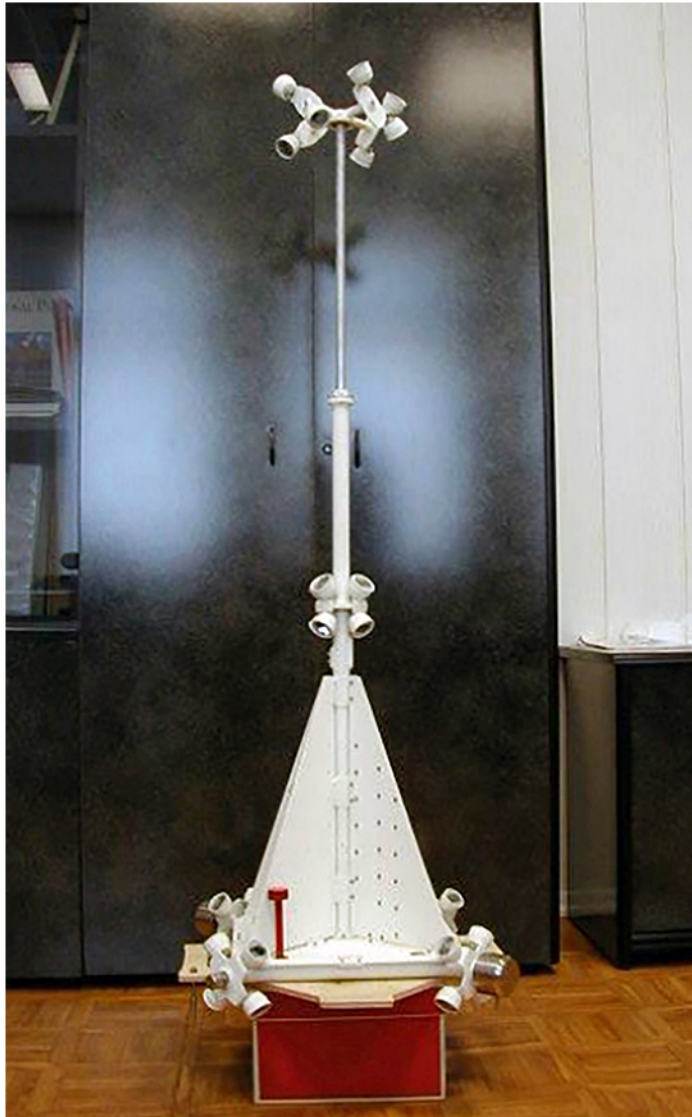


Reflector (Retroreflector Ensemble For Laser Experiments, Calibration, Testing and Optical Research)



The REFLECTOR microsatellite development is a result of a joint effort of IPIE (Institute for Precision Instrument Engineering - Russia) and AFRL/DEBS (United States Air Force Research Laboratory, Directed Energy Directorate, Surveillance Technologies Branch - USA). The microsatellite, successfully launched December 10, 2001 (as a piggyback load on board with the Meteor-3M 1 satellite) is a spatial test object carrying several groups of retroreflectors with specified spacing between them, intended for testing and calibration of high-resolution ground-based optical telescopes when laser illumination of targets is used.

The satellite (referred to as the Retroreflector Ensemble for Laser Experiments, Calibration, Testing & Optical Research, or REFLECTOR) is a free-flying, passive (un-powered) spacecraft that carries a number of small retros spaced apart on a tree-like structure.

