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NASA Press Conference on the Space Shuttle Columbia

Sean O'Keefe, Administrator

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MR. MAHONE: Good morning, and thank you for joining us here in Washington and from the centers across the country at our various NASA field centers.

Before I introduce the NASA Administrator, I want to go over a few guidelines for this morning's press conference. We'll begin with questions here in Washington, and then go to the various NASA centers. Please wait for the microphone before asking your question, and don't forget to tell us your name and affiliation.

Because of the large number of reporters who want to participate in today's briefing, please limit your

inquiries to one question and one follow-up, and, please, please, no multi-part questions.

Again, thank you for taking the time to join us today, and allow me to introduce the NASA Administrator, Sean O'Keefe.

MR. O'KEEFE: Thank you, Glenn, and good morning. Thank you all for spending time with us here this morning.

Yesterday, we received the report of the Columbia Accident Investigation Board run by Admiral Hal Gehman, and shortly thereafter I had the opportunity to speak to several of our colleagues here throughout this agency to describe those initial findings and recommendations as well as to offer some views of what the direction will be from this point forward. And so if you'll permit me, let me draw a little bit from some of those comments here in the context of today's discussion with you, as well, as we start this and, of course, respond to your questions.

This is, I think, a very seminal moment in our agency's history. Over the 45 years of this extraordinary agency, it has been marked and defined in many respects by its extraordinary successes and the tragic failures in both contexts. And in each of those, in a tracing of the history of that 45 years, there is always an extended debate and discussion of the national policy as well as the focus of the charter and objective of exploration of what this agency was chartered and founded to do in 1958. And I expect that in this circumstance it will be no different. This is one of those moments in which there will certainly be a very profound debate, discussion, and I think a very inward look here within the agency of how we approach this important charter that we've been asked to follow on behalf of the American people to explore and discover on their behalf.

In each of these defining moments as well, our strength and resolve as professionals has been tested, and certainly that will be the case in this circumstance, and it has been for these past seven months, to be sure.

On February 1st, on the morning of that horrific tragedy that befell the NASA families and the families of the crew of Columbia, we pledged to the Columbia families that we would find the problem, fix it, and return to the exploration objectives that their loved ones had dedicated their lives to.

The Board's effort and the report we received yesterday completes the first of those commitments and does it in an exemplary manner. They have succeeded in a very, very thorough coverage of all the factors which caused this accident and that led to this seminal moment, which is marked by a tragic failure. And their exceptional public service and their incredible diligence in working through this very difficult task I think will stand us in good stead for a long time to come as we evaluate those findings and recommendations as carefully as we know how.

As we begin to fulfill the second commitment that we made to the families to fix the problems, the very first important step in that direction is to accept

those findings and to comply with the recommendations, and that is our commitment. We intend to do that without reservation. This report is a very, very valuable blueprint. It's a road map to achieving that second objective, to fix the problem.

They've given us a head start in the course of their discussions over the last several months and in the course of their investigation, in the public testimony, in their press conferences, in all of their commentary, which has been very, very open in an extremely inclusive process as they have wrestled with the challenges of finding the problems that caused this particular horrible accident.

And that candor, that openness, that release of their findings and recommendations during the course of the investigation has given us a very strong head start in the direction of fulfilling that second commitment.

At this point, we have already developed a preliminary implementation plan, and we will update that, and we're about that process right now of updating to include all

the findings and recommendations included in the report, in addition to those that were released and described very specifically during the course of their investigative procedures.

But, again, must as the Chairman, Admiral Hal Gehman, observed throughout the course of those proceedings, what we will read and what we did read as of yesterday was precisely the same commentary that we had heard during the course of their investigative activities and in all of their public testimony that they've offered, which has been considerable and, again, very extensive, exhaustive.

So as we implement those particular findings and recommendations, our challenge at this point will be to choose wisely as we select the options that are necessary to fully comply with each of those recommendations. We'll continually improve and upgrade that implementation plan in order to incorporate every aspect of knowing what's in the report, but also so much of what we have determined and seen as factors

that need improvement and consistent upgrading throughout our own process within the NASA family.

It's going to be a long road in order to do that, but it is necessary in order to fulfill that second commitment we've made to the families.

Now, the report covers hardware failures, to be sure, but it also covers human failures and how our culture needs to change to mitigate succumbing to these failings again. We get it. Clearly got the point. There is just no question that is one of their primary observations, that what we need to do, we need to be focused on, is to examine those cultural procedures, those systems, the way we do business, the principles and the values that we adhere to as a means to improve and constantly upgrade to focus on safety objectives as well as the larger task before us of exploring and discovering on behalf of the American people.

But they've been very clear in their statements throughout the report in several instances, repetitively, and in the public commentary that the Chairman and members of the Board have offered

following their efforts yesterday after the release of the report, that these must be institutional changes. And that's what we're committed to doing, and that will assure that over time those changes will be sustained, as those process, procedures, and systems are altered in order to reinvigorate the very strong ethos and culture of safety and exploration, those dual objectives that we have always pursued. That is what's going to withstand the test of time if we are successful in this effort, and we fully intend to be.

So we will go forward now and with great resolve to follow this blueprint and do our best to make this a much stronger organization. In the process of doing so, it will involve the capacity and capability of all of us within this agency. This is not about an individual program. It's not about an individual aspect or enterprise of what we pursue. It is about everything we do throughout this agency. There is so much of what has been observed in this report that really has tremendous bearing and tremendous purpose in defining everything we do throughout the agency. And so, therefore, we will approach it and have considered

this to be an agencywide issue that must be confronted in that regard.

Now, this is a very different NASA today than it was on the 1st of February. Our lives are forever changed by this tragic event, but certainly not nearly as much as the lives of the Columbia families. This is forever for them. And so that resolve to find the problem which we have successfully done, thanks to the extraordinary efforts on the part of this Board, to fix those problems which we are now in pursuit of as the second commitment, and to return to the exploration objectives that their loved ones dedicated their lives to is something we take as an absolute solemn promise. We have to resolve and be as resolute and courageous in our efforts as they have been in working through this horrible tragedy.

The time that we have spent, I think, over the course of since the accident, and certainly well before, in trying to work through those particular questions, again, are focused on institutional change. Since I arrived a little less than a year and a half ago, we

have almost completely rebuilt the management team, and so it is a new, fresh perspective in looking at a range of challenges that we currently confront, and those changes have been ongoing of a management team as well as the institutional changes we have implemented and will continue to do in full compliance with this report.

The new management team began I think by evaluating initially on the first day that I arrived here the contingency planning effort that was necessary in the event of such a tragedy. It was the first thing I did on the first morning I arrived at this agency. And in reviewing that contingency plan of how we would respond to a disaster, to a tragic event, which I had hoped and was in the expectation and fond hope that I would never, ever have to utilize, we nonetheless improved that contingency planning effort by doing two things:

First of all, reaching back to the Rogers Commission, the Challenger incident and accident, to incorporate in that contingency plan all the changes necessary in order to respond definitively.

