NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
ORAL HISTORY TRANSCRIPT

EUGENE A. CERNAN
INTERVIEWED BY REBECCA WRIGHT
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WRIGHT: Today is December 11th, 2007. This oral history with Gene Cernan is being conducted for the NASA Johnson Space Center Oral History Project in Houston, Texas. Interviewer is Rebecca Wright assisted by Sandra Johnson and Jennifer Ross-Nazzal. Thanks again for joining us for this interview. Especially thank you for giving us today, as we all know that it was December 11th 35 years ago that you guided the Lunar Lander *Challenger* to a safe landing on the Moon. If you would, please, we'd like to start today with you reflecting on that moment and that anticipation of your arrival.

CERNAN: Waited a long time for December 11th, 1972 to come around. You might recall I had a chance to go to the Moon on Apollo 10 and fly the Lunar Module. But we only came close. We came within about 47,000 feet but did not land. That's the way it was planned, although originally one time early on in the program the fourth Apollo flight was going to be the first attempt at landing. That would have been Apollo 10. But things changed. We can go into that later if you'd like to.

But anyway, I keep telling Neil [A.] Armstrong that we painted that white line in the sky all the way to the Moon down to 47,000 feet so he wouldn't get lost, and all he had to do was land. Made it sort of easy for him. But I've been asked oh, so many times over the last years, "How does it feel to be the end, how does it feel to be the tail of the dog, the last one over the fence?" I got on my soapbox after we came back in January -- came back in December, but in

January of '73 was at Kennedy [Space Center, Florida] for homecoming, and I said, "I've been tired of being called the end. Apollo 17 is not the end. It's just the beginning of a whole new era in the history of mankind." Of course at that time I said, "We're not only going to go back to the Moon, we will be on our way to Mars by the turn of the century." That was '73. That gave me 27 years to be proven wrong. As you can well imagine, my glass has been half-empty for three decades. Fortunately now it's half-full as long as we continue to move forward with the Vision of Space Exploration.

But anyway, December 11th, 1972, oh, I can go into a lot of thoughts and feelings of what it was like to cover that last 50,000 feet, or the last 14 minutes of that flight. I'll try and do it briefly. It's a very exciting, very big time moment when you fire that engine. All the way down it's noisy; it's vibrating. We're in our suits. It's a very dynamic period of time. The ground's talking to you. Guy in the right seat, in my case Jack [Harrison H.] Schmitt was talking to me. I'm flying. A lot of people think we pressed a button and let the thing fly itself. …

There's no way I'm going to go all the way to the Moon, particularly for a second time, and let a computer land me on the Moon. The arrogance of a pilot, particularly naval aviators, is too great to allow that to happen. Nobody ever landed on the Moon other than with their own two hands and brain and eyeballs and whatever. Computer-assisted, yes. Got a lot of information. We got help from a lot of sources. But you're looking for landing radar. You're looking to maintain the communications. You're on your back. You've got to roll over. You've got to go face up. A lot of things happen very quickly. As I say a very dynamic, exciting 14 minutes of your life, maybe 15. At 7,000 feet you pitch over, so for the first time you can really see the landing site where you're going to land.

As it should have been, we landed in perhaps the [most] challenging area on the Moon. Our valley where we were to land in was surrounded by mountains on three sides that are higher than the Grand Canyon is deep, to give you some idea. So at 7,000 feet we were down among them. I mean the mountains rose above us on both sides. The valley was only 20 miles long and about five miles wide. We had good photography. So practiced this 100, 500, I don't know how many times. So what I was looking at I'd seen before basically, because of the simulation and the pictures. So I knew we were in the right spot. At 7,000 feet as the craters and rocks and the boulders and so forth began to appear I could begin to pick up my landing site. We had a particular target point, but it was only as good as we expected it to be. But when I got closer and I could see, then I could what we called redesignate where we were going to land.

As I say, all the way down the engine is firing, you're in a suit, it's noisy, it's vibrating, people are talking to you from both ends, needles are going left and right. You know you don't have much fuel. So you got to get down quickly. But you can't get down too quick to keep your rate of [descent], you got to have your rate of descent under control. You get down to 200 feet and you're going to land or crash because if something happens to the descent engine at that point in time you can't react quick enough to stage the two vehicles, fire the ascent engine, and get out of there.

So when you're down below 200 feet you're going to land. I mean I wasn't going to go all that way a second time and not land. Fortunately everything worked well for us. The landing radar, all the equipment, everything worked fine. You're coming down pretty fast through 200 feet. I don't remember exactly, but somewhere around 30, 35 feet per second, which is pretty fast. You've got to slow down from that point on so that you touch down at one or two feet per second. You get to about 80 feet, and you start blowing dust all over the place. By that time you

now know where you're going to land, the dust keeps you from really seeing much of anything, because it just scatters horizontally in all directions. You effectively take what you got.

At about oh three meters, you got a contact [light], that little probe hits the surface, tells you you're close, you better shut the engine down, because if you don't shut it down and you land with the descent engine running full-blast at high power like it was at that point in time, the backpressure could explode the Lunar Module. So the plan was to shut down the engine and fall the last nine feet. As I say, it's very dynamic, very noisy. By the time you get to 80 feet the ground's quit talking to you, they can't say much. Long before that, I told Jack, I said "Jack, don't talk to me, I don't need the information you're giving me." I know he kept calling the fuel out and one thing or another. By that time I didn't need to hear anything else. When you shut down and all of a sudden it's like going over a bump in a country road, you go up, come down, when you shut the engine down, boom, and you hit. Not real hard, but with a thump.

That's where you experience the most quiet moment a human being can experience in his lifetime. There's no vibration. There's no noise. The ground quit talking. Your partner is mesmerized. He can't say anything. The dust is gone. It's a realization, a reality, all of a sudden you have just landed in another world on another body out there [somewhere in the] universe, and what you are seeing is being seen by human beings, human eyes, for the first time. Where you are no human beings have ever been before. It's absolutely -- except for the glycol pumps, the environmental control system fans blowing -- which you don't hear -- it is distinctly absolutely 100% quiet. From all the activity and all the dynamics and all the noise and all the talking and all the vibration it goes to nothing that quick.

It could have been two seconds, ten seconds, a minute or two, I don't know. But after we all got our breath and realized hey we are there, that's when I told Houston, "Houston, the

Challenger has landed." That was the name of our Lunar Module, *Challenger*, because that's what it was, [a challenge]. That's what the trip was. Our Command Module was named *America*. We did that in order to sort of pay tribute to the people who made it all possible. … We launched at nighttime, first and only launch of the Saturn V, manned launch in history at that point, and the only one of Apollo. So we made our days, shortened or lengthened our days accordingly, so that when we landed on the Moon -- that was a long day, it ended up to be a 30-hour day. So when we landed on the Moon we didn't want to rest. We're there. We want to get out. Because if something happens, we want to make sure we get out first and not just land and have to leave.

So we prepared to get out. Had to prepare all our backpacks and everything. Then I started down the ladder. But the first step on the Moon had already been taken by Neil. So this was not the first step on the Moon. However, it was my first step. Let me tell you, it truly was a first step for me. It was important historically to me personally because well selfishly, because it was my step. I'd come close in Apollo 10, and now I was actually on the Moon, now I was actually going to step on the surface of the Moon. Also because -- it may be hard for you to understand this, maybe some people who listen to this will -- but being a naval aviator, and being in the Navy the whole time I was in the space program is not like being in the Navy for 20 years. My goal in the Navy was a number of things, go to test pilot school -- but most important was to have my own squadron, be command, be skipper of my own squadron aboard ship. This was my squadron. Apollo 17 was my squadron. Success or failure was on my shoulders.

That was important to me. So when I stepped on the surface I realized I was really there, and that for the first time, I'm stepping on another body in this universe. You can climb the highest mountain or walk the depths of the deepest ocean on Planet Earth but you're still on

Planet Earth. Now after all that zero-G traveling for three days and my other flights, I'm standing and touching something hard, something I can feel, and it's not Earth. (Pounding fist) That came home to me very very clearly. I'm living, truly living in another world at this point in time. There have been people who want to believe in the fantasy or the conspiracy, whatever, that it was all done in Hollywood, we never really walked on the Moon. Well, if they want to have missed one of the greatest adventures in the history of mankind, that's their choice. But once my footsteps were on the surface of the Moon, nobody, but nobody, could ever take, and to this day can take those footsteps away from me. Like my daughter's initials I put into the Moon during that three days we were there. Someone said, "How long will they be there?" I said, "Forever, however long forever is." I'm not sure we, any of us, understand that.

The other thing about it is, this conspiracy theory, is [that] the truth needs no defense. I don't have to respond to that. I stepped on the surface of the Moon, and I don't really need to defend that, because I know it happened, I know I did. I will admit sometimes three or four decades later it seems like it may have been a dream. But once you're there and you convince yourself and ask yourself do you really appreciate where you are at that moment [in] space and time [and] in history -- and you really don't, but you are there, you are alive, and that's the Earth out there. It becomes your real world. That area, that valley on the Moon became our Camelot for three days of our life.

But I'm getting ahead. This is the 11th. I made the last steps on the 14th. It's the last steps that are perhaps more memorable to me than that first step, because I'd been in this valley on the Moon, almost living in a paradox. Sunshine the whole three days we were there. Yet surrounded by the blackest black that we can conceive in our mind, and we don't know how to define it, describe it. We pull words out like infinity, the endlessness of space, the endlessness of

time, but we don't know what that is. But I can tell you the endlessness of it all exists, because I saw it with my own eyes. So you're in the middle of this. You're part of this unique part of the universe. Everything's three dimension when you look back at the Earth in all its splendor, in all its glory, multicolors of the blues of the oceans and whites of the snow and the clouds. If your arm were long enough while you're on the surface, it's almost as if you could reach out and put it in the palm of your hand and bring it back close to you and take it home with you. Take it home with you so everybody else could see.

