

NASA OFFICE OF PUBLIC AFFAIRS  
303 E STREET, S.W.  
WASHINGTON, D.C. 20546  
(202) 358-1600

**STS-115 POST-LANDING NEWS CONFERENCE**

SPEAKERS:

**MICHAEL GRIFFIN**, Administrator, NASA  
**LYNN CLINE**, Deputy Associate Administrator,  
Space Operations  
**LeROY CAIN**, Space Shuttle Launch Integration Manager  
**MIKE LEINBACH**, NASA Launch Director

[Moderated by Dean Acosta, NASA Press Secretary]

8:30 a.m. through 9:15 a.m., EST  
Thursday, September 21, 2006

NASA Kennedy Space Center

[TRANSCRIPT PREPARED FROM A WEBCAST RECORDING.]

## 1 P R O C E E D I N G S

2 MR. ACOSTA: Good morning, and welcome to the  
3 post landing of STS-115. I am your moderator, Dean Acosta.

4 To my left, we have NASA Administrator Michael  
5 Griffin; to his left, Lynn Cline, the Deputy Associate  
6 Administrator for Space Operations. To her left, we have  
7 LeRoy Cain, Space Shuttle Launch Integration Manager, and  
8 to his left, Mike Leinbach, NASA Launch Director.

9 We will start off with some opening remarks, and  
10 then we will go to your questions and answers. We will  
11 have time to get to everybody in the room. So feel free to  
12 do that. Also, please identify yourself and your  
13 affiliation before asking your question.

14 All right. I will turn it over to the NASA  
15 Administrator Michael Griffin.

16 ADMINISTRATOR GRIFFIN: Thanks, Dean.

17 I am glad to be here with all of you on obviously  
18 a really great day with only one dark spot on it, and we  
19 will be soon through that.

20 [Laughter.]

21 ADMINISTRATOR GRIFFIN: The teams did a wonderful  
22 job, the flight directors, the whole team. You have seen a

1 great effort on NASA's part by a truly great team of  
2 people.

3 I think it is obvious to me and I hope it is  
4 obvious to you that we are rebuilding the kind of momentum  
5 that we have had in the past and that we need if we are  
6 going to finish the Space Station because we have an  
7 awesome task ahead of us. The Space Station is half-built.

8 We have half to go. When we are all done, it weighs  
9 nearly a million pounds for humanity's first really  
10 long-term outpost in space, and we are halfway there, but I  
11 think we are going to make it.

12 It is a great day. Thanks.

13 MR. ACOSTA: Lynn?

14 MS. CLINE: Good morning. It is a pleasure to be  
15 here.

16 When the President announced the Vision for Space  
17 Exploration, he said we would do this using our current  
18 vehicles, one mission, one voyage, and one landing at a  
19 time. So you can see, we are very much on plan for that.

20 As Mike said, we have a very capable team, both  
21 on orbit and on the ground, and this was particularly  
22 complex because we had to orchestrate a lot of things

1 across both the Station and the Shuttle Program. Putting  
2 in this new power system required the entire team to be  
3 involved in that, and as you know, we have a lot of people  
4 on orbit this last week. In addition to STS-115 completing  
5 its mission this morning, on orbit right now we have  
6 Expedition 13 handing off to Expedition 14.

7           You will also see from the crew that we have had  
8 up there the last week, exercise of our international  
9 partnership and how important that is to us with a Russian,  
10 European, and American crew on the Station and a  
11 Canadian-American crew on the Shuttle.

12           All of these things help us learn to live and  
13 work in space and do it on an international basis, and it  
14 is a great foundation for our future exploration.

15           Thank you.

16           MR. ACOSTA: Well said. Thanks, Lynn.

17           LeRoy?

18           MR. CAIN: Okay. Well, good morning. It is  
19 really great to be here with you again this morning.

20           I was kind of thinking on the way over here, I  
21 didn't have much to tell you in the way of opening remarks.

22           What I would tell you, though, is that it is pretty hard

1 to come close to having a day as good or better than the  
2 day where you have a safe and successful launch of the  
3 Space Shuttle, but, of course, a day like today where we  
4 have a safe and successful landing is right up there next  
5 to it. Of course, that is what we did today, and we are  
6 very happy to say that Atlantis is back home.

7           The entry and landing were right by the numbers.

8       I spoke with our colleagues in Mission Control before I  
9 came over here to talk to you, and they really didn't have  
10 any problems to work during landing. It was really right  
11 down the middle, and, of course, Brent Jett and his crew  
12 just performed outstandingly, as they have done for the  
13 entire mission.

14           It is really a great accomplishment for us and  
15 for the whole team, and so we are ready to turn Atlantis  
16 over to Mike and his team and get her ready to fly again  
17 next year.

18           We will look forward here to our next mission.  
19 We will review all the data from this mission as we do with  
20 every mission that we fly, and we will continue to follow  
21 the data wherever it leads us, but preliminarily, the  
22 vehicle just looks extraordinarily clean. We are just real

1 happy about a safe landing and a completion of an extremely  
2 successful Space Shuttle mission.

