

APOLLO NEWS CENTER  
Houston, Texas

APOLLO 15 PREMISSION BRIEFING  
KENNEDY SPACE CENTER  
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1:00 PM (CDT)

PARTICIPANTS:

Rocco Petrone, Apollo Program Director  
Chet Lee, Apollo Mission Director  
James McDivitt, Apollo S/C Program Manager  
Walter Kapryan, Launch Director  
Richard Smith, Saturn Program Manager (MSFC)  
Ozro Covington, Asst. Director for MSF (GSFC)  
Col. Kenneth J. Mask, USAF, Director, DOD Manned Space Flight Support  
Donald K. Slayton, Director Flight Crew Operations  
Dr. Charles Berry, Director Medical Research and Operations  
Sigurd Sjoberg, Director of Flight Operations  
Gerald Griffin, Flight Director

Apollo 15  
PC-26

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SPEAKER May I have your attention, please? We're ready to proceed with our pre-launch briefing at this time for the Apollo 15 mission. Before getting ahead, let me cover a few logistics of the planning purposes. The News Center here will be open all night and there is a release downstairs on the departure times for bus transportation and so forth. You all should know our office number here is 783-7781 and there will be people on duty throughout the night to inform you of the status. We are now, I believe, in our built-in hold at 9 hours and 34 minutes. The countdown will be resumed at 11:34 PM this evening ending toward our planned T-zero liftoff at 9:34 AM eastern daylight time tomorrow morning. We have one pool position left in the Launch Control Center. If anybody decides to participate in that pool, please check with Mrs. Hunt downstairs and give her your name. This entails one person in the control center and a second person at the press site who will type down the information, turn it over to the NASA people at the press site at the pool operation and we will release it to all the news media at the site. Anybody interested in that, it would require two people to do the job, check downstairs following this briefing. We're now ready to proceed and, gentlemen, as far as the cameras are concerned, it's quite hot up here and we would appreciate it if at a certain time through conference, these hot lights could be brought down. We would appreciate the cooperation. I think the gentlemen up here are feeling it already. I now would like to introduce the participants to you. From your left, they are Colonel Kenneth J. Mask of the United States Air Force who is director of the Department of Manned Space Flight Support. Next, we have Mr. Richard Smith and Dick is the Saturn Program Manager from the Marshall Space Flight Center. Mr. Walter Kapryan who is director of Launch Operations here at the Kennedy Space Center. Dr. Rocco Petrone who is the Apollo Program Director, NASA headquarters. Next, we have Mr. Chet Lee who is the Apollo Mission Director, NASA headquarters. Next, we have General James McDivitt who is the Apollo Spacecraft Program Manager, NASA Manned Spacecraft Center. Mr. Donald K. Slayton who is Director of Flight Crew Operations at the Manned Spacecraft Center. Dr. Charles Berry, Director of Medical Research and Operations at the Manned Spacecraft Center, and finally, Mr. Ozro Covington who is Director of Networks for the Goddard Space Flight Center. Standing by in Houston and also ready to answer questions here during the conference are Sig Sjoberg who is Director of Flight Operations and Mr. Jerry Griffin who is the Flight Director for Apollo 15. Dr. Petrone.

PETRONE Thank you, John. As you all know, it was two years ago this past week we made our first landing on the moon with Apollo 11. Shortly after that landing, in 7 weeks,



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PETRONE        we made certain decisions to expand the exploration capabilities to the Apollo system. As you know, this involved the development of new gear, and that the rover, the experiments that had to be selected to go into the scientific instrument module, and generally expand our capabilities to explore on the moon. Apollo 15, two years later, represents the third of the J-mission series which has this capability and the goal of increasing our ability to explore the moon. During the past two years, there has been a very high level of effort, to qual our equipment, re-run our engine tests, take care of all those things and in effect have to go through (garbled) of requalification because of the extra effort we're going to demand it, as well as that new gear flying for the first time. The last six months has seen most of that gear flown into here at KSC and reached the point today, as we just mentioned, that we're at T minus 9 hours and holding ready to step off one of our largest missions to date in terms of exploration. All the hardware in terms of the task functioning is go at this time and we're ready to take that step as of now. With that, I would like to ask Chet Lee to give us a few comments on the things yet to do, the weather, and the outlook for tomorrow. Chet.