But when I climbed up the ladder for that last step, and I looked down, and there was my final footsteps on the surface, and I knew I wasn't coming back this way again, somebody would -- and somebody will -- but I knew I was not going to come back this way. I looked over my shoulder because the Earth was on top of the mountains in the southwestern sky. Never moved for the whole three days we were there. People kept saying "What are you going to say, what are going to be the last words on the Moon?" I never even thought about them until I was crawling up, basically crawling up the ladder. But I felt as if I'd been on a plateau [somewhere in space].

Science and technology got me to this plateau on another planet, another body in this universe. Science and technology got me there, but when I got there and I looked back home at the Earth, science and technology could not explain what I was seeing nor what I was feeling. You look at the Earth, and it very majestically yet mysteriously rotates on an axis you can't see, but must be there. There are no strings holding it up. It moves with purpose. It moves with logic. Every 12 hours you're looking at the other side of the Earth. It's inconceivable to be somewhere to watch the Earth rotate in front of your very eyes.

But when I looked back home there was too much purpose, too much logic. The Earth to me -- and we all, I think, come home with our own impressions -- was just too beautiful to have

happened by accident. Science and technology could not give me the answers I was looking for, and I came home with a conclusion that it's just too beautiful to have happened by accident. There must be something you and I, all of us don't fully understand about the creation of the universe, about the miracle of life itself. I thought about that, and as I say, it was a nostalgic moment, because it wasn't like going to Grandma and Grandpa's farm this summer or for Christmas. You do it again next year and the next year and the next year. I wasn't coming this way [again]. I wasn't coming back. This was it. I wanted, like in the simulator, I wanted to push the freeze button, stop time, stop the world. I just wanted to sit there and think about this moment for a few moments, and hopefully absorb more subconsciously than I had the ability to take in consciously. But I couldn't, there was no freeze button.

So up the ladder I went, and that's why my last steps are probably more memorable to me; although I'd spent a lot of time almost involuntarily looking at the Earth over my shoulder the whole time I was on the surface, it was at that moment that it came home loud and clear that it was uniquely an awesome and special moment and event in my life. Although we spent the next night on the Moon in what we call a sleep cycle, left the next morning, those steps up that ladder, they were tough to make. I didn't want to go up. I wanted to stay a while. Long drawn-out answer to a short question.

WRIGHT: Very good answer, thank you. You knew when you launched that it would be the last mission, at least as far as you knew.

CERNAN: We knew that Apollo 17 was going to be the last mission, probably well over a year before we flew. Nineteen and 20 had been cancelled very early on. Eighteen was certainly a

possibility. When 18 was cancelled, that changed -- well, when our crew was assigned we knew Apollo 17 was most likely going to be the last, because that shook up the crew assignments; because Jack Schmitt, my copilot, my colleague on Apollo 17, was a lunar geologist. He was not a professional aviator. He was the only scientist. No scientist had ever flown at that point in time. This was the last mission to the Moon. So although my crew backed up Alan [B.] Shepard on Apollo 14, and had been the general rule -- but of course there were no guarantees, Deke [Donald K.] Slayton our boss never gave anybody any guarantees about flying -- the general rule was you would have an opportunity if things went well to rotate three flights later, which meant Apollo 14 backup crew, which was Ron [Ronald E.] Evans and Joe [Henry] Engle would have been my crew on Apollo 17. Eighteen was cancelled.

Decision was made to -- and it was the right decision -- to fly Jack Schmitt. Here's a lunar geologist, he's in the space program, he had been training on a backup crew for Apollo 15, and the flights were stretched out a little bit at that point in time, so there was plenty of time -- 15 would have been 18, the backup crew would have gone to 18, that would have been the last mission to the Moon. Yet there was enough time between when Apollo 15 finished their assignment and the backup crew was free to put Jack on Apollo 17. In retrospect, it was the right decision. Jack did an outstanding job both with his responsibilities in the spacecraft itself and certainly did a fine job on the surface of the Moon. As a matter of fact, in retrospect Jack was like in his own private little test tube, being a lunar geologist. We trained, the rest of us trained for geology, but I was a guy who stood back and looked at the macro picture, Jack looked at the micro picture, and the scientific community was able to put that together much more clearly than they might have been able to do otherwise.

It was a tough decision going in for I think my boss Deke Slayton. It was a tough decision for me to accept. It was even tougher for Joe Engle to accept. I was the guy who had to tell Joe, although handwriting had been on the wall for some time that that probably was going to happen. But the word came down from [NASA Headquarters] Washington [D.C.] that we would fly Jack Schmitt.

The next question was who would be the rest of the crew. I guess if I were Deke Slayton I would have flown the Apollo 15 backup crew: Dick [Richard F.] Gordon, Vance [D.] Brand, and Jack Schmitt. They trained together, they worked together, it was enough time to rotate to Apollo 17. Why Deke gave me the opportunity to command 17 and keep Ron Evans as long as I was willing to accept Jack Schmitt taking Joe Engle's place I don't know. I don't know whether he had a lot of faith in me or whatever. But looking back at my three flights and that decision on Apollo 17, I'm the luckiest human being in the world. Got to walk in space, got to go to the Moon twice, got to walk on the Moon, got to command my own crew. I'm not sure what else a human being can ask for.

WRIGHT: What did you want to accomplish, knowing that you would be the last crew there, that was different from the ones that had gone before?

CERNAN: Well, I wanted it to be the best mission ever in Apollo. We had a lot of new things. We were going to be the first night launch. That in itself was a real challenge. Your options in case you had a problem or an abort or whatever at night are cut in half. I'm a naval aviator. Landing aboard ship in the daytime is a very challenging experience. At night it's just you and your maker. (Laughter) If you don't make it, that's it. So a night landing aboard a carrier is truly

a challenging experience. Landing on the Moon a quarter million miles away from home is a piece of cake compared to landing aboard ship at night. I think every aviator would say that. I can say that with some conviction because I've done both. So it was a night launch. It was going to be the longest stay. It was going to be in a mountainous area.

Every flight got a little bit more competitive, which it should have. We built on what we learned from all the other flights that went to the Moon, landed on the Moon. Going to be in a very competitive area. I had the first scientist to fly. I think that was a significant thing, a lunar geologist. I just wanted it to be the best, as we all do. We build on those that went before us. I wanted to land closer to my landing site than anyone else had ever done before. I wanted to land safely certainly, successfully. But I wanted to have more fuel when I landed. That's just a little pride thing that goes. How good can you be? How good can you be is measured by how much fuel you got left. We go way back in Gemini.

It was my command, my ability to prove whether I had whatever it took to get the job done. I hate to use the word right stuff, but it was my opportunity. Someone had enough faith in me, Deke Slayton and a few of the other people around, obviously Chris [Christopher C.] Kraft and some other people had enough faith in me not just to do the job but to do it better than it had ever been done before. That was my goal. Not to outshine anybody. That was my goal, my job was to do it better than it had ever been done before. I was just building on everything all my colleagues had done on all the other previous missions. We'd build on their mistakes, build on their accomplishments, and hopefully I wouldn't do something stupid, because doing something stupid gets you in trouble. Either you lose the success of the mission or it becomes catastrophic, and you don't want to put yourself -- you don't want to make any dumb decisions.

But I can promise you I didn't go to the Moon not to come home. I didn't go to the Moon to be a martyr. I planned to come back. There was no question in my mind. Now you know you're vulnerable to a whole host of unknown problems. You think about those before you go, and you decide that -- we had to be bold in those days, we had to take some risk. Hopefully you can manage risks, minimize them, manage them, and then you decide they're worth it. They're worth the risk, the boldness, steps you have to take are worth what you hope to accomplish.

WRIGHT: NASA's currently going forward with its Constellation program to return to the Moon and then hopefully on to Mars. What were some lessons learned that you would share with the pilots and commanders now that you know that there's going to be future crews going there?

CERNAN: Well, don't make the same mistakes we did. I've briefed, debriefed some of these people on how we did it, what we did, trying to get their feelings about what they're going to do. The evil of good is better. Don't misunderstand, [the time] going to the Moon, [the trip], is a waste of time. If you want to go to New York City to go shopping, getting on an airplane is a waste of time. You want to be in New York City. Your goal is to go shopping in New York City. Our goal is to get back to the Moon. Our goal is not to get on a rocket and have to spend three days getting there. The goal is to be there. So don't complicate what we've already proven we're capable of doing. Don't reinvent the wheel.

We have a whole generation of young dedicated talented young engineers with technology at their disposal that we never dreamed of. You [have] got more technology in the palm of your hand in an iPod or cell phone than we had to land on the Moon. [You]'ve got more technology under the dashboard of your car than we had to go to the Moon. We had to create the

technology to get us there. We were certainly the cutting edge at that point in time. But everything was a little bit of an experiment, including taking [an] electric car to the Moon kind of stuff, the Lunar Rover.

But what I'm concerned about is as I say the evil of good is better. We're going to try and make things better and better and better, more complicated, more expensive, more time-consuming, and not any safer. The key is to get there safely and adequately. I hear things about well you don't need windows in the LM [Lunar Module], we'll land the LM for you. Let me tell you anybody who's worth their salt is not going to go all the way to the Moon and not see where they're going, number one, particularly when they get close to the Moon and start to land, and nobody, I don't care how good it is, is going to -- well, I could be proven wrong, depends on who they send, but if they send aviators, if they send people who have grown up with a passion for aviation, they're not going to strap them into some box and land the machine on the Moon automatically for them. They're not going to allow that to happen. It's just not going to do it. So why complicate things? We know how and why we can do it.