3 So I will turn it over to Mike.

4 MR. LEINBACH: Okay. Thanks, LeRoy.

5 Atlantis is home, and it feels good to have her  
6 back at the Kennedy Space Center after an outstanding  
7 mission.

8 Out at the mid-field park site this morning for  
9 landing, we had some of the current leadership of the  
10 Atlantis team as well as some of the previous leadership of  
11 the team who had been working on this ship for over 4 years  
12 to prepare her for this mission, and it really showed.  
13 Atlantis looks terrific out there on the runway.

14 So it will make the turnaround job that much  
15 easier for us from a qualitative sense. Of course, we do a  
16 very detailed inspection of the ship, but from a  
17 qualitative sense, she looks as good or better than  
18 Discovery did after her last mission.

19 So it is outstanding to have her on the runway,  
20 have her back home. We will get back into processing this  
21 afternoon and turnaround for a flight in February. So it  
22 is good to have her home.

1 MR. ACOSTA: All right. Thanks, Mike.

2 Now we will open it up to questions, and as I  
3 said, please identify yourself and who your question is  
4 for.

5 Let's start on the end right there with Jay.

6 QUESTIONER: Jay Barberi with NBC.

7 Mike, yesterday Wayne said that he hoped to be  
8 able to get the next mission off as early as December 7th.

9 Do you have any problems doing that, and is there any hope  
10 that you will ever pay me the dinner you owe me?

11 [Laughter.]

12 ADMINISTRATOR GRIFFIN: Certainly not on that  
13 last one.

14 [Laughter.]

15 MR. LEINBACH: I make good on all bets I made,  
16 but we didn't shake on that one, Jay.

17 [Laughter.]

18 MR. LEINBACH: We will make good on it. I  
19 promise you.

20 Turning around and getting Discovery ready about  
21 a week early, we are assessing that right now. It is  
22 really going to be paced by the external tank that you know

1 arrived a day or so ago. The tank is being lifted today  
2 into the checkout cell. So that is really the pacing ops,  
3 not Discovery herself. So we will assess that over the  
4 next week or so and report to LeRoy and the rest of the  
5 program if we think we can make it.

6 First blush is we are going to give it a good  
7 shot and probably have a shot at it, but we need to go  
8 through all the data.

9 MR. ACOSTA: All right. Let's stay on the front  
10 row with John.

11 QUESTIONER: John Johnson, Los Angeles Times.

12 You accomplished everything on this mission and  
13 more than you started out hoping you would, but if there  
14 was one minor issue on the other side, it would be, I  
15 guess, this litter problem.

16 Yesterday, Wayne Hale talked about we have a  
17 little more work to do in that area, and I just wonder can  
18 you talk about specifics to prevent things that happened in  
19 this mission in the future.

20 MR. ACOSTA: Do you want to take that, Mike?

21 ADMINISTRATOR GRIFFIN: Oh, I will take it from  
22 the top, and if you have anything to follow up.



1           I mean, I appreciate the question. I have been  
2 asked this recently, and I am going to give a somewhat  
3 similar answer.

4           Guys, it is a cargo bay. Okay? Our object in  
5 life is to make sure -- and we do that -- that there is  
6 nothing dangerous in it, and we certainly don't want any  
7 debris at all, but humans are not perfect and they are not  
8 perfectible. For the 25 years that we have been flying the  
9 Shuttle, guys have been coming back and saying, "When I  
10 opened the payload bay, this or that came out," and it is  
11 nothing that we ever intend to be there, but it would cost  
12 us an awful lot of money and an awful lot of extra effort  
13 and an awful lot of extra operations to make absolutely  
14 certain that this cargo bay was pristine. Frankly, I am  
15 not sure that that is where we want to put our resources.

16           The guys here do a superb job for all the work  
17 that goes into processing a Shuttle and getting a payload  
18 in it, and all the operations we have to do in the cargo  
19 bay, they do an incredible job.

20           It is not a perfect job, and in Zero-G, you know,  
21 everything that wasn't perfect comes out, but they do an  
22 awesome job. I would not want one or two pieces of litter,

1 as it was called, to be the focus, or maybe I would.

2 Actually, if our missions get so good that you guys in the  
3 media can focus on that, then we are doing pretty well.

4 MR. ACOSTA: All right. Let's go back along the  
5 wall. Let's go with Mike Cabbage.

6 QUESTIONER: Mike Cabbage with the Orlando  
7 Sentinel for Mike Griffin.

8 I know you are supposed to make a decision next  
9 month on whether or not to fly the Hubble Mission, and it  
10 would seem that there were a couple of developments on this  
11 flight that would, I guess, weigh in favor of doing that,  
12 the fact that for the second straight mission, the tank  
13 performed pretty well, and also the apparently increasing  
14 confidence and efficiency with which the on-orbit  
15 inspections and things like that are going.

16 I know there are other factors out there, like  
17 the availability of CSCS and the lack of safe haven and  
18 that sort of stuff, but could you talk about how this  
19 mission, that what happened during this mission, how it  
20 might affect that decision and whether those things like  
21 the tank's performance and the inspections and how that  
22 went, how that might factor in?

1 ADMINISTRATOR GRIFFIN: Well, as a first, I mean,  
2 you have almost made the points yourself. I can review  
3 them, but you know, I think, the issues, Mike, as well as I  
4 do and as well as this team does.

