

craft then rendezvoused with Agena VIII, completing the first double rendezvous maneuvers in space.

These rendezvousing, docking, and maneuvering exercises laid the foundation for the design of future applications missions. The maneuvering of one vehicle, using the propulsion of a second to rendezvous with a third craft previously parked in orbit, combines the precise elements involved in the first Apollo Applications program alternate mission.

During the EVA on the Gemini X mission, the astronaut micro-meteorite experiment was retrieved by the astronaut from the Agena VIII target vehicle where it had been collecting data over a 2-month period. Thus the astronaut demonstrated capability to perform useful work outside the spacecraft. A previous standup EVA had been cut short due to eye irritation and the umbilical EVA involving retrieval of the experiment from the Agena VIII was shortened because of low maneuvering fuel supply.

GEMINI XI

Gemini XI was launched on September 12, 1966, and completed a rendezvous with the target vehicle during its first revolution, using on-board computer information exclusively. This rendezvous was most efficient as far as time is concerned and will find future application such as in the resupply of spacecraft where time may be a factor in rendezvous. Later in the mission a second rendezvous called a coincident orbit rendezvous was performed. This type of rendezvous is most efficient in conserving fuel, but requires significant tracking time. It will find later application on missions where fuel efficiency is required.

During a period of umbilical EVA performed while the spacecraft and target vehicle were docked, several experiments were accomplished and the astronaut succeeded in attaching a 100-foot tether connecting the two vehicles.

With the docking maneuver the Gemini spacecraft and propulsion stage were assembled into a new spacecraft combination and launched out of the Agena orbit into a new, high orbit of 741 nautical miles altitude. These assembly techniques will be essential in Apollo and Apollo Applications when the Apollo spacecraft is docked with the lunar module and the orbital workshop, Apollo telescope mount, and lunar mapping and survey system are assembled for the Apollo Applications mission.

Following the orbital maneuver, Gemini XI carried out a number of photographic experiments during more than 3 hours of high altitude, high velocity orbiting. Photographic observations of our Earth's surface and its characteristics during Gemini XI and other Gemini missions are important because of the applicability of these experiments to man's benefit on Earth.

During a later period of EVA standup after return to low earth orbit, a number of astronomical observations, as well as scientific experiments, were successfully completed. Similar experiments will be continued in the Apollo program and to a greater degree in Apollo Applications missions.