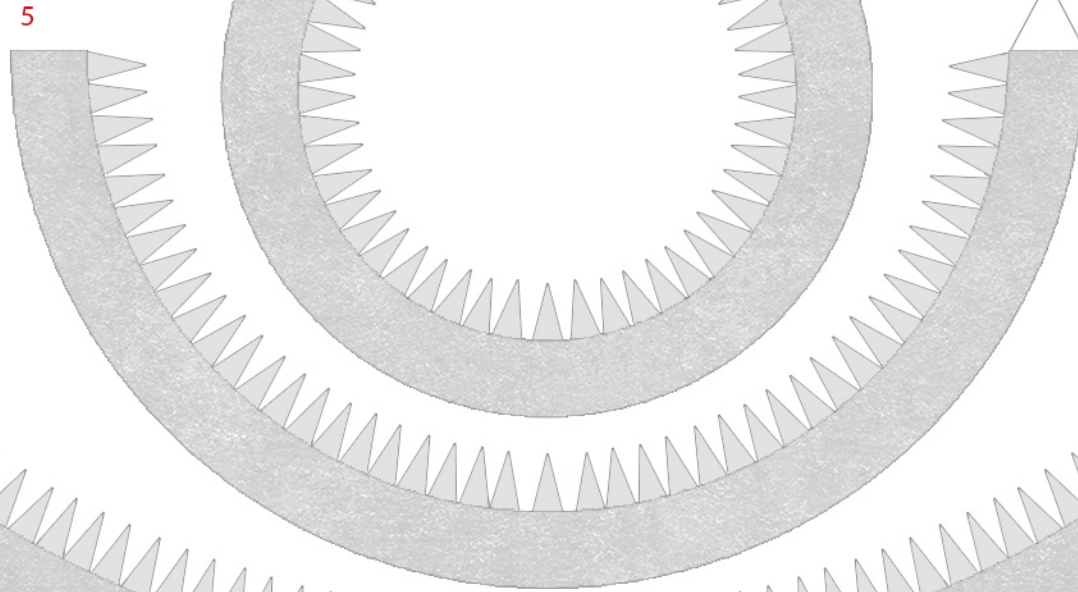
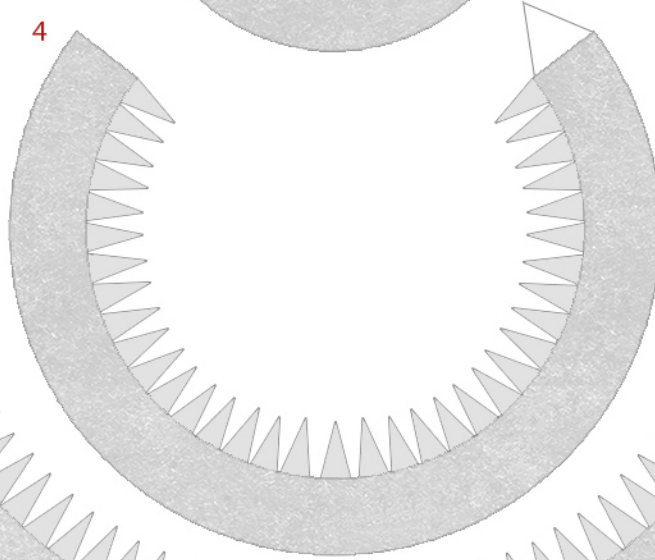
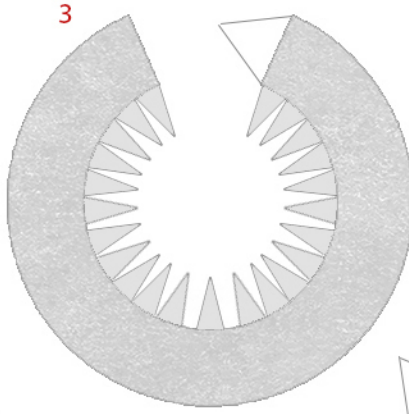
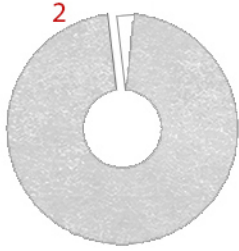
During ground inflation tests, 40,000 pounds (18,000 kg) of air were needed to fill the balloon, but while in orbit, several pounds of gas were all that was required to fill the sphere. At launch the balloon weighed 156.995 pounds (71.212 kg) which included 33.34 pounds (15.12 kg) of sublimating powders of two types. The first weighing 10 pounds (4.5 kg) with a very high vapor pressure, the second with a much lower vapor pressure. According to NASA, "To keep the sphere inflated in spite of meteorite punctures and skin permeability, a make-up gas system using evaporating liquid or crystals of a subliming solid were incorporated inside the satellite."