5 There are certainly people at this table who have  
6 seen more orbiters than I have come back, but I have seen a  
7 good number and over two different eras, the early 90s and  
8 then now today. The differences are night and day.

9 This group of people was walking around a  
10 half-an-hour ago underneath the orbiter looking for dings.

11 They are hard to find. I got up to a half-a-dozen, and  
12 they were the size of my thumbnail, and they didn't have  
13 any penetration to them. They were skin stuff only.

14 We have the orbital imagery that we will be able  
15 to look at and determine, in fact, whether all of the dings  
16 that we saw were even caused by ascent. Some of them could  
17 have been debris kicked up on landing, but we will be able  
18 to know that because we have the orbital data.

19 So the first and most important thing about a  
20 Hubble decision is, of course, when we launch an orbiter  
21 and can't do CSCS, as we cannot for Hubble, then we want to  
22 know that we are going to have a clean bird.

1           We are now two flights along, two very clean  
2 orbiters, Discovery and Atlantis, and I think most of us  
3 would say Atlantis was even cleaner. It sure looked that  
4 way on first blush. So that is great.

5           So the tank is performing well. Gap fillers are  
6 staying in. Really, that part is all looking good.

7           Inspection is going quickly and efficiently, and  
8 you are right. That is a key part of it. Our object in a  
9 Hubble servicing mission, if we are able to make that  
10 decision, is to service Hubble. It is not to go up and  
11 inspect. So the orbital inspection needs to be quick and  
12 efficient and positive.

13           We need to know that we have at least some repair  
14 capability should we need it, and the last mission gave us  
15 some excellent experimental evidence in that regard.

16           We won't have CSCS, and so we have to review our  
17 launch-on-need posture, is that something we really want to  
18 try to do, because for Hubble we would have to have a bird  
19 on the other pad, and that has implications. I don't know  
20 where we are on that yet. As I said fairly recently, if we  
21 had already decided, we wouldn't be having a decision  
22 meeting, but around the end of October, we are going to

1 have an agency decision meeting, and all the people who  
2 need to be there to play in that discussion will be there,  
3 folks far more expert than myself. In the end, it will be  
4 my decision, but it is input from all corners of the  
5 agency.

6 I have outlined some of the considerations that  
7 go into it, and there are others. So, when we can let you  
8 know, we will. We really will.

9 MR. ACOSTA: All right. Thanks.

10 Let's go to the second row right there. Holly?

11 QUESTIONER: Hi. Holly Hickman from Fox News  
12 Radio.

13 This mission went very well, and the astronauts  
14 were so efficient that they were able to get to some  
15 get-ahead tasks and accomplish even more than what was on  
16 paper, a very busy mission.

17 How confident are you with your packed schedule  
18 through 2010 that other teams and crews who don't have four  
19 years to prepare will be able to accomplish those things in  
20 the same way and that you will be able to make all of those  
21 missions by 2010?

22 ADMINISTRATOR GRIFFIN: Well, I am very confident

1 in our teams. I think this team did have four and a half  
2 years to train, both the ground and the flight crew, but,  
3 you know, they didn't need four and a half years to train.

4 The last mission, I would remind you, went  
5 extremely well, and the one before that went extremely  
6 well. The folks know how to step up, and that is what you  
7 are seeing. We are back into more of a normal operational  
8 tempo now. We have data that we never had before. We  
9 understand the tank and its issues and its performance  
10 better than we ever have before.

11 I am very confident that we will complete the  
12 assembly of the Space Station on schedule by 2010.

13 MR. ACOSTA: All right. First row, let's go to  
14 Tom.

15 QUESTIONER: Hi. Tom Costello with NBC News.

16 Again, congratulations on a great mission.

17 The success of this mission and the previous  
18 mission, does it in any way lead you to believe that you  
19 may not have to do the thorough inspection of the RCC and  
20 the tiles at any point down the road? Might you back off  
21 of that inspection, or is that going to be standard for the  
22 next 14 or so missions?

1 MR. ACOSTA: LeRoy, why don't you take that.

2 MR. CAIN: Okay. Yes, sure. I will take that  
3 one.

4 Our plan right now is to inspect every mission,  
5 and, of course, as with everything we do, we will continue  
6 to evaluate that and tune it, but the intent right now and  
7 what we have put into our flight plans for every one of the  
8 upcoming missions is that we will do the inspection of the  
9 heat shield before we clear the vehicle for entry.

10 You may see some differences along the way if we  
11 find some efficiencies or, as I say, if we learn more from  
12 subsequent missions as we go down the road here. You may  
13 see some subtle changes or maybe some not-so-subtle changes  
14 about how we do that as far as techniques and tools and  
15 those kinds of things, but our intent is to inspect the  
16 vehicle before entry.

17 MR. ACOSTA: All right. Let's go to the second  
18 row. Mike?

19 QUESTIONER: Hi. Mike Schneider, Associated  
20 Press.

21 I guess my question is for Mike Leinbach. Since  
22 the external tank has been redesigned with the PAL ramp

1 removed, I know that there are plans underway right now for  
2 further redesigns in the tank, but given that you have had  
3 two launches where the foam loss has been relatively  
4 benign, do you think that you have a design right now that  
5 you could live with?

6 I guess as an addendum to that question, how has  
7 the performances of the past two tanks that have been  
8 launched compare to the tanks that you have had in either  
9 redesigns, trials in the wind tunnel tests?