LEE            I think, as you are all aware, we're -  
we are in the hold and what we're trying to do at this - -

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LEE                    As you all are aware, we are, in the hold and what we're trying to do at this point is to outwit the weather. As you know, the scheduled move of the MSS was at about noon today and this has been delayed to be no earlier than 6 pm this evening. Now the separations for the move take about 2 hours, so Cappy's people will have to start about 4 if we want it to move at six. We just had a briefing from Ernie Amman just a few minutes - a half an hour or so ago, and the prediction is that we have a weather alert starting about 2 o'clock out at the pad area. And it should clear about 4 - 4 pm this afternoon. Of course, Cappy's people are prepared to follow that in real time, and if necessary we can delay that a little while longer and still be in a good posture to give us the protection from lightening that has given us so much concern in the past few weeks. The weather tomorrow is predicted to be similar to what it was this morning. And with 9:34 liftoff we should be in good shape. Our window closes at 12:11. We could have some clouds moving in. These things change, as you well know, but we still should be okay for the entire window. With regard to the readiness of the other people, the DOD forces are on station, are deployed, are ready. The Manned Space Flight Network is ready. Everything is ready to proceed. Picking up the count this evening at 11:34. As you well know, we will have another 1-hour hold at 5:04 in the morning with liftoff at 9:34. So with that, we're ready to go.

PAO                    If we're status on the crew, we now want to ask Deke Slayton to make a few comments on the crew status at this time.

SLAYTON                The crew is ready to fly. Have been for the last 3 days. This morning we did a little work on the geology traverses. Right now they're out getting a little sunshine, I hope. If the sun's still shining. And they'll come back in and spend a little more time on traverse number 3 late this afternoon, eat about 6:30, go to bed around 8 and that's the size of it.

PAO                    Thank you, Deke. And for the overall medical status, we now have a report from Dr. Berry.

BERRY                  I guess you all know that we had the 5-day exam and everything was fine at that time. Since then the crew has been checked on a daily basis and we have no medical problems at the present time. Our flight crew health stabilization program in the preflight period has been going very well this time. There are some illnesses in the Cape area. As I'm sure some of you may have become personally aware of in that there's some of the common - -

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BERRY there's a, some of the common GI upset type things that are going around at a fairly good rate in the local area, and we have had these involve a couple of our individuals who are not directly associated with the crew. One is that we have had some questions about is, Jim Irwin's wife, Mary Irwin, and she has had one of these gastric upsets and is doing very fine and has had no contact with the crew whatsoever, and we have another one in one of the other astronauts, Phil Chapman, who has the same type, and again there has been now contact that we have any problem about, and we thought that we ought to just let you know that the health stabilization program really is working.

PAO Okay, thank you Dr. Berry. We're now ready for questions here in the cape. Just wait for the microphone and please identify yourself, if you would.

PAO Mr. McDilly here in the first row.

QUERY Associated Press. I guess it would be to Chet Lee. What is the latest time you can move that service structure away from the rocket and still go on time?

LEE Well, I think Kapryan is in better position to answer that.

KAPRYAN Well, we can probably delay the move if necessary to something in the order of 10 or 11 o'clock tonight, but we hope very much to be able to move a little earlier than that.

QUERY Can you go as late as 11.

KAPRYAN Yes, we can start rolling as late as 11 and still make T 0 on time. That's starting to roll (garble)

PAO Why don't you start walking back up to this gentleman back up there with his hand up please.

QUERY Jim Surrell, KBSM News Los Angeles. Has the Soyuz 11 accident caused any, or effected any changes in wearing those environmental suits during the mission?

