

"ONE GIANT LEAP"

THOUGHTS ON APOLLO 11

On July 20, 1969, Flight Director Gene Kranz reports for work and walks down the hall in Mission Control not thinking of the lunar landing but with a feeling that he and his team, from the time that they were born, were "meant for this day." When he enters the Mission Operations Control Room, he "can feel the atmosphere immediately. Everything is pretty much ops-normal. This room is bathed in this blue-gray light that you get from the screen, so it's sort of almost like you see in the movies.

"Then the rest of the room's atmosphere, it's the smell of the room, and you can tell people have been in there for a long period of time. There's enough stale pizza hanging around and stale sandwiches and the wastebaskets are full. You can smell the coffee that's been burned into the hot plate in there. But you also get this feeling that this is a place something's going to happen at. I mean, this is a place sort of like the docks where Columbus left, you know, when he sailed off to America or on the beaches when he came on landing.

"It's a place where you know something is going to happen. You feel the energy of the room, because, as you walk in, you pass little groups where there's little buzzes of conversation. You don't waste too many words in Mission Control. You speak in funny syllables, in acronyms and short, brief sentences, and sometimes you use call signs, other times you use first names. It depends upon what the mood of the room is.

"I went up to the console. I sort of eat my way through a shift. Then talk to the Spacecraft Analysis Room where we've got the engineering representatives from our contractors, and this is another good place to get the pulse of the room. There are things going right. My controllers are in the other half of the room, and these people don't seem particularly uptight. It's really amazing. You get the feel that, gee whiz, this is just almost a normal day in Mission Control.

"I go back to the console and find out it's been more normal than you'd ever expect, because I read the log, and talk with

[departing flight director] Glynn Lunney during the handover. So, it still doesn't sink in that today's real time, this is really it.

"Then I put on my vest, my landing vest. The vest tradition started with the white team that goes all the way back to Gemini. The reason it's always got white is because I lead the white team. Red, white, and blue are the colors of the first three flight directors. For this landing, my wife Marta had made me a silver and white brocade vest, very fine silver thread running through it. I carried it in a plastic bag, turned inside out because the vest is always a surprise for the controllers. This is sort of a way to get the team loose, to get them a bit relaxed, because you don't want people who are trigger-happy in this business.

"We go through the first couple of orbits and things are really percolating along, no anomalies. It's almost like a simulation. There's many times during this day when the thought would come to mind, it's like a simulation. Finally we get down to the point now where it is time to finish. We're in our final orbit around the moon, which is two hours, and roughly for about an hour-twenty, we see the crew, and then forty minutes they're out of sight for us. We're into the final orbit. The crew goes behind the moon.

"There are certain things in Mission Control, and there are two of them [that] happened, one now and then one later on, that really indicated that this was not a normal day, or not a normal simulation day. The first one—and this was one of the triggering events—the spacecraft is now behind the moon, and the control team, the adrenaline, just really was—no matter how you tried to hide it, the fact is that you were really starting to pump. There isn't the normal banter, no jokes, etc. I mean, the level of preoccupation in these people—and these are kids. The average age of my team was twenty-six years old. I'm the oldest guy on this entire team. I'm thirty-six; I'm ten years older. This team, this day, is either going to land, abort, or crash. Those are the only three alternatives. It's really starting to sink in, and I have this feeling I've got to talk to my people.





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Gene Kranz, 36, leads the White Team during the Apollo 11 historic lunar landing.

“So I told my team, ‘Okay, all flight controllers, listen up.’ And although the people in the viewing room are used to hearing all these people talking, all of a sudden there’s nobody talking anymore. But I had to tell these kids how proud I was of the work that they had done. That from this day, from the time that they were born, they were destined to be here and they’re destined to do this job, and it’s the best team that has ever been assembled. And today, without a doubt, we are going to write the history books and we’re going to be the team that takes an American to the moon, and that whatever happens on this day, whatever decisions they make, whatever decisions as a team we make, I will always be standing with them, no one’s ever going to second-guess us. So that’s it.

“I finished the discussion and tell the controllers to return to business. I have the doors of Mission Control locked—we do this for all critical mission phases. This was the final thing that sunk in in the controllers that, hey, this is again something different from training, these doors are locked, we’ve got a job to do. ...

