

Launching Apollo 11 to the Moon

Stephen Coester

In 1969 I was a 28 year old engineer, one of several responsible for fueling the giant Saturn V rocket with Liquid Hydrogen.



My favorite Apollo memory was performing my final walkdown of the LUT just before launching Apollo 11. We were so aware of the

enormity of what we were about to do. The MSS (mobile service structure) had been rolled back revealing the enormous Saturn V to full view. It was after dark and the spotlights were casting their cones of illumination on the stack. I was virtually alone on the tower as I examined every component of the LH2 system to be as sure as I could that "my" system would do its job. It was just me and the Saturn V with a bright moon overhead. I would look at the moon , then at the rocket and think, " I don't want to be anywhere but right where I am right now"

Long forgotten is the fact that the Apollo 11 launch was almost scrubbed on July 16. I was assigned to the launch console (C4HU) that maintained 100% liquid hydrogen level in the Saturn third stage which was used to propel the astronauts from earth orbit to the moon. Late in the propellant loading as we were beginning the S-IVB replenish operation, a large liquid hydrogen leak at -423 degrees occurred on the third stage replenish valve on the 200 foot level of the launch umbilical tower. Loading was terminated and the lines drained to prevent a fire or explosion and a Red Crew went to the Pad to fix the problem.

Using troubleshooting that I developed the Red Crew torqued packing and flange bolts and cycled the valve. then we resumed liquid hydrogen flow, but were unsuccessful in stopping the leak which prevented maintaining the 100% fuel level in the Saturn third stage. Without a full tank of liquid hydrogen there would be no launch. Finally the leak was isolated by freezing the valve by pouring water over it, but that made the critical valve inoperable. We then developed a way to use the large main fill valve which was not intended for that purpose to maintain the level and the launch countdown could finally continue. For several hours another engineer (CPH1) manually cycled the valve from his console as I reported the tank level as it fell below or exceeded 100%. See the PCR (procedure change request) that I wrote.

PROCEDURE CHANGE REQUEST				1. TCP TITLE	2. DATE	3. CONTRACTOR
				2V Auto/17m 20V/LH ₂ LOAD DRAIN	7/16/94	BOSING
4. PCR NUMBER		5. TCP NUMBER		6. REV	7. VEHICLE	8. SHEET
B-37-JIL		V-35014		004	50455MS	L OF 2
9. PAGE	10. TIME	11. SEQ	12. CHANGE	13. REASON		
			REAL TIME - ONE TIME ONLY			
73		AFTER 1-1	ADD (A) PLACE S-1VB REPLENISH VALVE MAN/AUTO SWITCH TO MANUAL	TO MINIMIZE EXPOSURE OF A3311		
			(B) VERIFY THUMBWHEELS SET TO "00"	TO CRYOGENIC TEMPERATURES DURING RE-LOADING		
74		DELET 22	DELETE SEQUENCES 1, 3			
74		DELET 22	ADD NEW STEP AFTER STEP 2 2-1 143 COLH CPHI MAINTAIN S-1VB LH ₂ AT FLIGHT MASS BY CYCLING S-1VB FILL VALVE A3321 TO REDUCED, THEN CLOSED WHEN FLIGHT MASS IS 100%. REPEAT AS REQUIRED			
75		NEW 9	AT T-10 MINUTE CPHI VERIFY A3321 CLOSED CPHU PLACE REPLENISH VALVE AUTO/MAN SWITCH TO AUTO			
				<i>R. Scobitt</i>		
				<i>W.R. Brown</i> CITE		
14. CONTRACTOR APPROVAL		DATE		15. ASC ENGINEERING		DATE
<i>[Signature]</i>		1-16-94		<i>[Signature]</i>		1-16-94
				16. REC TEST COND.		DATE
				Y		2/11/94

For the actual voice transcripts by Public Affairs during this problem see <http://history.nasa.gov/ap11fj/01launch.htm>.

If we hadn't controlled the leak and maintained proper LH2 level the moon launch would have been scrubbed for at least July 16 and probably for several days.

I was twenty-eight years old when we landed on the moon, responsible for loading 600000 gallons of LH2 on the "moon rocket". The managers were in their early thirties and someone over forty was "the old man". Exciting times!