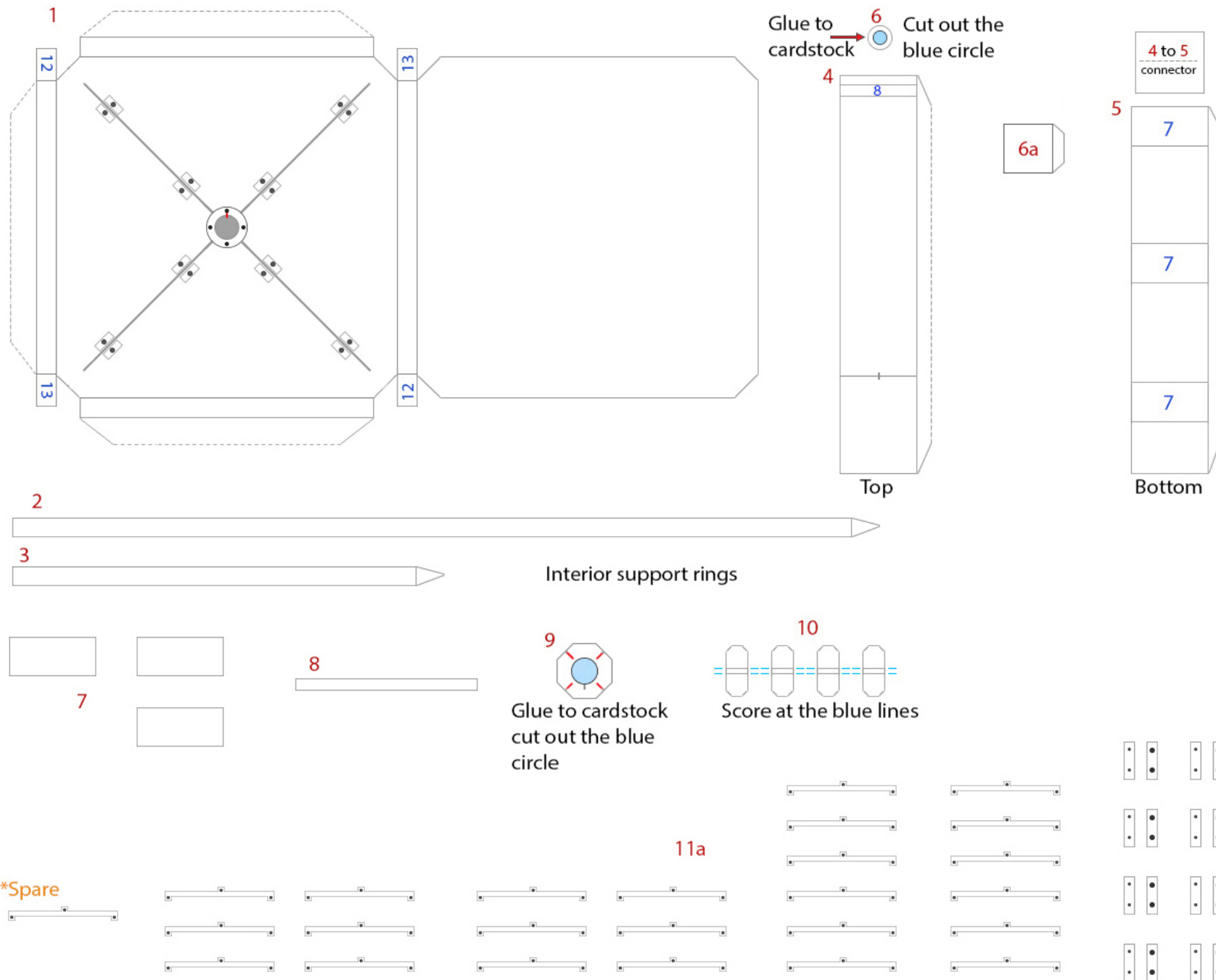
The REFLECTOR microsatellite carries 32 retroreflectors (cube corner prisms) arranged so that return signals can be obtained from any side when the microsatellite is stabilized along the vertical direction.

After release from the launch vehicle, the center boom telescopes to the position and stabilizes the vehicle gravitationally. The length of the vehicle with the boom extended is 1430 mm. Retros are clustered at the top of the boom, near the center of the vehicle and at the four corners of the base. The vehicle base is 460 mm wide between the retros along the diagonal. The total weight of the spacecraft is 6 kg. The triangular fins on the base increase the vehicle's Radar and optical cross sections for ground tracking purposes. It is estimated that during terminator periods sunlight reflected from the vehicle will result in a brightness at the ground of between 6 and 8 visual magnitude.