The second step we went through was to specifically benchmark it against best practices of any comparable organization, of which there are very, very few. And the only one that in my personal experience that I was aware or felt had any direct comparability to the risks and the stakes involved was the Navy nuclear program. And so from that first day, we upgraded that particular contingency plan based on the benchmarking procedures that we followed through with them.

We then began a very vigorous effort by late spring, early summer of last year to begin a comprehensive benchmarking procedure against the submarine service as well as the naval reactors community, to, again, pick up best practices as well as to institutionally change the way we do business. And that process is ongoing as it had been a year ago as we continue to make those changes.

That was a lesson I learned very specifically in my tenure as Navy Secretary better than ten years ago, was to look at those particular procedures and assure that

we have incorporated as much of that, and that was a work in progress that will continue.

But, again, the observation by Admiral Gehman and the members of the Board yesterday and replete throughout the report, it is not about changing boxes or individual faces in each of those positions. It is about the longer-term institutional changes that must be made. And, again, to that point we get it. It is about the culture of this agency, and we all throughout the agency view that as something that's applicable to the entire agency, not any individual element thereof.

With that, I thank you again for the opportunity to get together this morning and, again, look forward to your questions and comments.

MR. MAHONE: Yes, sir?

QUESTION: Mr. Administrator, Matt Wald, New York Times. There are other organizations that have gone through this kind of change. Most have called for some outside help. I'm tempted to ask if you've read Diane Vaughn's book or called her up or if there are other

specialists in safety culture who you would be bringing in at this time to help transform yourself, your agency.

MR. O'KEEFE: I appreciate that. Yes, indeed, we have read Dr. Vaughn's book, and there have been several folks here in headquarters as well as Johnson who have been in touch with her. Dr. Michael Greenfield spoke to her I think initially about four months ago, three months ago, shortly after her testimony before the Columbia Accident Investigation Board's hearings.

The primary source of safety experts that we have been trying to encourage and have requested come in to assist with us, again, are from the naval reactors community. This is a very specific set of procedures they follow. It's a very exhaustive effort that they have gone through over a comparable period of time as the span of this agency, in order to upgrade their procedures as a consequence of incidents in the early phases of that program that gave them great pause. And so there's a report that I think was released about a month and a half ago which was the second step in that

benchmarking procedure with the submarine service, which is the operational community, and the naval reactors community, which is the disciplinaires, if you will, over the technical requirements side, that we continue to solicit.

Beyond that, there are certainly a number of folks that we have invited in and will continue to do so. I spent the better part of four hours last night with Admiral Gehman and most of the members of the Board asking them specifically for the folks that they had brought in as advisers to the Board on this particular question so we may be in contact with them in order to ask for their advice and assistance and contributions in this regard as we implement these recommendations on that front as well. So, yes, we're about that as well.

MR. MAHONE: Keith?

QUESTION: Keith Cowing, Nasawatch.com. Yesterday you read Gene Kranz's inspiring words that were issued to his troops after another accident. And, you know, that was then and this is now. You've got a workforce that has been downsized, bought out, they're jaded by

innumerable management fads, and clearly it hasn't worked.

I got an e-mail from somebody yesterday saying, "What's he going to do, actually make us--write us on the white board?" I mean, the cynicism is that high.

What are you going to do this time that is demonstrably different than all these attempts before it, getting the agency motivated and beyond the cynicism and malaise that seems to have beset it?

MR. O'KEEFE: Well, it's going to require leadership at every level. This is not something that you direct or dictate. Again, in my experience, in my prior life as the Navy Secretary confronted with an incident, an event that really rocked that institution at that time, when I came in in the post-Tailhook incident, it's not about just walking around telling everybody shape up or ship out. It really takes persistent, regular, constant leadership focus, and I think the folks that we have recruited and are in place now as the senior management team that, again, have been over the course

of certainly this last seven months, to be sure, but over the previous year, have been recruited to those capacities specifically for that, are the kinds of people, I think, who not only get it but also are going to be the first start at that leadership objective.

Throughout the agency we're going to have to persistently move through that, but I think it is staying with a very set of clear principles and values that we will continue to work through, and it's going to take time, but the time begins right now. And it has been in process, I think, for some period before this, but we will continue to redouble our efforts of that. But it's something that there is no one trick pony at this. It is not something that happens simply because I send out a memo. I'm not a Pollyanna on that point at all. It is something that really requires, I think, constant, unrelenting diligence, and that is another theme that I think comes out very resolutely in the Accident Investigation Board report, which is consistency as well as persistence and vigilance in the leadership direction in that regard. And that's what we are committed to doing.

MR. MAHONE: Yes, sir?

QUESTION: Thank you. I'm Larry Wheeler with Gannett News Service. I want to get back to the leadership question a little bit. I was wondering if you could share with us your thinking about how you motivate your leaders to follow through on this point that you said they get it.

Two weeks ago, one of your senior managers had a press conference at Kennedy Space Center in which he, if I understand--if I recollect correctly, he denied that there was a culture in NASA or that he was aware that there was a culture in NASA. And this is the same senior manager who ran the Safety and Mission Assurance Program throughout the '90s, which has been highly criticized by the CAIB.

Can you give us your thinking? How do you turn around that kind of thinking?

MR. O'KEEFE: Well, first of all, I think it's a--it's always a challenge to define with common specificity to which all accept of what the term "culture" means. And in my experience, again, as Navy Secretary, there were multiple cultures. There's the culture--there's a Navy culture, to be sure, and a naval service ethos. But there's also a surface sailor culture, an aviator's culture, a submariner's culture. And then, just to really get some extraordinary oomph into it, let's get the Marine Corps involved. They're part of the Navy Department as well. And the common distinctions between those are born of years of history as well as deep tradition.

It is also true here. There is every single aspect of how this agency has formed over its 45 years and well before when at the beginning of the last century the NACA was formed to respond to aeronautics challenges at that time that were to be advanced. Every one of the centers, every one of the elements of what you see throughout this agency, can reach back and trace historical roots to each of those individual moments.

And so in that regard, there are lots of different ways in which folks respond, but the overall, overarching, overriding NASA culture for this agency overall is a set of principles and discipline in order to pursue safety of program consideration, which has always been the case, in pursuit of those exploration objectives.

Those are the kinds of things we need to redouble, and, again, as you define it very specifically in that regard, there is importance that I think we get great clarity of exactly what the definition is, and that's the part we get. There is an overriding culture which must dominate, and certainly we celebrate the history and traditions of every aspect of this agency, much as any other storied agency or institution does.

MR. MAHONE: Yes, sir?

QUESTION: Earl Lane with Newsday. A lot of what the report spoke about on culture, though, I think dealt with attitudes as much as institutions and talked about how lower-level engineers were reluctant to come forward with the concerns. And I'm wondering how you

deal with that to get that message out, and is it perhaps time for a stand-down like the Navy sometimes does?

MR. O'KEEFE: Well, it is--to be sure, that's one of their findings and views, is that there is--there was evidence that they saw, even in the course of their investigation, in which reluctance dominated. And I think part of that is--or the two things we've really got to focus on in that direction is, first of all, reinforce that principle, which, again, we articulate regularly and I think we see evidence of all the time.