SPEAKER Yes it has. I'll let Col. McDivitt answer that question.

MCDIVITT After the Soyuz accident occurred, we went back and reviewed all of the procedures and equipment that we have in the spacecraft and other associated equipment that might in any way be effected by the same type of thing, without really knowing what that thing was. It was obviously a loss of pressure somehow, and evaluating each one of these events from lift off to insertion, insertion to the orbital thing translunar injection of the lunar trip operations around the moon and back towards the earth, and then the reentry. We found one case where we felt that we could improve the safety of the crew, and this was at the time that we jettison the lunar module. At that time there is a, we sort of blow a ring off the end of the command module, and we felt that by leaving the pressure suits on at that period of time blowing the LM and it's associated ring on the command module off, that we could

MCDIVITT improve the crew safety. So we are changing the crew procedures for that particular period of time. It also turns out that we might just have changed the procedure anyway, because there is a limit of the amount of time between the time you can get out of the LM and into the Command Module when you have to jettison the LM. To stow, to take your suits off and stow them is a long and complicated thing, but really it will help the crew procedure time line and also increase their safety so it is a very good thing to do.

PAO Right up there.

QUERY Mark Cramer CBS News. Dr. Berry do you have any comments on reports a few days ago from Moscow, unofficial and unconfirmed reports that one of the Soyuz cosmonauts was still alive, but in bad condition upon landing.

BERRY Well, I've heard those, all I can say is that I have heard that same report, and I don't believe a word of it. I think that your going to hear that kind of story probably, that kind of thing will continue until we have some total exchange of the data, once we look forward to being able to do that in October. We hope that we're able to totally exchange that information and put that sort of conjecture to bed. But I certainly do not believe that in any form. I think we have good evidence that that's not so.

Query This question for Walter Kapryan. Exactly what protection do you have against bad weather. Lightning specifically.

KAPRYAN By keeping the NSS where it is first of all, we'll maintain a configuration that we've been in for the last several weeks. Every lightning strike that we have had, we have been in the same configuration that we are in at the present time, and are now holding until the bad weather passes through later today. The big thing of course is to have -

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McDIVITT present time are now holding until the bad weather passes through later today. And the big thing, of course, is to have the mobile service structure protect the space vehicle partially by surrounding it to some extent, as you know we have silos around the spacecraft area and then we also have a grounding system between the mobile launcher and the mobile service structure which we do not want to destroy until we're quite confident that we're not going to get bad weather, because we've seen some strikes, we've known how we react to them in this particular configuration. If we were to move the service structure back early, then we'd have an unknown configuration.

QUERY Jim, why is it at this particular event, the jettison of the LM that you feel that there might be a problem. Vibrations or something.

McDIVITT No, I didn't say that there might be a problem. It's just that we've evaluated every phase of the mission and we find that there is some increase in - say anytime that the crew has their suit on, it increases their protection against the loss of cabin pressure, but it also has so many many detrimental effects throughout the mission, so we don't wear the pressure suits throughout the whole flight. When you jettison the LM, you actually fire an explosive device which cuts the front end of the tunnel on the command module off. This puts a big structural load on the tunnel. Now, it's more than adequate and we've demonstrated many many times in qualification tests. But it is a structural event and we try to protect against any structural event like that. We haven't had any trouble in the past with it, we don't expect any trouble in the future, but it adds that ninth or tenth place of safety that we're always looking for.

SPEAKER (garbled) (laughter)

QUERY Rocco, what would you, in your opinion, keeping in mind that this site is not as well known as the previous mission site, how would you estimate how much more dangerous this mission is than any previous ones and the chance of them completing the landing or having to abort because of the rough terrain?

