

**Project Apollo
Dialogues, etc.**

"Our building's shaking here. Our building's shaking! Oh it's terrific, the building's shaking! This big blast window is shaking! We're holding it with our hands! Look at that rocket go into the clouds at 3000 feet! You can see it, you can see it! Oh the roar is terrific!"

Walter Cronkite, CBS News Anchor
Broadcast of Apollo 4 Launch, November 9, 1967



AS04-01-184



AS04-01-368



AS04-01-552



AS04-01-736

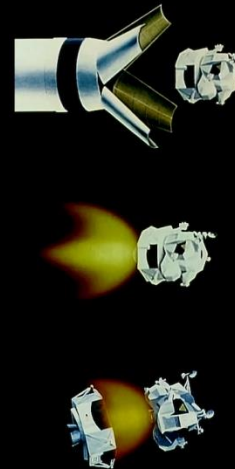
Apollo 4 was the first unmanned test flight of the Saturn V launch vehicle. It was the first to be launched from Launch Complex 39, and it was an "all-up" test, meaning all rocket stages and spacecraft were fully functional on the initial flight, a first for NASA. The mission was the first Apollo flight after the stand-down imposed after the Apollo 1 fire. The thumbnails (images) seen to the left are four out of 756 exposures made by the on-board camera. After two orbits, the S-IVB's very first in-space re-ignition put the spacecraft into an elliptical orbit with an apogee of 9,297 nautical miles (17,218 km) and a perigee deliberately aimed 45.7 nautical miles (84.6 km) below the Earth's surface for a high-speed atmospheric reentry of the Command Module. (NASA)

"I don't care what anything was designed to do, I care about what it can do."

Gene Kranz, Flight Director, Gemini and Apollo, NASA



NASA



Apollo 5 was the first unmanned flight of the Lunar Module (LM). It lifted off on January 22, 1968, with a Saturn IB rocket on an Earth-orbital flight. The mission tested the LM in a Space environment, in particular its descent and ascent engine systems, and its ability to separate the ascent and descent stages. The mission also performed a simulation of a landing abort, in which the ascent stage engine would be fired while still attached to the descent stage. This was referred to by engineers as the "fire in the hole" test. The windows of the LM were solid aluminum plates, and it was decided to do without its "legs". Without a crew or Command/Service Module (CSM), there was no need for a launch escape system. NASA deemed the mission a success in demonstrating the LM-1 systems, and a second unmanned flight test using LM-2 was canceled. LM-3 was cleared for the first manned flight, which occurred on Apollo 9. (NASA)

"The structure of the vehicle is much like a tuning fork, so if you strike it right, it will oscillate up and down longitudinally.

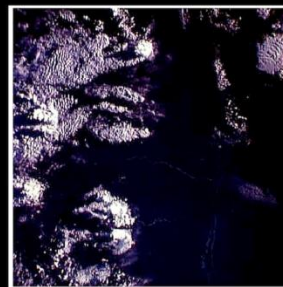
In a gross sense it is the interaction between the various frequencies that causes the vehicle to oscillate."

George Mueller, Associate Administrator,
Office of Manned Space Flight, NASA (1963-1969).

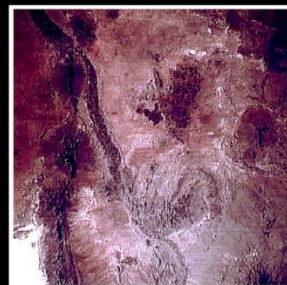
Mueller made this comment about the Apollo 6 pogo oscillation issues.



AS06-02-972



AS06-02-1063



AS06-02-1447



AS06-02-1506

Apollo 6 was the second A type mission, an unmanned test of the Saturn V launch vehicle. It was also the final unmanned Apollo test mission. The objectives of the flight test were to demonstrate trans-lunar injection capability of the Saturn V with a simulated payload equal to about 80% of a full Apollo spacecraft, and to repeat demonstration of the Command Module's (CM) heat shield capability to withstand a lunar re-entry. The thumbnails (images) seen to the left are four out of 755 exposures made by the on-board camera. There was little press coverage of the Apollo 6 mission mainly because on the same day (April 4, 1968) as the launch, Martin Luther King, Jr. was shot and killed in Memphis, Tennessee. (NASA)



Apollo 10

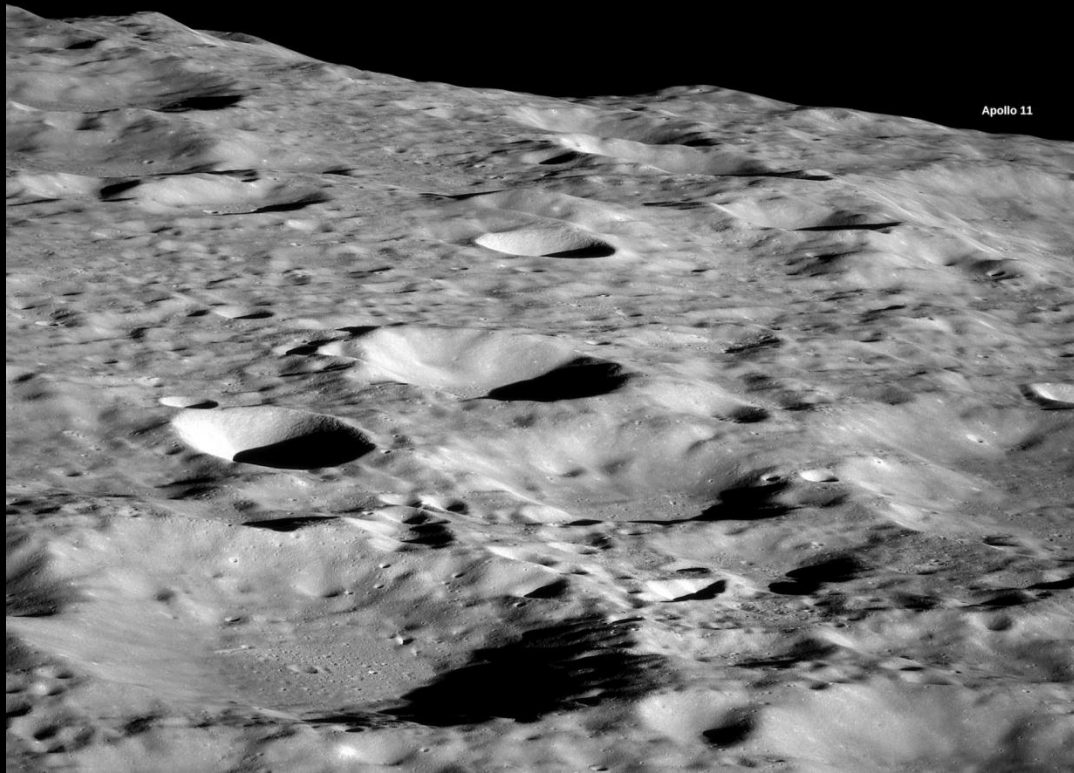
Apollo 10 set the record for the highest speed attained by a manned vehicle: 39,897 km/h (11.08 km/s or 24,791 mph) on May 26, 1969, during the return from the Moon.

"The fastest manned vehicle in history was Apollo 10. It reached 25,000 mph."