10 ADMINISTRATOR GRIFFIN: I am actually going to  
11 take that one because it gets a little more cross-agency.

12 First of all, I think in prior press conferences,  
13 what you have actually heard me say is that we would do one  
14 of two things. Either we would have a new ice/frost ramp  
15 design that we liked and that we knew why we liked it or we  
16 would find a way to get comfortable with this ice/frost  
17 ramp design because, in light of the flights we have done  
18 and the data that we have taken, we would understand it  
19 better. Because we have said all along that in flight the  
20 ice/frost ramp actually appears to perform better than the  
21 analysis would tell you that it does. That, of course, is  
22 an indication that there are some things going on that we



1 don't understand.

2 In that particular case, the lack of  
3 understanding has been in a good direction. It performs  
4 better than we had analyzed.

5 The ice/frost ramps have clearly performed very  
6 well on the last two missions. So we don't need to make  
7 changes that we don't need to make. So we are going to be  
8 looking very carefully at whether we do or don't need to  
9 make a change. It is not a settled issue.

10 The guys, the teams are working vigorously on a  
11 new ice/frost ramp design, one that they like, one that we  
12 think can do the job, and in the light of these last two  
13 missions, we will also be examining the technical data from  
14 the performance of these tanks very, very carefully in  
15 trying to determine which is the best path for us.

16 We are prepared to go down either path. We  
17 simply want to go down the best path based on the data that  
18 we acquire, and that is what we will do. That is in no way  
19 a done deal in either direction yet.

20 MR. ACOSTA: All right. Let's switch sides of  
21 the room. Let's go over here.

22 QUESTIONER: Hi. Eliot Kleinberg from the Palm

1 Beach Post.

2           Foam, lightning, hurricanes, fuel cells, fuel  
3 sensors, and space debris, you had some great practice in  
4 dealing with adversity, but all things being equal, you  
5 probably would have done without the hassles?

6           ADMINISTRATOR GRIFFIN: Well, anything that  
7 doesn't have to happen to you is good.

8           MR. LEINBACH: We could list another thousand  
9 things or ten thousand things that didn't go wrong, if that  
10 helps you.

11           QUESTIONER: What is the value of all this  
12 adversity?

13           ADMINISTRATOR GRIFFIN: Well, this is just  
14 routine life in the space business. I mean, at least for  
15 my 35 years of it. I mean, maybe we had a couple more  
16 things on this mission that we haven't had on some others,  
17 but, Mike?

18           MR. LEINBACH: We use the word in Shuttle  
19 processing "flexibility" quite a bit, and this processing  
20 and launch and mission demonstrated that -- that we are  
21 flexible. We can deal with issues as they come up and get  
22 to the right engineering solution when we get there. So it

1 is what we do for a living. I don't see this as adversity.  
2 I see this as a group of professionals responding to issues  
3 as they come up and resolving them, and this time, it led  
4 to a launch and a great mission and a great landing, so not  
5 adverse at all. It is what we do for a living.

6 ADMINISTRATOR GRIFFIN: I am going to jump back  
7 in because these two guys right here, LeRoy Cain and Mike  
8 Leinbach, are the guys who led the team in the discussion.

9 You mentioned the hurricane. A couple of weeks  
10 ago, a few weeks ago, we had a hurricane bearing down on  
11 this area or what was then a hurricane, and they were  
12 leading the discussion, but I was in the weather briefing  
13 at 7:00 a.m. on the day that we decided to roll back. If  
14 you heard the weather briefing at 7:00 a.m. and didn't  
15 decide to roll back, you were an idiot. Okay?

16 So they decided to roll back and they got halfway  
17 through it, and we got another weather briefing which had  
18 completely changed.

19 Now, I know that you are shocked that the weather  
20 in central Florida can change, but, you know, this time, it  
21 did. Considering all of those factors, these guys then  
22 made the very gutsy call, which saved this launch window,

1 to turn around and go back to the pad because the forecast  
2 winds had dropped to well below tropical storm strength.  
3 That is the kind of flexibility that Mike Leinbach was just  
4 alluding to, and it is another example of following the  
5 data and being driven by the data that I keep saying is  
6 what we need to do and what we do do at this agency. So we  
7 saved the taxpayers millions of dollars for delays and  
8 turnarounds and all that kind of thing that didn't have to  
9 happen because people were on the top of their game. There  
10 were many other people who contributed, but these were the  
11 guys leading the team that were on top of their game. I am  
12 proud to be associated with them.

13 MR. ACOSTA: Good example.

14 All right. Let's go back along the wall. Let's  
15 go to Todd.

16 QUESTIONER: Todd Halvorson of Florida Today for  
17 anybody who wants to take it.

18 I am wondering if you guys are ready to lift the  
19 daylight launch restrictions at this time, and could you  
20 discuss the importance of actually lifting those  
21 constraints to the completion of the Station on time?

22 MR. CAIN: Let's see, Todd. I will try to answer

1 your question.

2           As you know, we are talking about the lighting  
3 constraints and the self-imposed constraints that we have,  
4 and we are reviewing those constraints. We are soon going  
5 to make a decision.

