

tanks under pressure out here, and we weren't having any trouble. We started metallurgical studies, and all the guys started to look through the data, going back through what we call traceability of our equipment. To make a long story short, there had been a change in specification of the oxidizer by the Air Force for the Titan II program, and they were the suppliers of this oxidizer. They didn't have any trouble with this change, but it turned out that the alloy that we used was incompatible with this much purer oxidizer. And by changing back to the old spec, we were back in business again. So what happened was they had sent the first of this new oxidizer to the Bell Co., while we still had a storage tank of the old oxidizer here. We couldn't break our tanks, but they were breaking every time they put in a tank there, so we got the spec changed.

I have already talked of the helium ingestion problem. In the astro-sextant door mechanism, we were having trouble with the mechanism itself. We went to a passive thermal protection of that door, which we tested on Spacecraft 011; it was very successful.

Another problem was potential recontact of the apex cover. The top of the command module pops off when you are getting the parachutes out, and the aerodynamic wake of the command module tends to bring that apex cover back down and recontact. We changed to a separation chute in the apex to pull that cover off, and it was tested on Spacecraft 011. On block II, because the docking mechanism is up there, we can't use the parachute, so we have gone to a dual-positive expulsion system that pops the top apex cover off at greater velocity than the single expulsion system.

Service module reaction control system propellant capacity and gaging accuracy were problems in the program. There was a radiation source in the gaging system which looked like it might get us into a problem later in the scientific experiments, so we changed to a system that actually had come out of the Gemini program. That was a much simpler system.

In the earth landing subsystem (slide 40), we had a test out at El Centro on what we call a boilerplate vehicle. We had a tear in the

1966 TECHNICAL PROBLEM & SOLUTION SUMMARY

PROBLEM	SOLUTION
EARTH LANDING SUBSYSTEM MAIN CHUTE FAILURE	REINFORCING TAPES AROUND CANOPY
TITANIUM-ALCOHOL INCOMPATIBILITY	REASSIGNMENTS OF SERVICE PROPULSION SYSTEM TANKS NOT EXPOSED TO ALCOHOL, DELETE USE OF METHYL ALCOHOL IN PROCESSES
BLOCK II SERVICE PROPULSION SUBSYSTEM ENGINE POPPING & STABILITY	MOD INJECTOR TO INCLUDE ADDITIONAL PORTS & COUNTERBORING