Stephen Hawking

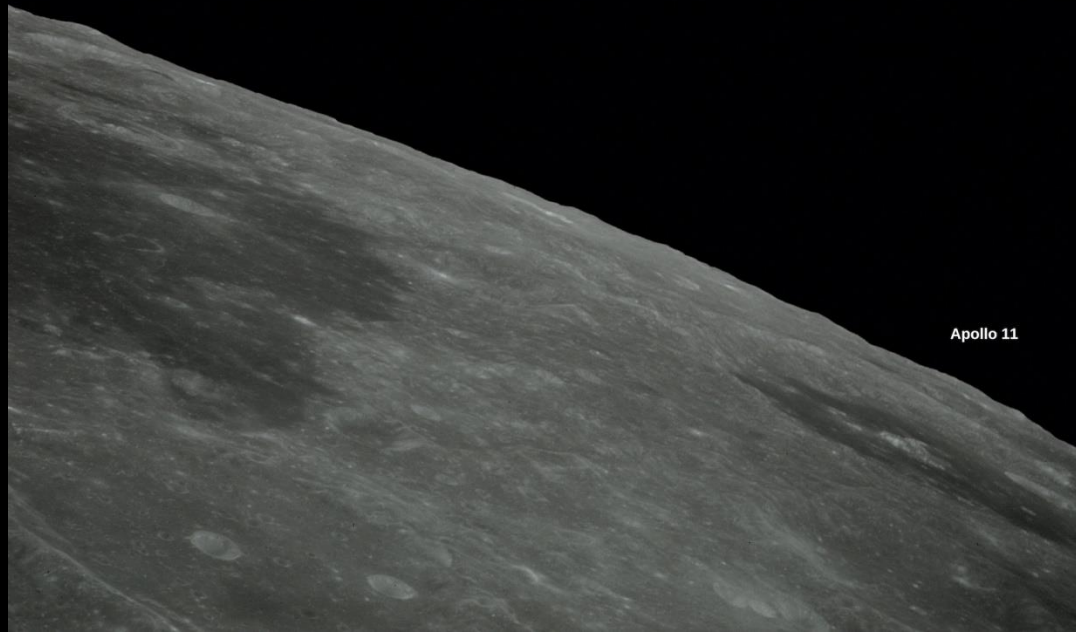
"I feel we need to remind
the world about the Apollo
missions and that we can
still do impossible things."

Buzz Aldrin, Lunar Module Pilot, Apollo 11



"To remain on Earth ...
knowing what we know
about the Universe and
our ability to access it,
albeit limited at this time
... is sacrilegious to our
existence and insulting
to our intelligence."

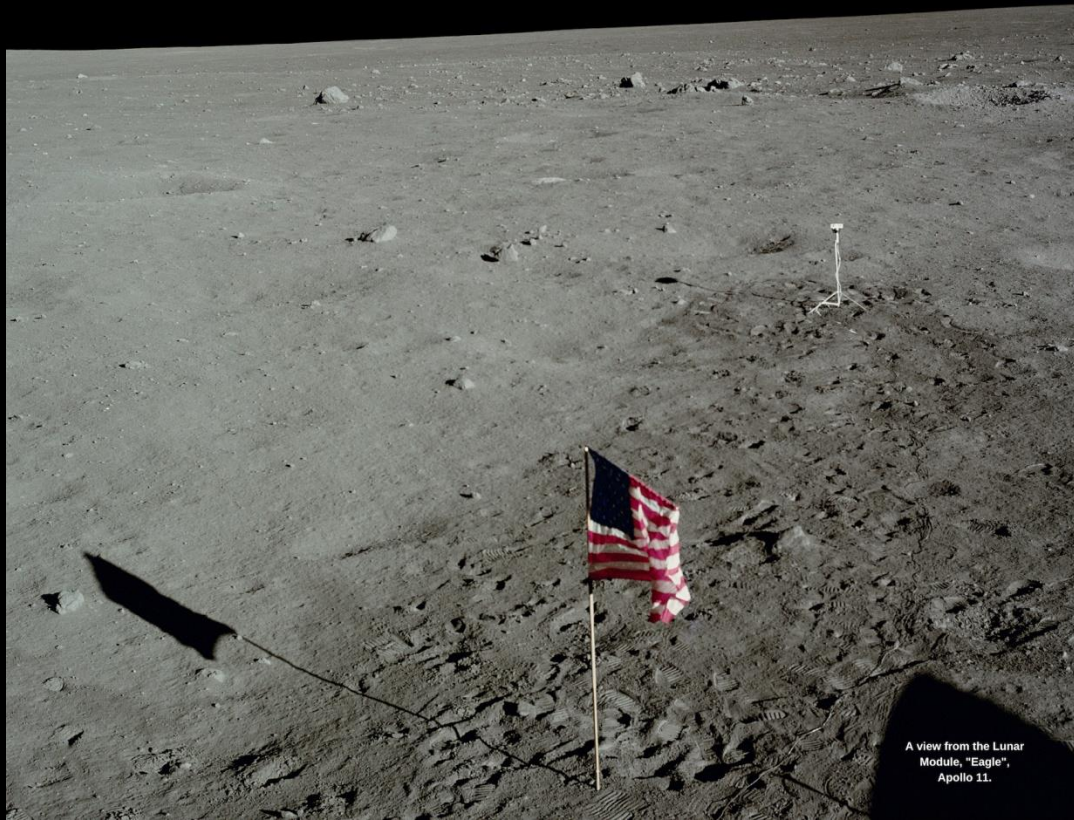
Tom R. Chambers, Research Analyst,
Lunar Receiving Laboratory,
Apollo Program (1969-1972)



Apollo 11

"What I do know is the first
man to walk on the Moon
walked into this room today -
and is looking at me right now."