6           I expect that we will, in all likelihood, be able  
7 to launch at night as early as STS-116, but we are going to  
8 go pound that flat and make sure that we are not missing  
9 anything and talk to the team and see what they have to  
10 offer.

11           It is extremely important to us, and we will, if  
12 not on 116, get back to being able to launch without  
13 lighted conditions at some point here because we have to,  
14 and we have known that for some time, in order to complete  
15 the Space Station assembly.

16           If you look at the launch periods and the launch  
17 window capability that we have, being constrained by  
18 daylight for launches were always daylight at ET separation  
19 throughout the calendar year, it is repeatable, as you  
20 might guess, and it is not very plentiful. So it is  
21 extremely important to us. We are looking at it very hard  
22 to see if we can get there, if we are ready to step up on

1 STS-116.

2 My personal expectation is that we probably are,  
3 and if not then, it will be soon after that, but the answer  
4 is going to come soon, and we are reviewing it as we speak.

5 MR. ACOSTA: All right. Go ahead.

6 QUESTIONER: Just a quick follow-up. If you did  
7 not lift the restrictions for 116, would you have to push  
8 that mission back into February? What are your other  
9 options?

10 MR. CAIN: No. I expect us to be able to launch  
11 in December, STS-116, daylight or not, and we have got a  
12 launch date that we are working toward. We will just have  
13 to see if we can expand it a little bit as to whether or  
14 not we have capability on either side of the window with  
15 respect to lighting. I see nothing in front of us right  
16 now that will prevent us from being able to get ready to  
17 fly in December.

18 MR. ACOSTA: Let's stay along the wall. Tariq?

19 QUESTIONER: Thank you. Tariq Malik with  
20 Space.com and Spacenews.

21 I think for Lynn, this mission was not only  
22 challenging from a station construction to flight, but also

1 a spacecraft wrangling. You had the Soyuz, the Station,  
2 and the Atlantis there. I was just kind of curious how  
3 that experience, as well as construction, kind of, I guess,  
4 enhanced the team's preparation just for ISS assembly and  
5 even, I guess, post-Shuttle operational.

6 MS. CLINE: Okay. I was wondering at one point  
7 if we needed to install a traffic light on one of our EVAs.

8 We did have a lot of vehicles, and basically, we  
9 took it one step at a time. We had a set of constraints  
10 that we were working to, to try to have the maximum time  
11 for the crew on orbit on Station in between the visiting  
12 vehicles, and we carefully looked at each of those as we  
13 came up to a decision point and worked our way through what  
14 was the right answer to go forward. As we said before,  
15 this is a team that can be flexible, and we figured out  
16 what were hard constraints and where we had some room to  
17 maneuver.

18 This international partnership has worked  
19 extremely well over the years. It is a good framework, and  
20 we worked very well together across the different  
21 countries. So this is more part of our learning  
22 experience, and it will serve us well as we go forward

1 because, as you know, in the future, we have other visiting  
2 vehicles that we will be working with, with the automated  
3 transfer vehicle from Europe and the HTV from Japan and our  
4 own commercial orbital transportation services that we are  
5 looking at post-Shuttle for cargo. So this is a lesson we  
6 need to learn, how to have multiple visiting vehicles and  
7 what are the constraints, and so this was a very helpful  
8 experience for us in that regard.

9 MR. ACOSTA: All right. We will come back to  
10 this side of the room, and then we will go back to the  
11 wall.

12 QUESTIONER: Stefano Coledan.

13 I was wondering, as far as the debris problem,  
14 could that have been caused by the prolonged stay of the  
15 truss at the Space Station processing facility? I mean, it  
16 has been there for four years, I think. So could that have  
17 been a contributing factor?

18 MR. CAIN: You know, Stefano, I would tell you  
19 that it is not impossible, but that wouldn't be my  
20 expectation. I don't think the time that the cargo spends  
21 here in terms of wait time are dwelled on would lend to  
22 anything additional more or less with regard to that kind



1 of propensity. So I don't expect that to be the case.

2 Mike, you may want to add to that.

3 MR. LEINBACH: Yes. I would just add that the  
4 folks that process the payloads here have the same  
5 intensity in their work and practices in their work that we  
6 have in the Shuttle processing. So not knowing what the  
7 debris was, it is impossible to say if that was a  
8 possibility or not. It is certainly a possibility, but  
9 probably very remote. Those guys over in the Space Station  
10 processing facility do a tremendous job on the payloads.  
11 So could it have been? Yes. Was it? We don't know.

12 MR. ACOSTA: Let's go back along the wall.

13 QUESTIONER: Pat Duggins, WMFE and National  
14 Public Radio.

15 Probably for LeRoy, but anybody who wants to jump  
16 in. I wanted to do a comparison on complexity with the  
17 upcoming Discovery mission. P3/P4 installed by the arm and  
18 the Spacewalkers did their support EVAs. Now you have the  
19 rewiring of the Space Station on the next mission. Would  
20 that make it more complex, the Discovery flight, or less  
21 complex or just different or what?

22 MR. CAIN: Well, I wouldn't say it would make it

1 any more or less complex.