PETRONE Well, I think we know the site quite adequately, which is the important thing. I think every landing on the moon has that element of risk and danger regardless of what site. The question of craters and boulders, we have assessed a nearby area. We are really landing in a mare type because it is a mare. Fortunately we've two nice features near it that we want to get to, the Rille and the Front. We're very confident with the work that has been done, out of the

PETRONE        photographs we have from the orbiter we're confident that we'll have a good spot to touch down. But any landing is risky. Jim, would you care to comment on that, because you did most of the work with your people there at Houston looking at those maps and we did pull them many many months.

McDIVITT        You see there are a lot of times when you can take and transport knowledge from one part of the moon to another part. Especially when they're adjacent. We have some very good high resolution photography of an area just adjacent to the place where we're going to land. We can extrapolate that data over to the place where we are going to land because it's exactly the same kind of terrain. We'd never be able to predict where craters this size are going to be, because you just can't see those things. But by this extrapolation of the data of the high resolution data that we have and by trying to enhance the medium resolution we're quite sure that that's a very good landing site. But like Rocco says you never really know what's going to be there until you get down on the moon and it doesn't make any difference how good the pictures are because they only show you so much.

QUERY            Two quick questions. One to the DOD man on the flotation collars, would you expand on what you know about the slashed collars at Eglin. And one for Jim, would you expand a bit for us on the decision to re-enter shirt sleeves and in the tradeoff and why that's probably safer for our missions.

MASK            Well, the flotation collars had single puncture wounds on the end of the cases, they were covered, they were not opened and they obviously had something that was driven through the end into the flotation collars. That's about all we know, they're being repaired and they've been replaced. Can't really say, the OSI is looking at it right now.

McDIVITT        We evaluated each phase of the mission because the problem with the Soyuz was not necessarily reentry problem. Reentry - -

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MCDIVITT - - with each phase of the mission, because the problem with Soyuz was not necessarily reentry problem. The reentry happened to occur, but they do other things. Their spacecraft is made up of 3 modules, a front module, a middle module, and a back module, and they reenter in the middle module. So when they reentered, they had to separate the forward and the back one. So we were looking at two specific kinds of things; the separation which led us to look at the LM problem, any penetrations that we might have in the cabin. Now during reentry there's a - it's a very spectacular kind of event, there's fire and changing of g's and all these things, but as far as the spacecraft is concerned it's a fairly benign environment. The g level that the spacecraft gets to is only 8 or 10 and it doesn't come on suddenly. It's just a gradual increase in g and the spacecraft is qualified for 70 g's for landing. So 6 or 8 or 10 g's is nothing compared to the qualification level. The temperatures that the structure gets to is very low. So all those things led us to believe that the reentry is a safe thing in shirtsleeves. Now why - But wearing a suit, of course, increases your probability of survival if you have a hole in it. So what's the disadvantage. Well, the disadvantage is when you hit the water, that is something that you just can't describe analytically and do a good engineering study on it to the exact detail that you'd like to and it's much more of a traumatic event as far as the spacecraft is concerned than the gradual increase in acceleration as you reenter. Now if you land on the water, and you're wearing an 80 pound pressure suit that's very very bulky and difficult to move around in and weighs a lot and is very difficult to swim in, you find that you're less safe by wearing a pressure suit in the water egress and emergency situation there than you would be if you were in your bathing suit. Now we don't wear bathing suits to take care of that problem. But you weigh the increase in safety during reentry against the decrease in safety by wearing that heavy pressure suit at water impact and you find that you're decreasing safety by wearing the pressure suit during reentry. Now that doesn't mean that we wouldn't wear the pressure suit during reentry if we had something that led us to believe that we would increase our safety more during reentry by doing that, and that would offset the decrease in safety in landing wearing the suit. And it's really that tradeoff. The mission is made up of many many events. You don't ever want to look at one single short period of time because you may find that you haven't evaluated everything else and you're really decreasing your probability of doing something. And that's the whole reason. Chet mentioned that we don't have time to come in pressurized and then take off the suits while we're hanging in the parachutes.

MCDIVITT There's only 15 minutes before we hit the water. So you can't have them both. You have one or the other.