There was a stand-down in June through October of last year in which an individual observed an anomaly on the fuel line for Atlantis. There was a crack on the fuel line that in turn stood down the fleet for that period of four months as we ran that to parade rest and determined exactly what the conclusions and solutions needed to be. So we've got to, again, continually identify that as the kind of behavior we want to encourage, and to the extent we do not see it evidenced or there is evidence in the opposite direction, to

assure that we motivate and encourage folks to feel that sense of responsibility.

And that's the second part as well, is that there is, I guess, a renewal of the view that I heard expressed best by Leroy Cain, the Flight Director on STS-107, who observed this is all of our responsibility. And so for those who are part of this agency, we have to renew that view, and for those we recruit to that have to have it understand as the first principle that we all must adhere to.

MR. MAHONE: Yes, Tracy?

QUESTION: Tracy Watson with USA Today. Administrator, did you have any hints before the accident that you had this kind of serious attitude and value problem at the agency?

MR. O'KEEFE: Well, to be sure, there's always cases in which there are folks who feel like there are certain aspects of what has occurred in the course of our history or in the course of events that are not as

advantageous as others. And so I've had a very open policy of let's communicate whatever those concerns are, let's have an open dialogue throughout the agency on every matter. I've tried to be as open about that to include encouraging e-mails, of which I get lots of from lots of folks. So I've seen, I think, lots of evidence of folks who are feeling, you know, very empowered to offer their view and their concerns. And at the same time, I think it's also evidence of the fact that the process or the systems to permit that discussion isn't happening at every level.

So there's two things you can draw from that that I have taken away, which is those who feel that it's necessary to respond in that regard really require other means because the systems may have broken down. So there is certainly some indicator of that, but certainly this was a wake-up call in yesterday's report to see how extensive that communications link that contributed during the course of this mission and operation needed to be improved to deal with precisely that set of problems.

It wasn't for lack of people talking. It was for lack of people, I think, coordinating those observations effectively to serve up appropriate decisionmaking about the challenges we were confronting at that time. And I think that's--you know, the upside of that is that there's ample evidence to suggest that folks are feeling like there is an opportunity to communicate and speak. It is also another question, though, of exactly at what level can they do so, and I think that's the point and the communications breakdown that is part of the culture and is part of the observation that was made by the Board, and the findings and recommendations speak to that very effectively.

MR. MAHONE: Yes, ma'am?

QUESTION: Marsha Dutton, Associated Press. The Board made--put quite a bit of emphasis on deadline pressure affecting decisionmaking and even usurping safety, and that this pressure came from on high. And you're up there in the highness here, and I'm just wondering--
[Laughter.]

QUESTION: --do you feel some accountability also for this accident since you've frequently made mention of the February 2004 date?

MR. O'KEEFE: Absolutely. I feel accountable for everything that goes on in this agency. That's a part of the responsibility and accountability I think you must accept in these capacities. No question about it.

The Board, I think, was very specific in observing that schedules and milestone objectives and so forth are important management goals in order to achieve outcomes, and these are--this is an appropriate and necessary way to go about doing business. But their observation was that in this instance, this may have influenced managers, may have begun to influence managers to think in terms of different approaches in order to comply. And in that regard, I think we have--we've got to take great heart in the point that--and stock in the point that in order to pursue such appropriate management techniques and approaches in order to establish goals, objectives, and milestones, you must also assure that the checks and balances are

in place to guarantee that paramount, number one objective, which is safety.

In the course of my tenure here, there was not a single flight of a Shuttle that occurred when it was scheduled. Not one. And so as a consequence of that, I think the system has demonstrated the capacity to not only establish what those objectives would be, but also a capacity and a flexibility to adjust to those based on the realities and the pressures that may exist at the time.

Now, the fact that that, again, observed by the Board as may have begun to influence a decision on the part of managers was a very important observation and one that we need to assure that, as we make these institutional changes, that we adhere to the same management principles of setting goals and objectives, but at the same time assuring that the checks and balances are in place they not override.

MR. MAHONE: Yes, sir?

QUESTION: Steven Young with spaceflightnow.com. You said a few months ago that you warned NASA employees this report was going to be ugly. I'm wondering: Was it ugly? And what effect do you think it's going to have on agency morale?

MR. O'KEEFE: Well, I think Admiral Gehman's observation, when asked the same question yesterday, was that, no, it's clinical and very straightforward. And there is no question about that. It is a very direct review. It is--again, the whole contingency planning effort that we went through on the prospect that something like this could happen ended up working exactly--better than we could have ever anticipated in that sense. That Board was activated that day. They met for the first time at 5:00 p.m. on that afternoon. So they were immediately about the business of investigating, and in concert with that, there was-- there was nary a hint or suggestion that there was ever any point throughout the course of this seven months in which we sought to influence the outcome of that result.

What we wanted was an unvarnished, straightforward assessment from them, and we got that.

Now, I think the approach that we have talked about among our colleagues here in the agency is that it would be that straightforward approach, that that would be that direct commentary, and then in the process of reading through this, that we'd be deliberate about following--accepting those findings and complying with those recommendations in order to strengthen this organization in the future. I think we've got a very competent, very professional, extremely well considered work that didn't, you know, spare anything in risking, you know, the sensibilities or the emotions or sentiments of anybody in this agency. And that's exactly the way we expected it to be. That's what we wanted it to be. And that's what we asked for them to do. And they did it.

MR. MAHONE: We're going to take one more question here, and then we're going to go to our centers, and then we will come back here in just a few moments.

Kathy?

QUESTION: Kathy Sawyer, the Washington Post. Mr. O'Keefe, the report pointed out that the schedule leading up to next February was going to be as challenging and fast-paced as the one that immediately preceded the Challenger launch in 1986. Were you aware of that? Did anybody come to you and say, hey, we're pressing too hard? And what do you feel about that now in light of events?

MR. O'KEEFE: Well, again, the scheduling and the manifest, as it were, the milestones and so forth that were set, was established by the Shuttle Program Office and the International Space Station program management at the request to specifically identify the optimum systems engineering approach for deployment of all of the components of the International Space Station. So they laid out the schedule. They established what those dates would be and milestone objectives would be. And, again, in the course of my tenure, there was not a single launch that occurred when it was actually scheduled.

So I think the approach that we adhered to at the time, as well as continue to, I think, is to always set what our milestone objectives and goals, and clearly the establishment of the core configuration of the International Space Station was an objective that our international partners looked to, Members of Congress, all kinds of folks examined and viewed as one of the seminal aspects that needed to be achieved in order to permit then a wider debate of what that broader composition or configuration of the International Space Station could be. But you had to reach that point first.

And so in dealing with that, the approach that the International Space Station and the Shuttle Program Office devised was that schedule for the optimum engineering configuration necessary to do so, and the operational considerations were factored into it. And, again, at every single interval, at any point in which there appeared to be any anomaly, the flight schedule was adjusted, as it was for every single flight since I've been here. There has not been one that flew on the day on which the launch schedule dictated it

should. And that's, again, appropriate, necessary. The stand-down that occurred from June to October of last year was a direct consequence of that.