Deke Slayton, Mercury Astronaut, Director of Flight Crew Operations, NASA

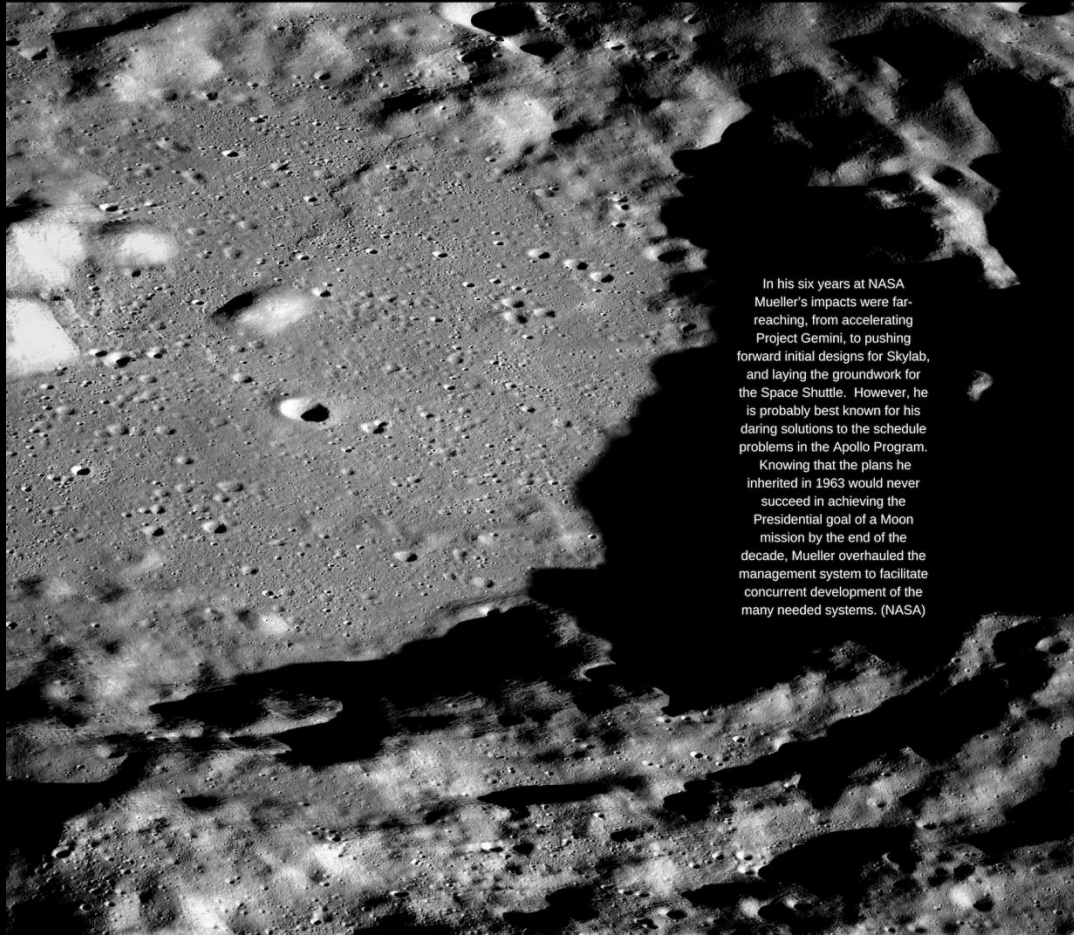


A view from the Lunar
Module, "Eagle",
Apollo 11.

"The management challenges were certainly as great as the technical challenges for the Apollo Moon landings."

George Mueller, Associate Administrator, Office of Manned Space Flight, NASA (1963-1969)

Apollo 11



In his six years at NASA Mueller's impacts were far-reaching, from accelerating Project Gemini, to pushing forward initial designs for Skylab, and laying the groundwork for the Space Shuttle. However, he is probably best known for his daring solutions to the schedule problems in the Apollo Program.

Knowing that the plans he inherited in 1963 would never succeed in achieving the Presidential goal of a Moon mission by the end of the decade, Mueller overhauled the management system to facilitate concurrent development of the many needed systems. (NASA)

LMP Alan Bean: "Yeah, I'll stop here, and this will be my last picture."

CAPCOM Ed Gibson: "Al, the equipment bays were white on the side, and the scoop itself was a light blue."

LMP Alan Bean: "Well, it's kind of a ...Well, we'll get down there and get closer inspection. What was the general color of the structure? For example, all of the struts and the like?"

CAPCOM Ed Gibson: "That's all white. The equipment bays and the primary structure was all painted with a white paint."

LMP Alan Bean: "Sort of turned tan or something. We'll have to look at it more closely."

LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator (Mission Control)



Alan Bean
Lunar Module Pilot
Apollo 12

LMP Alan Bean: "Okay. Right here. Good shot here, Pete."

CDR Pete Conrad: "I wanted to get my footprints in it too, so they can see that."

LMP Alan Bean: "Okay."

CDR Pete Conrad: "Uh-oh."

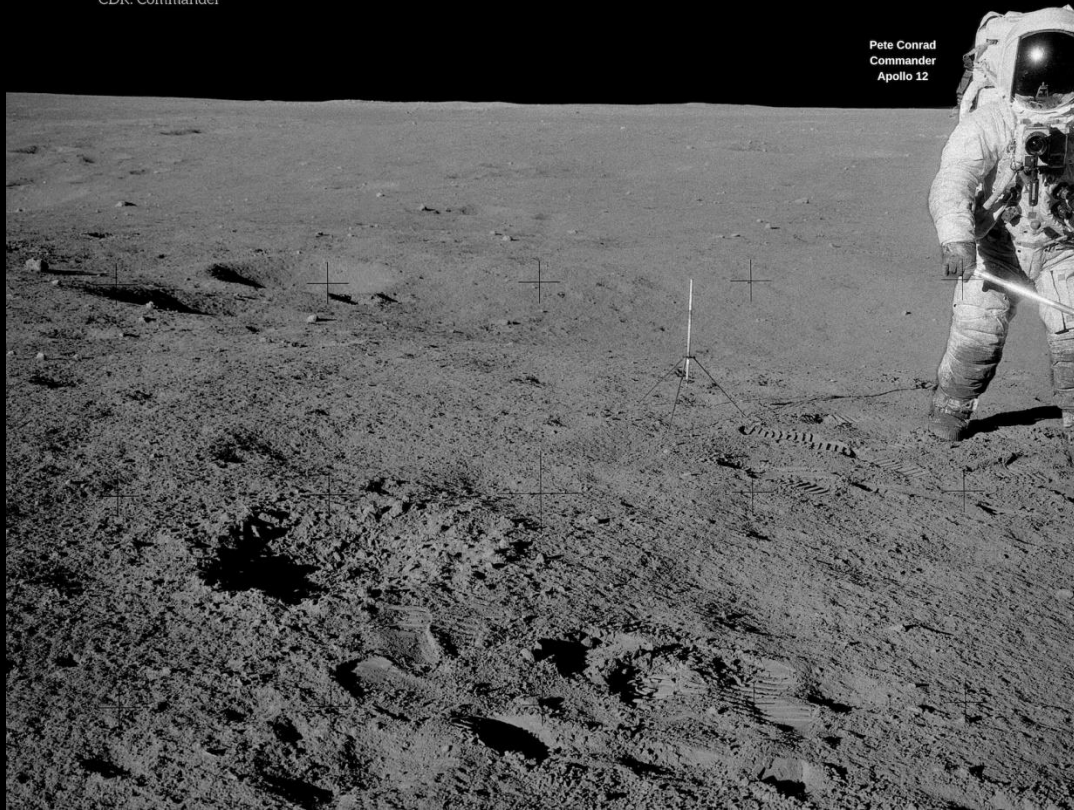
LMP Alan Bean: "Okay, I think I will take some a little further away. Back up a little, and shoot a 15-foot one if it's okay."

CDR Pete Conrad: "Yeah. I'm going to just dig."

LMP Alan Bean: "All right. I will be back to collect it in just a second; let me get this 15 footer."

LMP: Lunar Module Pilot
CDR: Commander

Pete Conrad
Commander
Apollo 12



CDR Pete Conrad: "Yeah. Yeah. I'll tell you what. Let's see, we're cross-Sun, right? Look over here at me and smile."

LMP Alan Bean: "Okay. I'll get you. You're right there by a crater."

CDR Pete Conrad: "Where's the LM?"

LMP Alan Bean: "Right in the background. You look great. There you go."

CDR Pete Conrad: "All right. Let's ease off at a nice, slower pace. I know where we're going now. I think this is Halo Crater right up here in front of us."