2           The complexities will just be different kinds of  
3 complexities. We had, of course, the intense robotic  
4 operations on this mission that you just saw, and coupled  
5 with the EVAs and the associated choreography that is  
6 necessary. The upcoming mission will have less of that,  
7 but it will have more of interaction potentially with the  
8 ground and the crew on board in terms of doing the  
9 choreography associated with the power downs and the power  
10 ups and the revectoring, if you will, of all the necessary  
11 power equipment and the power transfer capability.

12           So I would tell you, it is different kinds of  
13 complexities. I consider them both to be very complex and  
14 challenging. We will be doing some things on this next  
15 mission for sure that we have not done before, and just as  
16 we did on this mission, we executed some tasks between the  
17 ground and the flight crew that we had not done before, and  
18 I am certainly confident that we are capable of doing those  
19 things, but I wouldn't consider them to be any less complex  
20 than what we just executed.

21           MR. ACOSTA: All right. Let's come back to the  
22 third row.

1 QUESTIONER: Phil Long, Miami Herald.

2 Administrator Griffin, going back to this issue  
3 of kind of regenerating the momentum, were there any  
4 specifics, any threshold points, any kind of "aha" moments  
5 that you saw that really have you this feeling of  
6 confidence that things are really picking up again? Just  
7 kind of some specifics of what you were talking about  
8 earlier, if there are some.

9 ADMINISTRATOR GRIFFIN: I wouldn't have said  
10 there was a specific moment. I would have just said that  
11 watching this whole mission unfold with the professionalism  
12 that it did would, I hope, give folks who watch what we do  
13 the same impression I have, which is that the teams are  
14 back. They are used to flying again, and they are flying  
15 well.

16 MR. ACOSTA: All right. Let's come back over  
17 here. Second row, black shirt.

18 QUESTIONER: Hi. Robert Gass, Interspace News.

19 I realize this is a technical question, but I  
20 thought maybe LeRoy might know the answer.

21 [Laughter.]

22 QUESTIONER: We noticed that the air data to nav

1 wasn't incorporated in the past and the BFS. Do you know  
2 the reason for that?

3 MR. CAIN: Yes. I actually talked with our  
4 colleagues in Mission Control before I came over here, and  
5 I have a little background on that because that is the area  
6 that I came from. I grew up in the GN&C flight control  
7 area and worked on the GPS system for a very long time. So  
8 I am personally very satisfied and gratified that we  
9 actually were able to incorporate the global positioning  
10 system data into the primary software system today for the  
11 first time during entry in ops three for entry and landing.  
12 That is really an important milestone for us.

13 The way the on-board navigation system works is  
14 the sensors are weighted as you come down through entry.  
15 You are familiar with TAC [inaudible] navigation sensor  
16 that we use and have used for years -- it is a military  
17 application -- and still use it, and so you heard that the  
18 team incorporated TAC today to navigation, and that worked  
19 normally, the way it always does, and performed fine.

20 As was the plan, they then incorporated GPS to  
21 the primary software system, the pass navigation as well.  
22 Subsequent to that, we deployed the air data probes. The

1 principal function of those probes is to be able to  
2 incorporate the higher accuracy air data into the guidance  
3 and control system, the flight control system, because it  
4 gives you higher accuracy for mach alpha airspeed and  
5 Q-bar, so that you can set the gains in the flight control  
6 system more accurately.

7           Normally, what we do, in addition to taking air  
8 data to guidance and control, is we then incorporate air  
9 data to the navigation system in both the primary and the  
10 backup system. Where air data to the navigation system  
11 comes into play, really it only updates the altitude  
12 channel of navigation, what we call the "baro," if you  
13 will, barometric measurement.

14           As it turns out, it looks like that the GPS  
15 performance was so good that the GPS, even the altitude  
16 measurement, which if you are familiar with GPS --

17           ADMINISTRATOR GRIFFIN: It is not normally good.

18           MR. CAIN: -- it is not normally as good an  
19 altitude channel as it is in the other channels, but the  
20 performance was such that the altitude was better than what  
21 the air data altitude performance was. So, rather than  
22 incorporate the air data baro measurement to navigation in

1 the past and the backup system like we normally would do,  
2 the team on the ground assessed the data, as they always  
3 do, and they decided that the navigation performance was  
4 going to be better, more pristine and more accurate  
5 overall, if they did not incorporate the air data to  
6 navigation.

7           Now, that is preliminary, and they will go back,  
8 and they will reconstruct the trajectory with the  
9 navigation in the best-estimate trajectory, and they will  
10 look at all the parameters again. This may be a learning  
11 point from this mission, but the short answer is it looks  
12 initially like the navigation residuals were such that the  
13 GPS performance was actually better in the altitude channel  
14 than what air data would have given the system, and so they  
15 elected not to incorporate the navigation, but they did  
16 incorporate it to guidance and control, which is the normal  
17 and the principal function, if you will, the more important  
18 one for the air data system.

19           MR. ACOSTA: You weren't kidding about a  
20 technical question, were you?

21           [Laughter.]

22           MR. ACOSTA: All right. Who hasn't asked a

1 question?

2           Okay. Let's go to the first row.

3           QUESTIONER: Hi. Curtis Krueger with St.  
4 Petersburg Times.

5           With the completion of this mission, you are  
6 closer to the goal of completing the International Space  
7 Station. I wonder how you would characterize how close you  
8 are to that goal now or how far from that goal and the  
9 challenge of completing that goal.