So all those factors, I think the paramount objective that we continue to look to is the safety objective. And, again, that's what the Board report points to, is that the checks and balances really needed to be reinforced, and we need to be mindful in the future that those be in place as we use that appropriate management tool, as they have identified it, of establishing goals, objectives, and milestones.

MR. MAHONE: Sir, we're going to go to Stennis first, so, Stennis Space Flight Center?

QUESTION: Hi, Administrator. This is Keith Darcy with the Times-Picayune out of New Orleans. Can you say how the return to flight process will affect the long-term flight schedule of the Shuttle, and specifically the production level at the external fuel tank plant in New Orleans.

MR. O'KEEFE: I wouldn't speculate at this moment. We've really--we've received the report yesterday, and what we have put together, again, is an implementation plan in its preliminary form based on everything that the Board identified in its public statements and commentary and in the written material they sent to us as preliminary findings over the course of the last several months.

Now we have the benefit of the entire report. We're going to update and upgrade that implementation plan. We hope to release that here in the next ten days to two weeks so we can identify what those objectives are, informed by the report. We also have a number of factors and issues that we have identified within the agency that need to be adjusted prior to return to flight. And so as that unfolds in the weeks and months ahead, we'll be able to establish exactly what it will take in order to achieve that.

But, again, the paramount, overriding factor in this case is going to be that we comply with those recommendations, and when we are fit to fly, that's

when that milestone will be achieved on return to flight.

MR. MAHONE: We'll go to Langley. Langley?

QUESTION: This is Dave Schlect with the Daily Press. I have a question about the Safety Center being developed here at Langley. One of the Board's recommendations is to establish an independent technical engineering authority that would be the sole waiver-granting authority for all technical standards. It would decide what is and what is not an anomalous event and would independently verify launch readiness.

How might the new NASA Engineering and Safety Center fulfill this recommendation?

MR. O'KEEFE: Well, we're sorting through that right now. The initial charter of the Safety Center has been formulated. As a matter of fact, Brian O'Connor is there at Langley today, working with General Roy Bridges, the Center Director at Langley, and others in order to begin working through the findings and

recommendations of this report and how it will affect how we should adjust the charter of the NASA Engineering and Safety Center.

The approach that is identified--and, again, we spent a lot of time last night talking to Admiral Gehman and his colleagues on the board--of exactly how we may consider various approaches here, and they were more in the listening mode of what that could be, because, again, they have not been dispositive about which options we should select other than to, again, reiterate that the recommendations are to, again, establish that independent technical authority for the control of requirements of the Space Shuttle Program. And that's a factor of whether or not that's part of the Engineering and Safety Center, which, frankly, could serve as more of a research and development, testing, trend analysis kind of center and an organization that can come in to regularly examine what our processes and procedures are with a fresh set of eyes all the time, and to have the influence during the course of operational activities to identify cases where they see anomalies that have some historical or

trend assessment to it, that's the issue that we've really got to sort through, is whether or not you have both of those capacities inherent in the same organization or whether it should be two separate functions.

In the time ahead, very short time ahead, that's, you know, the set of options we really need to sort through in order to comply with those recommendations, which I think are solid.

MR. MAHONE: Next would be the Glenn Research Center.

QUESTION: Mr. Administrator, Paul Winovsky (ph) from WOIO Television. I'm working on an assumption here that there's a backlog of science waiting to fly once safety concerns are handled. How will you go about prioritizing what flies in the payloads. For example, the combustion experiment developed here (?) was destroyed on the last mission. Is the pipeline full? And how will you prioritize what goes into space next?

MR. O'KEEFE: That's a very good question. There are two approaches we're going to use to this. The first one is that if you go to the Kennedy Space Center today, the payload processing facility and all the International Space Station program elements that have arrived are stacked up in sequence and are being tested and checked out for deployment at the--as soon as the resumption of flight occurs. So there will be not a lot of confusion about exactly what that sequence will be. It's going to follow the pattern that, again, fits that optimum systems integration, engineering strategy that is best for the production--construction of the International Space Station to reach the core configuration.

The science component will be drawn from an effort that we conducted through last summer and early fall, not quite a year ago, which was an effort to prioritize what the science performance will be aboard the International Space Station. We had a blue-ribbon panel of external scientists representing every single scientific discipline who came in to specifically organize what that priority sequence is. Until that

time, it was a collection of priorities from every discipline, all of which ranked number one. And so when everything is number one, that means nothing is number one.

So what the Board--what was referred to the re-map effort did last summer and fall that organized that prioritization set actually had a rank order that began with the number one and moved through by sequence, two, three, four, and five, and so that is the sequence in which we will organize the Space Station scientific objectives from this point forward, because that is the primary source of all the scientific microgravity experimentation that will be carried out in the future, is aboard the International Space Station. So we'll adhere to that blueprint very carefully.

MR. MAHONE: Sir, we have a question at the Kennedy Space Center.

QUESTION: Mr. O'Keefe, this is Jay Barbee with NBC News. In talking with the workers here and in Houston, I'm finding they are very encouraged with you at the

helm. They believe at this time in NASA's history that you are the right man for the job.

Now, they're encouraged by your honesty and your willingness to admit NASA's mistakes. But their concern is still communications. It has been stifled, and many with safety concerns have been intimidated into silence, in fear of losing their jobs.

Can you today reassure any NASA or contractor employee if they speak up with safety concerns, even to members of the press, that they won't be fired, that they won't suffer setbacks in their careers?

MR. O'KEEFE: Absolutely. We get it, and that's what message has been transmitted and understood by every single leader and senior official in this agency, is that we need to promote precisely that attitude. So the answer is absolutely, unequivocally yes.

MR. MAHONE: Johnson Space Center?

QUESTION: Gina Treadgold with ABC News. Sir, you've said you take responsibility. Do you plan to step down as a result of this? Or do you feel any pressure to resign?

MR. O'KEEFE: Well, certainly I serve at the pleasure of the President of the United States, and I will adhere to his judgment always on any matter, including that one. And so, no, there is nothing that in my mind transcends that requirement, and I intend to be guided by his judgment in that regard.

MR. MAHONE: Marshall Space Flight Center?

QUESTION: Shelby Spires with the Huntsville Times. Given that the Board suggests that the external tank be blown with no foam loss, and engineers say this isn't possible, is NASA prepared to redesign the tank without foam and go to Congress to ask for the money to do this?

MR. O'KEEFE: We'll see. I mean, there may be an option down the road in which will be selecting to do

something along those lines. Don't know. But the approach that I think very clearly articulated yesterday by the Accident Investigation Board membership was that there--just based on the current configuration and the safety considerations, the issue of foam loss per se is not something they find as being totally disqualifying.

What they do find to be a problem and what was a contributor, to be sure, a causal effect based on what is the likely condition of what occurred in that first 81 seconds, was the departure of the bipod ramp from the--insulation from the external tank which struck the leading edge of the orbiter. That's the part that already we have eliminated as a factor that's going to be heating segments around that area to act as, instead of the insulation, so you will not find an insulated bipod ramp at that point on the external tank in the future.

