physical phenomena that occurs when you fire an engine into a closed or essentially closed volume as we do when the ascent stage takes off from the lunar surface. We want to verify in fact that the engine would work properly under those conditions. The third is to verify that the uprated H–1 engine, where we have gone from 200,000 to 205,000 pounds of thrust, will yield the performance on the uprated Saturn I that we expect.

The mission sequence is shown on the right-hand side (fig. 7, MC67–5793). It begins with the insertion into an 85 to 120 nautical mile elliptical orbit and then use the descent engine to achieve a circular orbit. There are actually two burns of the descent engine followed by an ascent burn which places the ascent stage into a higher elliptical orbit. In addition to that, you have an elliptical orbit with a higher apogee and it provides us with a test of an ascent burn.

It results in a larger orbital altitude. The problem that we have in designing this mission profile is to provide that the burns take place over places where we have tracking stations on the ground. There is a fair amount of work that has been done to be sure that we make the burns which resemble as closely as we can, the burns that are going to be used in carrying out the lunar mission itself. Also, that those burns occur over places on the Earth where we have tracking stations. Generally we prefer to have these burns take place over the United States. You can't do all of them over the United States because you have to fire both at perigee and apogee to control it.

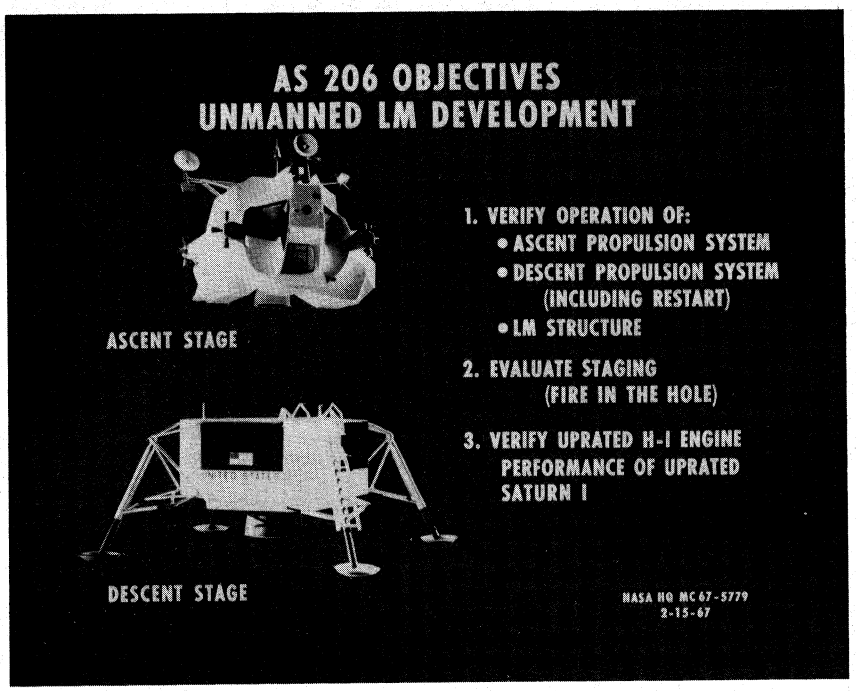

FIGURE 6