We know that a human being is capable of doing far more physiologically and psychologically than we ever dreamed of. When I walked in space in Gemini IX, doctors are saying oh he's going to get space euphoria, he's going to travel 18,000 miles, he's going to feel like he's falling out of the sky, baloney. You adapt very quickly. My relative motion was to my spaceship. We're going over the ground -- walked across the United States in 15 minutes. I say big deal. It was a big deal. But we know what we're capable of doing, and the goal is to get us to the Moon. The goal is not to complicate the method [on how] we're going to get there. We know we can rendezvous, we know we can rendezvous around the Earth, around space, find the

safest, most experienced way of doing it, and make it safer and if you will less complicated with new technology if that's the goal, but get us there.

Now the other thing that I've been preaching forever and ever and ever in space -- you've got too many other things, both the known things and the unknown things that happen in space, whether it's an Earth orbit, whether it's your Shuttle, Space Station, or the Moon. Just make living as close as we're accustomed to living here at home. It's so easy to get frustrated in space. In zero gravity you can't find anything, it floats away. You take a nice vacuum-packed package of food and open it up, you consume the food and now you got a package that's three times the size of what it was when you took it out, and you don't have anyplace to put it because there's not room. Things like that can get frustrating, and frustration limits your ability. Limits your ability to think, limits your ability to act. Too many important things to do.

Keep personal frustration out of the way, and by that I mean we had to take some chewing gum, Dentyne chewing gum, on Gemini IX, just to keep our mouth refreshed, because we couldn't take toothpaste and toothbrushes, because what are you going to do with the toothpaste? Well we're going to swallow it. Oh, you can't swallow it. Okay. Well, you can swallow it. You swallow half the toothpaste -- you put it in your mouth, in your own bathroom [when] you get up in the morning. You know if you didn't brush your teeth for three days how frustrated and miserable you feel. So we took Dentyne chewing gum because we couldn't take toothpaste.

Let the people live, the guys and gals, live like they do on Earth. Get up and shave in the morning. I cannot tell you how good after a couple, three days in space after not shaving how good it feels to put a warm rag under your face and shave. But the doctors wouldn't let us do that because number one what are you going to do with the shaving cream? Well, we wiped it with a

washrag. Okay, well what do you do if you cut yourself in zero gravity? You'll bleed to death. I'm sorry, you don't bleed to death, you clot just like you do here on Earth. Get rid of the frustration. Hot washrag.

We didn't have any hot water on the surface of the Moon. We had it in the Command Module. When we got back in there, we took our suits off, and stripped naked and got hot water and a hot washrag and gave ourselves a "bath." I cannot tell you how good that feels. Don't take a bath for 14 days and tell me how you feel. We looked like coalminers. You've seen pictures of me. I've got black lunar dust all over the place. We were working hard so our -- you need to have the facilities of living as close as you do as close to home when you go out in space. Get rid of those little things that can become big frustrations.

I hear, "We're not going to put hot water on the spacecraft." I'm telling somebody, I said "Why?"

"Well, we can save some electrical power, we can save."

Said, "Well save it somewhere else, because let me tell you, a cup of hot coffee" -- we didn't have it on the Moon. I wish we did, because we didn't have hot water. We had it in the Command Module. I cannot tell you how important. You're still a human being, you're not a box, you're not programmed. You still got the same desires, you still got the same feelings. I think you're getting the message. That hot cup of coffee can relieve more frustrations. Wow, I feel good, let's get to work.

That's one of the things I've been preaching for a long time. But if you haven't been there and we've got some smart, smart young people out there in today's world, a whole generation of young men and young women who weren't born when Neil walked on the Moon or at best in diapers and knee pants when I made the last steps on the Moon are now redesigning what we're

going to do when we go back to the Moon and on to Mars. They've got some good ideas, but build upon the right things we did and correct the dumb things we did, because we did a lot of dumb things. Let's make it safer, let's make it more capable, more economical, and that's the thing that I really feel is something we got to look at very very closely.

As I say, the trip to the Moon is just a necessary -- was it a great experience? Of course it was. You fly in Earth orbit, you're fly over a river or lake, a city, a coastline, maybe even you get a glimpse of your own hometown, flying at 18,000 miles, traverse the Earth once every 90 minutes, flies through a magnificently beautiful sunrise and sunset, every revolution, what, 16 of them every 24 hours. But when you go to the Moon you accelerate to 24, 25,000 miles an hour, and you get to look back. That's when you begin to see the world in a true perspective for the first time. The horizon that's slightly curved closes in around upon itself, and all of a sudden you're beginning to see something very strange, even though it's something familiar, because you're no longer flying over cities and rivers and coastlines, you're looking from ocean to ocean across continents, from the east coast of North America across the windswept plains, the deserts, the mountains into the deep dark blues of the Pacific Ocean. So the trip to the Moon truly is a memorable part of the trip, so don't -- those three days, I'm not going to tell you they were a waste of time by any means, particularly if you haven't been there.

But that's not the reason we're going. We're not going for the trip, we're going because of the destination. So let's not complicate the trip and let's focus on what we're going to do when we get there, and as I say make the living conditions as compatible to what we're accustomed to here on Earth, and it's going to make the rest of our life in the future on the Moon and over on Mars a lot more effective, efficient, acceptable, and probably a lot safer. When you talk about trips to Mars, you really got to look at the psychological aspect of it, and you don't want to

frustrate people with little things, because they're going to get frustrated with big things. It's going to impact their performance.

WRIGHT: You went through intense training and all different types of training for your missions. If we could, could we talk about some of those aspects of the different types that you did? Because they ranged from survival training to of course the training with the LLTV [Lunar Landing Training Vehicle] and with the Rover. Can you share some of the experiences that you feel were very helpful and worthwhile and how you used that training?

CERNAN: The average person thinks -- I don't know, you put on a suit, jump in a spacecraft and go to the Moon. Our spacecraft were designed with human intelligence into the system in the loop, unlike the Russians and Soviets. They were truly passengers. They had little or no capability to do things emergencywise or otherwise. [With] everything that happened in our spacecraft, the human brain was part of the [loop]. So there was nothing automatic in going to the Moon except maybe the control of the TV camera, [when on] the surface the ground controlled it. They could update us with some computer information. Everything else a human being was in the loop, which requires an intensive amount of understanding and background and knowledge. We had to be professional aviators in a new type of spacecraft. We had to be lunar geologists. We had to find ways of going from an Earth gravity environment to how we could or would perform, not only in zero-G, but then in one-sixth gravity on the Moon.

There's no way to train for one-sixth gravity. Very little ways to train for zero gravity, particularly for long periods of time. That's when you're going way back to my Gemini flight when I was the second American ever to walk in space. That got us in trouble, because our

training for zero-G in an airplane lasted 20, 25 seconds. The problems I got into were because I lived in a world where we extrapolated the zero-G problems over long periods of time.

So we had to do the obvious. You have to train in ground-based simulators where you have replicas of the cockpit and go through every type of an emergency that people can conceive in their mind, and yet you know there's something people haven't thought of. Apollo 13's probably a good example. Of course that emergency, or the solution to that emergency, was minute by minute by minute in real time when it happened.

But you try and go through anything and everything systemswise, computerwise, operationalwise, working with Mission Control, trying to solve every kind of problem either in saving a mission on one end or just getting back alive on the other extreme. But there's a tremendous gap between a simulator on the ground, even if it's a moving-based simulator -- by that, it's got hydraulics or electrical motors that move you around, make you feel like you're getting the vibration and so forth -- you're still on the ground, you can still -- you run into a problem and you can say, “Stop the simulator, let's go out and get a cup of coffee and we'll talk about it, let's figure out what we did wrong.” The real world doesn't allow you to do that. We live in not just a six-degree freedom, but a seven-degree freedom of movement, because we had roll, pitch, yaw, left, right, up, down, but then time.

We couldn't stop time. So if you have a problem in space, you better be prepared to solve it right then and there, because you can't press the old freeze button, stop it, get a cup of coffee and say well this is what we'll do, or let's talk about it tomorrow morning at 9:00, we'll figure out what we'd do in a case like that. In a simulator you can do that. You're in “a simulated world.” You're not in the real world. Then going to the Moon, sitting on top of that Saturn V, if something happens you’ve got to make a decision. Landing out there on the surface

of the Moon during that 14 minutes of landing, if something happens you got to make some decisions now. There's a tremendous gap in the training.

So someone came up with the idea of the Lunar Landing Training Vehicle, the flying bridge. Looks like it was made by Chicago Bridge and Ironworks, not an aerodynamicist. It was built to simulate the reaction of the control systems in one-sixth gravity environment only for the landing itself. But what it was good for, it was a step between a simulator where you could stop and have your hot cup of coffee and talk about it and the real world where you were a captive audience to the real, to time. Because you would get up there, and it wasn't just the fact that you could simulate the controls of the Lunar Module, you had to accept a lot of compromises. We had four of them, and just to make it safe enough you had an ejection seat in it. We ejected out of three of the four, including Neil Armstrong, and I was the last guy to fly the last one in preparation for Apollo 17. The commander's the only one who flew, because it was too dangerous to let everyone else fly. Sitting in an ejection seat.

But the key was this was the real world. When you got up there to 500 feet and started your trajectory from 500 feet to simulate the dynamics of landing on the Moon, either you landed or you crashed or ejected or did something. It was a close -- here I am. This is the real world. I've got the controls in my hand, and I've got to do something with this vehicle. I've got to do it successfully. You can't stop. You can't freeze time. You can't stop the simulator. That was a step closer to being in the real spacecraft, making a real landing on the real Moon out here. You try and fill up those gaps with some of your training, and we had that kind of training, which was you have to be able to get there, because all the lunar geology training in the world isn't going to help if you don't get there.