The first attempt to orbit an Echo satellite (also the maiden voyage of the Thor-Delta launch vehicle) miscarried when Echo 1 lifted from Cape Canaveral's LC-17A on the morning of May 13, 1960. The Thor performed properly, but during the coasting phase, the attitude control jets on the unproven Delta stage failed to ignite, sending the payload into the Atlantic Ocean instead of orbit. Echo 1A (commonly referred to as just Echo 1) was put successfully into a 944-to-1,048-mile (1,519 to 1,687 km) orbit by another Thor-Delta, and a microwave transmission from the Jet Propulsion Laboratory in Pasadena, California, was received at Bell Laboratories in Holmdel, New Jersey, on August 12, 1960.

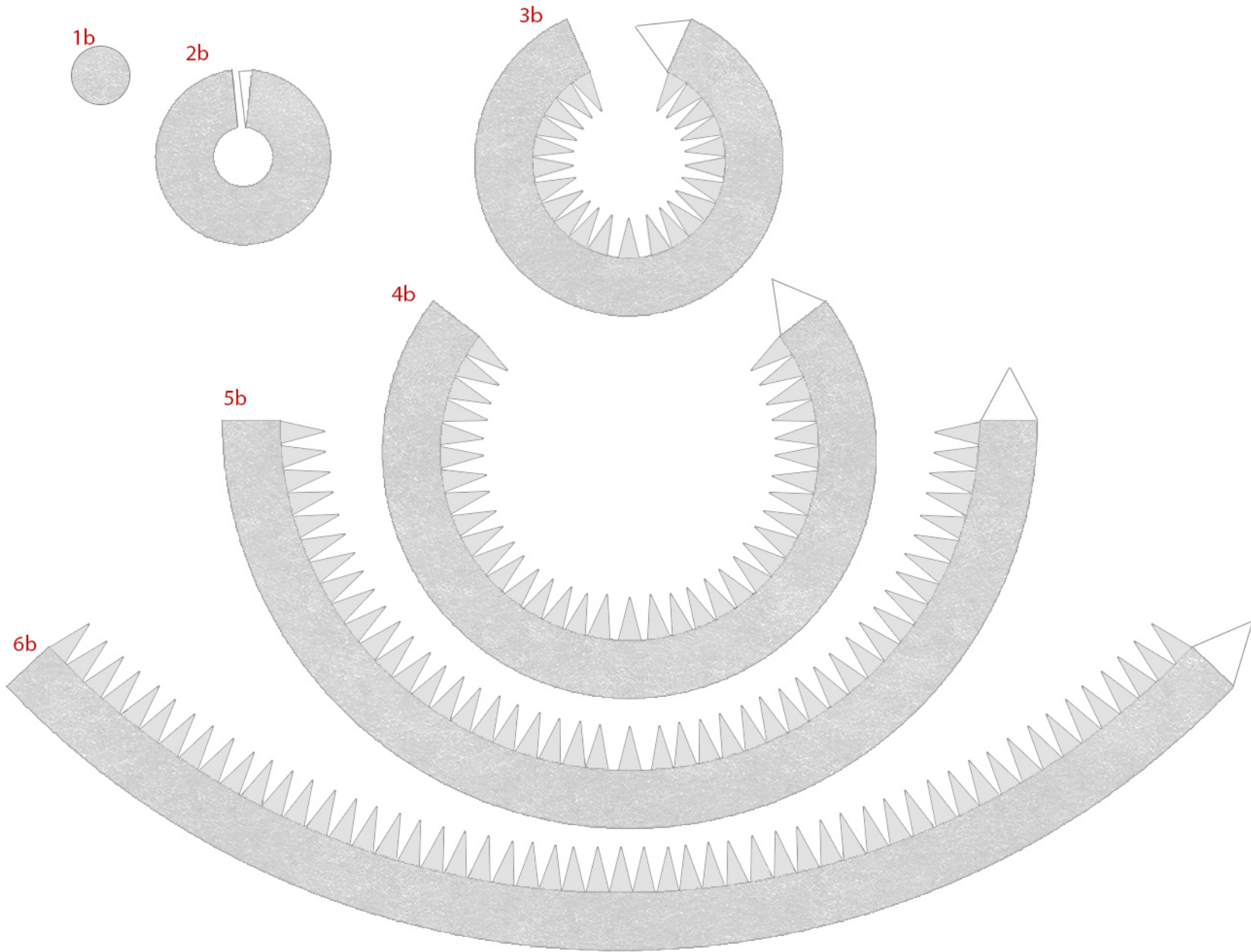
The 30.5-meter (100 ft) diameter balloon was made of 0.5-mil-thick (12.7 μm) metalized 0.2-micrometer-thick (0.00787-mil) biaxially oriented PET film ("Mylar") material, and it was used to redirect transcontinental and intercontinental telephone, radio, and television signals. The satellite also aided the calculation of atmospheric density and solar pressure due to its large area-to-mass ratio. As its shiny surface was also reflective in the range of visible light, Echo 1A was easily visible to the unaided eye over most of the Earth (It's considered to have been seen by more people than any other manmade object in space. Ever). The spacecraft was nicknamed a 'satelloon' by those involved in the project, as a portmanteau of satellite-balloon. It also had 107.9 MHz beacon transmitters for telemetry purposes, powered by five nickel-cadmium batteries that were charged by 70 solar cells mounted on the balloon. During the latter portion of its life, the spacecraft was used to evaluate the technical feasibility of satellite triangulation. It had a total mass of 180 kilograms (397 lb). Echo 1A was originally loosely estimated to survive until soon after its fourth dip into the atmosphere in July 1963 but possibly until 1964 or beyond but it ended up living much longer than these estimates and reentered Earth's atmosphere, burning up on May 24, 1968.