10           ADMINISTRATOR GRIFFIN: Well, in terms of the  
11 mass on orbit, it is almost precisely half done.

12           MR. ACOSTA: So there you go.

13           [Laughter.]

14           QUESTIONER: How big of a challenge is it to  
15 complete this goal?

16           ADMINISTRATOR GRIFFIN: Well, it is a huge  
17 challenge. We have -- not counting exactly -- about 15 or  
18 16 flights to do. Every flight depends on the flight  
19 before it having gone well or there winds up being makeup  
20 work to do.

21           I have in the past characterized it as keeping  
22 our eye on the ball here. Whatever else the Space Station

1 is, it is one of the most amazing construction projects  
2 that human beings have ever undertaken.

3 It is maybe a little simpler than trying to build  
4 an aircraft while you fly it, but not a lot.

5 [Laughter.]

6 ADMINISTRATOR GRIFFIN: So I am pretty proud of  
7 the team for how far they have gotten. They are halfway  
8 done, and, of course, we lost several years with a major  
9 accident.

10 We have a number of very challenging flights and  
11 very challenging missions left to go, but I know they are  
12 going to make it.

13 MR. ACOSTA: Anybody that hasn't been able to ask  
14 a question that wants to ask one?

15 Okay. Let's go to the third row, and then we  
16 will come back to you, Holly.

17 QUESTIONER: Steven Young with  
18 Spaceflightnow.com.

19 For Mike Griffin, I just wanted to revisit the  
20 Hubble servicing. Could you talk a little bit about the  
21 importance of that mission to the agency and where it fits  
22 in with your other priorities?



1           ADMINISTRATOR GRIFFIN: Well, I think Hubble is  
2 important. You know, we talk about international partners  
3 and international programs. The Hubble is an international  
4 program. I mean, there have been European instruments on  
5 Hubble since day one.

6           I worked on Hubble when I was maybe not a kid,  
7 but a lot younger than I am now.

8           Hubble is one of the great observatories. It has  
9 revealed fundamental things about the universe of which we  
10 had no idea and would have had no idea without that  
11 mission. It is one of the great scientific instruments of  
12 all time.

13           It is not outmoded. It needs some refurbishment  
14 and repair, but its contributions and its capability to  
15 contribute remain quite robust. So, if we can do it  
16 safely, we want to do it. I have said that now for 17  
17 months. I think the first time I was asked that question  
18 in public was at my confirmation hearing, and that was the  
19 earliest possible date.

20           So we want to do it, but we have new constraints  
21 on the Space Shuttle program and the Space Shuttle system.  
22 We have a new understanding of its fragility and

1 vulnerability. So, if we are going to do Hubble, we want  
2 to do it safely, and we want to do it well. That is what  
3 our data-gathering has focused on, and that is what this  
4 decision meeting toward the end of October will focus on.  
5 If we think we can do it safely and well, then we will.

6 Now, the implications on other programs,  
7 obviously that is a flight that we are doing that is not a  
8 Station assembly flight. We need to do the Hubble mission,  
9 if we are going to be able to do it at all, in a certain  
10 window because the Hubble is fragile itself and has  
11 suffered some deterioration or else we wouldn't be doing a  
12 servicing mission. So we need to do it fairly soon. We  
13 are targeting early 2008, and other missions, Space Station  
14 assembly, will have to flow around that, and they will.

15 I am confident that our international partners  
16 understand because, as I said earlier, Hubble itself has  
17 had international participation, and its contributions to  
18 the advancement of scientific knowledge have been  
19 international in nature.

20 MR. ACOSTA: All right. Everybody get a chance  
21 to ask a question before we go round two?

22 All right. Let's go with Holly.

1           QUESTIONER: Hi. Thanks. Holly Hickman, Fox  
2 News Radio.

3           I want to go back to the camp-out procedures. I  
4 know you are going to be debriefing the astronauts today,  
5 but from the ground, does it look like doing the pre-EVA  
6 camp-outs in the airlock is something you will do again?  
7 Also, are there any other sort of innovations that you  
8 might try in the future missions?

9           MR. CAIN: Yes. By all initial indications, the  
10 camp-out worked very well. We got positive feedback from  
11 the crew. Of course, we will get more feedback now that  
12 they are on the ground, and we will have some up-close and  
13 personal debriefs on it.

14           As you know, we do have other EVA protocols,  
15 pre-brief protocols, that we can and do exercise, and so I  
16 expect that we will take advantage of the camp-out  
17 capability as we go forward on one or more of the future  
18 missions.

19           I also expect that we will continue to utilize  
20 our other de-nitrogenization capabilities, just as we have  
21 in the past.

22           Early indications are that it was successful,

1 and, of course, as you know, it saves us about an hour in  
2 the timeline, and that is really the fundamental benefit of  
3 doing it.

4           So we will continue to look at it. I expect we  
5 will continue to use it, just as we do the other protocols.

6           MR. ACOSTA: All right. Any more questions?  
7 Stay on the wall. Tariq?

8           QUESTIONER: Thank you. Tariq Malik with  
9 Space.com and Spacenews again.

10           Just a short follow-up for Mike Leinbach. You  
11 mentioned, of course, that the tank right now is kind of  
12 the long pull for a December flight, and I am also curious,  
13 I guess, if that is the case with Atlantis to support  
14 either that flight or else a February flight. What are  
15 those challenges for that flow?