Exactly how much further that's going to need to go, that's one of the things that I think in the report they said very specifically we ought to aggressively

develop a program to eliminate departure of any debris of insulation coming off the external tank. And that's the part that has already been tasked and that Bill Readdy, as part of the return to flight effort, has already charged our external tank management team over to look at. So we'll be looking to the results of that view, and all the options are on the table. We'll see what comes.

MR. MAHONE: We'll take two more questions from the centers, and then we'll come back here to headquarters, and we'll go to Dryden.

QUESTION: Mr. Administrator, this is Jim Steen with the L.A. Daily News. I was wondering if the folks at NASA are looking at the possibility of bringing Shuttle landings back to Edwards Air Force Base as a safety precaution. And I also wanted to know what role, if any, that Dryden Palmdale facility will have in your return to space operations.

MR. O'KEEFE: Well, in terms of the option of landing at Edwards, to be sure, that is an option we've always

exerted and used anytime the weather conditions don't permit a return to the Kennedy Space Center in Florida. So we'll continue to do that, and anytime there is a condition which would dictate that we land on the west coast, that's exactly what we'll do.

The challenge thereafter, once landing at Edwards, is to transport the orbiters across country, and that's something that, again, one of the quality assurance and risk management challenges of dealing with the Shuttle orbiters, is the more you touch it and the more you fiddle with it, the more likely is the prospect that you can damage it. And every time we do that, it gets more and more difficult to sort with, because, again, it's always launched from Cape Canaveral at the Kennedy Space Center.

So, yes, Edwards will always be an option, and it's one that we are not deterred by that challenge if there are factors that dictate the consideration of landing there.

In terms of the Dryden Center, there is no question that the flight operations activities that are continuing to go on there that cover a wide range of different supporting efforts that we go through for unmanned aerial vehicles for the Defense Department, for a wide range of different programs, no question we will continue to see that activity unabated there. And as circumstances dictate, there may be further flight test requirements that we would conduct there in support of return to flight activities for the Shuttle.

MR. MAHONE: We're having some technical difficulties at JPL, so we'll come back to headquarters. And, Mr. Administrator, if I could start off with Bill Harwood, we'll start with Bill.

QUESTION: Thanks, Glenn. Bill Harwood, CBS News. Well, just looking ahead to 114, I think the previous questioner was probably asking you about overflight to land at Edwards versus Kennedy, just for the record.

My question: Looking at 114, are you committed to not flying that flight until you have both a tile repair

capability and an on-orbit RCC repair capability, realizing that it's the RCC that's obviously the long pole in the tent right now.

MR. O'KEEFE: Well, there's no question. The report very specifically divides the findings and recommendations into those areas which must be complied with prior to return to flight. We intend to take that with absolute conviction, no doubt about it, and we're committed to doing that.

Among them is the point of an on-orbit repair capacity, and that's the range of options, because it could cover a wide set of circumstances. We've got to look at what is a responsible set of options in order to provide that repair capacity, and those are the things we're looking at right now as weighing all those options to figure out what's the most appropriate course on that. But it's one of the requirements within the--or what we view as a requirement within the report as a recommendation that must be complied with prior to return to flight, and we intend to adhere to that.

MR. MAHONE: Mike?

QUESTION: Mike Cabbage with the Orlando Sentinel. One of the things the Board made pretty clear in their report was that they have a concern that after you implement cultural changes, that NASA will sort of backslide the way that it did after the Rogers Commission.

What can you do to make sure that cultural changes you put in place now will still be in effect 5, 10, 15 years from now?

MR. O'KEEFE: That's a point that we really have spent a lot of time. Again, last night the Board was generous with their time for several hours in sorting through, and that dominated the discussion in many ways, and they were consistent and repetitive in their responses to this, which is it can't be personality dependent. It's got to be a set of institutional changes that will withstand any change in leadership and management and so forth, and it's got to be a set

of principles and values that are reiterated regularly that then become institutionalized.

So, I mean, the measure of that is going to be, I think, over time if we see a real change in the mindset. But, importantly, I'm very mindful of the observations that several have made in the public, which is, yes, we've heard this before, and, yes, they've pledged to do these things. No question, that's a very clear criticism.

All I can offer is I wasn't here at that time, and a lot of folks who were in senior management and leadership positions were not in those capacities at that time either. So we've got to move forward with the objective of adhering to what the Board has said, which is to be sure that it not turn on just the individual personalities involved, but instead become an institutional set of values and disciplines that will withstand that test of time. And that's going to be the real measure. It's something that, again, the jury's out. We'll see how far that goes, and I'm

certain, I'm absolutely certain that you will be the judge of that.

MR. MAHONE: Frank?

QUESTION: Frank Sitzen (ph) with Aerospace America. Among the Board's report--recommendations yesterday was that the Space Shuttle be replaced as soon as possible. Admiral Gehman expressed his concern that there wasn't at least a design candidate on the drawing boards, he said.

Given that, are you looking afresh at when and under what circumstances to retire the Shuttle? And what kind of mix of systems do you propose to do so with?

MR. O'KEEFE: Well, it's exactly one of the charges that is now slightly over 24 hours old that we do, so maybe I could--if I could ask you for another hour or two to get through that analysis, it would be helpful. But we are trying, I think, to sort through exactly what the implications would be there of a range of alternatives.

The Board--what I read and what I saw in the report was very specific in saying that if there is an extension of the Shuttle operations beyond the beginning of the next decade, it must be recertified. And so establishing what those recertification requirements would be is part of what I read also to be one of their recommendations and findings, that we establish exactly how we would go about doing that, so that you make those judgments today so that later, when those decisions are made by all of our successors, that there not be just matters of convenience taken at the time to determine what the recertification requirements would be. So that's an aspect we've got to think about now in anticipation of tomorrow.

And, finally, the approach we have pursued as a consequence of the President's amendment to last year's program submitted in November of last year to, as part of the integrated space transportation plan, is to begin an effort for a crew transfer vehicle that is focused on crew transfer capacity as a supplement to that capability that we have used for both crew

transfer as well as heavy-lift cargo assets on the Shuttle.

And so we're pursuing that. There is a very aggressive effort right now to be very specific and very deliberate about a very limited number of requirements, and I think we have followed through on what the Board observation on that point is, which is to make sure that those requirements are very straightforward and not so extensive that it requires either an invention, a suspension of the laws of physics, or the use of what Admiral Gehman referred to last night as a material referred to as "unobtainium" in the effort of trying to put together the alternative. So make sure it's realistic, is something that is technically doable now, and that is the set of very limited requirements that we have put together for a crew transfer vehicle that is the orbital space plane configuration.

So we'll see what the results from the creative juices and innovation of the industry will be here in the weeks and very short months to follow.

MR. MAHONE: Debra?

QUESTION: I'm Debra Zabarenko. I work for Reuters. You've got a lot of big challenges contained in this report, but for safety concerns, you can go to safety experts and systems analysts. For organizational problems, you can go to the folks who are expert there. But one thing the report said that NASA needs and does not now have is the kind of urgent mission that it had during the Cold War years. Are you going to be looking to the White House, to Congress? Where are you going to go for guidance on dealing with what seems to be one of the biggest underlying problems that the report remarked on?

