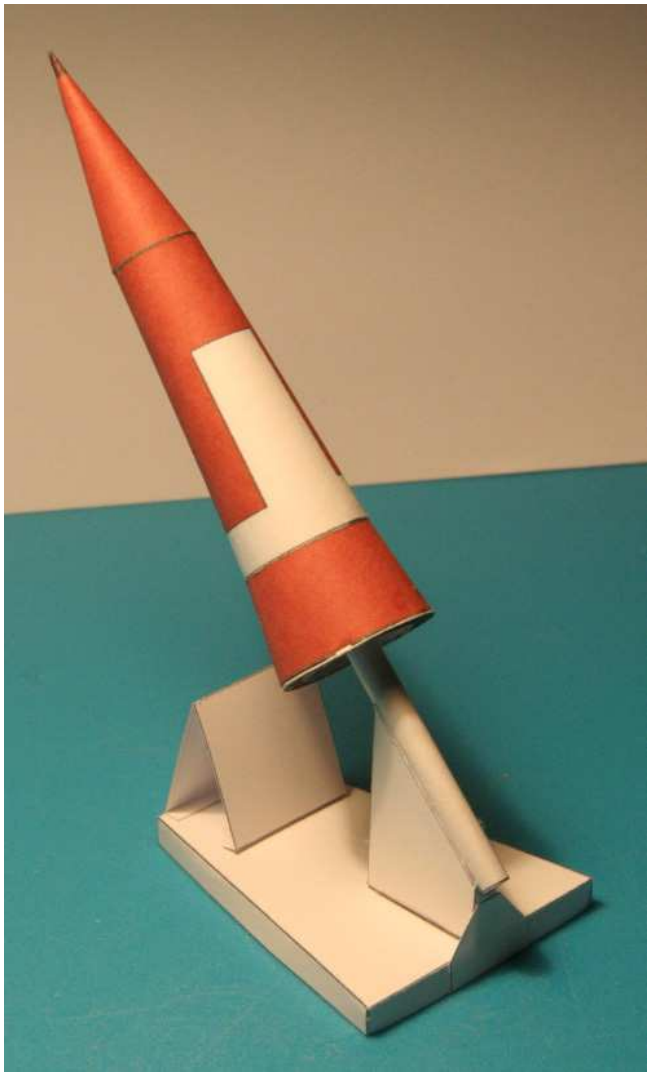
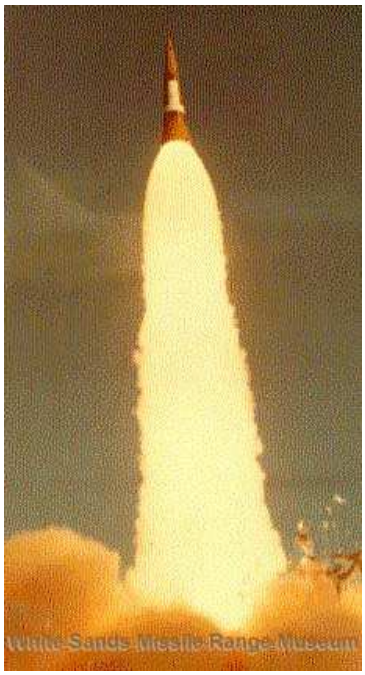


Instructions
for
Boeing ABM HiBEx

1 : 48 scale

F.Santandrea - 2006

Historical information (from Nuclear ABM Defence of the USA)



If Sprint was a phenomenal missile, HiBEX was even more interesting in some ways. It was part of a project called Defender run by DARPA in conjunction with the Army for a last ditch ABM missile in a similar vein to Sprint. However, it was literally a last ditch missile and was designed to intercept an incoming RV at less than 6,100m (20,000ft) altitude. At that altitude, the incoming RV would be traveling at around 3,000m/sec (10,000ft/sec) so a very fast reaction time was essential to insure interception. In fact, HiBEX was designed to have exited from its silo within 1/4 second *and it accelerated at over 400g.*

HiBEX was only 5.2m (17ft) long and due to the high acceleration, the fuel did not last very long at all, so it was characterised with very short rocket burn times and hence a very short range. One of the problems with such a high accelerating missile was that of guidance, and the onboard gyros presented a problem. Mechanical gyros were not really practical due to the spin up times and flight characteristics (ie they took to long to spin up, and didn't take kindly to rapid shifts in trajectory), so ARPA developed the laser gyro. This meant that the gyros and associated guidance system was available essentially instantaneously permitting a very rapid launch which was a major design goal.

HiBEX was not designed to use the MSR, but instead used another radar called the HArd Point Demonstration Array Radar (HAPDAR).