QUERY Jim, assuming we did have the leak like the Soyuz presumably had, would we have - what kind of monitoring system would we have so we would know it in time? I have a question is for Chet after you finish that.

MCDIVITT When we separate things like the LM, we check to make sure that the hatch is sealed. We look at the pressure, we evacuate on the other side of that hatch. We put that into a vacuum. And then we measure the pressure in that other side. If it doesn't stay at a vacuum, it means that we have a leak in the tunnel. Then we could take - since we have a separator, we can take the hatch off and fool around with it and put it back on. And do that until we got it fixed. Now if we find that we could never fix it, we would have our pressure suits on and we wouldn't go ahead and jettison the LM until we were all buttoned up in the suits. Now during reentry, after you separate the service module, there's a cabin pressure gage and there's an O2 flow indicator and those kinds of things that would warn about that. We don't try to do any dramatic events in the spacecraft unless we're suited and it just might be worthwhile to point out that during the times like docking and at launch and other critical times during the flight, the crew is suited and we have a schedule that says they're suited at this time, they're not suited at this time, they're suited at this time, throughout the whole flight. And we always have them wear the suits at those critical times. But to answer your question specifically, we have a flow meter, an O2 flow meter, which has a gage and it also has a light that indicates if the flow gets too high. We have a cabin pressure gage that also has a light on it. We also have telemetry to the ground and we can set lights that work off that telemetry on the ground.

QUERY Thank you. And Chet, you said that Jim Irwin's wife has not had a conference with him and even though she has the G.I.'s when was her latest visit?

SPEAKER I don't think Dr. Berry described the medical capability - -

BERRY I didn't do that. You did that.

QUERY You said there was no conference. You said the wife - -

LEE Not in the last 21 days she hasn't.

BERRY They really have not. That's been a decision that the crew has made. They have not - -

SPEAKER When did it start? On the 5th of July.

BERRY 5th of July.

QUERY It's a question for Mr. Kapryan. Why can't



QUERY            they load fuel. I think I understand. But why can't they load fuel tonight when - if the mobile support structure is there?

KAPRYAN        You say why can't we load fuel.

QUERY            You can't load your cryogenics - -

KAPRYAN        Well, there's no technical reason why we can not. There's a - the reason is there's a hazard to people. And we have a requirement to have the mobile service structure back a certain distance so that should something occur we'd be on what we call the blast area. That's the reason. We can as far as technical operations are concerned keep the mobile service structure around the vehicle and load the complete bird. There's no technical restriction to that.

QUERY            For Jim McDivitt. What's the situation on suiting at the time of separation of the command and service module?

MCDIVITT        When the service module separates from the command module the crew is unsuited in shirtsleeves.

QUERY            This question perhaps may be old hat, but would one of you gentlemen, for me, run down the various things that you hope to accomplish on this mission?

PAO            The lady is asking for a rundown on the various achievements we hope to accomplish on this mission. Quite a bit is outlined in the press kit - -

PETRONE        It would just take much too long. I think for all the members of the press really to go through - It is in the press kit. It is available and there are really many many objectives that I really think it will take too long to give it a fair answer. But I'd be glad to try.

SPEAKER        You want to - perhaps in a general manner, Roc.

PETRONE        Well, listed we've got like 4 prime. Say one we're going to do an exploration of the Hadley Apennine site, which has as you know a rille and a front which we think will give us more insight into the evolution of the surface of the moon. We are going to do experiments from orbit for the first time which will give us data 360 degrees around the moon. And then knowing the one spot where we're at on the ground as well, we'll be able to use that as a baseline to interpret where we fly over. We'll cover about 16 percent of the lunar surface in the orbital experiments. We are going to fly an ALSEP, that's another remote control station. With that we can see the network of the seismograph, we can see the network with the laser reflector. For the first time, we'll do an experiment where the drill looks for the heat flow. These are the major things. One really could not do justice to the total mission unless you want to spend many many more minutes on it. Generally, those are the three

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PETRONE or four items at the top of the heap without really describing why and what and how.