But we had a lot of geology field trips, trying to become good lunar geology observers. With the exception of Jack Schmitt no one was going to make a geologist out of [us]. But we learned a lot, and we learned to observe. Once we got on the Moon what they wanted us to do was recognize something that was unusual, and take pictures, examine it, bring a sample, look around the corner, drive over the top of the hill or wherever it was to make the time we had on the Moon useful time.

The stars were our world. [Christopher] Columbus sailed across the ocean with a sextant, I suppose he had a telescope as well. We went to the Moon with a sextant and telescope. We had to use the stars to be able to navigate on. Oh, the ground could track us, but the fact of life is we had to sight on the stars and tell our computer exactly where we were to align our inertial platform for navigation. We also had to have the capability, if we lost all contact with the ground, of getting home alone without talking to anybody.

So you had to go through that training. We went to -- where was it? The University of North Carolina [Chapel Hill, North Carolina] I think one of the planetariums there and we did a lot -- I don't know. We did a little of everything. Then of course we had a very mature realistic boss who had the attitude you better be both in the physical and mental condition to fly this mission, because if you're not there's someone right behind you who's going to take your place. So when it came to physical training and one thing or another, no one said you have to do so many push-ups or run around the block from 3:00 to 4:00. You did your own thing when you had time to do it.

Added to the fact that we were traveling all over the country helping design and build and test the spacecraft we were going to fly, putting user's input into the development with the engineers at Rockwell, North American, Grumman, wherever it may have been, into everything

from the communications systems to the booster systems to whatever to -- because we all had an engineering or technical background. So we'd work with them in the design, development, as I say testing, and we could put the user's philosophy into the placement of switches, into what kind of instrumentation we needed from a safety and from a facility and get the job done point of view. We were gone eight days a week. We were gone all the time.

That took its toll personally on people's families over the years. The wives, God bless them, they stuck with us until we got the job done, and then unfortunately I think probably 60% of the people involved in the space program in those days ended up being divorced. The women and the families paid a big price, and we were tunnel vision, man, we were going to go out and play on the Moon. You come home after being [gone] for five or six or seven days, and all you want to do is have a good home-cooked meal and your wife's been taking the garbage out, making sure the kids get to school on time, and she'd like to go out for dinner that night. We didn't appreciate that. We were pretty tunnel-visioned, and it took a long time in retrospect to appreciate what the wives went through.

Mine at that time was asked the question, "How do you feel when Gene goes to the Moon?" Her answer I thought was very explicit. She said, "If you think going to the Moon is hard, try staying home." Now I know that's true in a lot of professions, but it becomes more visibly explicit when you talk about going to the Moon. So anyway it was a busy time.

WRIGHT: What could have been changed? Now looking back, knowing what you know.

CERNAN: Oh probably nothing could have been changed, because we were in a war with the Soviets. Way back in '61 JFK [president John F. Kennedy] said, "We're going to send a man to

the Moon and bring him safely back to Earth." He said that in 1961, and he said, "We're going to do it before the end of the decade." What he didn't say, but he implied, is he wanted to do it before the other guy does it. What's really amazing, he said it three weeks after Alan Shepard flew. Alan Shepard had a grand -- and the United States had a grand total, they were Alan Shepard's flight, of 16 minutes in suborbital flight. Alan didn't even get into orbit, and the President says okay (claps hands) I guess we're smart enough we're going to the Moon. We didn't know beans about going to the Moon. We had 16 minutes; guy went up and down, and the President says we're going to go to the Moon. That was a bold statement, and that boldness carried through, carried all through the space program.

WRIGHT: You left NASA not too long after you came back from the Moon. At the time you were leaving, the agency was working with the Russians to do ASTP [Apollo-Soyuz Test Project]. What was your role in that?

CERNAN: Well, I wasn't sure. I flew December '72. I did have 20 years in the Navy in July of '76. So I had four more years to go. When I came home, the Shuttle was already on the drawing board. I did some work in Shuttle simulator work, very rudimentary at that time. I worked there for a while, and then the Apollo-Soyuz program was going forward. After Apollo 17 we flew three Skylab missions. Then in there the Apollo-Soyuz flight began to become a reality. So I was looking down the line. It was pretty obvious to me even that early that the Shuttle wasn't going to be flying for a long time. I wasn't sure I wanted to go back in the dungeons and start developing spacecraft, spaceships all over again. So I had an opportunity to work at Apollo-Soyuz, which I thought would be something new and different. Soviet Union was led by

[Leonid] Brezhnev at that point in time, pretty closed society, and so this was going to be an interesting experience.

So I was the odd man out if you will. There was a prime crew, a backup crew and a support crew, nine guys. So I became one of Glynn [S.] Lunney's assistants as sort of an, as I say, odd man out. I worked with the engineering and operations crew, and so I spent a lot of time in Russia and here working with their counterparts over there. But I also worked with the flight crews and the nine guys, which were working somewhat independently. Sometimes we had joint meetings. So I'd go to Russia both with the engineering team, and then I'd go back with the flight crews, and of course got to meet a lot of my Soviet counterparts I knew of, some who I had met before, because we had a few crew exchanges, PR [Public Relations] visits back and forth occasionally. So I knew a couple of them. But I had a chance to get to know a lot of them very well. I don't know, I made about eight trips to the Soviet Union between '73 and '75. It was an enjoyable time.

It was a challenge. Alexei [A.] Leonov, who was the first human to ever get out of a spacecraft, and I became very very good friends. He flew on Apollo-Soyuz. Of course we had a lot to talk to; of course his 12-minute spacewalk was not much of a spacewalk, but at least he walked in space and I walked in space. The only other guy in the interim at that point in time -- well, not the only other guy, but we were two of the first three. So we were working together and had a lot in common there. We discovered he was going to be probably the first man on their lunar mission.

So we got to know each other very very well and had some good times together, and we used to talk about things privately that they would never talk about publicly. We'd talk about religion, we'd talk about Cuba, and he told me a lot of things that he knew I wouldn't talk to a lot

of other people [about]. We just became good friends, and he said one time to me, he said "Gene, he says, you're working with Glynn Lunney and his team, you're working with the crews." He said "You're not going to fly, you're not in a support crew; we know you're with the CIA [Central Intelligence Agency] but don't worry about it, you don't have to -- we know you are with the CIA." That was partially true to a degree. I guess I can say that now.

But we learned a lot from Apollo-Soyuz. We learned it sometimes as important to know what they don't know as well as what they did know. I think the Soviet Union was beginning to change. I think we opened a lot of doors. I'm not going to say that that was the big hammer that knocked down the wall. I don't think it was. But I think it sure opened up a closed society. We learned a lot about their space program. They were mesmerized by ours. They were mesmerized by the fact that we had so much capability and control on board the spacecraft. As I said earlier, they did everything automatically. I remember specifically they said, "If the docking of Apollo-Soyuz fails, we'll just quit and go home." We said, "Wait a minute, no way. If it fails in the docking, we'll take the docking mechanism apart, we'll take a tool bag with us if we have to. We're going to go up there and dock."

Well, they'd built Soyuz spacecraft like we build Chevrolets. They just came off the assembly line. One didn't work, they'd send another one up. Well, we didn't have that luxury. Maybe it's because we built so much sophistication into our spacecraft, had a lot of computer technology they didn't have. So they learned from us, we learned from them, and here we are today. Who would have ever -- well 35 years ago -- envisioned that we'd be where we are today in terms of working and cooperating with the Soviets? The bad side of that coin is if we're not careful they're going to have the only access to our Space Station, which is somebody else's problem at this point in time, but something that's got to be considered.

WRIGHT: In between then and now you moved over to the commercial side.

CERNAN: Moved over?

WRIGHT: To the commercial side of the space business.

CERNAN: Well, '75, that was over and I still wasn't sure what I was going to do. Am I going to stay in the space program? I think had I stayed with the background I had of three flights, I would have flown one of the very early Shuttle flights. I always wanted to do that. I'd even do that today, if I could. But once you've been to the Moon -- let me just say this, I would love to fly the Shuttle, take it up for a day, run it through its paces, do whifferdills, do all the stuff that you could do. Shuttle has got to be the greatest flying machine we've ever designed, built, and flown bar none, period. That's why I'd like to fly it, to say that I've at least flown.

Do I want to go up there for two or three weeks on a Shuttle? Do I want to go up there for three or four months on a Space Station? Not on a bet. You wouldn't get me up there to do that. Once you've gone to the Moon, staying home just isn't good enough. Now that's an arrogant statement but I'm sorry, that's exactly the way I feel. I wouldn't go on the Space Station and go around in circles for two days, much less two months or three months or six months. But if you haven't done it it's a worthwhile trip. I'd still like to fly the Shuttle if I could.

After Apollo-Soyuz was over, '75, what am I going to do? The Navy lobbied pretty hard for me to come back to Washington. I was [a] Captain. When I made Captain, I was the youngest Captain in the United States Navy. I had 14 years in as a Captain, which is somewhat

unheard of in peacetime. So 20 years, I was ready for Admiral. The Navy wanted me to come back, and I said. “Well if I come back I want to drive a boat, big aircraft carrier or something. I'm already too senior to have my squadron,” so but I also was too senior to get command of an aircraft carrier. I was ready to [become] Admiral. They wanted me to come back and run the Navy space program, which was probably a couple satellites running around the Earth. Didn't sound too exciting to me. They dangled a couple stars in front of me, which was really something I gave some thought about. Then Washington wasn't that exciting. So I decided to take the leap after 20 years in the Navy, take the leap into the civilian world.

Had I gone to Washington, my life probably would have changed a lot. I don't know, because there were days back when -- I'm from Illinois, folks in Illinois wanted me to run for the Senate from back there, at a later period of time run for governor of Illinois. I had too many other things. I was still in the space program. I had too many other things. [Texas Governor] John [B.] Connally wanted me to run for Congress from Texas. I don't think I would have made a good politician, because I'm too -- I say what I think, not what's politically correct, and I don't think I would have been a good politician in that respect, because I'm not afraid to tell you what I believe in. So I didn't accept any of those opportunities.

