"Yeah, yeah. Right. Probably have so. Yeah. Ladies and gentlemen, welcome to the main spacecraft center. This is the Apollo 11 Press conference. The format today will consist of a 45 minute presentation by the Apollo 11 crew quaalude by Question and answered. At this time, I'd like to introduce the Apollo 11 crew astronauts, Neil, armstrong, Michael Collins, Edwin Aldrin. Yeah, yeah. It was our pleasure to have participated in one great adventure. It's an adventure that took place not just in the month of july, but rather one that took place in the last decade. We all here and the people Mhm listening in today had the opportunity to share that adventure over. It's developing and unfolding in the past months and years. It's our privilege today to share with you some of the details of that final month of july. That was certainly the highlight for the three of us of that decade. We're going to divert a little bit from the format of past press conferences and talk about the things that entered interested us most in particular the the things that occurred on and about the moon repeat. We will use a number of films and yeah and slides which most of you have already seen and with the intent of pointing out some of the things that we observed on the spot which may not be obvious to those of you who are who are uh looking at them here from the surface of earth. Yeah the Mhm. The flight is you know, it started promptly. Yeah. And I think that was characteristic of of all the events at the flight. The Saturn gave us one magnificent ride. Both okay into earth orbit. Yeah. And on a trajectory to the moon. Yeah. Composer are Mhm. Our memory uh that actually differs little from the reports that you have all heard from from those Previous Saturn five Flights and and the previous flights served as well in preparation for this flight, in the boost as well as the subsequent phases. Mhm. Yeah, I'll. Okay, yeah. We would like to skip directly to the trans lunar coast phase. And uhh on dockings are the transposition and docking sequence. Sure. All right, okay. This was our first look at the magnificent machinery which had been behind us up until this point. The booster, of course, the 1st and 2nd stages had long since separated, but this shows the limb nestled inside the third stage, the S. Four B. After the translator inject burn. This maneuver was an interesting combination of manual and automated techniques and that we programmed the on board computer to make the turn around. And then these final maneuvers were made uh completely manually as I approached the lamb my head an easy time because I had a docking target which is not clearly visible here, which allowed me to align the probe and the drug which is a dark spot you see on the upper right. During this time I also checked out the proper vehicle response to uh my stick inputs. And here shortly you'll see the actual docking somewhat speeded up. Yes there's a point of contact and in just a second you'll see a second Right there. A second small indication of the retract cycle with $12 for the lunar module of course is a in a sense upside down relative to the command module. Yeah. This is in lunar orbit showing the separation of the lunar module from the command module as viewed through my window. This was a busy time for me and that I was taking these motion pictures through the right hand window. At the same time I was taking still photos through the left hand window and also flying my vehicle and probably poorly and taking a close look at the limb as as he turned around. Uh my most important job here was to make sure that all his landing gear were down and properly locked prior to his gives you a better idea of the detail available with the 70 millimeter. Of course. This is a still and shows a limb either right side up or upside down. I'm not sure which it looks more like to me. It looked more like a praying mantis than it does the first class flying machine in this view, but uh it was a beautiful piece of machinery. The the landing gear are at the top and uh you can see the probes which indicate lunar contact is as thin wires extending upward from the landing gear. Of course, Before we could undock as is shown in this uh picture, we had to complete the activation. Now, the day before we undocked, we entered the lemon went through an entire switch configuration check and we exercise the various communication modes in retrospect, since we did have a little bit of communication problems on the following day during power decent, we would recommend that we might make a more for more thorough check of this on the day before descent. Uh on the day that uh huh we did finally enter the limb for the landing maneuver. We went through a staggered sequence of suiting and we found that with all the simulations that we had run back here in Houston or with Houston tied with our simulations in the Cape, that we were quite confident that we would be able to complete this limb activation in the given time period, which was approximately four hours. We managed to get uh 30 minutes ahead of the time and it allowed us to get a more accurate platform alignment check. At one point after the undocking maneuver, we went through a brief radar check and then the command module executed a two ft per second maneuver away from us so that we would both be able to independently exercise our guidance system through a star alignment check which we did following this this separation maneuver. Now, this occurred in the vicinity close to the landing site, and you can see at this point the command module is traveling right over the center of our