MR. O'KEEFE: Absolutely. Again, as I mentioned at the very opening of my comments here this morning, in each of these events of great success and great tragedy it has been always attendant thereafter with a very extensive national policy debate. And sometimes that national policy debate has resulted in a set of objectives that are identified, and in other cases it has been unsatisfying.

Our anticipation is this next national debate coming is one that we hope and we certainly plan for it to be a satisfying result. And how that sorts its way out between our colleagues within the administration as well as in Congress, and certainly the general public, is going to be a question that in the time ahead--and Congress has--the committees of jurisdiction have planned a set of very aggressive, very extensive public hearings in the weeks ahead that I expect will spark that debate. And the answer to your question I think will be resolved from that set of policy debates that will be shortly coming.

QUESTION: Do you agree with the report's estimation that that is something that NASA doesn't have right now, an urgent sense of mission?

MR. O'KEEFE: Nothing comparable to what drove us as a nation with the threat of the prospect of thermonuclear war by a bipolar, you know, opponent on the other side of this globe that existed in the early 1960s. No, we

don't have anything nearly as earth-shattering in that.
Thank God.

MR. MAHONE: Frank?

QUESTION: Frank Moring with Aviation Week. Another thing that the space program needs is money, and there's been some bad news lately from the--most recently from the Congressional Budget Office.

What is your assessment of the budget prospects for the space program as this national debate gets underway? And, also, what do you see as the cost of meeting--in rough terms, of meeting the Gehman recommendations?

MR. O'KEEFE: Again, I would not even speculate on what the national debate that will occur over the federal budget proposals would yield. That's going to be in the time ahead as well. That's happening currently. I think you pointed that very succinctly.

As a member of this administration, we certainly are going to be valuing and evaluating those particular

consequences in the context of what is necessary to proceed forward with compliance with these recommendations and what resource requirements we'll have. And certainly that debate will continue and will go on inside the administration as well as within the Congress. And so the results of that will be known in due time.

In terms of what it's going to cost for us to implement, again, if you give me another hour on top of the one that I asked from Frank to figure out what the cost is beyond just evaluating a report 24 hours old, we might be able to get back to you. But at this juncture, I wouldn't even put an estimate or a price tag on that at this juncture.

MR. MAHONE: Okay. Brian?

QUESTION: Brian Berger with Space News. One of the points that the report made is that NASA has exhibited a tendency to bite off more than it can chew, have more ambition than budget.

Can you fix Shuttle, can you complete Station, and undertake an ambitious effort like Project Prometheus on the same schedule that you've laid out so far?

MR. O'KEEFE: Well, again, this is not a new observation, is your point. It's one that was very clearly driven home to me in the course of my confirmation hearings, as a matter of fact, a year and a half ago by several Members of Congress, that we have had a history of trying to do too much with too little or not prioritizing sufficiently. And there are several different ways to go about looking at technology management. One is what is commonly referred to within, I think, the technology sector kind of approach, which is put a lot out there and let a thousand flowers bloom. And the ones that do come up and the ones that are considered to be of greatest value, those are the ones you pursue.

Well, maybe that's the closest comparable management approach of technology that was pursued within this agency in the past. Upon my arrival here, in fairly short order we established that there were three mission objectives: understanding and protecting the

home planet, exploring the universe and searching for life, and inspiring that next generation of explorers. And if it doesn't fall in those three mission categories, it doesn't belong here--not because it isn't a neat thing to do or would be interesting or whatever else.

So in the course of the past year-plus, we've been really going through the process of winnowing down what are the programs that really participate and contribute to those three mission objectives very succinctly, and those that are neat ideas and good things to do, well, we try to find some other home for them somewhere else, but not here, because we're trying to be very disciplined and very selective about what we do. We've got to continue that effort and be more deliberate about it in the future, I think, in finding those efforts that fall within those categories.

In terms of the very specific example that you cited of Project Prometheus and developing power generation and propulsion capabilities, that is something that comes right into our wheelhouse of the kinds of things we

need to be doing, and it marks the technology kind of prowess of this agency that it's been known for four decades, which is to overcome those technical obstacles in order to achieve the next set of exploration objectives.

And so that is there in the program. It's fully financed. You know, the money that's required and the resources necessary in order to do so have been approved within our administration, have been offered to Congress for their consideration. And we're underway with that effort because that's one of the serious long poles in the tent to pursuing future exploration objectives. And so that one fits very, very precisely within those three mission categories, without reservation or equivocation.

MR. MAHONE: Mark?

QUESTION: Thank you. Mark Carreau (ph) from the Houston Chronicle. I think I have a question and a follow-up, if that's okay.

What do you contemplate--

MR. O'KEEFE: How can you have a follow-up when you haven't heard the answer yet?

[Laughter.]

MR. O'KEEFE: Sorry. Go ahead.

QUESTION: Okay.

MR. O'KEEFE: Pardon me. I didn't mean to be flip.

QUESTION: That's okay, sir. Thank you. What do you contemplate doing or saying to your managers and workforce to explicitly uncouple schedule pressure to build the Space Station from the Shuttle recovery?

MR. O'KEEFE: Well, let me take the first part of that because I'm not sure--Shuttle recovery, do you mean return to flight?

QUESTION: Yes, sir.

MR. O'KEEFE: Okay. I'm sorry. Again, the point that I think was very clearly enunciated in the report that resonated with me is that this may have begun to influence the program manager's view of how you proceed to meet milestone objectives. Again, that's a useful, very valuable management tool that has to establish goals. It's a leadership principle. You have to have folks--again, it's part of the point that was raised in several other questions earlier, too, that you have to have goals, you have to have objectives, you have to enunciate what they are and when you intend to achieve them. That's part of any other aspect of what we do.

The really profound point, I think, that the Board raised was that there was some mixed signal, miscommunication of that point, of which was more dominant. And so the checks and balances must be established, and they were very clear on that point repetitively in their--in every part of the report, that what we need to do is establish institutionally an ethos, a set of values, a discipline that really encourages folks to have an open communications loop,

to express when they believe something to be not safe at that time to proceed with.

Now, that may not rule the day. It may not be, well, in that case, since you've simply asserted it, it must be so. There really is a case in which we've got to demonstrate that it is safe, and that's a very different approach that now the burden of proof, I think, has to be reiterated in that direction as well.

So as we move through this, establishing what those institutional checks and balances will be, and part--I think the answer to that one in this particular instance is assuring that that communication loop is very open and that there is resolution to each of the objectives or objections heard so that everybody is heard and that crisp decisions are made thereafter in terms of how to serve it up and follow through from there.

Once you've heard it, your follow-up?

QUESTION: Yes, my follow-up is: Do you need the flexibility to deal with the Russians, contract with the Russians, or whatever, to give you this time so

that you have the supplies aboard the Station? And how do you deal with your international partners' expectations of having their equipment aboard, that there's commitments made even above your level to try to do that that you have to respond to? And I'm wondering how you deal with the workforce, but also deal with that issue.

MR. O'KEEFE: That's a very important question and one that we've taken extremely seriously. But I'm very, very impressed with the response of our international partners and their capacity to really act like partners in an International Space Station effort. This is an endeavor pursued by 16 nations, and they have responded very, very definitively.