McDIVITT Just as a comment, the flight plan is about that thick. And to really talk about that intelligently here in the detail you need, it would be impossible. We'd be here until after launch time tomorrow.

QUERY Has anyone kept a tally of the lightening strikes in, on and around the pad area and if so, what's the number?

KAPRYAN Well, I guess I can answer that one. The mobile launcher since the 14th of June has been struck 11 times. The first day, on the 14th of June, it was struck 3 times. One time on the 15th. We had a strike on the 25th of June, on the second of July we had 5 strikes and we had a strike on the 19th of July. The maximum intensity strike that we had occurred on the 14th of June. One of those 3 strikes we recorded 98 000 amperes of energy. As far as around, I can personally attest that on the 15th of June, I was in the firing room about 8 o'clock in the evening and it was raining lightening. You could look out and see rain coming down and it was lightening. And I think the Patrick Station recorded something like between 2 and 3 hundred strikes in a 2-hour period in the general area.

QUERY For Dr. Berry and Deke Slayton. Is there any correlation between the reports of the - -

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QUERY Is there any correlation between the report that the weakened conditions of the Soyuz 11 cosmonauts and the change in Stu Roosa's physical condition after the Lunar Orbital Mission of Apollo 14, and have you made any corrections in exercise programs to offset any of this?

BERRY Well you say is there any connection between the two, obviously any person who is exposed to Space Flight environment has certain physiologic adaptive things that happen to him involving his heart and blood vessels and his muscles and skeleton that we've talked about in some great detail before. Now I think it's important to emphasize that what was observed on the Apollo 14 flight in Stu Roosa is an individual who had been weightless the entire flight, was not to any degree that was greater than anything we had seen in a previous flight. That is important to understand, too, I think it has gotten, perhaps there is some misunderstanding in that regard, because there is a difference between the two individuals who were on the lunar surface, who did not have the same changes to the degree that we have seen on previous flights, and this is the significance and not the degree that the individual who was weightless had, he was no greater than what we have seen on previous flights. Yet we followed the pattern that we expected to see as a matter of fact. So there is some relationship I think. We have not made any significant change or feel that there is any real need to make a significant change there, and Deke might want to say something particularly about the exercise program.

SLAYTON Well, there is essentially nothing different on 15, except programming 2 half-hour periods a day where we only had one before. The problem is when he's up there in orbit around the moon by himself he's very very busy and has a tendency, in 14 particularly, to forget to exercise because there's many other interesting things to do, so we're just going to try to force it a little more on this one.

PAO (garble) I'm going to ask you to wait if you don't mind (garble).

QUERY For Chuck Berry's other consideration, in 16 or 17 or had there been any on 15 in using that Russian elastic exercise?

BERRY No, Mark, there is no consideration of using that, we do not foresee any difficulty that would - where this would really help us in the time duration of flight that we have. Now that suit of the same type that has been used by the Russians, we have used some bedrest studies and as a matter of fact, we can stay in bedrest studies up to 9 months, it will not preclude the cardiovascular deconditioning nor the loss of calcium.

SPEAKER Okay, let's come up to the front row.

QUERY Anyone who can answer this question, have you ever pinned down the problem with the latches on



QUERY the docking probe and if so, has there been any changes since Apollo 14?