targeted point, is approaching. Now what we call the cat's paw, following this separation maneuver on the backside of the moon, Uh we made a decent orbit insertion, which is uh slightly over 70 ft per second maneuver. That lowers our altitude down to 50,000 ft. We had to guidance systems working for us and they behave perfectly. Both of them agreed extremely closely as to the results of this maneuver. Following this, we use the radar to confirm the actual departure rate from the command module. Yeah. This is a view of the descent trajectory area is viewed through the lamb window during our activation. In the bottom right of the photograph is the crater masculine and the bottom center is the the final phases of the descent. Uh, The landing area itself is in is in the smooth area at the top of the picture, uh, just before we arrive at the shadow or what's called the terminator. We had uh seen a number of pictures from Apollo's eight and 10, which gave us an excellent understanding of the ground track over which we would pass during the descent. We're now looking at the right hand window of the crater and there's masculine w uh It occurred approximately Approximately 2-3 seconds late and gave us the degraded our ability to determine not only our altitude and altitude rate in the final phases, but also and probably more importantly, our translational velocities over the ground. It's uh quite important not to stub your toe during the final phases of a touchdown. And once once settled on the surface, the dust cleared immediately and we had an ex foot. And of course the surface was very fine grained. We could tell that from uh from our view out the window, but there were a surprisingly large number of rocks of all sizes. This is the view out the right window up close to the horizon, you see a boulder field that was probably uh deposited by some of the impacts and craters that were behind us. You see most of the craters have rounded edges. However, there is a variation in the, in the age of these, as we can tell by the sharpness of the edge of the crater, the immediate foreground area. Uh, we'll see more pictures of later. It was relatively flat terrain in contrast to looking forward along where the shadow of the limb is cast on the surface and we see a zero phase glow around the upper portion of the limb, the general color of the terrain. Looking down Son was a very light tan ish color. This blended as we look more across Son to a more sharper, well defined features and more of a gray color during the initial time period after touchdown. Ah we went through various sequences to prepare us for immediate abort or lift off if we found that that was necessary. We had found, we had to vent the fuel and oxidizer manifolds a good bit earlier than we had thought. Uhh we went through these various checks and prepared for One lift off that would occur about 21 minutes after the beginning of power descent. The ground gave us a stay during this period. We did not have to make use of that. They then proceeded at that point into our simulated countdown, which consisted of checking our guidance systems. Uh we made use of a gravity align feature where the inertial platform of the primary guidance would would use the gravity vector to determine the local vertical. We then compare this with the alignments that we had previously. We also made use of the stars through the telescope, uh and aligning a cross hair by rotating the field of view until the cross hair superimposed on the star. This would give us the angular measurement of the star within the field of view of the telescope will then determine the distance out by aligning another radical spiral on this, we went through an averaging technique on board and then fed this information into the computer And this came up with our various alignment checks. Uh, this was all in preparation for a possible liftoff that would occur About two hours after touchdown As Mike and Columbia came over for the 1st Revolution. The uh ground network gave us a stay and uh we've continued briefly through the remainder of this checklist and our simulated countdown. And at this point we uh terminated and powered down many systems on board the spacecraft and went into an eat period. Yeah. A number of, of experts had prior to the flight predicted that a good bit of difficulty might be encountered by people attempting to work on this. This didn't prove to be the case. And uh after landing, we felt very comfortable in the lunar gravity. Uh huh. It it was in fact, in in our view preferable both to weightlessness and the Earth's gravity. Yes, this led us to believe this in conjunction with the fact that all the systems in the limb work. We're operating magnificently and we had very few problems. Two, uh, go ahead with the, with the surface work immediately. Ah We predicted that we might be ready to leave the limb by 8:00. But those of you who followed on the ground recognized we missed our estimate by a good deal. This was due to a number of factors. Uh one We had a house cleaning to perform ah food packages, flight plans and uh all the items that we had used in the previous descent to be stowed out of the way and prior to depressurizing the lunar module. It took longer to depressurize the lunar module than we had anticipated. And it also took longer to get the cooling units in our back packs operating than we had expected. Yes. Yeah, sum and substance, it took us approximately an hour longer to get ready than and we would that then we had predicted when uh Mhm. When we actually descended the ladder, it found it was found to be very much like the