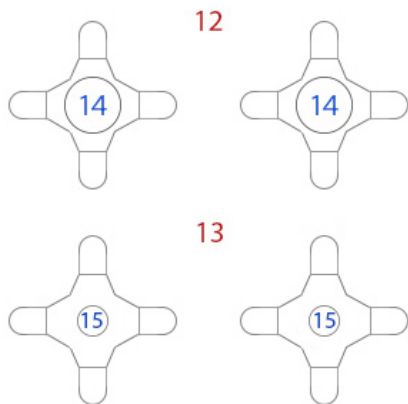
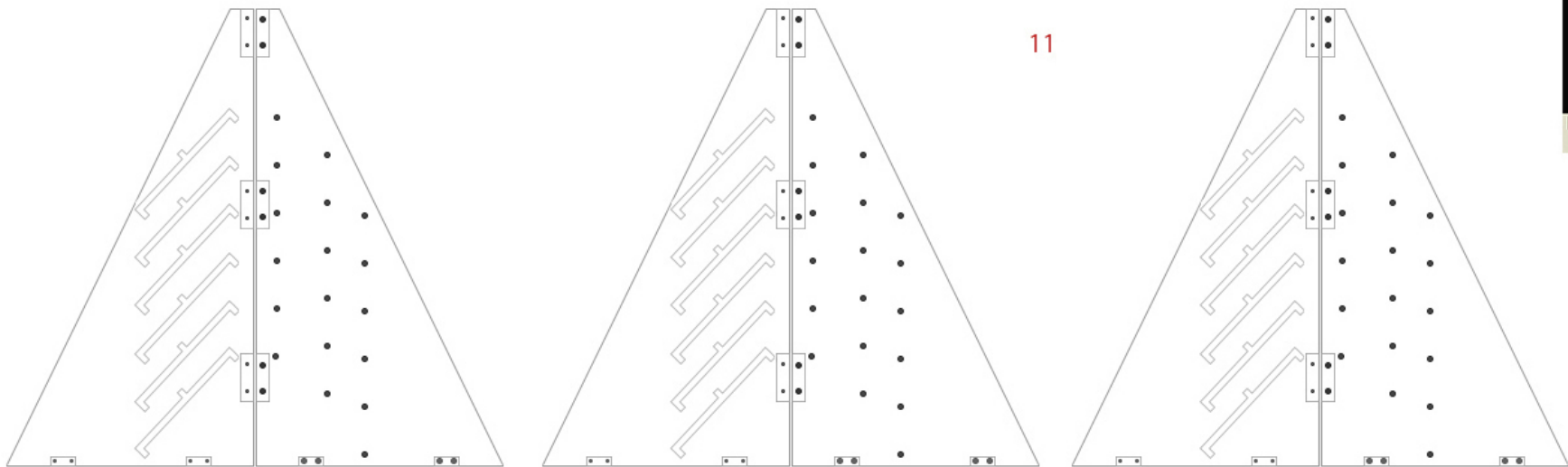
The REFLECTOR micro-satellite, built through a joint program between U.S. and Russian scientists will provide laser sensing experimenters with a unique low-earth orbit target of retroreflectors. The retros are separated spatially and one set of reflectors imparts a polarization signature to the return light. To provide a known target for the experimenter, the orientation of the vehicle will be maintained in orbit to a few degrees of oscillation by passive means. After launch, currently scheduled for the fall of 2000, a more detailed model of the expected return signal and ground patterns will be pursued to allow better experimental calibration and prediction capability when using REFLECTOR.



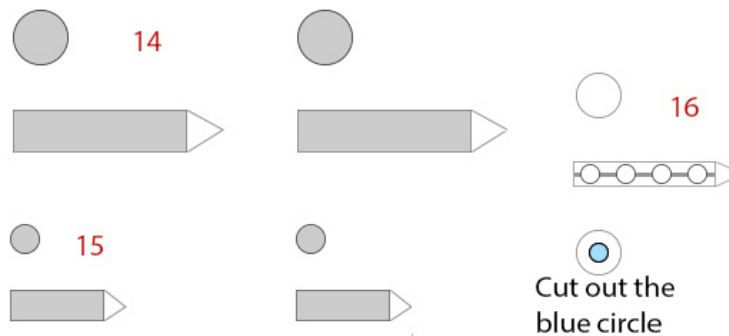
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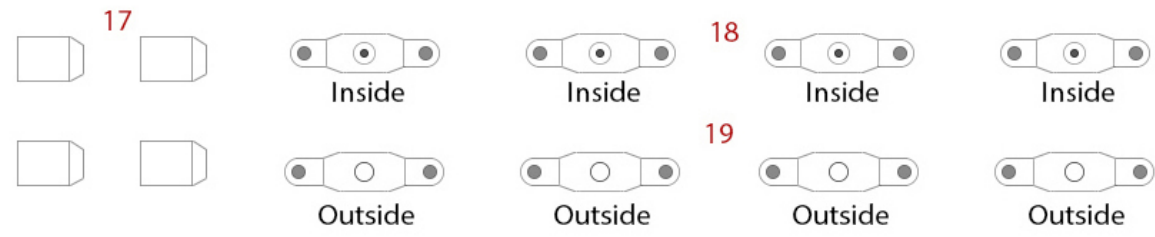
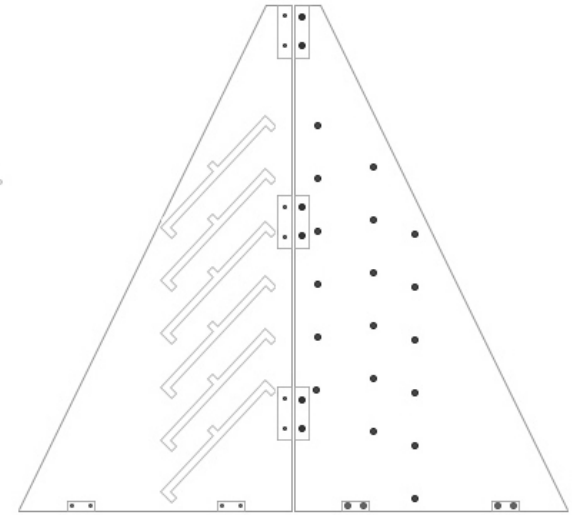
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Glue these four parts to cardstock



Cut out the blue circle



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Cut a long tooth pic or similar material that is 2mm diameter the same length as the line below, colored light grey or silver for the upper boom assembly.

