

time that these bars were extended outward. We have a mockup of this same relationship between the foot restraints and the adapter work station.

Some of the items that we had in the adapter were these pen lights which could be used to supply illumination during darkness in the event that the two spacecraft lights were not working. All the tasks that were conducted back here were done during the darkness period.

These are the portable hand holds that were taken from the adapter back up to the nose section of the Agena.

In the pouch there was a torque wrench which could read out various torque levels. By having my feet in here to give me a torque point, I could establish certain torque levels at cardinal positions of the torque wrench in both directions. There was also a set of cutters, and I performed a cutting operation on these wires.

We had electrical connectors of three different types and configuration, a fluid connector, and various sizes of hooks and rings.

There was this small type of hook that we had on Gemini IX that gave Astronaut Cernan the difficulty in connecting this small hook to this ring.

We also had rather simple tasks of connecting the velcro strips to see what effect this had while using the foot restraints, and also when the waist tethers were connected to the work station without using the foot restraints.

I found that without the foot restraints and with just the waist tethers connected I did have a tendency generally to drift upward, which was merely because I was operating my hands along in this position. I would just kind of drift upward, but this was not of much concern because I knew that I was only going so far and these would stop me from going any farther.

This film sequence is taken under water, and it shows entering the foot restraints by cocking the foot sideways and then twisting it to provide a complete restraint.

I found that the underwater simulations gave a very excellent reproduction of the situation that I found in orbit. During the entire EVA portion of the mission, it seemed to me that somehow I had been there before; and I think this was because of some of this underwater work. You see the mobility that a person has, making use of these foot restraints.

This section of the film was actually taken in flight, and it shows me connecting one of the waist tethers with the pit pins to the side of the Agena. I found that the dynamics in space were surprisingly well reproduced in an underwater simulation.

You would think that the viscous effects of the water would tend to kind of damp out the mission. In one case with two waist tethers connected I kicked my feet against the Agena; I started a gradual oscillation. This oscillation was not appreciably faster in space than I was able to produce under water.

The conclusions that we can gather from our experience on extravehicular activity in Gemini are that there are several factors that are necessary for successful EVA (fig. 11). One is that we have a proper body restraint system that will enable a person to operate with his hands without having to hold on. We need some type of