So in working through all those issues, as recently as a month ago I met with all the heads of agencies of the International Space Station partnership, and we worked through all of the challenges that, as we sort through the months ahead and anticipate return to flight, that there be a lot of obligations and commitments. We're going to continue to look to them and to us to honor as

we work through this. And we have--I've got a very clear understanding with them, and they have been really just exemplary in the manner in which they've done that.

So I have--we've all taken a part of the responsibility of this, and we all view this as a partnership challenge. This is not something which they say, you know, to the United States, "What are you going to do to help us out today?" No. They've been very forthcoming in terms of their approach and accepting their piece of the partnership responsibility in doing this. It's been commendable.

MR. MAHONE: We're going to go right here.

QUESTION: Mr. O'Keefe, Peter King, with CBS News Radio.

Yesterday, we read the report, of course, and there were lines in there that expressed pessimism that NASA would be able to change, and in an interview after the report was issued, Admiral Gehman told my colleague,

Bill Harwood, that some are or will be in denial about the changes needed and the flaws in the system.

What message have you or will you send to those particular people at NASA?

MR. O'KEEFE: Well, again, and this is reminiscent of some of the earlier comments that we have shared here, this is tough stuff, and we shouldn't be a bit surprised when engineers, and technical folks and all of the rest of us as colleagues here in NASA act like all other human beings doing, which is, when you hear something, it really is tough, and it's hard to accept that it takes a little effort to work through it. And that's exactly what we've been really endeavoring to do in the last few months here is just kind of steeling ourselves for what we asked for, which was an unvarnished position, a very direct report, take off the gloves and let us know what's wrong.

We didn't ask Admiral Gehman and his colleagues to tell us what's so right about this place. I mean, that's something that has, you know, again, been widely viewed as "overthought" of. We got that point.

The issue is we really wanted to know, in a very clear, distinctive way, exactly what they thought was flawed about the way we do business, what caused this accident, what were the contributing factors, all of the other things that may go to it, and they complied with that, and they did it with great skill, and it could--I can't imagine what the deliberations among the Board members must have been over these past several months.

Trying to get 13 very, very smart, very thoughtful, very Type A people to come to closure on a set of views could not have been an easy task. And you can see that they really worked through some very differing approaches that ultimately came to a very crisp set of conclusions. So I think that's something we've got to work through, and this is part of the process we've been engaged in for the last few months is kind of strapping ourselves in for the fact this was going to be an unvarnished view and a very clinical, direct, straightforward position, and it has been.

We got what we asked for, and there's no question that we now need to go about the process of all of the steps that it takes in order to accept those findings and to comply with those recommendations, and that's a commitment we're not going to back off of.

QUESTION: Todd Halvorson of Florida Today.

Now that you have had the CAIB report for 25 hours, and given the fact that you've gotten a good head start on your return-to-flight activities, what are your thoughts now about your ability to make that March through April window for return to flight next year, and what are your thoughts about when you can get to core complete?

MR. O'KEEFE: Well, the answer to both is we'll see. From the technical hardware standpoint, all of the assessments we've gone through here in the last couple three months are there are a number of options that would certainly permit an opportunity after the new year to look at a return-to-flight set of objectives, and we've reviewed those with the Board. They're aware of that activity, and that's underway.

The larger questions I think that are raised in this report, too, that deal with some of the management systems, the processes, the procedures, the, again, the culture of how we do business, we really have to set this bar higher than what they did, what anybody would do. The standards that we are expecting of ourselves, we need to be our toughest critics on that. And so those are going to be a little more difficult to I think assess in terms of a calendar or a time line, in terms of when they're done, and instead I think it's going to be a case where, when we've made the judgment that we are fit to fly, that's when it's going to occur.

Now, we're not going to just do this in isolation or a vacuum. We've asked a very impressive group of 27 folks who are part of the Tom Stafford and Dick Covey's Return-to-Flight Task Group to help us work through those options and assure that we're not just, you know, drinking our own bath water on this or singing ourselves to sleep on the options we love the most, you know.

It's a case where we really want to lay out the full range of things we're going to do and have their assessment of whether they think that passes the sanity check. And that group of folks, I would suggest to you, if you haven't had the opportunity to do so, to look at the varied backgrounds that those 27 people bring, not only the technical and engineering and I think smart folks on the hard sciences side, but also a lot of management experts, a lot of folks who have dealt with large organizations, dealt with culture change.

Walter Broadnax, who was the deputy secretary in the last administration for the Health and Human Services, is a member of that. He is now the president of Clark Atlanta University. This is a guy who has been through several different organizational shifts working for the State of New York, working for the last administration at HHS, and so forth, dealing with very large organizations, understanding management culture change requirements.

Richard Danzig, who was the last Secretary of the Navy in the last administration, as well, was a member of this.

Ron Fogleman, who was the Chief of Staff of the Air Force, who really set some standards in the Khobar Tower incident over what accountability standards should be adhered to within the Air Force, is a member of this group.

So if you work through every one of those, what you find are folks that aren't just--or I shouldn't say "just"--it's not dominated by a group of folks looking strictly at the engineering-hardware kinds of challenges. It's also looking at these larger systems process changes, and those are the kind of folks that have been added to this, including a number of academics who have written about it, and thought about it, and worked through it like Dr. Vaughn and others, colleagues of hers, who have really looked at organization change issues and, in turn, are going to help us really think through this.

And they've been there, done that, gotten several T-shirts and recognized lots of tendencies on the part of organizations or institutions to select options that may or may not be more or less convenient. They're going to be good sanity checkers as we work through that, and those are the kinds of people I think that their judgment will be invaluable as we work up to that inevitable return-to-flight milestone.

MR. MAHONE: And the complete list of those members are at www.nasa.gov. You can go to that and find their bios and so forth.

A question right here.

QUESTION: Jim Oberg with NBC.

I'd like to ask a question on culture and the issues of intellectual isolation of the NASA community from the outside world. The Board and other people have mentioned words, from the Board example, self-deception, introversion, diminished curiosity about the outside world, NASA's history of ignoring external recommendations.

These are some pretty serious charges, and people have seen evidence of it. The Board did and other people have mentioned it, too. You have a situation where people who are here now are almost hunkering down into a siege mentality, where outside critics are cold and timid souls whose views should be ignored.

How can you get the people to become what the Board wants you to be, a learning organization like that, when many of the same people who have been immersed in this culture for all of their working lives are the ones designing, developing and judging the success of your recovery process?

MR. O'KEEFE: Again, you have accurately recited what are the findings of the Board and their overarching view of what they have deemed or viewed to be the culture within the agency.

The first step in any process is to accept the findings and to comply with those recommendations, and I think Admiral Gehman had been very fond of saying to the Board, "T equals zero," zero meaning anything that happened after February 1st is not something they're looking at. They're really focused on examining that.

