Apollo 11 Highlights
Day 4

CAPCOM Apollo 11, this is Houston. Over

SC Roger. Go ahead Houston, Apollo 11.

CAPCOM 11, this is Houston. You are GO for LOI. Over.

SC GO for LOI.

CAPCOM Apollo 11, this is Houston. All your systems are looking good. Going around the corner. We'll see you on the other side. Over.

SC Roger.

SC Everything looks okay up here.

CAPCOM Roger, out.

PAO And we've had loss of signal as Apollo 11 goes behind the moon.

PAO Madrid, AOS. Madrid AOS.

SC (Spacecraft signal very weak – inaudible).

CAPCOM Roger, reading you the same now. Could you repeat your burn status report. We copied the residuals and burn time and that was about it. Send the whole thing again please.

SC It was like, it was like perfect. DELTA T 0, burn time 557, ten values on the angles, BGX minus .1, BGY minus .1, BGZ plus .1, no trim, minus 6.8 on DELTA VC, fuel was 38.8, OX 39.0 plus 50 on balance, we ran an increase on the PUGS, NOUN 44, show us in a 60.9 by 169.9.

CAPCOM Roger. We copy your burn status report.

CAPCOM We're getting a beautiful picture in down here now 11. The color's coming in quite clearly and we can see the horizon and the outer blankness of space and without getting into the question of grays and browns it looks, at least on our monitor, sort of a brownish/gray.

SC (garbled) the way they're describing it. It appears to me as though it made a difference just sitting back in the, in the tunnel and gazing at all windows, it makes a

difference which one you're looking out of. For example, the camera right now is looking out the Number 5 window and it currently gives a rosier or tanner tinge, especially when you look straight through it and not, not at an angle. Over.

CAPCOM Roger.

SC Yah, the crater that's in the center of the screen now is Webb. We'll be looking straight down on it at about six minutes before power descent. It has a relatively flat bottom to the crater and you can see maybe two or three craters that are in the bottom of it. On the western wall, the wall that's now nearest to the camera, near the bottom of the screen, we can see dimples there just on the outside. And then coming back towards the bottom of the screen and to the left, you can see a series of depressions. It's this type of connective craters that give us most interest to, to discover why they're in the particular patterns that they're in. I'll zoom the camera in and try to give you a little closer look at this.

CAPCOM Roger. We're observing the dimpled crater now. The central peak that we can see on the orbital photos doesn't seem to stand out very well here.

SC They're not central peaks. They're depressions in the center.

SC Eagle, Houston, we look good through the 210. We're going to shift data select to an 85 foot dish to see what we got and then we'll be back to you on the 210 if you'll stand by in a couple of minutes in this mode, we'll be back with you. Over.

CAPCOM Roger, Eagle. Standing by.

PAO This is Apollo Control Houston. 83 hours 21 minutes

EAGLE Roger. Eagle standing by.

PAO This is Apollo Control, Houston. 83 hours, 21 minutes are now in to the flight. Meanwhile, aboard the Eagle, apparently it's Buzz Aldrin and Nell Armstrong, although Buzz is doing most of the comm check at this time.

CAPCOM Eagle, Houston. How do you read? Over.

EAGLE Houston, Eagle. Read you loud and clear. Over.

CAPCOM Roger. We're reading you 5 by. We've got the voice good through the 85, the telemetry is in and out through the 85. Stand by, we'll be back with you through the 210. Over.

CAPCOM Eagle, Houston. You can go step 5 now. We'd like low bit rate. Over.

EAGLE Houston, Eagle. Yes, low bit rate.

CAPCOM Roger copy, Eagle.

CAPCOM Eagle, Houston. Could you give me a short count - this mode. Over.

EAGLE Houston, this is Eagle with a short count. 1 2 3 4 5. 5 4 3 2 I. Eagle over.

CAPCOM Roger, Eagle. You're 5 by. This S-band voice is really beautiful. Over.

CAPCOM And Eagle, Houston. We'll be standing by this mode for a minute or so. We'll be back with you if you'll just stand by. Over.