Had I gone to Washington as a two-star Admiral, which was what it would have been, and gotten in that Washington environment, it's probably good thing I didn't. I don't know where I would have been or what I would have done. It could have been exciting, and I would have liked to take a shot at both directions, but I ended up going to the commercial world. Got involved in starting up an airline. Got involved in the oil industry.

I will tell you at the time economics played a big part in it, because when I left the space program in '76 I had been in the Navy for 20 years, I had flown three times in space, I had

walked in space, I'd been to the Moon twice, I'd lived on the Moon, and I was making a grand total of about $48,000 a year. That's a big jump from when I got in the space program, because when I got in the space program was making about nine or ten. That was over a period of 13 years. So I was making $48,000. I had a chance to go into the civilian world and make twice as much money as that. That was more money than God. I will admit that was a little bit of a reason for me doing what I did.

WRIGHT: Well, I don't want to keep you too much longer.

CERNAN: Well, go ahead, I'm all right, I'm still with you, if you want.

WRIGHT: Okay. I do want to go back and talk to you for a second about --

CERNAN: Because I know I'm longwinded, but --

WRIGHT: Well, we think you're very informative.

CERNAN: What?

WRIGHT: Think you're very informative, because it depends how you look at that. One of the things that you did after you left the space program is that on occasion you would work with ABC TV as an anchor. How did you enjoy or how did you feel about --

CERNAN: I don't know, ABC came when it was -- I think *Enterprise* did a drop test in '[77], and then I think we first flew in '[81] if I'm not mistaken. So between '76 and '81 I guess, I don't know, ABC just came to me. I guess I developed somewhat of a reputation for being able to communicate. They wanted me to work with them on air covering the Shuttle flights. I did contractually for a number, golly, number in those early years, a number of Shuttle flights. I don't know, five, six, seven years. Even had a little what's new in science on the *Good Morning America* show for a while. I enjoyed that. It's very interesting.

Television is phenomenal. As soon as your face appears on television you're some kind of celebrity. Prior to that you just went to the Moon. Nobody knows who you are, what you did, when you went. You get on television and even today I've had a lot more exposure obviously since then, people will look at you and know they know you, they don't know what you did, they don't know where you're from, they don't know what your name is, but they know they know you. I get those looks in the airports all the time. Of course some people who follow pretty closely, "Are you Gene Cernan." So I take that all back to television. That's where you develop recognition, then eventually if you're there long enough people attach a name to a face. Eventually they'll remember what the hell you did. But that's why we got so many phony celebrities on television today. Someone commits a double murder, their face is on television, they're a celebrity. That's wrong, but that's just the way it is.

WRIGHT: Lasting images or visual images are those that leave lasting impressions. I certainly would hope that you'd give us a minute. Everyone has talked about this photo. [Shows photograph of the Earth.]

CERNAN: Now, I'm going to give you -- okay wait a minute. Wait a minute. I want you to hold that up. You do what everybody in the world -- and you shouldn't. Now hold it up upright. Hold the top of the world at the top. You're two out of two wrong. Try it again. You only got two other directions to go.

WRIGHT: Why don't you hold it for us? Because you saw it. You tell us. Look at it.

CERNAN: You know what you're looking at? You know what you're looking at?

WRIGHT: You tell us.

CERNAN: I wish I had a nickel, I wish I had a penny for every time this picture has been used. This is the only real -- it's not quite full Earth. It's about a day or two after full Earth, because you can see how sharp it is on one side, and you can just see a little bit of the fuzzy terminator on this side. But it's because we landed on the -- I didn't try to put you on the spot. Because we landed [on the northeastern edge of the Moon, when it was just a sliver].

WRIGHT: It's all right.

CERNAN: But this happens all the time. Because we landed on the eastern edge, northeastern edge of the Moon, we left when there was no Moon to see at all. It was a new Moon, and that means if you're on the Moon you're going to see a full Earth. So when we left, and three days later the Sun was going to be rising over our landing site on the northeastern edge just at like

7:00 in the morning Sun, so we could see the shadows when we landed. When we're on our way -- this is probably taken 50 or 60 or 70,000 miles out when the horizon closed in around upon itself and we began to see that mysterious yet familiar thing we call the Earth and the world. We saw the closest thing to a fully lit 100% full Earth. This was it.

Now the further out we went, the smaller it got. Very very very quickly at first until if you saw *Apollo 13*, Jim [James A.] Lovell a la Tom Hanks or vice-versa could cover up the entire Earth, what I call identity [with] reality, with nothing bigger than their thumb. But at this point it filled up the entire window of the spacecraft, phenomenal. Now we launched in December. That big icepack down around the bottom of this picture is the [Antarctic] continent summertime. The real continent of Antarctica where the icepack is broken away from the continent.

What you're looking at is the entirety of Africa from the tip, from Cape Town down there all the way up to the Mediterranean, you're looking at a very familiar part of the world, looking at all of the Mideast, all of Saudi Arabia, all of the Suez Canal, the Red Sea, the [Strait] of Hormuz, where there's a lot of action in the world today. The Mediterranean, Europe just see at the top. The Indian Ocean on your right. If you look close you can see the Indian continent down here. Twelve hours later you're going to see the world like that. You're going to see North and South America very small. Eventually you can look from pole to pole, from the icebergs of the north to the snow-covered mountains and desolation at the south. Across the oceans. Look, you're looking from the Indian Ocean across almost the entirety of the Atlantic Ocean.

If you can picture this three-dimensional and pinch yourself, it's really happening at this point in time, and you're looking at this Earth, see that blackness? That's the infinity of space and infinity of time. The endlessness of it all, which we truly yet haven't been able to

comprehend, spectacular picture. Now what's interesting, this picture [is] used [by] everybody who has anything to do with a global travel agency or global or world -- this picture you've seen it 100 million times in the last 35 years. Three quarters of the time, people will do what you do. It's the world, but they don't know which is the top and which is the bottom. They'll do it like this or it's like this or it's like this. [Demonstrates] Sometimes it's even backwards. It's just absolutely amazing. I have found people here at NASA [doing the same thing].

I went into old Mission Control. There's a couple pictures that they are showing -- the old Mission Control, historical site, there's a couple pictures there that are printed backwards. John [W.] Young is saluting on the surface of the Moon with his left hand. Even NASA people do this, because you're a generation removed from when these happened. But this picture is always like this or like this. [Demonstrates] No, and I'm not really -- please, don't misunderstand.

WRIGHT: No, I'm fine. What a great lesson.

CERNAN: But you brought a point home loud and clear. That happens all the time.

WRIGHT: What are your thoughts? You of course were one of the few people that got to see the photo as it's being taken. Then now generations later it's one of the most requested photos from the NASA archive.

CERNAN: Is it! I understand that. I read that. This is more so than any other. We've got a lot of pictures of a lot of us on the Moon with the flag, with the Rover, other things. We've got a lot of

Earthrise pictures, which I think Apollo 8 took the first Earthrise, which -- phenomenal picture, but it doesn't show much of the Earth, just a sliver. This is unique, because none of the other flights ever had a chance to take this picture, because their landing site on the Moon wasn't far east enough for them to see the world like this. It is. I've read it. It is the most sought after picture ever. But you want to advertise, you want a logo, you want anything, there it is.

I don't think people use it or look at it from the way they should, from the philosophical point of view. This is us. We're looking at ourselves. Apollo 8 gave us a chance to look at ourselves for the first time. For eons and eons of time we've only seen ourselves through the paintings of artists, words of poets or through the minds of philosophers. Now we've been out there, we can see ourselves.

What is the real meaning of seeing this picture? I've always said, I've said for a long time, I still believe it, it's going to be -- well it's almost 50 now, but 50 or 100 years in the history of mankind before we look back and really understand the meaning of Apollo. Really understand what humankind had done when we left, when we truly left this planet, we're able to call another body in this universe our home. We did it way too early considering what we're doing now in space. It's almost as if JFK reached out into the 21st century where we are today, grabbed hold of a decade of time, slipped it neatly into the '60s and '70s, called it Apollo. We went to the Moon, we came home, and then we started over. People are going to wonder here they are in the 21st century, they went to the Moon four decades ago, and we don't have the capability to go back. That's what's disheartening. We don't have the capability to go back.

I remember Bob [Robert R.] Gilruth said one time when he was alive, long time ago, and this was a long time ago, after we'd gone to the Moon. I'm not sure when Bob Gilruth passed away, but probably in the '80s. He said if we had to go to the Moon now it'd probably take us

twice as long as when we did it back in the '60s and '70s. That's a sad commentary. We've been talking about it, thinking about it, planning -- we're not going to land on the Moon until 2020.

Now having said that, at this point in time in my life, considering what we've done, I think the direction that we're taking is far more important than when we get to the destination. I don't care whether it's 2015 or 2025. The fact that we now have our focus, our eyes, our heart on the future, on space exploration -- see, what I call today is space exploitation. Someday, someday Space Station is going to be a very valuable commodity, great asset. Science never knows what it's going to discover. Great things are going to come from it. Right now it's a white elephant quite frankly. Am I disappointed? You bet your life I'm disappointed. Because we put all our money, all our eggs, all our technology, all our resources in space exploitation at the expense of space exploration. I just hope it doesn't come back to bite us. I'm just glad at least now that we're looking forward once again, because that's where we got to go, and that's where the future is.

