

From this flight one of the major lessons we learned was the value of proper body positioning and restraining in order to perform work tasks. As a result, we developed improved foot restraints. We also learned that we had to coat the inside of the visor with an antifog compound.

In the words of the pilot, after the flight, he said, "Make everything simple," meaning sufficiently large for easy operation—every little task that you have to do make as simple as you possibly can.

We further learned, as a result of this flight, that the underwater simulation studies would be quite valuable not only in working out procedures but, also, in actual conduct of training for the crewmembers.

After this flight the pilot went through his entire sequence of training in an underwater facility, and we found that many of the difficulties he had experienced in flight were very closely duplicated.

We then went on to look into the procedures that were being employed on Gemini X and XI. However, because of the time schedule, we were unable to conduct actual crew training for these flights in the underwater facility.

In Gemini X we conducted our first standup EVA. This came first in the flight. The standup EVA, or open hatch period, was primarily to conduct night photography with a camera mounted on the hatch sill. These were ultraviolet pictures. We found, as we were coming into daylight on this flight, that we had an eye irritation problem. We attributed this eye watering problem to the effect produced by two suit compressors which were used to increase airflow into the helmet.

The umbilical EVA was conducted in conjunction with a rendezvous with a Gemini VIII Agena that had been in orbit for 5 months. The purpose of this was to recover an experiment package that was on the Gemini VIII Agena. You see the 50-foot umbilical that was used in this flight, in this slide (fig. 6), along with the ELSS, the hand-held maneuvering unit. In this particular case we supplied nitrogen to the hand-held maneuvering unit through a connection aft of the spacecraft hatch.

You can get some idea of the size and bulk of this by comparing the 25-foot umbilical that we have over here with this double umbilical that not only had an oxygen line and electrical communications but also a nitrogen line.

We found in transporting from the Gemini spacecraft over to the Agena that the pilot was not able to hold on to the docking cone on the Agena because there were not enough handholds positioned there for him. As a result, he had to return to the spacecraft and then transport himself once more to the Agena. In spite of this problem, however, he did successfully recover the experiment package.

On ingress back into the Gemini spacecraft the pilot had a certain amount of difficulty, becoming entangled with the large amount of umbilical that we had. We concluded that this length of umbilical was just too long and too bulky to be used in the Gemini spacecraft.

On Gemini XII, the equipment used was essentially the same as that on Gemini X, with the exception that we had shortened the umbilical down to 30 feet. One of the objectives in this umbilical EVA was to attach a tether to the docked Agena vehicle. We also had planned a handtool evaluation on the aft portion of the spacecraft. (fig. 7.)