

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PRESS BRIEFING

WITH

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AND

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P R O C E E D I N G S

MR. ACOSTA: Thank you for joining us here in Washington at NASA headquarters for today's update on the Space Shuttle's return to flight. I'm Dean Acosta from the Office of Public Affairs. Joining us this morning are NASA Administrator Michael Griffin and Associate Administrator of Operations Bill Readdy. I would like to remind everyone to please wait for the microphone before asking your question, and don't forget to tell us your name and affiliation.

Again, thank you for taking the time to join us. Now here is NASA Administrator Michael Griffin.

MR. GRIFFIN: Good morning, everybody. Actually, we can't keep meeting like this for just a routine launch slip.

Now we are here to let you know officially that we will be moving the Shuttle Discovery's return to flight launch window--or launch from the May-early June window to the mid-July window. We're doing that as a result of over the past week and a half several reviews, to include a shuttle design certification review for the changes which have been made for return to flight and then a delta design certification--design verification review on debris issues held down at JSC this week. And as a result of all that and looking at some of the open analysis items and small fixes

that we need to make and some issues that arose during the tanking operation of Discovery last week, no one thing but the sum of all those things together necessitates that we move out six or seven weeks into the July window.

Of course, you know, this is consistent with our overall approach to return to flight, which is that we're going to return to flight, we're not going to rush to flight. And we want it to be--we want it to be right, so we're doing what we need to do to ensure that.

If I say any more, as I often say, I'll be repeating myself, so I'll stop. Bill, you may want to provide some more detail on some of that.

MR. READDY: I think the only other factor that we would probably share is as a result of those reviews, I think, and new data that we have on reinforced carbon carbon and the tile and reviewing past films of some of the ice that has been shed from the LOX feed line on the external tank, that we may elect to go ahead and implement a heater in the LOX feed line bellows area, the forward one, which would also cause a little extra work and would put us out of the May-June time frame.

So I think the sum of all those things caused us to get together yesterday afternoon and as a result of that,

we're now going to revector here for the July 13th through July 31st launch window.

MR. ACOSTA: All right. Let's take a few questions here. We'll start up front right here. Again, identify yourself.

QUESTIONER: Bob Zimmerman, UPI. I want to understand. You're thinking then of adding that heater to the external tank that's attached to Discovery at the bellows region. From what I understand, that heater was--is on later external tanks already. If that's--what was the reason for not implementing it right away on Discovery's external tank? Can you backtrack and give the background for why it wasn't there to begin with?

MR. : Well, to start out, you're exactly right. The third external tank, known as ET-119, is at the Michoud Assembly Facility right now. It's having that heater implemented because we could. Previously, the design engineering didn't exist for it, but also the data that we had on the fixes that we made surrounding those bellows--and you'll hear more detail from Wayne Hale and Bill Parsons later in the day. The design fix was called a drip lip, which prevented moisture from accumulating and reduced the volume of ice in that bellows area up to like 70 percent. So it was felt from the various analyses that we

had done that perhaps ice, which had never been shown to be an issue before, was mitigated substantially and so that was the reason for not pursuing that immediately.

We have several kits that have now been manufactured and are available, and I think the prudent thing to do is to implement a field modification to the second tank, which would be ET-121, immediately and that would be done in the vertical assembly building as they stack FTS-121. And then after we complete more troubleshooting out on the launch pad and the main propulsion system, the external tank, hydrogen engine cutoff sensors, I guess there's also some cycling and repressurization (?) hydrogen tank and the ET that we detected during tanking, all of those things would cause us to stay out at the launch pad longer.

So in sequence, because we could, we have elected to go ahead and implement the feed line bellows heater at Michoud on tank 119. We'll do it on 121 at the Cape as expeditiously as we can in the VAB, and then concluding our troubleshooting at the launch pad when we roll Discovery back and we would implement the heater likely in the VAB there.

MR. ACOSTA: I also want to remind reporters there will be a live from NASA's Johnson Space Center some more

in-depth and technical briefings from the Space Shuttle Program Manager Bill Parsons, Deputy Space Shuttle Program Manager Wayne Hale, and International Space Station Program Manager Bill Gerstenmaier. So a lot of those questions will also be answered then.

All right. Let's go with Tracy.

QUESTIONER: Tracy Watson, USA Today, for the Administrator. I understand that there were some managers who were thinking about trying to delay the launch by a matter of days or a week or two rather than going to July, and I'm wondering if you can talk about why you decided to go with July.