It's sad, everybody knows who John [H.] Glenn, Neil Armstrong, Al Shepard were. If you were alive, you watched them, if you weren't, your mom and dad told you who they were, you studied them in school. We have one of the most talented group of young astronauts today, far, far more talented than we were during the days of Mercury, Gemini and Apollo. Yet nobody knows who they are. You could send three guys, four guys, seven guys or gals to Space Station and you could go to State Street in Chicago or the hiking trails of Casper, Wyoming, and ask them who's on the Space Station today, there isn't a person in any one of those places who could tell you. You ask them an easier question, how many are aboard the Space Station today, one, five, six, I don't know. Nobody knows, and nobody cares. Now if we go back to the Moon and go on to Mars, you're going to get young people excited about something. The [real] legacy of

the Wright Brothers, space and aviation is a romance. The legacy is the fact that they stimulated the desire to dream in the hearts and minds of everyone who followed. Get kids' attention, make learning fun, you can teach them anything.

I think one of the side effects, the positive side effects, that's going to come back from Constellation is education. I think we're going to get kids on board again. They don't care about Space Shuttle, oh yes, they'll watch it launch maybe. They don't care about Space Station. But get them involved with going to the Moon -- and I'm not saying they have to become astronauts, just get them involved, get them on board. Education is going to take a big positive hit in the right direction. I'm convinced of that.

Curiosity is the essence of human existence. Who are we? Where are we? Where did we come [from]? Look alongside [the Earth]. How deep is that blackness? What's out there? Are we here alone? I don't have any answers to any of those questions. I've been way out there, but I haven't been way, way, way out there. My dream today is to see others have an opportunity to find out. You just can't get their attention with Station. You can't get their attention with Shuttle after it launches, or unfortunately [only] if there's a major accident, which we don't want to see and have happen again.

My cup has been half-empty for a long time. [But Station is] the only game in town, so we got to exploit it, we got to get involved. There's a lot of positive aspects of it. But we've been trying to define and redefine the reason for the Space Station existing for a long time, and until we get the next two modules up there, the European and Japanese modules up there, and they can literally put enough people up there to go to work rather than just keeping house and keeping the thing alive and functioning, then we'll probably get some return from it. Until it finds a cure for cancer, until it comes up with some economic ability to create something

significant that's going to affect you and me, people just don't know and they don't care. They will care about going back to the Moon, and they will care about going to Mars. That's what's in the next couple generations.

I look fourth graders, fifth graders square in the eye. Your kids, your grandkids, your nieces and nephews, they're the ones, I tell them, you're the ones that are going to take us to the Moon, as long as someone gives you the same opportunity that someone gave me. There's no question that we're going back to the Moon, and there's no question that we're going to go to Mars in my mind. It will happen. It's our destiny to explore. We're not exploring space at the moment. We're trying to exploit it. We haven't done it very well.

WRIGHT: We're looking forward to watching this progress as we go along too. I was going to ask do you have any questions. I was going to ask Jennifer if she had [any questions.]

CERNAN: You're scribbling down. Go ahead. I'll try and accommodate as much as you --

ROSS-NAZZAL: Well, I did have a couple of questions.

CERNAN: You weren't even born when I walked on the Moon.

ROSS-NAZZAL: I was.

CERNAN: Barely. You were still wetting your diapers I can guarantee you.

ROSS-NAZZAL: I was. Barely, you're right. Yes I was. I was really intrigued by your comments about the Earth and how you could take it and put it in your pocket and bring it home, because I was thinking today one of the major issues that this world is facing is global warming. I was curious what impact you think that the space program and your mission perhaps has had on the environmental movement and shaping the way we think about the Earth.

CERNAN: Well obviously you're of a younger generation. Your outlook towards the environmental movement is probably a little different than mine is. I think a lot of people support and make the environmental issue an issue that benefits themselves rather than the planet, quite frankly. Now there are some good points. You do see the Earth differently. It is the only Earth we have to live on right now, and I will say philosophically in 100, 200, 300, 500 years some of our descendants are going to be living on Mars and come back to see where Great-great-great-great-Grandma and Grandpa lived back here in the 21st century. I think that's possible.

But we're not going to do it because we have to escape the environmental catastrophe we are creating on this Earth. The Earth has gone through cycles for eons and eons of time. It will continue to go through cycles. Have we had an impact on both the good and the bad parts of the Earth? Yes, but as much good as we have bad I think. But I think that picture, looking at the Earth, and you can fly, particularly in Earth orbit, you can fly over the rainforest, you can fly over the Sahara, and you can see the desert creep south.

After Apollo 17 we went through central black Africa and the Niger River -- and from the beginning of some of the early Mercury Gemini flights into Apollo where we did circle the Earth, you could see how the desert has crept south. Now is that man's [doing] or is that nature's

[doing] or who's doing it, who's making it happen? I don't know, but you can see the changes. The Niger River, which at one time was probably a mile across, is about five feet across, so there's a lot of changes going on in the world. Global warming, that's a controversy that I hope isn't settled by visible PR, if it's a problem let's look at it realistically and scientifically and let's look at the cycles of the Earth over the years.

I'm not answering your question. I think looking back at the Earth has given us a greater awareness that yes we certainly may be having an impact. There's no question, look at the Los Angeles Basin, if you shut off every automobile in Los Angeles, in about ten or 15 years the basin would probably be cleaned up. Go to Mexico City, the same thing. Now that's certainly a problem that we have to address in one way or another. Some of the other problems I think are cyclic. But I'm trying to get back to your [question]-- yes, it's given us awareness, but I think as important, as significant of the environmental response of looking at a picture of the Earth, like that, is the political.

If I could take everyone in this world, everyone in this world, and stand them alongside me on the surface of the Earth and look back home, where you see no religious borders, no cultural borders, no color borders, no whatever, you just see an Earth with the bright blues of the oceans and the land, and we all live here together, I've got to believe the world [would know] no political differences, I got to believe the world would truly be a better place to live.

Stepping one back a little bit further than that, I said earlier looking at the Earth in all its wonder, in all its splendor, it's all dynamics, it's alive, it's not tumbling through space, it's not moving aimlessly, it's moving with logic and purpose, it's too beautiful to have happened by accident. What I'm saying is there is a creator of the universe. There's a God. I don't care how you dress him, by what name you call him, I'm telling you I've been there, I've seen a small part

of "God's" [creation] -- and God is not -- there's a God -- religions are manmade. But from my point of view they all get to the same place. They get to a creator; call him, worship him in any way you want. … But I think that's what you see and feel when you go out there and look back at the Earth. You realize that -- why do we do some of these things to each other? Why do we have the problems of terrorism, fanaticism that we have today in the world?

If you got back out there and took how many billion people on the Earth and looked at this, we wouldn't be perfect, I still think we have nationalistic pride, you're different, but we'd learn to [live together]; the best thing is that we are all different. We are different shades, different colors, we do have different cultures. My grandparents were born in Czechoslovakia. The food they eat different than the food they eat in China. But that doesn't mean we can't get along with each other. Until people can see and feel this unfortunately I don't know what the solution is. So I think that picture has -- or should have -- as much dramatic impact on the political, cultural, religious differences we somehow create as well as the environmental problems that we see, many of which we indeed are probably creating. Now I know you're not going to like this. I don't happen to believe that global warming is one of them. But that's just my personal feeling.

ROSS-NAZZAL: I did have one other question. Kind of a fun question.

CERNAN: Go. They're all fun.

ROSS-NAZZAL: You were talking about making life in space more like living and working on Earth. One of the topics that I've been doing some research [on]—I was wondering if you had

any knowledge of this—was originally when Skylab was going to go up, they were going to put wine on board Skylab.

CERNAN: Wine?

ROSS-NAZZAL: I was curious. Do you have any recollections of that and the controversy surrounding that?

CERNAN: Well, we just went the easy way during Apollo and on Gemini and Apollo, we said, why create a public relations controversy and put wine [onboard]? Russians took vodka. Why put wine or liquor on board? It was going to create -- we didn't need it. We didn't need it. Of course you couldn't smoke on board. We're in 100% oxygen. Ron Evans had his last cigarette the morning we suited up and had his next cigarette the morning we landed on the ship. Never bothered -- I don't think it bothered him. Didn't bother his performance. So it's just why create another controversy, number one.

Now someone might say well why create the temptation -- and besides I'm sure the doctors -- same, well, what's alcohol going to do in zero gravity? What's alcohol going to do in a five-PSI oxygen environment? What about all those questions to answer? So the easy way out was saying we don't need it. Now why not take -- first of all if you're not mature enough -- just like this damn drinking problem that came up with the Shuttle astronauts -- that's the most ridiculous damn thing I've ever heard of. If you're not mature enough, that's somebody's sour grapes. If you're not mature enough to be able to handle a glass of wine in space for it won't be nine months by the time we go, it'll be about 60 days when we go to Mars. How nice it might be,

like that cup of coffee in the morning, to just say listen, pour me a little glass -- of course you wouldn't be able to pour it in zero gravity. But give me a little glass of that red wine. I want to sip it with this irradiated chicken I'm going to have to eat. How nice that would be.

If you're the kind of person who's got what it takes to be selected and get involved in the space program, you're certainly mature enough to handle a glass of wine on board. I'd be 100% for it. No one's going to go on a binge. No one's going to get drunk. No one's going to become an alcoholic. You've got too much at stake. What you're doing means too much to you. You're too much of a human being. This stuff about drinking the night before they launch, give me a break. Did we have liquor in the crew quarters during Gemini and Apollo? You bet your life we did. Did we have a drink two or three days before we flew with dinner? Glass of wine? Sure we did. We probably all said, "We're going to fly in two days, I'll just get it out of my system, I don't need it." It was a very mature approach to people who were -- we were given -- let me tell you. I was put in charge of a jillion-dollar spaceship. I was put in charge of the reputation of my country and the lives of at least three human beings. Give me a break. Am I going to drink the night before I launch? If I had liquor on board would I abuse it? Not in a minute.