“Everybody in the room is deathly silent except for what is on the voice loops, and we’re only listening to Bob Carlton’s call. The last call was ‘sixty seconds,’ and the next call was going to be ‘thirty seconds.’ So I advised controllers no more calls, because we’re now operating in what we call negative reporting. We’re not saying a word to the crew, because they’re just busier than hell right now, and the only reason for us to abort is fuel.

“Now Carlton hits thirty seconds. Now we’re thirty seconds off the surface of the moon, and very—I mean, incredibly rapidly I go through the decision process. No matter what happens, I’m not going to call an abort. The crew is close enough to the surface I’m going to let them give it their best shot.

“At the same time, the crew identifies they’re kicking up some dust, so we know we’re close, but we don’t know how close because we don’t know at what altitude they’d start kicking up the dust, and then we’re to the point where we’re mentally starting, waiting for the fifteen-second call, and Carlton was just ready to say, ‘Fifteen seconds,’ and then we hear the crew saying, ‘Contact.’





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“There’s nothing in training that ever prepares you for that second, because the viewing room behind me starts cheering. Our instructors, which are over in the Sim Sup area (on the right) they start cheering, but we’ve got to be cool because we have to now go through all of the shutdown activity. We have to go through a series of what we call ‘stay/no stay’ decisions, because forty seconds after we’ve touched down on the moon, we have to be ready to lift back off again.

“I had to get going on the stay/no stay. I just rapped my arm down on the console there, just absolutely frustrated. I broke my pencil, the pencil flies up in the air. I got back on track and started, ‘Go. Okay. All flight controllers stand by for T-one stay/no stay.’ Then, as soon as we finished that, we had another; I think it was ten or twelve minutes later, and these were opportunities for liftoff and go back up, and immediate rendezvous. Once we went beyond T-two, then we had to go through a T-three.

“While we’re doing all this stuff, Charlie Duke’s still talking to the crew, saying, ‘Eagle, you know, you’ve got a bunch of controllers down here about ready to turn blue.’ Well, the fact is, I don’t think any of us breathed for that last sixty seconds.”

Neil Armstrong: “Each of the components of our hardware were designed to certain reliability specifications, and far the majority, to my recollection, had a reliability requirement of 0.99996, which means that you have four failures in 100,000 operations. I’ve been told that if every component met its reliability specifications precisely, that a typical Apollo flight would have about 1,000 separate identifiable failures. In fact, we had more like 150 failures per flight, substantially better than statistical methods would tell you that you might have.

“I can only attribute that to the fact that every guy in the project, every guy at the bench building something, every assembler, every inspector, every guy that’s setting up the tests, cranking the torque wrench, and so on, is saying, man or woman, ‘If anything goes wrong here, it’s not going to be my fault, because my part is going to be better than I have to make

it.’ And when you have hundreds of thousands of people all doing their job a little better than they have to, you get an improvement in performance. And that’s the only reason we could have pulled this whole thing off. ...

“When I was working at the Manned Spacecraft Center, you could stand across the street and you could not tell when quitting time was, because people didn’t leave at quitting time in those days. People just worked, and they worked until whatever their job was done, and if they had to be there until five o’clock or seven o’clock or nine-thirty or whatever it was, they were just there. They did it, and then they went home.”

Jerry Bostick: “It was not until after the mission was over and for the first time in my career, I took like a week off, [because] we’ve done what we came to do, we want to do it a bunch more times, but we have proved it can be done. We met the President’s goal. We beat the Russians.”

Mel Brooks: “Apollo 11, what an adventure. I was with a group of guys who were just about as fortunate as you can possibly be. We were in the right place at the right time when the President decided we were going to go to the moon and put plenty of money in the budget. We set out to do it, and it’s probably, I still think, the greatest achievement in mankind’s history, what we did on the moon.”



Gene Cernan: “The Apollo 11 epitaph was written before they left—a testimonial to what we can do if we really want to do something badly enough and do it well. We made a few mistakes along the way; there was a period of time in two years where I wore my uniform eight times when we buried people at Arlington National Cemetery. The other side of that coin is we had our tickertape parades and trips around the world. So it’s a two-way street. We can do it if we want to do it badly enough.

“We had no guarantees. Nobody had any guarantees. We had a challenge. We had a challenge from the President of the United States to do at that point in time, which most people thought couldn’t be done. Going to the moon when we had those sixteen minutes of spaceflight experience, I mean, was Kennedy a visionary? Was he a dreamer? Was he politically astute? I expect he was all three. So that’s the lesson that we have to pass on from Apollo. That’s what we have to tell our kids and our grandkids. That’s the lesson that I think history somewhere sometime will record.”