MR. GRIFFIN: Well, I can talk about why we decided to go with July. This was very much a team effort. I was at the reviews in question that I spoke of a few moments--and that Bill talked about because, you know, I had publicly really given my pledge to learn everything I can learn about return to flight with the time we have remaining and the limitations on my capability. So I was at the reviews, but there were many voices, and, in fact, at the reviews there was no specific decision made. Reed and his team spent a good fraction of yesterday assessing from out of those reviews what the logical conclusions would be, and so I would not honestly say--I didn't make this decision.

The team came forward to me last night with a recommendation that we slip, and I've accepted that recommendation. So I think they were just all doing their job and doing it well, doing it exactly as we want them to do it. I couldn't be more pleased with the thoroughness that the whole process went to--went through.

So if you say some managers didn't [inaudible], you could count me among those managers. I want to launch as soon as we can.

This brings almost a philosophical point up, which I'll share with you since I can. We constantly hear that--you know, we tell ourselves, we try to tell ourselves, we try to tell others that, well, you know, schedule doesn't matter, we'll do the right thing. And I appreciate the philosophical intent behind those words. But schedule does matter. There are no human activities in which it's just okay to perform them whenever you like. Schedule matters. It shouldn't matter to the point of causing people to do dumb things or to take ill-advised actions, and that is where we want to get to. But schedule is one factor in the equation, and we want to launch Discovery when we can, because the completion of the International Space Station depends upon an expeditious launch schedule. We don't want to launch it sooner than we can.

The conclusion out of the reviews that you spoke of, when all of the managers and all of the engineers had had their say was that we had enough work remaining to do, that trying to go in May or early June just wasn't the smartest thing.

Am I being responsive to your--okay. Thanks, Tracy.

MR. ACOSTA: Right here in the middle.

QUESTIONER: I have a follow-up [inaudible] 13th to 31st launch window, and how realistic is it that you can take care of those fuel tank concerns in that time frame?

MR. GRIFFIN: I think I need to defer to Reed on that.

MR. READDY: I'd say that every time we have established a launch date, it's been on the best data that we have available. And sometimes that's hardware-driven, sometimes it's driven by the analyses that we must perform. We have, I think, since we first established a baseline launch date back in June of 2003, we've adjusted it now a half a dozen times. And each and every time it's been based on new data, and we are going to continue to be milestone-driven in our approach to return to flight.

In terms of handicapping it, I can't tell you, quite frankly. The troubleshooting that we need to do at



the launch pad, they're still working on the various fault trees that they need to run to ground, this issue with two out of four hydrogen fuel tank engine cutoff sensors. There were also some other out-of-family events that occurred during the fueling of the tank where the hydrogen tank repressurized probably twice as many times as we've seen in past tanking evolutions.

But I think that it really points to the wisdom of continuing to work on vehicle processing and launch processing, because, quite frankly, we had not been to that launch pad since October of 2002, hadn't conducted a fueling operation. There are a number of things that we'll need to do out at the launch pad here in the coming weeks, likely as not, that it's important to go do. That may include loading the hypergolic propellants. It may include doing a hot fire of the orbiter's auxiliary power units and the solid rocket booster hydraulic power units. Those cannot be done other than at the launch pad.

And certainly some of the troubleshooting may include having to flow propellants again, not only through all the ground infrastructure but also back into the tanks.

So all those things point to the fact that we need to continue pressing on, and as we gather more data, it will

retire more problems. We may identify more problems, but we'll solve each and every one in sequence.

MR. ACOSTA: All right. Let's come up front.  
Brian?

QUESTIONER: Brian Berger (ph) with Space News [inaudible]. This question is for Mike. [inaudible] mission once NASA completes return to flight. With this decision you've lost two months on the front end. Is a review of Hubble still tied to completion of return to flight?

MR. GRIFFIN: That's a very good question, Brian. Thank you. The answer is we're going to start early on reviewing the Hubble decision. I've spoken yesterday in anticipation of this issue with key congressional stakeholders, and what we will be doing--and, unfortunately for some of our troops, this is announcement of this the first time, but you asked. What we're going to be doing is getting the Shuttle Mission 4 servicing folks at Goddard started on the work that they would have to do if a servicing flight can yet be done.

This is because, as I know everyone on this press conference is aware, we have legislation from the--or we have appropriations legislation in our FY05 bill directing us to spend money toward Hubble servicing. If we delay much

more, we first of all put the capability of doing that servicing at some risk, and also we're at risk of noncompliance. We could go back, of course, to the Congress and seek relief, but it seems most sensible to begin, I'll say, I'll use the phrase "betting on the come," not that I actually spend much time in Las Vegas, but it's an apt phrase. We're going to bet on the come a little bit that we can do the servicing mission and get folks at Goddard started on doing what they would have to do to enable that.