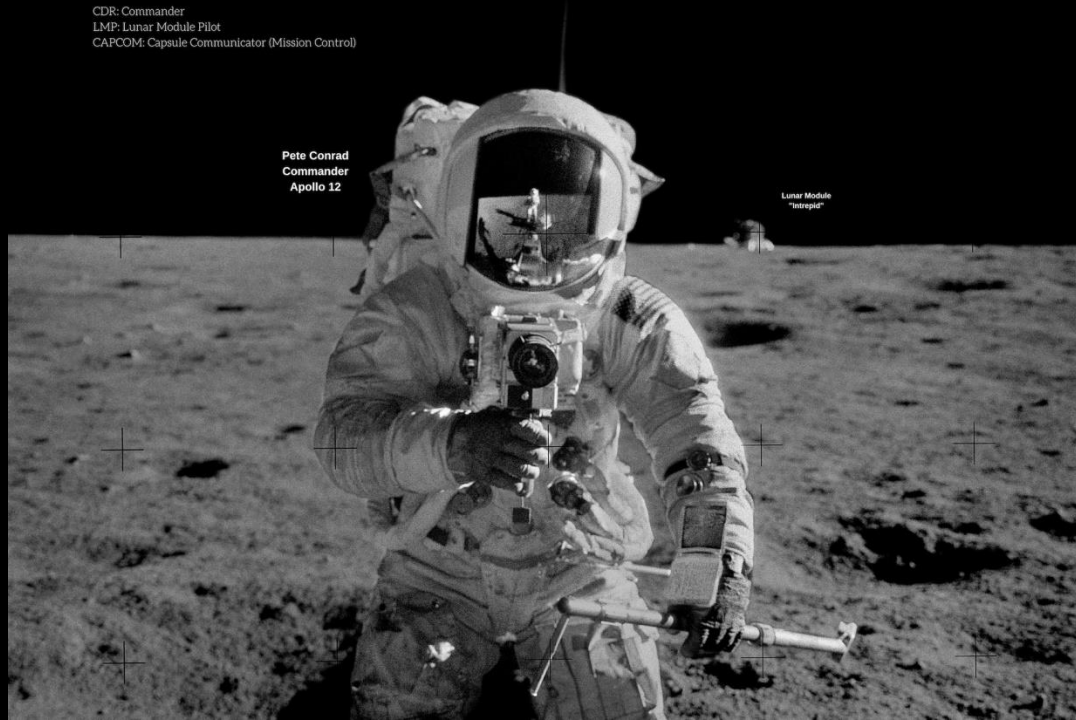
LMP Alan Bean: "Hey, Ed, you might tell Fred Haise [Apollo 13 LMP] he ought to quit working on running and start working on holding things in his hands for long periods. My legs don't get a bit tired, but your hands get tired carrying these tools, particularly the Hand Tool Carrier."

CAPCOM Ed Gibson: "Roger, Al. Sure will. I'm sure he is listening."

LMP Alan Bean: "Yeah, you wouldn't think. I think that's funny. You wouldn't think it that way."

CDR Pete Conrad: "Tell Jim Lovell [Apollo 13 Commander] to practice digging."

CDR: Commander
LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator (Mission Control)



CDR Pete Conrad: "Say, Houston, Intrepid."

CAPCOM Ed Gibson: "Intrepid, Houston. Go ahead."

CDR Pete Conrad: "We're having a little trouble judging distance. How long is my [Lunar Module] shadow?"

CAPCOM Ed Gibson: "Intrepid, your shadow length on a level surface is 250 feet."

CDR Pete Conrad: "You've got to be kidding me!"

CAPCOM Ed Gibson: "Intrepid, Houston. We could shorten that a bit to 230. Which way do you think you are?"

CDR Pete Conrad: "Okay. Well, if my shadow's 230 feet long, we're really misjudging distances."

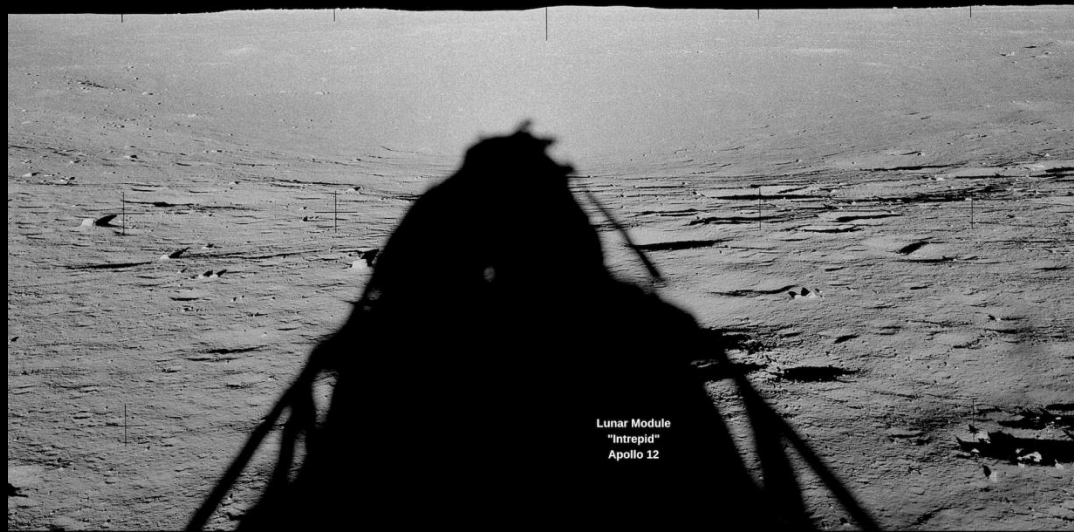
CAPCOM Ed Gibson: "Roger, Pete. Are you short or long?"

CDR Pete Conrad: "Well, I'd say that my shadow was much shorter than that."

CAPCOM Ed Gibson: "Roger."

CDR: Commander
CAPCOM: Capsule Communicator (Mission Control)

Commander Pete Conrad and Lunar Module Pilot Alan Bean have been looking out the windows of "Intrepid" trying to figure out where they've landed.



Lunar Module
"Intrepid"
Apollo 12

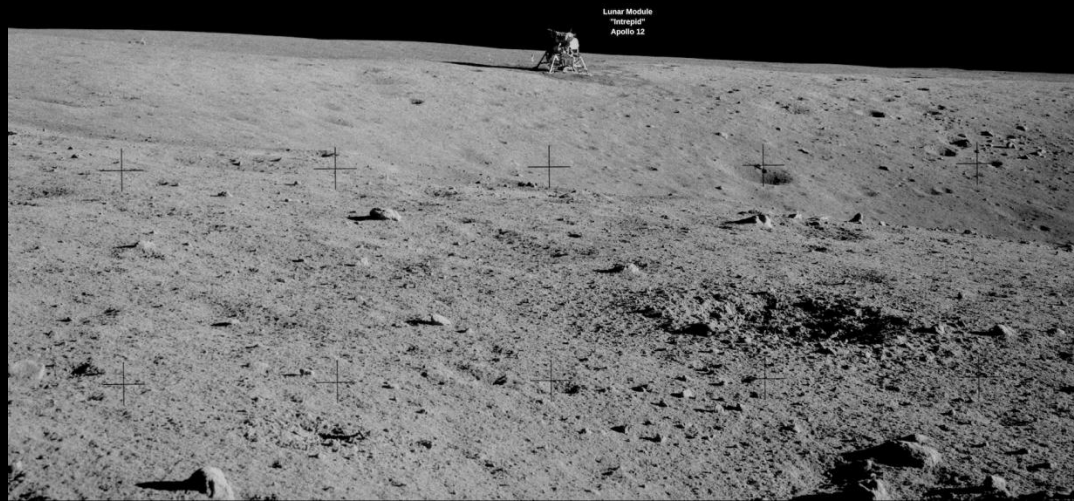
CDR Pete Conrad: "Doesn't that LM [Lunar Module] look neat, sitting on the other side of that crater?"