Sources

I took the technical information to design the model from this technical drawing (on the right) that I took from the Los Alamos National Laboratory publication “Ballistic Missile Defense: Potential Arms-Control Initiative”

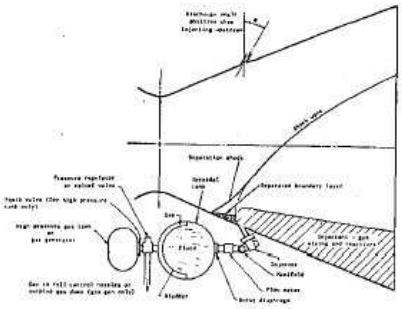
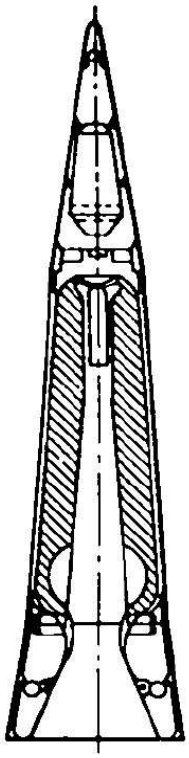


Figure 1. Typical Liquid Injection TVC System

I attempted to sophisticate a bit more the model, designing also the interior of the engine. I applied to the engine interior the color I took from some Shuttle SRB propellant pictures, and I detailed the nozzle with hypothetic dot of the LITV (Liquid Injection trust vector) steering System, typical of this kind of solid propellant missile, so fast that the fins could burn out for the air friction. I took the idea from the technical drawing on the left.

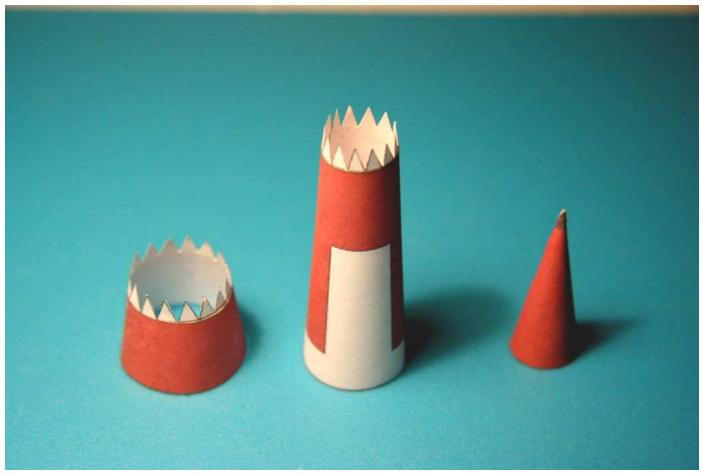


Instructions

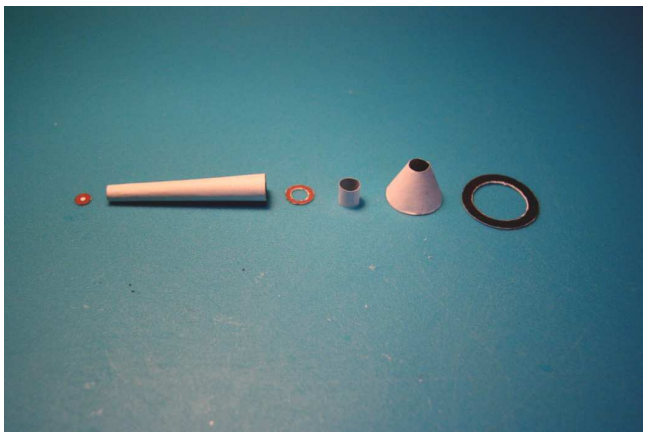
Print the Sheet 1 and 2 (Hibex Missile) on 80 g / m2.

Step 1 (main body)

First cut the body parts (part a, b and c) and roll them in conical shape. Glue the parts together to form the missile body, lining up the seal.



Step 2 (rocket nozzle and engine interior)



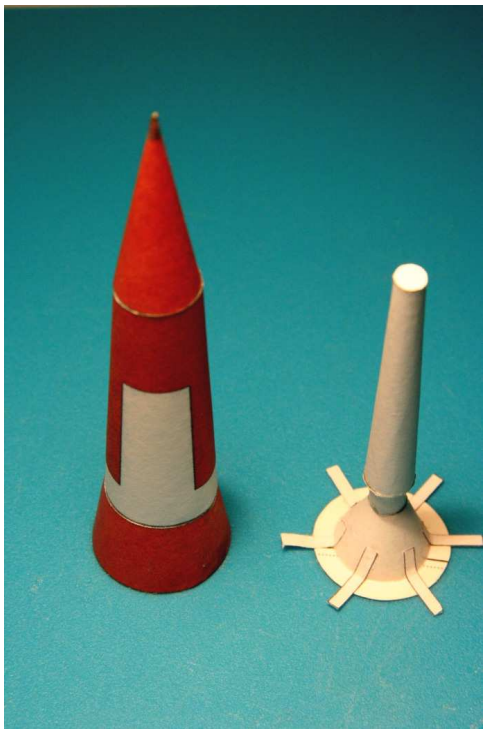
Then cut the parts of the rocket nozzle (d, e, f) and the parts of the engine interior (f, g, h, i).

Glue the nozzle (e) in conical shape and the throat (f) on top , with the gray side inside.

Glue the ring-shaped base (d) at the end of the nozzle with the black side down.

Glue the engine interior in conical shape and then glue the top and the bottom, all with the dark brown side inside.

Step 3 (final assembly & the base)



Glue the rocket engine inside the body.

For the base, roll the part k, then fold and glue together the parts l, m, n, o.

You can see the finale result in the pictures below.