lunar gravity simulations we had performed here on Earth and no difficulty was Was encountered in descending the ladder. The last step was about 3.5 ft from the surface. Uh We're somewhat concerned that we might have difficulty in in re entering the limb at the end of our activity period. So we practiced practice that before doing the exercise of bringing the camera down, which took the subsequent surface pictures here. You see the camera being lowered on what might be called a Brooklyn clothes line. Yes. Yeah. I was operating quite carefully here because immediately to my right and off the picture was a six ft deep crater. And I uh was somewhat concerned about uh losing my balance on the steep slopes. Mhm. The other item of interest in the very early stages of ETA should it shouldn't have been cut short for some unknown reason, was the the job of bringing back a sample of the lunar rocks. And these photographs show the collection of that initial sample into a small bag. And uh then that bag being deposited in my pocket. This was the first of a number of times when we found Down two men were a great help. Yeah, I quickly put up the tv camera. Mhm. Mhm. Mhm. And and and then more leisurely. But Buzz and I joined together to erect the american flag. We found on a number of occasions that we were able to help each other in many ways on the surface. You probably recall the times that I got my foot caught in the television cable. And Buzz was able to help me extracted without without falling down. Mhm. We had some difficulty at first getting the pole of the flag to remain into the surface uh In penetrating the surface, we found that most objects would go down about five, maybe six and then it would meet with a gradual resistance. At the same time, there was not much of a supporting force on either side. So we had to lean the flag back slightly ah in order for it to maintain this position. Okay, yeah, so many people have done so much to give us this opportunity to place this american flag on the surface. To me it was one of the prouder moments of my life to be able to stand there and quickly salute the flag region. Yeah, chris the rest of the activity seemed to go very rushed. Uh There were a lot of things to do and uh we had a hard time getting them finished very much. Oh, good night. Yeah, No way. Mhm. We did find that uh mobility on the surface was in general a good bit better than perhaps we had anticipated it. There was a slight tendency to uh to be more nearly toward the rear of a neutral stable position. Uh balance seemed to be quite easy to identify and as one would lean one a slight bit to one side or the other, it was very easy to identify when this uh loss of balance was approaching, in maneuvering around as you saw. This was one of my tasks fairly early in the Eva. I found that a standard uh loping technique of one ft in front of the other uh worked out quite well as as we would have expected, one could also jump in more of a kangaroo fashion two ft at a time. Uh This seems to work too many interesting things to do. The Mhm. The surface as as we said, uh what was fine grained with lots of rocks and it it took footprints very well and the footprints stayed in place. Ah The the limb was in good shape and exhibited no damage from the landing or the descent. This picture of the ladder with the uh well known plaque on the primary strut. He uh Mhm. There was a question as to whether the limb would sink in up to its knees. It didn't as you can see uh foot pad sunk in perhaps an inch or two. And uh the probe in this picture was folded over and sticks up through the sand in the bottom right hand corner, showing showing that we were indeed traveling slightly sideways at touchdown. Uh Mhm. There were a wide variety of surfaces here. Buzz is standing in a small crater and it gives a very good picture of the rounded rims of the of the what we believe are very old features. Uh huh. The two experiments that you saw in a previous picture uh were deployed in a scientific equipment bay. Uh We found that getting them down produced no significant problems. And uh Here you see a view of my carrying these two experiments out to the deployment site about 70 ft to the south of the lunar module. You have a very good view of the varying depths of this upper surface layer. You see that along the crater rim, a small crater rim off to my left. Along this, the the upper surface appears to be about 2- 3\". And the subsurface uh has a slope that is rather ill defined and one has to be very careful and threading your way around these very uh small craters. Any long excursions I feel would would take a good bit of attention as you're moving along to avoid uh walking along or down the slope of some of these smaller craters. Yeah, this is the passive seismic experiment that was deployed and has been giving us good returns on the all right interactions of the of the moon. We had a little difficulty deploying one of the panels. I had to move around to the far side and release a restraining lever. And then the second panel came out. We had a little bit of difficulty determining as Neil said, the exact local horizontal. And I think this is due to the decrease in the cues that a person has as to which way up up really is. One has to lean a little bit more off to the side before you get this body Q. That you're approaching off balance. And of course the terrain varied considerably uh in this area. Mhm. This second experiment is the laser reflector. We've been successful in Bouncing laser beams off. This consists of 100 arrays of corner reflectors. The other experiment, please"