LMP Alan Bean: "Yeah. It does. We ought to get a shot of that."

CDR Pete Conrad: "Yeah. Get a shot of home."

CDR: Commander

LMP: Lunar Module Pilot



LMP Ed Mitchell: "Okay, Bruce, I'm coming around one more sector. I'm going to move it just a little bit more and you should be able to see the four or five rocks I was talking about in my discussion before we got out of the LM [Lunar Module]. Now, I'll zoom in on those if I may."

CAPCOM Bruce McCandless: "Yes, please."

LMP Ed Mitchell: "Here we come."

CAPCOM Bruce McCandless: "Okay, now point the camera down a degree or two."

LMP Ed Mitchell: "Okay. How's that?"

CAPCOM Bruce McCandless: "Beautiful. You might come right a degree or so. I see the small rocks off to the right. Okay. What's that object in profile on the horizon?"

LMP Ed Mitchell: "I mentioned a quadruplet chain of craters."

CAPCOM Bruce McCandless: "Point it down a little."

LMP Ed Mitchell: "They're right here in front of me. Okay. The quadruplet chain of craters starts right here in front of me. Well, it's halfway between the rock and myself."

CAPCOM Bruce McCandless: "You're getting all sky."

LMP Ed Mitchell: "Across here, now, there's quite a few. Let me zoom back in again."

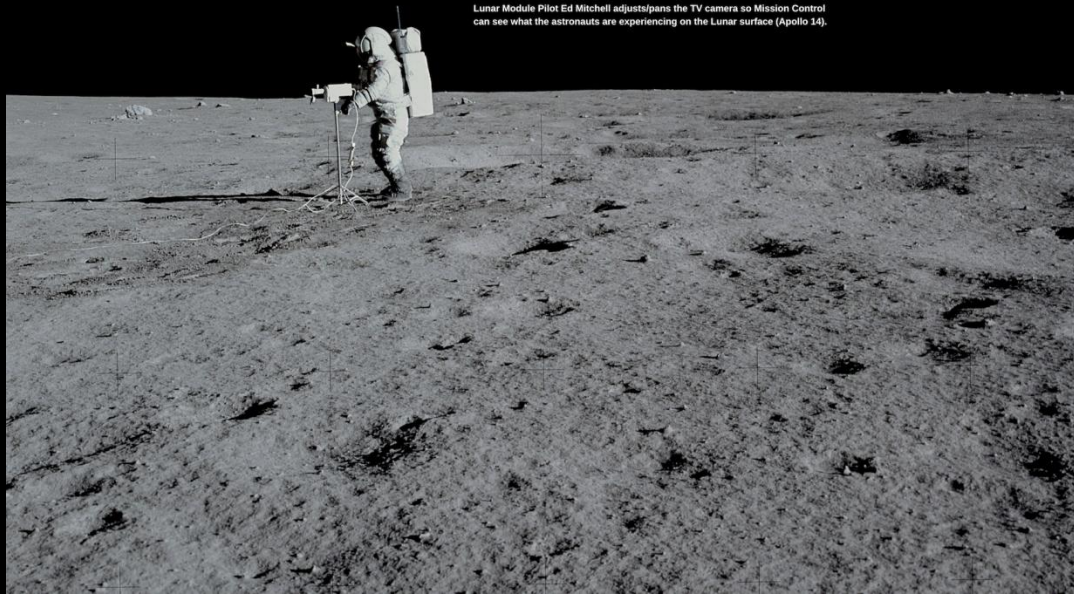
CAPCOM Bruce McCandless: "Roger. Okay, hold it."

LMP Ed Mitchell: "Okay. How's that now?"

CAPCOM Bruce McCandless: "Good."

LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator
(Mission Control)

Lunar Module Pilot Ed Mitchell adjusts/pans the TV camera so Mission Control can see what the astronauts are experiencing on the Lunar surface (Apollo 14).



CDR Alan Shepard: "Okay, Houston. We've got almost two complete tubes here, about one and seven-eighths tubes, I would say."

CAPCOM Fred Haise: "Roger, Al."

LMP Ed Mitchell: "Okay, Houston. The pan is completed. I took it from the rim of an old crater with a fresh crater right in the bottom of it, and several small ones around it."

CDR Alan Shepard: "Yeah. That's a fairly blocky one, that new one. I think if we take samples from right along that rim there, you'd probably get some of that from the bottom."

LMP Ed Mitchell: "Yeah. Okay."

CAPCOM Fred Haise: "Okay. We copied, Al and Ed."

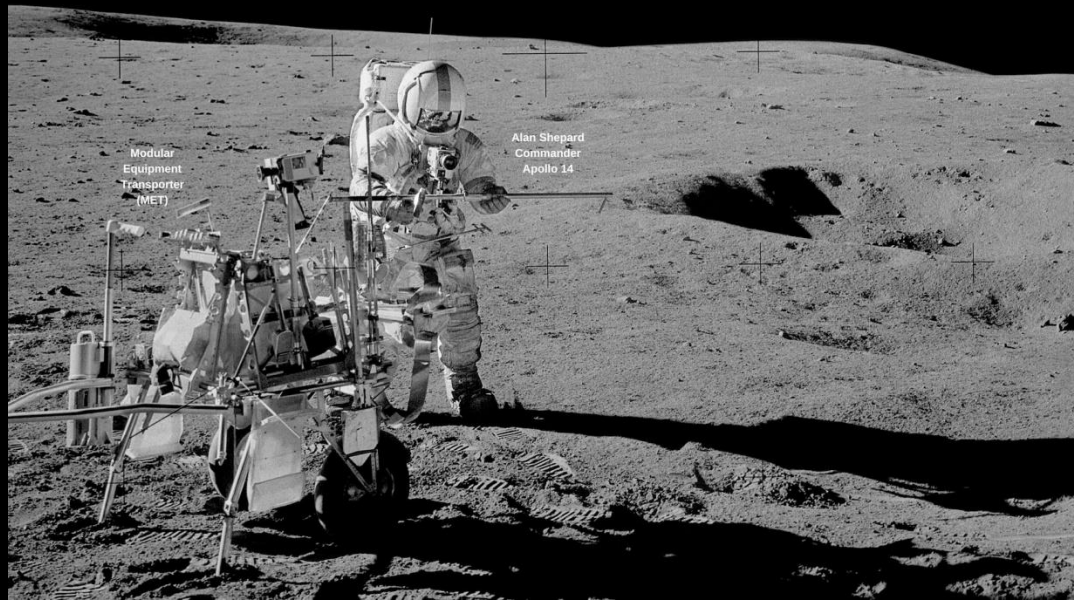
LMP Ed Mitchell: "Just a minute."

CDR Alan Shepard: "Okay. And the core bit, just for the fun of it, is going in bag 2 November. If we can get it back."

CAPCOM Fred Haise: "And Al, they'd like a description of the surface where you drove the core tube."

CDR Alan Shepard: "Okay, Fred. The surface was the same textured pattern of which we spoke coming up in this traverse."

CDR: Commander
CAPCOM: Capsule Communicator (Mission Control)
LMP: Lunar Module Pilot



Deke Slayton: "Okay. You're looking lovely troops. Why don't you take a pair and let me pass a message to you."

LMP Ed Mitchell: "Okay."

CDR Alan Shepard: "Okay."