Larry Davis: “I was proud that I got to be on the shift where they were going to land on the moon. I’ve never seen so many people in the Control Center. I believe they were afraid about structural support and the floor, because it was just everybody who you’d ever seen and people you hadn’t seen. There were more people than there were headsets that could be plugged in. It was a full house. They talk about people holding their breath; I think everybody literally was. It was really unbelievable. It did not seem real. It was just amazing.

“I remember we had a display in the Control Center that moves along the trajectory. When the Lunar Module landed, the display didn’t move, because that’s the first time we’d ever had a vehicle that wasn’t moving—it’s sitting on the moon. That was part of the trajectory; it was very strange to [see] it always sitting there.”

Ed Fendell: “When it started getting down close, I don’t think I was touching my chair. I actually believe I was levitating. It was so intense that I don’t think most people really

fully realized what we did. I know I didn’t. [Afterwards] we did a shift change, and I went home to sleep for a few hours, got cleaned up, and stopped to eat some breakfast on the way back to work at one of these little coffee shops with the round stools. I sat down up at the counter, and I’m sitting there reading the paper when two guys walk in and sit down on the two stools next to me. They are from the gas station down at the corner, and they’re in their gas station uniforms, grease under the fingernails, and so on. They were older [than me]. They get their coffee and while waiting for their breakfast, they start talking. One of them says to the other one, ‘You know, I went all through World War II. I landed at Normandy on D-Day. It was an incredible day, an incredible life, and I went all the way through Paris and on into Berlin.’ [Then] he said, ‘But yesterday was the day that I felt the proudest to be an American.’

“Well, when he said that, I lost it. It all of a sudden hit me as to what we had done. And I just threw my money down, grabbed my paper, and walked out and got in the car and started to cry. I realized what we had done and what had happened—but I hadn’t until that moment. It hadn’t hit me. It wasn’t like sitting in the control center. That was great, a tremendous experience and relief they were alive, and we had made it but it was just a complete different feeling. I had now joined up with the rest of the world as to what had happened.”

Ed Gibson: “When you’re in the midst of it, you don’t step back and be too philosophical about it. I was in mission control in the viewing room when Apollo 11 landed, and Wernher von Braun, Chris Kraft, and Bob Gilruth were there. I looked at their faces, and von Braun just had tears in his eyes. Here was a guy that I had grown up to admire from his contributions he had made to rocketry. Then it hit me. This is really monumental, what has happened.”

Bob Heselmeyer: “While they were on the moon and even after the flight, I kept trying to get in touch with the reality. It was, for me, mind-bending in terms of connecting with it really happened. They really got there, really got back. I concluded





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Post-Apollo 11 celebration in the Mission Operations Control Room.

that it was probably going to be some time before that really sunk in, and it was. Still is. Still think about that. Of course, it's been some time now, but I think about that and think, 'Man, amazing.' And done on the fast track, in terms of the vehicles; in terms of the limited, by today's standard, computing capacity; the ability of the whole organization to make hard decisions without having to convince Congress that it was the right thing to do at the time and have it debated back and forth, but to get on with doing something pretty amazing in an efficient way, and as safely as we all knew how to do it."

Jack Lousma: "Very few times in history do you ever get to the point where everybody in the whole world wants to have the same thing happen or is concerned about the same issue or has the same hope and vision for its success, but this particular one was one in which that happened. Probably Apollo 11 in the space program was the first time that everybody around the world was glued to the news and glued to their television sets watching this happen. It didn't matter what country one lived in or what the culture was or the language or the religion or anything. The astronauts were people who represented all of mankind, so to speak,

and they wanted them to be successful. It didn't matter who it was, as long as someone or humans like them were involved in this."

Dave Whittle: "[After the landing,] we handed over to the team that was going to be there while we were on the ground. I stuck around for a while. I walked outside the Control Center and looked up, saw the moon, and thought, 'You know, I am part of history. This is incredible. Here I am looking at the moon, knowing that there's somebody there looking back.' I reflected on that, really and truly, the thought that this is something that's going down in history books, something that I've had a part of, that I've been involved with, that I've helped make happen. I was very proud of that, and awestruck, really. I purposely walked outside of the Control Center and stood there and looked up at the moon. It was something else." ★

These excerpts are from interviews conducted for the NASA Johnson Space Center Oral History Project. For the complete transcripts and for more transcripts, go to www.jsc.nasa.gov/history