EAGLE Roger.

CAPCOM Eagle, this is Houston coming through 210. How do you read? Over.

EAGLE Roger. You're loud and clear.

CAPCOM Eagle, this is Houston. We're happy with all our data and all modes. You can power down to comm flow. Over.

EAGLE Roger. I understand. Eagle will power down to comm and we are just approaching 27 volts now. It looks like we won't have to bother with the high dap.

CAP COM Rog.

EAGLE We're powering down. Out.

CAPCOM Roger. Copy. Out.

CAPCOM Houston, we got a TEI 11 pad for you and an update on the water dump. Over.

EAGLE Stand by 1, Houston. Are you through with the DSKY?

CAPCOM That's affirm. Over.

EAGLE Okay.

PAO This is Apollo Control, Houston. 83 hours and 27 minutes now into the flight of Apollo 11. That last exchange between Charlie Duke, our capsule communicator and Buzz Aldrin, aboard the Eagle, identifying that we're very well satisfied with the communications check on the lunar module and will proceed with powering down the spacecraft. At 83 hours 27 minutes, we now read an altitude of 54.3 nautical miles, a velocity of 5,376 feet per second. This is Apollo Control, Houston.

COLUMBIA Houston, Columbia. Ready to copy TEI 11. Over.

CAPCOM Rog, Columbia. Here we come with the TEI 11. SPS G&N, 37200 minus 060 plus 047. NOUN 33, 098, 05, 2422, plus 41448 plus 03719 minus 02422. Roll is NA, pitch 020, the rest of the pad is NA. Set stars are NA. The ullage is 2 quads, correction, 2 jets for 16 seconds. Use Bravo and Delta. In a comment, the undocked present CSM, correction, this is up front. TEI 11 is undocked. Present onboard weight of the CSM is 37200 pounds. About 50 Alpha on your dap. Over.

COLUMBIA Alright. I read back. TEI 11 SPS G&N, 37200 minus 060 plus 047 plus 098, 052422 plus 41448 plus 03719 minus 02422, NA 020, the rest of the pad NA, ullage two jets for 60 seconds, quads B and D. Undock present CSM weight is okay in the dap.

CAPCOM Roger, 11, and we'd like you to do a waste water dump at 84 hours down to 25 percent. Over.

COLUMBIA Roger, I understand. Waste water dump to 25 percent at 84 hours.

CAPCOM Roger. And Mike, we'll have LOS in about 11 minutes at 83:44. AOS is 84:30, and prior CAPCOM to - or at LOS, we would like you to go configure the S-band for high gain track to react, high gain beam to narrow, and let's try that to see if we can get an automatic react at the next AOS. Over.

COLUMBIA Good idea.

PAO That was Mike Collins, aboard Columbia, taking down a maneuver pad.

COLUMBIA Rog.

CAPCOM Apollo 11, Houston. Also that water that you got on the APS bulkhead, we - if it's not too much, we Just recommend sopping it up and then throwing the sponges away in the waste stowage area. If it's too much, then we recommend using the procedure in the checklist on page F 10-14. Over.

SC Alright. Thank you.

PAO This is Apollo Control, Houston. 83 hours 34 minutes now into the flight of Apollo 11. The lunar module communications has been deactivated. We currently show a velocity of 5,377 feet per second. Our orbital parameters now read 65.1 nautical miles. We currently show a velocity of 53 hundred and 77 feet per second. Our orbital parameters now read 65.1 nautical miles epilune, 54.2 nautical miles perilune. At 84 hours 35 minutes continuing to follow, this is Apollo Control, Houston.

CAPCOM Apollo 11 Houston, would you have Buzz make sure he gives us the OPS pressure reading before you close up, over.

COLUMBIA Will do.

SC Houston 11, the OPS read 57 50 both bottles.

CAPCOM Roger.

PAO This is Apollo Control, Houston 83 hours 38 minutes. Apollo 11 now on CSM power.

