

a reentry heat shield test, it was in 1963 predicted to be launched sometime in 1964.

In fact, because of the series of events, not the least of which was a set of hurricanes and almost everything that could possibly happen, seemed to have happened to Gemini II, we finally launched it in January of 1965.

Gemini III, our first manned Gemini flight, was launched some 3 months later. As we continued downstream, you will note the phenomena that we are quite proud of in the Gemini program and that is as we gained experience, we were beginning to be able to move the launch dates forward, so that by the time we reached Gemini XII, we actually completed the program some 2 months or more ahead of the schedule that we established in 1963.

I think this represents the ability to capitalize on the maturity of the spacecraft, the ability to use the experience that you gained earlier to improve your schedule posture.

I might also add that during the course of this set of flights, we did introduce rather major modifications from flight to flight based upon the experience that we gained in the preceding flight. So that many changes, for example, a new set of experiments in EVA and a new set of restraints, were implemented on Gemini XI and XII in 3 months. We achieved a level of maturity in the organization, so that we are able to accomplish rather major changes from flight to flight and yet maintain a fairly tight and efficient launch schedule. One of the reasons for desiring to have a relatively short turn around from flight to flight is the maintenance of proficiency of the launch crews themselves and of the flight operation crews.

It is important in being sure that you can carry out these missions so as to have a reasonable frequency of launches so that the crew does not forget from flight to flight how to carry on the next mission.

The next slide (fig. 14, MG 67-5821) is another way of looking at our experience in Gemini. This measures the number of man-hours required to complete the acceptance testing of the Gemini spacecraft. You will note on Gemini II it took some 600,000 man-hours to go through acceptance testing. By Gemini III, we were around 300,000 man-hours and by Gemini IV we were down to 120,000 man-hours. This represents the kind of learning one expects to gain in going through the early phases of checkout and gaining an understanding of the problems involved in the acceptance testing of these involved spacecraft.

We ended up with between 116 and 120,000 hours for each of the succeeding spacecraft.

Next slide (fig. 15, MG 66-9430) : I thought it would be interesting to note the variation in cost and the manpower in the McDonnell contract as an example of the interaction of the management of the program, the maturity of the program, and the phasing of the program with respect to the actual flight schedules. You will note here that a combination of actions were taken in 1964, the fiscal year 1964; one of these was to establish an effective date for an incentive contract in about April of that year.

Another was to introduce our configuration control board, which we introduced about that time throughout our Manned Space Flight