SPEAKER No, we've worked very diligently trying to find exactly what was wrong with Apollo 14 probe and it's worked very well on Earth. We haven't found a single thing that was wrong with it. There were a few funny things, there were some scratches in a little hole at the end of the probe. We've taken some steps now to make sure that we don't get any contaminations out of that hole just in case that could have caused it. There's a pin that runs through there that shears off when we jettison in power, though that pin was not restrained before, it in no way had anything to do with Apollo 14 incident, but we retained that pin just so that it can't possibly get out. We went back and we looked at the operation of the very complicated device which is on the interior of this big tube that actually operates the probe and while we didn't find anything wrong with Apollo 14 probe, we did find some indication from some of the other probes that we may have had some binding, it could have binding in this mechanism and we have made some changes in there. We've made a little ball smaller, we've put a new guide in, we rounded all the sharp corners that could be binding up in there, we have a new way of rating the micro switches and we've done a lot of work on this very small mechanism which actually operates that great big probe. So we have made changes but we still do not know the exact cause of the Apollo 14 problem, but we know a lot of things that did not cause it, but we're not really sure what did cause it.

QUERY I want to know, on the nutrition aspect are you going to increase any of your physiological monitoring or telemetry either in this or in the space lab, and will you make anymore effort to force an increase in feeding if you notice a weight drop?

BERRY Well, there is no way that we would know of weight drop in Apollo of course and we expect to lose some weight with every mission and we realize that the bulk of this is fluid loss, although there is some that we are losing which is solid tissue loss. We have a very detailed plan for Skylab which involves a much more rigid type control of the dietary intake and also examination of output because we are trying to do a very detailed mineral balance study, with that flight as a part of an experiment and therefore, it will be followed much more closely, and we will have a capability to look at weight in flight, but we would still expect to see a weight loss and we would not try to make up all that weight loss with food intake.



PAO Okay, take this at the right hand and then we'll go back up the right hand side.

QUERY Was there any possibility that there was excessive moisture up under that shield that an extra earth orbit would have given time to sublime from that docking power?

SPEAKER No, as a matter of fact, there wasn't any indication like that at all. That temperature stays pretty warm. We have a temperature sensor on it, it was probably running at about 85 degrees or so, normally when you launch with water in - if we had water in it even, it would sublimated very quickly and at those temperatures we would have never formed ice. That probe is a rather massive thing and has a very large heat sink and you could not have extracted enough heat by sublimating a small portion of water to cause the temperature to go down and cause that, so we could not have had ice in it.

SPEAKER Back up here on the right, way back up about 30 yard line back there.

QUERY I'd like to ask you about the booster and the boost phase and the omission of the second stage of its rockets and paring down some of the retro rockets. Does anybody expect this to produce any kind of different separation and is it a possibility then that we didn't need all those in the first place on the previous flight?

SMITH When first laid out the Saturn V we were very conservative in the propellant management area during the separation phases. As we've flown each flight we've actually had some experiment with some of the IB program. We found that the propellant masses don't move as rapidly as we thought it would. As part of the program to reduce overall vehicle weight and complexity we've tried to take off as much of the complex hardware as we could. We have eliminated all the retro rockets on the S-II stage, excuse me, the ullage rockets on the S-II stage. We are delaying ignition of separation or separation from the S-1B stage about 1 second to let the F-1 engines tail off farther. Looking at the bubble that we could call it at that time, we find no elements concerned whatsoever, so that's why we're still going that way, but we do eliminate some potentially explosive hardware by doing this.

QUERY Thank you.

QUERY Do the astronauts have a walkback capability from the furthest point of their traverse in the event of a double failure of the Rover and of a primary PLSS?

SPEAKER No, they do not. The walkback capability is based on a loss of the Rover and you have the PLSS walkback capability, or if you lose the PLSS you have the Rover capability. It is not based on a double failure of that sort. However, I would like to point out that there are some other means they could go to. They do have

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SPEAKER The OPS's and in extreme conditions  
the OPS's would give them additional capability to get  
back - -

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SPEAKER It's the OPS's that give them additional capability to get back and deplete one, you could also deplete the other one. But, the traverses are not based on that double failure.

SPEAKER Chet, I think we have - we may have many new comers. Maybe you might describe this briefly what PLSS and OPS do.

