

water simulations is an attitude buoyancy, neutrality. In other words, it is rather easy to get the subject in the suit so that he is not moving up or down, but it is rather difficult, since he moves in the suit, to establish a complete degree of attitude freedom.

In general we found the tasks that can be performed in underwater simulation. We have a reasonable expectation that they will meet with success when conducted in orbit.

We also found that loose equipment must be secured. We had several instances of losing items of equipment because they were not tethered.

The hand-held maneuvering unit, we concluded, is promising, but needs further development.

The status of our present EVA capability is that we have proven through Gemini that EVA is practical.

The lessons that we have learned in Gemini will benefit us in intervehicular operations, that is, operations inside the spacecraft, such as removing the docking probe, and transferring through the tunnel between the Command Module and the LM. We certainly are going to need several restraint systems in order to do this.

The lessons we have learned in Gemini will come in very handy as we go into space station operation—first, inside the spacecraft connecting the airlock to the SIVB; second, for the amount of work to be performed within the workshop; and, third, in conducting various EVA tasks, such as recovering experiments from outside the spacecraft.

The lessons that we have learned in Gemini will also assist us in future EVA design concepts; life support systems, such as the portable life support system to be used on the lunar surface; and also several simple umbilical-type operations or simple umbilical or chest pack designs for umbilical operations in use with Apollo Applications.

Transport methods that have been developed in Gemini will certainly find use in Apollo along with additional type of transport systems, such as expending booms with hooks on them from one spacecraft to the other, which will enable us to transport in emergency conditions from one vehicle to another (fig. 13).

In lunar surface operations, certainly all of the experience we have gathered so far in Gemini will come in to play. We are in the process now of fixing this experience onto the 1/6-G environment. We will make use of the underwater facility by weighting the individual so that he is in a condition of 1/6 G, and we will also make use of overhead suspension devices.

The effects of suit mobility and the back pack operations will certainly determine just how successful we will be in conducting experiments and exploring the lunar surface.

In summary, we feel that the entire Gemini EVA effort has afforded us a valuable understanding of the problems of EVA and given us a firm foundation from which to embark on a wide variety of EVA tasks.

Thank you.

Congressman TEAGUE. Any questions?

Congressman PETTIS. This is probably a silly question, but why couldn't you use the magnetic idea for keeping close to the vehicle instead of this velcro, and the other things, not so much that you couldn't resist it easily, but would this create problems in the ship itself?