Now I don't know, do you need it? No. Would it be nice to have like a toothbrush? Yes, like a hot cup of coffee, sure, it would. Particularly on those longer trips. Particularly if we're going to spend -- I'm just not talking about Mars, we're going to spend weeks, months on the lunar surface. Do you need it? No. Would it be nice to have it once in a while? A glass of wine? Absolutely it would. Come out for 12 hours in a spacesuit, take it off, you're hot, you're sweaty, you're back off. You got two other guys that are going to go out tomorrow so you can relax and do some paperwork or get ready to -- maybe you're going to send a wire home or maybe you're going to -- whatever we're going to do at that point in time. Sit back and have a

glass of wine. If you're mature enough to do the job you're mature enough to handle that kind of thing.

WRIGHT: I wanted to end on an opinion question. I thought you might have an opinion on this. We learned that there are 22 astronauts that graduated from Purdue University [West Lafayette, Indiana] including the first and the last men on the Moon.

CERNAN: I'm going to give you another one after that too. Go ahead.

WRIGHT: Well how do you explain that so many astronauts came from Purdue?

CERNAN: Well, I don't know, but I was just up there dedicating a new engineering building for Neil. Neil and I were both up there together. He went to Korea and came back and finished. So he graduated in '55 and I went straight through from graduating high school in '52 to Purdue and graduated there in '56. I knew of Neil because he dated -- only because he was another guy -- going to the Moon at that point in time was not on anybody's agenda. He dated a friend of mine who went to a competing high school that I dated in the Chicago area.

I don't know. Purdue has always had a great reputation for aeronautics, for education, although I went through electrical engineering at Purdue. My dream as a kid was fly airplanes off aircraft carriers. My dad had a dream too. He wanted me to get the education he never had a chance to get. MIT [Massachusetts Institute of Technology, Cambridge, Massachusetts] was out of reach, because he wanted me to go to the best engineering school there was, [but] MIT was [financially] out of reach, and he said second best in his mind was Purdue. I wanted to fly. So I

got a Naval ROTC [Reserve Officers' Training Corps] scholarship, so our dreams were not at odds. They came together at Purdue. I got my education and went to Pensacola in the Navy flight training. We got a lot of undergraduates, we got a lot of graduates who went to Purdue. I don't know what the attraction is. There's just got to be something unique and different, special there.

Now let me give you another one. My Air Force buddies aren't going to like this. I'm going to ask you a question. You asked me why so many astronauts had gone to go to Purdue. Several I think went to [the University of] Michigan [Ann Arbor, Michigan] as well. But no one can touch Purdue. Going back to Purdue, Gus [Virgil I.] Grissom went to Purdue. Roger [B.] Chaffee went to Purdue. Neil Armstrong went to Purdue, and I went to Purdue. Plus several engineers in the program. I know Kenny [Kenneth S.] Kleinknecht and a lot of other people at that point went to Purdue as well. But those four of us who flew in those days were I guess the leading charge of astronauts.

Now, why was -- you don't have to answer it till I'm done. Why was the first American in space a naval aviator? Why was the first American to orbit the Earth -- why did he wear Navy wings of gold? He's a Marine, a naval aviator. Why was the first step taken on the Moon by a naval aviator? Why were the last steps left on the Moon left by a naval aviator? Why were five out of six lunar landings commanded -- commanded, that's important -- by a naval aviator? Why was the seventh, Apollo 13 that didn't land on the Moon, commanded by a naval aviator? Why was the first Apollo flight, period, that was in Earth orbit commanded by Wally [Walter M.] Schirra, a naval aviator? Why was the first Shuttle flight, John Young, commanded by a naval aviator? Why was the first Shuttle flight after the *Challenger* accident commanded by a naval aviator, Rick [Frederick H.] Hauck?

Think about that, give me the answer to that question. The Purdue question's a good one. Five out of six lunar landings were commanded by naval aviators. First American in space. I don't know, I don't have an answer, but I'm on the record now, so you can use that any way you want. Let me tell you. I'll tell you what. We had some outstanding talent in the space program. Whether you were Air Force, Navy, Marines, wherever you came from. But that is an unanswered question about naval aviators. Is it their training? Is it the background? Is it a personality? I'm not going to compare myself.

You got Dave [David R.] Scott, you got Jim [James] Irwin, you got Al [Alfred M.] Worden, you got one of the finest aviators we ever had in the space program was Charlie [Charles A.] Bassett who unfortunately never flew because of the accident in Saint Louis. I worked with Charlie. I was his backup. Outstanding. None better. But I don't know if I should say this on the record or not, but when Chuck Yeager tells me everybody who ever walked on the Moon was trained by him in his Air Force test pilot school at Edwards [Air Force Base, California], I told him one day in a little bit different words that he's full of baloney. Now I got that on the record. You can do with that what you want. But the Purdue question is a good one. There's a lot of outstanding engineering schools in the country. I don't have an answer for that one. I don't have an answer for the naval aviator one either. But I'm proud of it, quite frankly. I'm extremely proud of it. I'm extremely proud to be one.

WRIGHT: Well, we're glad that you shared that with us.

CERNAN: Oh, let me give you another one while I'm on the record. This is a special week for me. You ever heard of the Wright Memorial Trophy? It's given in Washington every year in

December, black-tie dinner, for the individual who has contributed -- this is the 60th year -- contributed to the Wright Brothers' legacy, aviation, aerospace, people like [Charles A.] Lindbergh, people like [Lt. General James H.] Doolittle, people like [Igor I.] Sikorsky, people like [Donald W.] Douglas, you can go on and on, people like John Glenn and people like Neil Armstrong. The only [three] thus far astronauts that have ever received the [Wright Memorial] Trophy. That's a pretty unique club. Three days from now -- I've been selected. I'm going to receive the Wright Brothers Memorial Trophy.

WRIGHT: Congratulations.

CERNAN: Okay? Special club. I'm proud of it. Normally I don't go around saying things like that to people, because I've had a few other honors, but this is the top of the mountain. Pretty special. Why is it that the only three astronauts -- I'm going to give you another one -- that have ever received the Wright Brothers Memorial Trophy are all naval aviators? God, my Air Force guys are going to hate me for this one. I don't have the answer to that question either. We all put our pants on one leg at a time. There's no [difference]. I've given you some tough ones now. You're going to really do some editing, I can see that.

WRIGHT: I don't think so, I don't think so. Usually we get to ask the questions. So I'm glad you left us with some. But thank you for all your answers.

CERNAN: Thank you. You got anything else you want on me? I've got -- what is it -- oh been here almost two hours. But you got anything else you want to follow up on?

WRIGHT: Oh, there's just so much, I'm not sure where we would start at this point.

CERNAN: So after this is over we're going to get hot water, hot coffee, and wine.

WRIGHT: We're going to tell them recommendations from Gene Cernan that the astronauts would be glad to get.

CERNAN: Well, my problem is I could talk about this for a long time. There's so many things. You probably haven't had a chance to read my book. I've tried to answer --

WRIGHT: I actually have.

CERNAN: Have you? So you know about that spacewalk from hell.

WRIGHT: Yes.

CERNAN: One of the greatest compliments I get is people saying I know you made it, but I wasn't sure until I finished the chapter. That's what I want to do. I wanted to take you and everybody else and put you out there with me, put you on the Moon with me. Your question about this picture, I seriously mean it. It's got so many cultural and philosophical and political consequences that truly if we could somehow vicariously at least put people in the environment

that we were in when we looked back at that picture -- of course you can't do that, so that's maybe somebody's pipedream. But we should look at ourselves differently.

When I said it may take another 50 or 100 years to realize what the significance of Apollo was, how long -- none of us can answer this – [how long] did it take for the world to realize the significance of Columbus's journey across the Atlantic? When Neil made that first step on the Moon, going back, when Apollo 8 just went to the Moon -- the real spirit of Apollo are those kinds of significance of those moments. It's not so much where we went. The Moon happened to be a handy place. But it's what we did under the circumstance that we did it.

The country was torn in the '60s by civil strife, campus unrest, the beginning of a very unpopular war. The President of the United States gets up in the middle of all that and says hey world, we're going to go to the Moon. He was asking us to do what was impossible, to do what people didn't think could be done at the time. The thing about Apollo is we did it. That's what we need to relate to the young people, is that we -- it's not so much what we did but it's how and why we did it, along with the first three human beings looking back at not quite that picture but almost, and reading Genesis, in the beginning kind of thing. Or here's a human being -- a human being, just like you and me. If Neil was sitting here, he's no different than you and me. When you cut him he bleeds. When you pinch him he says ouch. But he walked -- he's the first human being ever to step on another -- allow me to call it a planet -- another planet out there in this universe. I don't think we have yet reconciled what all that means. We haven't. I just -- I hope someday our kids and grandkids, someday someone puts it all together. People are still writing books about the Alamo.

WRIGHT: Yes they are.

CERNAN: Okay?

WRIGHT: Yes they are.

CERNAN: What it was really like to be there, what it really felt like, what it really looked like, answering the same questions that I tried to answer in the book. Were you scared? On and on and on. People haven't put all that together yet. Maybe your grandchildren will finally get a handle on what all this means. By that time we'll probably be a long way along the way.

WRIGHT: We've talked about the program and the Purdue question has a follow-up on it. The astronauts came from -- 22 of them came from Purdue. But we've had hundreds of astronauts, and all of them are willing to take the walk and the route that you did. Can you give us an insight on what you feel are the major attributes of the astronauts that cause them to or propel them to take these risks to lead the exploration effort?

CERNAN: Well, yes, I think in one word, or a couple words maybe. But first of all aside from the Purdue and Navy thing, if you look at people, we came from all walks of life. Bill [William A.] Anders if I'm not mistaken was born in Hong Kong. We've got guys who came from academy families. We've got [Edwin E. "Buzz"] Aldrin who came from a military background that goes back forever. Scott the same way.