Deke Slayton: "Okay. We were very pleased a few minutes ago to receive a phone call here in Mission Control from President Nixon. He asked me to extend to you and to Stu his best congratulations. He said that, like millions of people all over the world, he is an astronaut watcher at this time. The picture is coming in very well at the White House, he said. The President said he knew how many thousands of people had worked on this mission without whom men would not be walking safely on the moon. He asked that I wish the Apollo entire team well. The President said he was proud of you and proud of them. He sent you a wire just before the flight wishing you Godspeed, and he wishes you well on your return flight. The President also asked me to invite you to the White House for dinner and to spend the weekend at Camp David with your families after the mission is completed. Over."

CDR Alan Shepard: "That's fine, Deke. Thanks very much. And we appreciate those kind words."

LMP Ed Mitchell: "Thank you, Deke. And convey our thanks to the President, please."

Deke Slayton: "Roger. Will do. I don't think Stu got this, but we'll see he gets it later."

CDR Alan Shepard: "Okay."

LMP: Lunar Module Pilot
CDR: Commander

Commander Alan Shepard and Lunar Module Pilot Ed Mitchell had this dialogue with Deke Slayton shortly after Shepard made this last exposure (frame) of his photo pan showing the shadows of him and the Lunar Module, "Antares" (Apollo 14).



CDR Dave Scott: "I think I'll get to work here."

LMP Jim Irwin: "Okay."

CDR Dave Scott: "I'll get a pan from the rim. And the rim is very, very soft. My boot sinks in a good - if I push on it - a good 4 inches. And the whole center part of the crater is just full of debris. Very angular, glass in the center. It's about, oh, I guess, 40 meters across and maybe 5 or 6 meters ... no, not that much, 3 or 4 meters deep. And a slightly-raised rim. An ejecta blanket that goes out about one crater diameter, quite uniform."

CDR: Commander
LMP: Lunar Module Pilot



CAPCOM Joe Allen: "Roger. We copy. And, Dave, earlier you talked about, specifically, a very bright crater, I think, fairly near by. Could you estimate for us the size, distance, and azimuth of that bright crater?"

CDR Dave Scott: "Stand by. I can tell you're still looking for our position."

CAPCOM Joe Allen: "No, that's not necessarily true. We think we're pretty well squared away on your position. This probably would cinch it down, though."

CDR Dave Scott: "Okay. As we're unsuited here, let me think that one over. I think we can cinch it down too."

CAPCOM Joe Allen: "Roger."

CDR Dave Scott: "But, before we go, I got to tell you about a rock that's right out at 12 o'clock, almost at the radar antenna shadow, and it's going to be gone pretty soon. There's a dark, black, angular fragment which is on the order of, I'd say, 6 to 8 inches across. It's got some light-colored, apparent dust on it. It's unique on the surface. All the other fragments appear to be white. And this one really looks like a jewel. You can think about that for awhile."

CAPCOM Joe Allen: "Roger. We copy. And it wouldn't surprise me at all if there wasn't some thought given to that rock."

CAPCOM: Capsule Communicator (Mission Control)
CDR: Commander



CDR Dave Scott: "We're at a nice place to stop and we're ..."

CAPCOM Joe Allen: "Jim, you may want to use Dave's camera to record this on film, while Dave uses ..."

LMP Jim Irwin: "I am."

CAPCOM Joe Allen: "... the 500-millimeter camera."

LMP Jim Irwin: "That's exactly what we're doing."

CDR Dave Scott: "Yeah, you must have dropped comm there, Joe. That's what we're in the process of doing here. After I dust your eye off. How's that, Joe? Attaboy. Swing it around there, and you're going to see a spectacular place. Boy, oh, boy!"

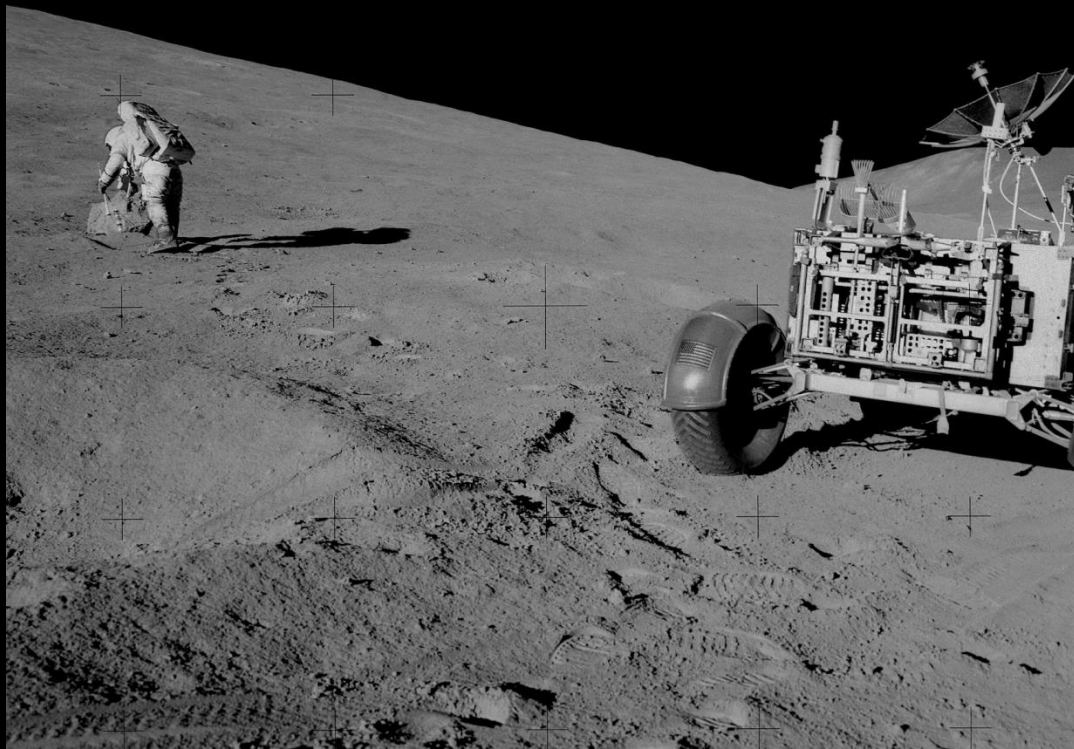
CDR: Commander
CAPCOM: Capsule Communicator (Mission Control)
LMP: Lunar Module Pilot



"This is unreal. The most beautiful thing I've ever seen. Man, we're walking uphill, too! Is that ever uphill! There is one boulder. Very angular, very rough surface texture. Looks like it's partially, well, it's got glass on one side of it with lots of bubbles, and they're about a centimeter across. And one corner of it has got all this glass covering on it, seems like there's a linear fracture through one side. It almost looks like that might be a contact. It is, within the rock. It looks like we have maybe a breccia on top of a crystalline rock. It's sort of covered with glass. I can't really tell. But I can see a definite linear feature through one side of it which is about a fifth, and the glass covers both sides of what I guess I'm calling a contact."

Dave Scott, Commander, Apollo 15

Commander Scott is seen at this rock he is describing above. The Lunar Roving Vehicle is seen to the right.



"Space travel is life-enhancing,
and anything that's life-
enhancing is worth doing. It
makes you want to live forever."

Ray Bradbury

This image of Earth was made by the Apollo 16
astronauts on their way to the Moon.