PAO This is Apollo Control, Houston, 83 hours 40 minutes now into the flight of Apollo 11. We're less than 4 minutes away now from time of loss of signal with the Apollo 11 spacecraft. At the present time, our velocity reading, 53 hundred and 75 feet per second. Our total weight in orbit at this time, reading 70 thousand 500 and 2 pounds. Our orbital parameter's epilune is 65.1 nautical miles perilune 54.2 nautical miles. This is Apollo Control, Houston.

PAO This is Apollo Control, Houston at 83 hours 43 minutes now into the flight of Apollo 11. Less than a minute away from predicted time of loss of signal with the Apollo 11 spacecraft. We expect the next time we acquire Apollo 11, its crew, Nell Armstrong, Mike Collins, and Buzz Aldrin, will have begun their rest period. And at 83 hours 43 minutes this is Apollo Control, Houston.

PAO Apollo 11 has passed out of range with the ground, traversing now over the far side of the Moon. During this pass, we had an extremely successful communications checkout with the lunar module using its code name for the first time. Its code name of the Eagle. Buzz Aldrln performed the counting tasks in concert with Charlie Duke, the capsule communicator here on the ground, and at times Buzz's – Buzz's voice, we noted considerable enthusiasm for the way things are going, and at times Charlie Duke shared that enthusiasm and its maiden checkout in communications, the lunar module Eagle, looked good. At 83 hours 45 minutes, this is Apollo Control, Houston.

PAO This is Apollo Control, Houston, at 84 hours and 28 minutes now into the flight of Apollo i1. We're less than 2 minutes away now from our scheduled time of acquisition with Apollo 11. Meanwhile in Mission Control Center, Astronaut Owen Garriott has now replaced Charlie Duke as our Capsule Communicator. We expect that some final advisories will be passed to the Apollo 11 crew, and final report says such as crew status will be received from Nell Armstrong, Mike Collins, and Buzz Aldrin prior to the start of their sleep period. A little over - we're a little over a minute away now from scheduled time of acquisition. We'll continue to keep the line-up and continue to monitor. This is Apollo Control, Houston.

PAO Mark 30 seconds now from time of scheduled acquisition.

PAO Mark 20 seconds. 10 seconds. We should be acquiring shortly and we're standing by.

PAO We have data - we've acquired data on Apollo 11.

PAO This is Apollo Con*t*rol, Houston. Owen Garriott getting ready to place a call.

CAPCOM Over.

SC Houston, Apollo 11.

CAPCOM 11, Houston. Roger. Reading you fine, and it looks like the automatic REACT went very well just because-you came around the LM. We have several small items to discuss with you here just before you go to sleep. Over.

SC Go ahead. Over.

CAPCOM Okay, 11. First of all, on our LM systems checks. Everything went fine. I would like to remind you though tomorrow you may see an ascent pressure light when you activate the MC and W. There should be no problem, however. You did note that the AP - OP tank pressure was only reading 111 psi, which is normal at this point, but the below the level which will trigger your light due to the helium which has been dissolved into the propellant. Over.SC Roger. Understand that. Thank you.

CAPCOM Roger. And next item, the supercritical helium rise rate is nominal, and you also had that question for us about your thruster activity during the P22 on the last REV. Believe we understand that now, and you reported that your pitch was in ACCEL COMMAND and your yaw and roll were in REG COMMAND. You were firing your pitch thrusters that will couple REG into your yaw and roll axes, and the - you were at that time holding only half a degree deadband and coupling REG's into yaw and roll produced the extra firings about the yaw and roll axis. Over.

SC Yes, that may be true. It's very peculiar coupling in that it waits longer than you would think and its reaction is greater than you would think. We were getting yaw rates of around four tenths of a degree per second per panel.

CAPCOM Roger, Mike. We did play the data back and that's the way it looked upon analysis of the chart recordings back here. Over.