I pride myself on being from a blue-collar family in Chicago. My dad had to finish high school at night. I think when he got a raise and made five -- no one can imagine -- made $5,000

a year. My sister and I slept in the same bedroom until she went to college in a 700-square-foot house. Was I an all-star athlete? Was I whatever? I don't know. I think maybe this can pertain to others as well.

My dad said to me when I was a youngster, he said, “I'm only going to ask one thing of you, and nobody else can ask more, no matter whether it's on a playing field, in a classroom or wherever it may be. I'm just going to ask you to do your best. Sooner or later your best is going to rise to the top. But there's only one person who knows what their best really is, and that's you.” I think when you're given an opportunity to do something, having enough pride in yourself to be willing to try, to not be afraid to make a mistake -- because if you're afraid to make a mistake you'll never try, and if you never try you'll never know how good you can be.

You're not going to succeed at everything. I'm not a great tennis player. I'm not this and that. I just happen to have been good enough -- the other word I want to say, I said I want passion. Passion. I’ve had a passion to fly all my life. I'm still flying. I just flew back from Kerrville yesterday leaving in all that fog in my own airplane. I’m still working with Bombardier flying Learjets and Global Expresses and Challengers today. I'm 73 years old. As long as I can do it I'm going to keep doing it. I've been to 51,000 feet in a Learjet, which is as close as I've been to the Moon in three and a half decades.

I think no matter the Purdue, the Navy, whatever -- I think we all had the passion, the desire to do something we were challenged to do. Not just to do what had never been done before, but to do what is -- someone gave me an opportunity to do something, and by God I'm not going to let them down. I'm going to do it. I think we all regardless of our cultural background, our economic background, our whatever, I think we all came down here with the same inspiration; now are there a lot of people who weren't selected for space program and

should have been? You bet. For every guy who walked on the Moon there's another thousand or more who could have done it just as well or better. Were there guys selected for the space program that should never have been selected for the space program? You bet your life there were. That sort of took care of itself to a degree.

So what is it? That old story, the right stuff is so corny. You can't say what the right stuff is any more than you can describe infinity. But somewhere -- and maybe it's the same thing, because remember in those days we were all aviators. You had to want to fly or you didn't. Those people that weren't good enough washed out. I remember during the selection process I came down to the old Rice Hotel, walked into the ballroom. There were 400 of the most qualified human beings, the greatest test pilots in the country, broke every altitude record, every speed record. Combat experience. All of them and me. I wouldn't have even been in the Navy long enough to go to test pilot school. Didn't have enough jet time to even be considered. Didn't volunteer.

All of a sudden I found my room with 400 of them and me. Any one of those guys probably could have walked on the Moon and done it as good or better than anybody else. You come back three or four weeks later and three quarters of those guys weren't there and you were? You want an unanswered question? Why me? Why me? To this day and to the day I die I'll never know why me, why me. I'm no different. I didn't know beans about orbital mechanics. I didn't have a lot of the experience a lot of other people had. If I knew what it was I'd market it but I don't know what it is.

Lucky, probably luck, probably luck, being in the right place at the right time, saying the right thing to the right person. I don't know, I don't know. But you can't -- like I said about that first step, my step on the Moon, no one can ever take it away from me. However I got here I

don't know, but I'm not going to apologize for it and I'm not going to argue about it. Have I done dumb things in my life? God, have I ever. I mean I've done lots of dumb things in my life. Not proud of them necessarily, but learned from them I guess is probably as good a way to put it as any. So I don't know.

WRIGHT: Well, we're glad that you came today and shared with us some of the things that you've done and hope that sometime in the future you want to come back and share a little more.

CERNAN: If you want to do more of this I'll be glad to -- it's probably -- probably -- it's a valuable thing to do. You'd like to have Christopher Columbus and Neil Armstrong in this room sitting side by side. Throw Jim Lovell in. Okay? Ask them the same word, "Hey, Mr. Columbus, were you ever scared you'd fall off the flat Earth? Hey, Mr. Columbus, how did you feel when the guy said land ho? Hey, Neil, you feel you wouldn't come back? What was it really like to make that first step?" Which none of us unfortunately will ever really know yet. "Jim, God, you got to tell us about Apollo 13." These guys experienced -- they all experienced the same thing in some degree or another, a product of their times, doing what they thought was the right thing to do. That would have been a hell of a group of people to put together, wouldn't it?

WRIGHT: Just the decision-making processes that were going through their mind, of what's right, what's wrong, what's --

CERNAN: Keep in mind the decision-making process, although Columbus had a little bit more time to think about it I suppose, you got that extra dimension that we have no control over of time. Dimension of time really controls the outcome of almost everything we do.

WRIGHT: You mentioned a while ago about fears. Did you have the fear of the unknown because that's what you knew?

CERNAN: No, you sort of -- you try and anticipate the unknown. You didn't have time to be scared. Scared is lack of awareness. We knew where we were going, what we were going to do. Weren't sure what we were going to encounter. I don't care how many guys go there before you, it's still you, it's still the first time for you, okay? No matter what you do. Whether you tightrope across the Grand Canyon, it's been done 100 times. For you it's the first time.

WRIGHT: Well, I'm sure you're looking forward to seeing the next crew go back. Are you involved with Constellation? Are you lending support?

CERNAN: Only to the extent that I try and respond to some of their requests to tell them some of the same things I've talked to about you. As I say, you've just to harness all this young talent that's out there. Young talent with technology beyond comprehension. I'll tell you at this day in my life if it doesn't have a green button and a red button I don't want it, a go button and a stop button, don't give me all that other stuff in between. (Laughter) I don't want to have to worry about all that stuff. I want a cell phone, it doesn't need to take pictures, it doesn't need to get me on the internet, it doesn't need to send text message. All I want to do is make a telephone call.

WRIGHT: I agree.

CERNAN: That's all I want to do with it. But so they got a lot to work with. They'll get the job done. I got a lot of confidence. As I say, take advantages of those things we did right, don't reinvent the wheel at every turn, and learn from the things we did wrong, and we'll get there. We'll get there. That trip to Mars is going to be a special thing. By the time we get ready to go, it's not going to take nine months. It's going to take about 60 days, and we're going to be able to stay as long or short a time as we want to stay. That kind of technology has yet to be evolved, but it will be. It will be. Because we're still the same human beings that Columbus was. We still have the same frailties and we still have the same emotions.

I for one would not have to want to go to the Moon and stay there until the planets were aligned -- or to Mars and stay there until the planets were aligned for a year and a half until I could come home. Let me say this. I want to be -- and maybe this is what it's all about, and that's why command of a crew was important. I want to be in control of my own destiny. I have always been that way. I don't want to be subject to someone else's mistakes or -- if I'm going to screw up I want to screw up. I want to be in control of my own destiny. I can tell you there was -- I had open heart surgery two and a half years ago, and that's when you give up control of your own destiny, that's when you put it in someone else's hands, that's when you say here I am, go ahead and do what you need to do, because you have no choice. But other than that, whether it's landing on the Moon or landing aboard an aircraft carrier, if I'm going to kill myself it's going to be me, not somebody else.

WRIGHT: Well, that is one thing I thought was interesting, one of the things I thought was interesting in your book, was the fact that you almost had a guaranteed ride with John Young and you told Deke Slayton --

CERNAN: I didn't go into that. But well, that's why I said it meant --

WRIGHT: You wanted to command your own crew.

CERNAN: -- more to me to take my chances at having my own crew, and I ended up hitting the jackpot. I had my own crew and walked on the Moon. When I crashed that helicopter, which you read about, a very uncertain period of time in my life. So but who knows? Who knows what's in store for you? Unfortunately I see over the last generation or so we're developing a risk-averse society. Give me a guarantee. What's in it for me? If I go to the Moon guarantee me I'm going to get back. If I go to work for you, guarantee me I'm going to get a bonus at Christmas and four weeks' vacation. We see it in sports today. Guarantee me. Even if I hit .200 instead of .300 guarantee me I'm going to get a bonus and get paid. No. Get paid on performance. Get paid -- risk-averse.

Sports is the greatest example. No one is willing -- if I get hurt I still want my $10 million salary. Well wait a minute. Give me a break. You get paid for results. I think we've got to overcome that guarantee process, that risk-averse process. You never get something for nothing in this world. There isn't a person that went to the Moon who was guaranteed a trip home.

Now the other side of that coin -- and this is something I think is very important. Think about it. We made some mistakes along the way in Gemini and Apollo and we lost some people, airplanes and certainly the Apollo 1 accident. But a testimonial to our commitment, commitment not of the astronauts alone, commitment of the people who were involved in the space program, a testimonial to our commitment to do what needed to be done and learn from our mistakes was the fact that everybody -- think about this-- everybody that we sent to the Moon came home, including Apollo 13. That's something people don't talk a lot about, but that's something we can hold our head high over. Everyone who went to the Moon came home.

The Apollo 11 epitaph was written before they left. I think that's a testimonial to what we can do if we really want to do something badly enough and do it well. As I say, we made a few mistakes along the way, there was a period of time in two years where I wore my uniform eight times. That's when we buried people at Arlington [National Cemetery, Arlington, Virginia]. The other side of that coin is we had our tickertape parades and trips around the world and Air Force One and all those other kind of things. So it's a two-way street. But we can do it if we want to do it badly enough.

We had no guarantees. Nobody had any guarantees. We had a challenge. As I said earlier, 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. Our wildest dreams. Beyond our craziest imagination. Going to the Moon when we had those 16 minutes of spaceflight experience, I mean, was Kennedy a visionary? Was he a dreamer? Was he politically astute? Yes, yes, yes. We'll never know. But 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.

WRIGHT: Okay. Well, we'll do our best to help pass it on too.

CERNAN: There you go.

[End of interview]