Apollo 16

LMP Charlie Duke: "Okay, Tony, this area here is on a ... We're on about a 5-degree slope away from North Ray, and this big block that you'll see in a moment is downslope, filleted predominantly downslope here. The surrounding terrain is covered with - not covered but 10 percent covered - with cobbles about 64 mm to 256 mm. It's very subdued on the meter-sized craters. In fact, it's a very smooth plain, but on a slope. The rock types here appear to be the same as we sampled up on top at the North Ray rim, but we'll get you a rake-soil sample out in front of this big boulder over here. Let's see, we need to get the bags and stuff. Okay, John, both of us got bags on our backs, so why don't we just take these little bags."

CDR John Young: "Yep. Okay."

LMP Charlie Duke: "Okay."

LMP: Lunar Module Pilot
CDR: Commander

Apollo 16



LMP Charlie Duke: "And the regolith here, is firmer than up on Stone. We're in a blocky field here. Predominant rock size is 10 to 15 centimeters, but the biggest one is a couple of meters. And you'll see that 12 o'clock from the Rover."

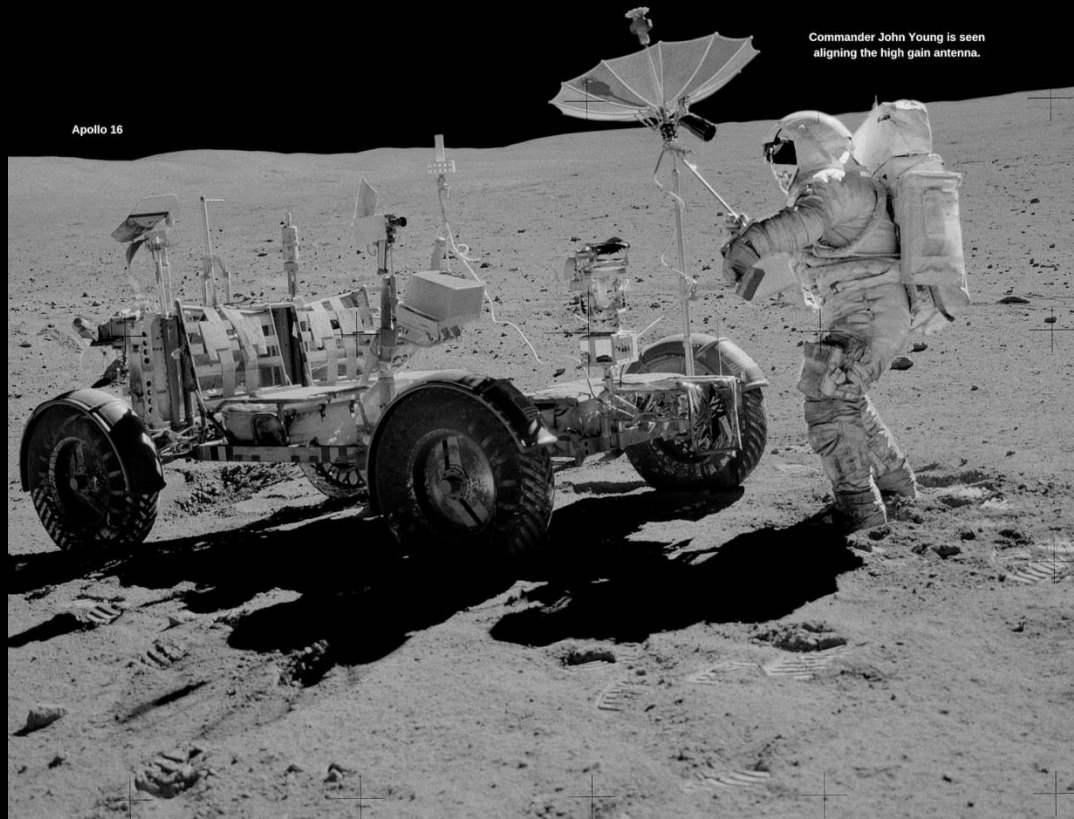
CAPCOM Tony England: "Wow! That's a real boulder."

LMP Charlie Duke: "It has a bluish cast to it, black maybe. Okay, you already see it, huh? And beyond that, there's a white one that looks like that big one that John sampled. Think we ought to get one of those. Okay; pan's complete. Double core, here, is first thing. I think we're in the ray, so I'll just sample right out ... do it right over here."

CDR John Young: "Okay, Houston, you should have us now."

CAPCOM Tony England: "Okay; we sure do."

LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator (Mission Control)
CDR: Commander



LMP Charlie Duke: "I got to get one more view from up here. John, I'll take the pan from right here."

CDR John Young: "Okay. I'll go ahead and pack up, Charlie."

LMP Charlie Duke: "Okay. Let's see, how do I do this? f/11 at 74. Hmmm. Click, click, click, click. Okay, Tony. Do you want me to change the mags on the 16mm camera? It's about empty. That ..."

CAPCOM Tony England: "That's affirmative."

LMP Charlie Duke: "Twelve frames per second runs it through there."

CAPCOM Tony England: "Right, go ahead."

LMP Charlie Duke: "Okay, will do."

CAPCOM Tony England: "Should be mag R."

LMP Charlie Duke: "Okay. Man, if I get the top of this one in that picture, it's going to be a miracle. Okay, Tony. Doing this pan, I've moved about 2 feet downslope, so I don't know that things are going to match up too well or not."

CAPCOM Tony England: "Ah, we'll make it work."

LMP: Lunar Module Pilot
CDR: Commander
CAPCOM: Capsule Communicator (Mission Control)



CDR Gene Cernan: "Yeah. This is the one you need anyway. That's the color camera. Why don't you see if you can grab a couple. Yeah, right here."

LMP Harrison Schmitt: "Boy, are you dirty."

CDR Gene Cernan: "I know it."

LMP Harrison Schmitt: "Let's see. I don't know whether I can get you."

CDR Gene Cernan: "Yeah, you can."

CDR: Commander
LMP: Lunar Module Pilot



"We will certainly see teachers,
journalists, artists and poets in Space.
Whatever it takes to be the best is what
it will take to get you into Space."

Gene Cernan, Commander, Apollo 17



CDR Gene Cernan: "Am I ten meters from the transmitter? Probably not, huh?"

LMP Harrison Schmitt: "You're pretty ... no, you need to go about 5 meters."

CDR Gene Cernan: "How far am I? See if it's okay."

LMP Harrison Schmitt: "You're about 3 meters ... 4 meters."

CDR Gene Cernan: "Hey, Bob, I'm 3 meters to the west of the transmitter and about 2-1/2 meters south of the line going west. Is that okay?"

CAPCOM Bob Parker: "There's no problem there, Gene. Don't move. It's just they had to be less than those numbers."

CDR Gene Cernan: "Okay. That's where I am."

LMP Harrison Schmitt: "I'm getting your photos."

Commander Cernan needed to park the Rover within ten meters of the transmitter and within 5 meters of the west antenna arm to give the experimenters a calibration reading.

CDR: Commander
LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator (Mission Control)



CDR Gene Cernan: "And I guess I'm certainly within 5 meters of the transmitter."

LMP Harrison Schmitt: "Yep. You're in good shape."

CAPCOM Bob Parker: "Okay, we'll get that in the photos. And Gene, how's the low-gain oriented?"

CDR Gene Cernan: "It's oriented 355 and my heading is 352."

CAPCOM Bob Parker: "Okay, copy that."

LMP Harrison Schmitt: "Okay, you want the SEP receiver on ..."

CAPCOM Bob Parker: "Roger. Both ..."