SC Okay. Fine. They've looked at the results of your feedback tracking. The marks all apparently were very good and we've got a full page of data here relative to the altitudes of the various track locations, which I won't read up to you, but I did want to let you know that the marks apparently wen**t** very well. I also have your consumables budget, particularly your RCS propellant quantities. They're Deltas from nominal if you

should want them. Your work quad is quad Charlie, which is 9 percent low. I'll not read up the others unless you want them. Over.

SC Okay, I got the 02 fuel cell purge. You want them now?

CAPCOM I'll have to standby. Just a moment.

SC Okay. And then the other one is we're still charging battery A.

CAPCOM 11, Houston. We would like to delay the fuel cell purge until the back side of the moon, and you go ahead and - should terminate your battery charge at this time. Over.

SC Okay; understand, I knew we had another O_2 and H_2 purge coming up in the morning, I wasn't sure whether you wanted to go through with this one or not. I'll wait until the next side and then do it.

CAPCOM That's fine, Buzz.

SC Terminate battery charging now.

CAPCOM That's right and one other systems item here - in order to balance your cryo tanks, would you get your 02 and tank 1 and your H2 tank 2 heaters off? Over.

SC Okay, I have O_2 tank heater I off, and H_2 tank heater 2 off.

CAPCOM That's right, Mike, and we believe you have your quad Bravo and quad Charlie turned off in your DAP at this time, and a 5 degree deadband. We'd prefer a 10 degree deadband for your sleep period overnight here. Over.

SC Okay.

CAPCOM One *O*ther item relative to a malfunction procedure. It's unlikely that you'll have to worry about this tomorrow, but in your malfunction list under docking on page Fll-9 there is a malfunction procedure for a high 0_2 flow rate at the top - under tunnel at the top of page 11-9. We would like to have you not use that malfunction procedure should you encounter the high 0_2 flow rate, and instead check back with Houston for a revised procedure should you find that situation. Over.

SC Understand and note has been made in my checklist.

CAPCOM 11, Houston. Roger. That just about takes care of all the items we have here on the ground before time to hit the sack, and I guess you will have a pre-sleep check for us before you go to bed.

SC Roger. We're in the midst of cycling the 0_2 and H_2 fans now.

CAPCOM Roger.

SC And the radiation is as follows: CDR 11012 CMP 10013 LMP 09015. Negative medication, over.

CAPCOM Roger, copy 11.

PAO This is Apollo Control, Houston. 84 hours 39 minutes now into the flight. That conversational exchange with Owen Garriott - here in Mission Control Center and principally Buzz Aldrin; however, Mike Collins did talk briefly about Program 22, the landmark tracking activity in which he performed. At 84 hours 40 minutes,
this is Apollo Control, Houston.

SC Hey, Houston, Apollo 11.

CAPCOM 11, Houston, go ahead.

SC Roger. We're thinking about taking the monocular with us on into the LM. We think it might prove to be of some use, over.

CAPCOM Roger, Buzz. It sounds like a good idea for some of your surveying work there inside the cockpit, over.

SC Okay, you want to run that by whoever might be concerned.

CAPCOM I sure will.

PAO This is Apollo Control, Houston. 84 hours 44 minutes now into the flight of Apollo 11. Our current spacecraft altitude is now 64.3 nautical miles with an apolune 65.2 nautical miles; perilune 54.4 nautical miles. We show an orbital period of one hour 58 minutes 40 seconds on our displays. Current weight of the spacecraft
in orbit 70,502 pounds. At 84 hours 44 minutes, continuing to monitor, this is Apollo Control, Houston.

PAO This is Apollo Control, Houston 84 hours, 48 minutes now into the flight. We're receiving noisy data at this time. We've requested Apollo 11 to give us a manual relock. Standing by at 84 hours, 49 minutes this is Apollo Control, Houston.

SC Houston, Apollo 11. How do you read now?

CAPCOM 11, Houston. Loud and clear this time. OMNI.

SC Loud and clear. You faded out on your other transmissions. Over.

CAPCOM Roger. Are you in wide-beam now?

SC Negative, but I've got you locked back on again REACQING now.