Now, there are substantive technical questions remaining on the shuttle end of things that we simply can't answer until we return to flight. So there is the issue of possibly we would be expending some money that would ultimately not serve our purpose. So that's why it's a bet.

On the other hand, if we followed the explicit direction of the legislation and worked on the robotic servicing mission for Hubble, every review team that has studied that has concluded that the robotic servicing mission is just not feasible within the time and the money that we have to allow for it. So that's off the table.

So if we're going to rule that off the table, then we need to consider what we can do that would be useful in advancing the Hubble servicing goal, and this is it.

QUESTIONER: My follow-up is for Bill. Bill, at the same time you're preparing for return to flight, do you have the engineering staff to support the review of the SM-4 decision without taking your eye of the return to flight ball?

MR. READDY: Well, I think first things first. The vision for space exploration talks explicitly about return to flight, assembly of International Space Station. That's what we're focused on here immediately, is return to flight.

I think what the Administrator has just shared with you is there is a lot of work that can be done in parallel here, and the crew out there at Goddard is well equipped to go ahead and commence this effort. We have flown four missions to Hubble before, as you know, and so there is a body of engineering and expertise that's still resident within the Space Shuttle program that we can avail ourselves to.

So I don't view these as being in conflict. Return to flight--and by that I don't mean simply STS-114, but STS-114, STS-121, and then resolving whatever--whatever issues may arrive from those test missions are prerequisites, obviously. But there's no reason why some of

this work cannot be done in parallel and should not be done in parallel.

MR. GRIFFIN: Yeah, and to Reed's point, the reason I characterized it as betting on the come was specifically because we're not going to allow any of the SM-4 work on Hubble to interfere with return to flight. I mean, that is a guarantee. But the folks out at Goddard who are needed to prosecute that effort are not in the series path on return to flight. So just to be clear.

MR. : I think Guy had his hand up.

QUESTIONER: Guy [inaudible] of the Washington Post. In pushing back the STS-114 flight for a couple of months and adding a Hubble flight, you still have not moved retirement of the shuttle beyond 2010. Do you see that in the coming years and that you're going to be strapped to conduct the number of flights you need to assemble the Space Station? Will you push the deadline out?

MR. GRIFFIN: The President, the space policy that we have is very firm that the shuttle will retire in 2010. So in assembling the Space Station, what remains for us to do, if we cannot complete the requisite number of shuttle flights by that time, should that occur, is to be creative in other, in looking for other means by which some of that hardware might be put on orbit. We may not be able to make

the exact completion date we desire, but we will complete it.

I've said this in other fora to include the U.S. Congress for my confirmation hearings. We are recovering from a major accident here, a huge national tragedy. Putting people into space is still not so routine that we can do it blithely. Every mission where we decide to launch people into space with the level of the technology we possess today is a big deal. We take it seriously. Other considerations, such as exactly in what sequence and in what dates we are able to assemble the International Space Station have to come behind, making sure that when we launch people we are taking it seriously. That's what you're hearing from us.

Part of the problem, I think, is that as the decades have gone by, when we have been able to do human space flight, we've come to accept it as more or less routine. From an engineering point of view, it isn't. When some of us--some of you weren't even born, but when some of us were, say, 12 years and we launched Alan Shepherd, everybody knew that Al was risking his life. That's why they were heroes. The people who get on the shuttle today and fly it or who have flown it, such as my compatriot here, are every bit as much heroes as Al Shepherd, Gus Grissom,

John Glenn on his first flight, every bit as bold, courageous, and risk-taking, as were the astronauts of a generation or two generations ago.

We may have lost sight of that fact, but the fact hasn't changed. So this is a big deal. Retreating it is a big deal. Assembly sequences, ways and means to get that done are a big deal, too, but not as big. So that's how I view it. Thank you.

MR. ACOSTA: Up here.

QUESTIONER: [inaudible] Boyd with Aviation League. For Bill Readdy, could you elaborate a little bit the work involved in putting in the heater? And also, second question, could you talk a little bit more about those liquid hydrogen sensors that you mentioned and what the threat to the schedule is there?

MR. READDY: To start with, I think those things will be covered in much more exquisite depth here by the shuttle program folks here in a little bit. But just to give you kind of a broad brush, external tank number 119 is at Michoud, and the wiring for the heaters, the heaters will be incorporated in the horizontal before the tank is shipped as part of the normal processing for that tank.