LMP Harrison Schmitt: "And then I guess I'm supposed to get on, huh?"

CAPCOM Bob Parker: "Roger on that."

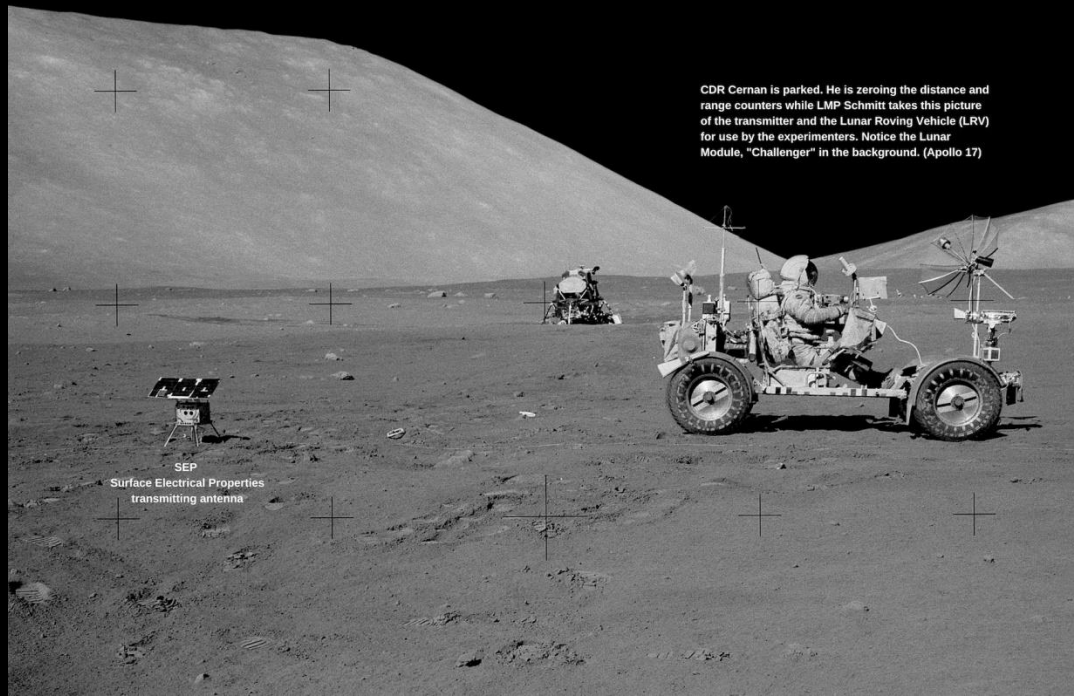
CDR Gene Cernan: "Okay, Bob, Nav Reset is now Off and I'm all zeroed up."

CAPCOM Bob Parker: "Okay. Copy that. And we're ready for you guys to roll."

CDR: Commander

LMP: Lunar Module Pilot

CAPCOM: Capsule Communicator (Mission Control)



CDR Cernan is parked. He is zeroing the distance and range counters while LMP Schmitt takes this picture of the transmitter and the Lunar Roving Vehicle (LRV) for use by the experimenters. Notice the Lunar Module, "Challenger" in the background. (Apollo 17)

CDR Gene Cernan: "Yeah, I'll do it. Okay. It's coming off. Well, I'll set it right up here."

LMP Harrison Schmitt: "It's going to fall down the hill. You'd better stomp off a good place."

CDR Gene Cernan: "Yep. That looks level to me. Can you see it from there?"

LMP Harrison Schmitt: "Well, I can see it."

CDR Gene Cernan: "I mean, is it level?"

LMP Harrison Schmitt: "I don't know. I have no perspective anymore."

CDR Gene Cernan: "I don't either. Mark. Gravity."

CAPCOM Bob Parker: "Copy the mark."

CDR: Commander
LMP: Lunar Module Pilot
CAPCOM: Capsule Communicator (Mission Control)



"Houston, Tranquility Base here. The Eagle has landed."

"That's one small step for a man, one giant leap for mankind."

"Here men from the planet Earth first set foot upon the Moon.
July 1969 AD. We came in peace for all mankind."

"It's a brilliant surface in that sunlight. The horizon seems quite close to you because the curvature is so much more pronounced than here on Earth. It's an interesting place to be. I recommend it."

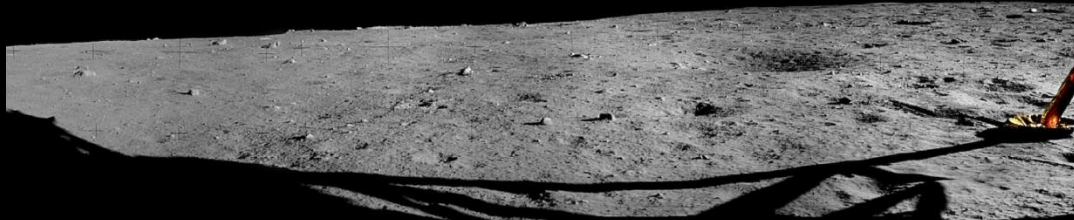
"It suddenly struck me that that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth. I didn't feel like a giant. I felt very, very small."

"I thought the attractions of being an astronaut were actually, not so much the Moon, but flying in a completely new medium."

"I was elated, ecstatic and extremely surprised that we were successful."

Neil Armstrong, Commander, Apollo 11

A portion of Commander Armstrong's first photo pan is seen. He had only been on the Lunar surface for eight minutes. A foot pad and shadow of the Lunar Module ("Eagle") are seen (July 20, 1969).



Armstrong: "I'll step out and take some of my first pictures here."

McCandless: "Roger. Neil, we're reading you loud and clear. We see you getting some pictures and the contingency sample. Neil, this is Houston. Did you copy about the contingency sample? Over."

Armstrong: "Roger. I'm going to get to that just as soon as I finish this picture series."

Aldrin: "Okay. Going to get the contingency sample there, Neil?"

Armstrong: "Right."

Aldrin: "Okay. That's good. Okay. Looks like it's a little difficult to dig through the initial crust."

Armstrong: "This is very interesting. It's a very soft surface, but here and there where I plug with the contingency sample collector, I run into a very hard surface. But it appears to be a very cohesive material of the same sort. I'll try to get a rock in here. Just a couple."

Aldrin: "That looks beautiful from here, Neil."

Armstrong: "It has a stark beauty all its own. It's like much of the high desert of the United States. It's different, but it's very pretty out here."

A portion of Commander Neil Armstrong's first photo pan is seen. He had only been on the Lunar surface for eight minutes. A foot pad and shadow of the Lunar Module ("Eagle") are seen (July 20, 1969).

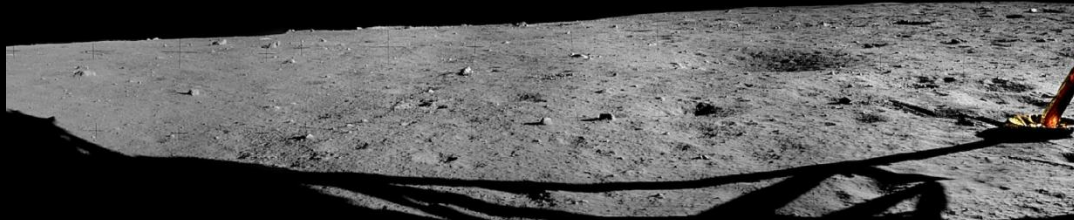
Apollo 11



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