CAPCOM Roger. That's all we want. We want to stay in narrow and-we're a little puzzled about why we lost you here a few minutes ago. Do you have any ideas?

SC *S*ure don't. We're showing the background - 15 degrees for the pitch and about 270. That ought to be good and clear.

CAPCOM We concur tha**t**. We still don't have any good ideas on why we were lost.

CAPCOM 11, Houston. Would you confirm that we did acquire automatically whe*n* you came around the LM for this passage. Over.

SC That's confirmed.

CAPCOM Thank you.

PAO This is Apollo Control, Houston 84 hours, 56 minutes are now in the flight of Apollo 11. Our current apolune 65.1 nautical miles, current perilune 54.3 nautical miles. After receiving some noisy signal, Apollo i1 *h*as locked back on in fine form. That was Buzz Aldrin speaking with Owen Garriott here in the Mission Control Cente*r*. I expect we will ta*k*e a s*e*cond look at why we had to lock on manually. As we receive any updates on
we'll pass them along. We now read 84 hours, 57 minutes and this is Apollo Control, Houston.

CAPCOM Apollo 11, Houston, over.

SC Houston, Apollo 11.

CAPCOM Eleven, Houston, on your RCS select switches, we show quad Bravo disabled but quad Charlie only partially disabled. Charlie 3 I believe, is the only one you have selected off, is that correct?

SC Roger, that's correct.

CAPCOM Rog ·

PAO This is Apollo Control Houston at 85 hours 5 minutes now into the flight of Apollo 11. We confirmed from the ground, following that conversation exchange. As was pointed out –

CAPCOM We see them all disabled at this time, thank you.

PAO As was pointed out, quad, RCS quad Charlie is now disabled following that conversational exchange between Owen Garriott and Buzz Aldrin. Buzz, the lunar module
apparently, quite obviously still awake. 85 hours 7 minutes now into the flight of Apollo 11 now continuing to monitor, this is Apollo Control, Houston.

CAPCOM Apollo 11, Houston, over.

SC Go ahead Houston.

CAPCOM 11, Houston. We're going to try to check out this ability to automatically reacquire on the S-band and what we want to do is to secure our uplink carrier for about 30 seconds, then we will turn it back on and see if the spacecraft equipment will automatically reacquire. So if you do not get a call from us within about 3 minutes, that means we have not been able to reacquire and request your assistance on a manual acquisition, over.

SC Okay, we understand.

CAPCOM 11 Houston, we also would appreciate if you will note the angles that the antenna tracks through in its attempt to reacquire, over.

SC Roger, we'll do that.

CAPCOM 11, Houston. It looks like we're locked back up again with no delay. How does it look on board? Over.

SC Roger. The signal strength dropped very rapidly to zero and the pitch and yaw, in about 3 seconds, moved towards 40 degrees pitch and 240 degrees yaw.
Right now, we're setting on about 15 degrees pitch and roll about 265 degrees yaw. So they didn't move very far, oh, about 30 degrees apiece and then they picked right back on up again. Over.

CAPCOM Roger. Some of the luckiest people in the background there. We copied your pitch and yaw angles.

CAPCOM 11, Houston. You give us the location of your pitch and yaw location of your position indicators. Over.

SC Roger. They're in the same position as the antenna right now, about 15 degrees pitch and - no, wait a minute. I got them - got it at about 75 instead of 265.

CAPCOM Okay, thank you.

CAPCOM 11, Houston. We'd like to try the same procedure once more. We'll leave the carrier a little longer and be back up for a call within 4 minutes. Over.

SC Okay.

PAO This is Apollo Control, Houston. At 85 hours 17 minutes now into the flight of Apollo 11. What you heard in the conversation between Owen Garriott and Buzz Aldrin
was following a communications check in which we secured the uplink carrier for some 30 seconds and waited to give it a period of time of approximately 3 minutes, to see if the spacecraft would reacquire. We appeared to reacquire in fine form on this first test. We will repeat it - this test a second time, delaying approximately 4 minutes before we place a call to Apollo 11. At 85 hours 17 minutes, we currently read a**n** altitude - spacecraft altitude of 56.1 nautical miles. Present velocity shows 5,367 feet per second. At apolune 65 nautical miles, perilune 54.4 nautical miles. Present weight in orbit remains a static 70,502 pounds. Present time in orbit as shown on our displays, 1 hour 58 minutes 40 *seco*nds. This *is* Apollo Control, Houston.