The engineering that we have and the kits that we have available to do modifications at the Kennedy Space

Center allow us to do that in the vertical as we're processing the stack, not where the tank is stored but where it's stacked on the solid rocket boosters. There's access to do that, and the technicians are very confident that they can do it in flow there at the Cape. So we think it's prudent to go ahead and start that effort with external tank 121 while Discovery is still out at the launch pad, and we expect we'll probably learn a few lessons about doing the installation of those heaters. And then once Discovery rolls back, then we'll have that process behind us in terms of the nuts and bolts implementation and one would think the learning curve would be pretty steep on that. So we'd be able to implement that.

You talked about the liquid hydrogen engine cutoff sensors. The launch commit criteria for those things--and basically what they do is they signal that the tank has either got fuel in it or it's empty, and they're used for engine cutoff prior to MECO, main engine cutoff of the shuttle main engines [inaudible]. And during tanking, two of those were intermittent, and at present, troubleshooting in the fault tree continues.

I assure you that 404 is the launch commit criterion for STS-114 and 121 and subsequent. So it's very important that we go ahead and troubleshoot that.



I think the team, although they haven't arrived at what the exact issue is, has got a plan for pursuing that, and I've got every confidence that they'll run it to ground.

MR. ACOSTA: We have time for just a few more questions. Let's go right up front here.

QUESTIONER: Keith [inaudible] nasawatch.com for Bill Readdy. You've been asked this a thousand times, and I'm make this the 1001 time. After the CAIB report came out, all the changes were recommended. You've changed a lot of your policies and how your prepare for a launch. Having just gone through one of these yesterday, still fresh in your mind, what was different about how you went to this last portion of preparing for STS [inaudible] probably would have done it had there not been an accident previous to this review, and what has changed and what is the same?

MR. READDY: What has changed is I think we're an awful lot smarter, not only as a result of the recommendations from Columbia Accident Investigation Board, but also as a result of the volumes of work that have been done here in the interim. In the past couple of years, we've learned a tremendous amount about debris transport. We've learned a tremendous amount about the complex hypersonic shock wave interaction that occurs around this vehicle as it accelerates off the launch pad and through the

thickest part of the atmosphere and on into orbit  
[inaudible] trip.

We've learned a tremendous amount about the material properties of the orbiter, of thermal protection tile, the reinforced carbon carbon, and then to complete that, the debris environment, the foam insulation on the external tank, and the various possible debris sources, not only foreign object damage that might be around the launch pad, but also ice generation. And all those things I think we've attacked very scientifically, and we've built up a tremendous body of data.

I think that the team has been very good about bringing forth those data. We have additional people that are part of the review chain right now. The NASA Engineering and Safety Center has been stood up since the Columbia accident. And we also have an independent technical authority.

Those are entities which have empowered people to speak up, and I think they have. And we've heard them.

MR. ACOSTA: Last question. [inaudible].

QUESTIONER: Jeff Morris with Aerospace Daily. This is for Bill, and understanding that Bill Gerstenmaier is going to be out later to talk in more detail, I just wonder if you could sort of give us a preview of the impact

to station operations from this delay given the logistics that Discovery is carrying.

MR. READDY: Okay. Well, as you mentioned, Bill Gerstenmaier has got this, I think, probably in exquisite detail. But the next major milestone for International Space Station I think is progress resupply vehicle that would launch somewhere around the 10th of June, Progress 18-P, and that should resupply the Space Station so that it's got a sufficiency of resupply that would go across this July launch window. And then the next Progress would not be until August.

So we should be in great shape in terms of logistics on board International Space Station, recognizing that, you know, we're still throttled back to only two crew members on board, and we're still dependent on Progress to Progress in terms of the sufficiency of consumables.

So that actually does put us in good shape here moving to the July launch window. In terms of the downstream manifest, we'll be assessing that as we get closer to return to flight.

MR. ACOSTA: All right. That will end today's press conference, but before we conclude today's news briefing, I have a couple of programming notes to pass along.

As I mentioned earlier, at 11:30 Eastern, live from NASA's Johnson Space Center in Houston, Space Shuttle Program Manager Bill Parsons, Deputy Space Shuttle Program Manager Wayne Hale, and International Space Station Program Manager Bill Gerstenmaier will have additional return to flight information. That press conference will be carried live on both NASA television and nasa.gov.

Reporters at JSC and at participating NASA field centers will be able to ask questions. Again, that's at 11:30 Eastern here on NASA Television.

Thank you for joining us, and have a pleasant afternoon. That will conclude today's news briefing.  
[Whereupon, the briefing was concluded.]