

Mercury-Redstone 1 Launch Memory

By Ed Fannin

I was pad engineer for M & P working with the techs finalizing preps for launch. When all was ready I cleared to the blockhouse and into the firing room. I learned that the firing panel operator had become ill and had to leave. The deputy chief of our M & P group was operating the panel. He told me to take over the operation of the panel which I did.

The countdown continued and when firing command was directed by the test conductor, I initiated the firing button. All sequences were normal, fuel and LOX tanks pressurized, the rocket engine ignition occurred normally and engine mainstage was initiated. The vehicle lifted off, and about 5 inches off the launcher the engine shut down and the vehicle came back down on the table still standing as if nothing was wrong. That's about the time the fun starts. With booster cut-off the escape tower electrical control system received the cut-off command and as the system was designed at that time, the cut-off was a normal event so the escape tower, the function of which is to pull the Mercury spacecraft away from a failed booster, solid rockets fired and the escape tower jettisoned. The roar of the solid motors was quite loud in the firing room.

This is the picture, both the booster and the spacecraft think that all is OK and they are flying and all flight programs are occurring as sequenced. At a point in time the spacecraft barostat was activated which initiated the spacecraft recovery systems. It looked like a popcorn popper with dye marker canisters, shark repellent canisters, sofar bombs, and finally the parachute all being ejected from the top of the spacecraft. So here we have a completely fueled vehicle sitting on the launcher and absolutely no control of it, all umbilicals, mechanical and electrical, disconnected at liftoff.

After much discussion the decision was made for the people in the blockhouse to leave in car size groups, a standby crew would stay in the blockhouse and turn on the cameras to record the event of loss should it occur. No one would be allowed to approach the vehicle until all LOX boiled off. This was in the morning after an all night countdown. So I left the blockhouse retrieved my car and went home.

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The next morning I returned to work and as I entered the hangar my group chief, Albert Zeiler, was leaving and told me to come with him to the pad. We got to the blockhouse and after some discussion with pad safety about the LOX level, I suggested to Albert we better get going because the wind was picking up and the parachute was starting to fill and flutter. Pad safety agreed and so the pad safety officer, Albert, and myself headed to the pad.

I was walking right directly to the vehicle but Albert with his Peenemunde experience with the German V-2, began to circle the vehicle to check for any dangerous condition we couldn't see head on and I joined him. While we were circling the vehicle the pad safety officer was cutting the parachute shroud lines freeing it from the spacecraft. There was some structural buckling of the of the thrust frame and the vehicle was not centered on the launcher support pads and some of the ground umbilicals were damaged but that was about all we could note. Our M & P techs were called in and a pneumatic supply was set up to open the LOX tank vent valve, remember the LOX tank was at operating pressure and the valve was still slightly relieving.

Jay Campbell opened the engine compartment hatch, climbed in and connected a pneumatic hose to the valve control port. When all was ready a slight flow was set on the auxiliary pneumatic panel, the hose connected to the vent valve was connected to the panel and we all high tailed it to the blockhouse. The LOX tank vent valve opened with a great big swoosh just as we rounded the corner of the blockhouse. The LOX tank blew and blew because the residual LOX was superheated. Safing operations were then started for the Redstone booster and the Mercury spacecraft, with both eventually removed from the pad.

The failure was attributed to an electrical floating ground resulting from electrical umbilicals disconnecting slightly out of sequence. The fix was a separate trailing ground umbilical for later vehicles.

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MERCURY-REDSTONE LAUNCH SUMMARY

MR-1 / 11-21-1960, (document says lifted off 1 inch, my memory is that we figured 5 inches based on the pneumatic umbilical necessary rise for disconnect)

MR-1A / 12-19-1960, (I don't remember this one), used spacecraft from MR-1.

MR- 2 / 01-31-1961, HAM, Chimp flight, in flight anomalies – thrust control valve ran wide open with higher thrust level resulting in fuel depletion cut-off resulting in escape tower firing and pulling spacecraft off what was “believed to be a failed” booster based on emergency circuits set up between booster and spacecraft. This resulted in a extra long trajectory, 420 miles, for Ham who showed his eagerness to get out of the spacecraft when recovered. Major toothy smile!

MR-BD (booster development) / 3-24-1961, To verify changes made from MR-2 anomalies.

MR-3 / 03-05/1961, First sub-orbital manned space flight with Alan Shepard, Jr. onboard., Freedom 7

MR-4 / 07-21-1961, Second suborbital manned flight with Gus Grissom onboard, Liberty Bell 7