Echo-1 A



Echo-1 A

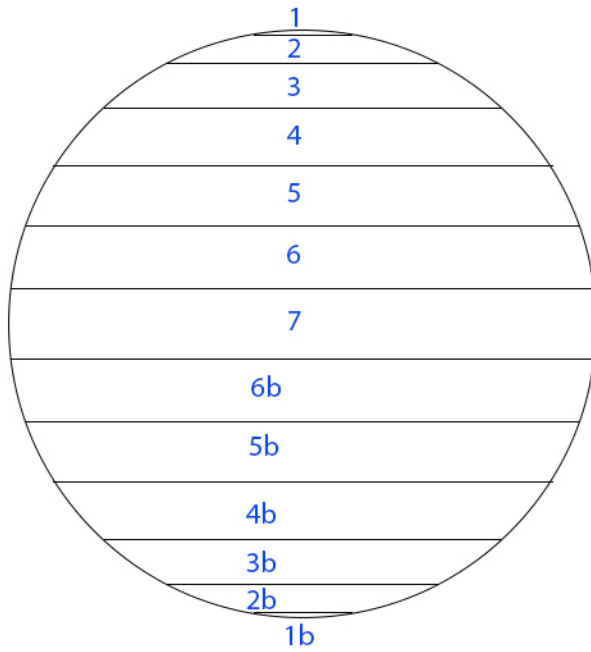


1/400 Scale paper Model
Instructions



Keep all seems aligned during assembly.

I like to start with part 7 (center piece).
then glue on part 6, then 5, then 4 and so on.
Do the same for the lower half.



Completed Model