LEE Our portable life support system has the capability - what's carried on the back and on top of that they have the oxygen purge system, which is additional 30 to 40 minutes of a high flow of oxygen. And, the buddy PLSS system is where you lose the water cooling capability, the one astronaut can plug into the good water cooling system and the two of them walk together and pan them with a short tether and it gives them the water cooling effect and he still has his own supply of oxygen.

SPEAKER Okay. Mr. Miller up here.

QUERY Red Miller, ABC. For Jim and Deke. There's plenty of indication in our background kits, that's there's a ridge line just northeast of the landing site. Can you give us the highest point and the ground definition from the landing site in the approach track?

SPEAKER About 11,000 feet.

SPEAKER Yes. About 11,000 feet.

SPEAKER Doing about 10,000 - 8 to 10,000 feet clearance above the highest point.

QUERY (inaudible)

SPEAKER It's about 6 or 8 kilometers from the site.

SPEAKER It's going to be pretty spectacular. That drop is - We've looked at it a little bit, but it looks like it's a quicker drop than anything we have on earth for that height. Should be a really spectacular view.

SPEAKER (talking at once)

SPEAKER As a matter of fact, the astronauts won't see it during landing, but after we get on the ground, and turn the television around and look at it I think that - I hope that we can all see it.

SPEAKER His first visibility will be at high gain when he's about 7000 past the peak.

QUERY Sorry. I think you just answered my question.

SPEAKER Okay, go ahead Lynn.

QUERY Correct me if I'm wrong, Jim McDivitt. I think on the last mission, there was no alternate mission which involved a CSM alone. Is that correct? On this mission, there is one, an alternate available, and yet you don't have any additional precautionary equipment on board. You did have an extra oxygen tank then. You have the same supply now. What is the rationale behind permitting a CSM to go into for a lunar-orbital mission alone?

McDIVITT I think it's a matter of what one gains from doing that against what one risks. And, on Apollo 14, we had a limited number of pieces of - a limited number of equipment in the command module which we could use. We had absolutely nothing in the service module. Now, on this particular flight, we have a whole service module full of very exotic equipment. I think that a command module - a command service module lunar mission would gain an awful lot of knowledge about the moon. I'm not proposing we fly that, but we're going to gain an awful lot of knowledge by flying around the moon with the command service module. Because the gain is so great, we are willing to accept that risk of going into lunar orbit. We do have one extra hydrogen tank onboard the spacecraft that we didn't have before. That really is almost insignificant. That just increases our capability of staying there. But, I think we all feel we have a very reliable spacecraft. Yet, on the other hand, what would have been gained from 14 flying around the moon really wasn't worth it.

SPEAKER The hands that wave, I see one left and will take that as the last question. Mr. O'Toole. I understand we have no questions from Houston so this will complete the - all right, Mac, we'll take yours and that will do it.

QUERY A question for Deke Slayton. Deke, could you tell us what the crew has said today about the mission. Give us some feel for what they've been talking about? Couple of quotes here and then maybe? (Laughter)

SLAYTON I'm not very good at recording quotes. I don't recollect anything very significant being said. I think this morning when they were running the EVA 1 and 2 there on the - we got a hookup on the LMS, so that we can essentially drive the rover over the same surface that we fly into in the visual sextant in the LMS. That's all that was said, we haven't this thing operating too long, so we got a chance to look at a few areas we haven't seen before and hopefully looks pretty much the same as it's going to look when they get there. But, other than a few exclamations along those lines, I don't recollect anything.

SPEAKER Okay, Mac.

QUERY My question is similar to that, Deke. What is the general mood of the crew and particularly, is Irwin concerned about his wife's "gastric upset?"

SLAYTON No, it appears she's in great shape, well relaxed and has been for the last couple of weeks as a matter of fact, and I don't think Jim's concerned about his wife. He's been talking to her on the telephone, and she's not concerned and he's not concerned.

SPEAKER Okay, that completes the conference. Ed mentioned the news center will be open all night. The countdown commentary will start at 11:34 when we pick up the count. Thank you.

END OF TAPE