16           MR. LEINBACH: Turnaround Atlantis, originally we  
17 had about 110 days in the flow for Atlantis, and given the  
18 late launch date and a day delay on landing, we are down in  
19 the mid nineties or upper nineties or something like that.

20           That is an achievable schedule. It is more aggressive  
21 than we have done since Return to Flight. It will be the  
22 most aggressive turnaround since Return to Flight, but the

1 team is up for that.

2 LeRoy, the external tanks, I believe, probably  
3 pace several of our missions coming up. Is that fair?

4 MR. CAIN: Yes. I would say that is a fair  
5 statement.

6 As Mike mentioned earlier, we just had the  
7 arrival of ET 123 for 116, but the subsequent missions,  
8 STS-117 and -18, the tank for the near term is certainly  
9 our pacing item in terms of being able to get the tanks  
10 completed and shipped and here at the Kennedy Space Center.

11 So we will continue to work on finding  
12 efficiencies. Certainly, whether we do or don't do  
13 ice/frost ramp modifications or other modifications will  
14 ultimately play into where we end up as far as tank  
15 processing and tank delivery, but we will continue to work  
16 those things as we go. Certainly, the tank is the pacing  
17 item for the out flights.

18 ADMINISTRATOR GRIFFIN: I am going to jump in  
19 here and add that the only reason we are getting tanks at  
20 all, of course, let me remind you, is we had a record  
21 hurricane 13 months ago, and the only reason we are getting  
22 tanks at all is because of the dedication of the folks down

1 at Michoud to keeping that facility alive when everything  
2 around it was flooded. I mean everything. If you haven't  
3 been down there to see it, it is a sobering experience. So  
4 they kept the place alive during the hurricane, and they  
5 came to work right after that to start cleaning up.

6           They saved a whole bunch of flight hardware, and  
7 now they are producing more flight hardware, despite the  
8 fact that a goodly fraction of them still don't have homes  
9 or their homes are trailers in a parking lot. So the  
10 dedication of folks who work on the NASA team in the  
11 nation's space program, this is one of those cases where it  
12 is literally true that you just have to see it to believe  
13 it, and even after you see it, you are not sure you can  
14 believe it. So that is, when we talk about tanks being the  
15 pacing item, the other way to look at that is we got tanks.

16           MR. ACOSTA: All right. Stay along the wall.

17           QUESTIONER: Pat Duggins again, WMFE and NPR, for  
18 anybody who wants to take it.

19           I don't want to beat the litter issue to death  
20 here, but it caused some interest on our parts, and  
21 obviously, you all seem to be interested in it too. Has  
22 any talk been made at all about having high-resolution

1 cameras available at the [inaudible], so if there is  
2 something out there, a quick picture, make sure it is  
3 benign, and then you just go on with whatever you are  
4 doing?

5 ADMINISTRATOR GRIFFIN: I haven't talked about  
6 it.

7 MR. CAIN: You know, we do have that capability  
8 on board. The crew has a lot of high-resolution, highly  
9 capable cameras as well as highly trained people to operate  
10 those instruments.

11 Frequently, they do take pictures of things that  
12 are interesting. They do normal earth observation  
13 photography anyway, but if the crew sees something that is  
14 unusual or interesting or might be, they will normally get  
15 out the cameras and start taking pictures.

16 I would remind you that in this case, we just  
17 happened to be looking around with the cameras out in the  
18 cargo bay while the crew was off doing their normal thing,  
19 after, of course, sleep and getting to the end of the day,  
20 and typically, as is normal in the Mission Control Center,  
21 the instrumentation and communication officer, the INCO,  
22 will take control of the cameras, and it is one of the

1 things that they do and they enjoy doing, frankly,  
2 throughout the nighttime, especially as they have control  
3 of the cameras. They look all around, and they will scan  
4 everything that they can.

5 This is not the first time. This one has gotten  
6 a lot of press for some reason, but this is not the first  
7 time that we have seen something interesting out in the  
8 cargo bay or on the ship or in our vicinity.

9 Then the last thing I would say about the debris  
10 item is we always have circumstances where we have little  
11 pieces of ice coming off of the vehicle, all the way from  
12 the time we do ET separation, and we have oodles and gobs  
13 of photography of ET separation photos where we have ice  
14 coming off the vehicle in different little nooks and  
15 crannies of the orbiter and the various interfaces. That  
16 continues to happen throughout the mission, as long as the  
17 ice is able to survive.

18 So, again, we have gotten a lot of attention and  
19 focus on this, and we were very interested in looking and  
20 obviously for good reason, but I would just tell you that  
21 it is not unusual for us to see things out the window that  
22 are interesting and be able to grab a camera and take



1 pictures of it. So I don't know that we will do anything a  
2 whole lot different in the future, but we will probably  
3 still talk about it.

4 MR. ACOSTA: Well, great. That will wrap up  
5 today's press briefing.

6 For more information on today's landing and  
7 mission, please go to [www.nasa.gov](http://www.nasa.gov).

8 That concludes today's briefing. Thank you very  
9 much.

10 [End of STS-115 Post-Landing News Conference.]

11

- - -