CAPCOM 11, Houst**o**n. We're locked back up again. Can you give us a report on how the antenna behaves?

SC Roger. it was essentially identical as *b*efore. The pitch went to 45, 40 to 45 and then the yaw w*e*nt to about 255, 245 to *2*55 and then it rather quickly locked up at 15 degrees pitch an*d* 270 yaw. Over.

CAPCOM 11, Houston. Roger. Your angles of 45 and 255. Do I understand that as soon as the carrier dropped, it went to these angles, or did it only go to these angles after the uplink carrier was re-enabled and the antenna began to reacquire? Over.

SC No. As soon as the carrier dropped off, why it drifted over into those angles and stayed there. Then when it came back up again, why it hunted around for a while, but it didn't get any further off, gradually brought it on in to the angles where it is right now, and they the signal strength, would take several jumps as evidently it goes from wide to medium to narrow.

CAPCOM 11, Houston. I understand, and on another subject, request you zero your optics for the night. Over.

CAPCOM Apollo 11, Houston. Over.

SC Houston, Apollo 11, go ahead.

CAPCOM The Black Bugle just arrived with some morning news briefs if you’re ready?

SC Go ahead.

CAPCOM Ah, Roger. Okay. Church services around the world today are mentioning Apollo 11 in their prayers. President Nixon's worship service at the White House is also dedicated to the mission and our fellow astronaut, Frank Borman, is still in there pitching and will read the passage from Genesis which was read on Apollo 8 last Christmas. The Cabinet and members of Congress, with emphasis on the Senate and House Space Committees, have been invited along with a number of other guests. Buzz, your son, Andy, got a tour of MSC yesterday. Your uncle, Bob Moon, accompanied him on the visit which included the LRL. Among the…

SC Thank you.

CAPCOM Roger. Among the large headlines concerning Apollo this morning is one asking that you watch for a lovely girl with a big rabbit. An ancient legend says a beautiful Chinese girl called Changho has been living there for four thousand years. It seems she was banished to the moon because she stole the till of immortality from her husband. You might also look for her companion, a large Chinese rabbit, who is easy to spot since he is always standing on his hind feet in the shade of a cinnamon tree. The name of the rabbit is not reported.

SC Okay, we'll keep a close eye for the bunny girl.

CAPCOM Roger. You residents of the spacecraft Columbia may be interested in knowing that today is Independence Day in the country of Columbia. Gloria Diaz of the Philippines was crowned Miss Universe last night. She defeated 60 other girls for the global beauty title. Miss Diaz is 18 with black hair and eyes and measures 34 ½, 23, 34 ½. First runner-up was Miss Australia followed by Miss Israel and Miss Japan. While you're on your way back Tuesday night, the American and National League All Stars will be playing ball in Washington. Mel Stadlemeyer of the Yankees is expected to be the American League's first pitcher. No one is predicting who will be pitcher for the National League yet. They have nine on the roster. Even though research has certainly paid off in the space program, research doesn't always pay off, it seems. The Woodstream Corporation, parent company of the Animal Trap Company of America, which has made more than a billion wooden spring mousetraps reports that it's built a better mousetrap but the world didn't beat a door to it, didn't beat a path to its door. As a matter of fact, the company had to go back to the old fashioned kind. They said, "We should have spent more time researching housewives and less time researching mice." And the Black Bugle is all completed for the morning.

SC Thank you very much. We appreciate the news.

SC Our black team will be looking for an interesting day with you all tomorrow.

CAPCOM Roger, we'll be going off here shortly and…

CAPCOM Apollo 11, this is Houston, over.