Well, to NASA today, T equals zero starts today, and we've really got to work our way through accepting those findings and complying with those recommendations and that will be the beginnings I think of sorting our way through these larger institutional challenges. I think the questions and comments and observations made by your colleagues here, as well as in my statements at the opening of this, suggest we've got to being that process and work with what is a very

professional group of folks throughout this agency, who I think can step up and accept those responsibilities, and we all have, in working through this, and recognizing that this is a institutional set of failures that must be addressed.

I don't see that the reticence on the part of any individual in this agency is going to be a setback in that regard. We've just got to work through that very methodically, very deliberately, very consistently, and employing a principle of the United States Marine Corps that I always found to be pretty pointed, which is "repeated rhythmic insult." If you always say the same thing, and you mean it, and you keep going at it, and you stick with that set of principles and values and discipline, it's going to resonate in time, and in time means sooner rather than later in order for us to really reconcile and come to grips with these findings, and accept them, and comply with those recommendations.

MR. MAHONE: Question, here.

QUESTION: Bill Glanz, Washington Times. I just want to find out what your gut reaction was while you were reading that part. For instance, were you appalled at some of the decisions that the program managers made, and also, when you were reading it, did you have any "holy crap" moments?

[Laughter.]

MR. O'KEEFE: I've had so many of those since February 1st I can't count them all any more.

Again, this was not a surprise. Among the emotions that I felt in reading through this, surprise was not among them, because again, they were very faithful in what they said they would do. Admiral Gehman and every member of that Board were very, very clear in the course of their proceedings of saying, "What we're telling you and what we're inquiring about in these public hearings is what you will read in this report." Very explicit about that. They never walked away from that point. Again, talking about repeated rhythmic insult, that was, a repetitive commentary

that they followed through on and did precisely what they said they were going to do.

So in reading through this, and again, our approach from day one, from the 1st of February on, was again to be as open as we possibly could conceive of being, release all of the information for everybody to see what was going on. So reading lots of the discourse and back and forth and communication that went on that are now faithfully repeated in the report, was not the first time I'd read them, because we released them a lot here, and they talked about them a lot in the hearings, and so in the course of this, I think the terminology they used was very consistent with what I heard in the course of all those public hearings.

And after 22, 23 hearings that lasted on average three-and-a-half to four hours each, that was a lot of volume. So really, distilling all of that and coming up with a report that was as succinct as this is, that it was only 248 pages by comparison to the thousands of pages of

transcripts from all those hearings, was really the part that I found most impressive, was they were able to distill this into a very pointed set of findings and recommendations.

But surprise was not among them, and there was nothing that I saw there that they had not previously talked about. They were very, very conscientious about following through on that commitment and they did what they said they were going to do.

QUESTION: [Off microphone] -- appalled by some of the decisions that the program managers made, you know, being pressured by the long schedule, and all the missed opportunities that they mentioned in the report?

MR. O'KEEFE: Again, I mean the course of this. There have been countless hearings that I've been a witness at. There have been lots of different opportunities where we have gotten together among your colleagues in the press corps to discuss several of the events as we've walked through this

in the last seven months. At each one of those there were plenty of cases in which you said, gosh, how could this have happened? But there's no question. None of it was a new revelation in that regard. It has been all by degrees over time in these last six, seven months, you know, rolling out and laying out in ways that we have really seen institutionally as well as with the hardware, as well as human failures were that led to this.

By all means, they are a guidepost to figuring out exactly how you improve that communicate net, sharpen the decision-making process that informs, decision-making that includes all the information that's necessary to make those kinds of judgments at the time, and I think that's exactly what we saw come out of this.

QUESTION: Chris Stolnich from Bloomberg News. I was just wondering if you could describe what you believe the goals for manned space flight are in the wake of this report, and how or if they should change?

MR. O'KEEFE: We are, and have always been, dedicated to exploration objectives which in some instances require a multitude of different capabilities, to include human intervention. What we've laid out is a strategy, a stepping stone approach in which we conquer each of the technical and technology limitations as we pursue greater opportunities. Calls for a sequence of capabilities, which we see playing out right now.

In early January we're going to see two Rovers land on the planet Mars, and it will follow, as it did, several other missions that preceded this, in order to collect and gather the information and the knowledge necessary to inform the opportunity for human exploration at some point.

And as we prepare those capabilities to proceed, we have a more complete knowledge of precisely what it is we're going to encounter, and what will be garnered and gathered from that set of missions and those that will follow, which are robotic, will inform that decision making and inform that

understanding and judgment about exactly how human exploration thereafter could be permissible.

The second phase of it though is an important one, because your question I think also speaks to the immediacy of instances and cases in which human involvement is imperative in order to preserve capacity.

Today there's a spirit of debate that's going on, that again, I commend you all for having covered rather broadly, of exactly what is going to be the service life of the Hubble telescope. Just launched on Monday the SIRTf infrared telescope that will be a companion to Hubble, if you will, for all the infrared lower temperature observations and readings that could be observed by that imagery.

But recall that the history of Hubble--which I have not seen very extensively discussed in all the coverage of the current debate about how long Hubble should be operational and what servicing missions are necessary--the history of that was,

your predecessors 10 years ago roundly viewed the deployment of that capability as a piece of \$1 billion space junk, because it couldn't see. The lens needed correction. It required a Lasik-equivalent surgery. And the only way that could be done was by human intervention. So in 1993 when that mission was launched to correct the Hubble, that was done successfully, and the only way it could be done was because a human being, several of them, spent many, many months training to be prepared for making those corrections on the spot, and for every contingency that could arise as you work through it. It was nothing we could do, adjust from the ground.

The last round trip flight of the Columbia in March of 2002 was to the Hubble again to service it, to install new gyros, to install an infrared camera, to upgrade a number of different factors to it that improved its capacity by a factor of 10, according to all the astronomers who observed this, and they are just elated over the quality of what has come back from this. And yet it turned out that the primary human characteristic that was

so important on that mission was embodied by a
gent who will be joining us here in about a month,
or a matter of fact, weeks--I'm losing track of
days here--Dr. John Grunsfeld, who will be our
Chief Scientist, and relieving Dr. Shannon Lucid,
as she goes back to Johnson Space Center, as our
Chief Scientist.

He was on that mission. He's an astrophysicist,
got all kinds of incredible scientific background.
But his primary human characteristic trait that
was most valuable proved to be that all the
instruments for adjustment on the Hubble telescope
are on the left-hand side. So rather than having,
like many of us--righties are stuck with the
problem or reaching around the front of your face
with a catcher's mitt equivalent capacity to
adjust things, and a big bubble over your head,
trying to see what's going on--his primary human
characteristic that was most valuable is he's a
lefty. He's now referred to as "the southpaw
savant."

But it was a human characteristic that made those adjustments, that made that capacity work in a way that we never imagined possible, and that 10 years ago we were prepared to write off as garbage. And instead today, it's revolutionizing not only the field of astronomy, but also informing all of us as human beings of the origins of this universe, its progression over time. It has changed the way we look at everything. In the last 18 months it has been a remarkable set of discoveries that have emerged from that capability that would never have been possible were it not for human intervention.

So those are the two areas we really have to focus on, is recognizing how we can advance the exploration opportunities by being informed as deeply as we can through a stepping-stone approach of always developing those capabilities and technologies that then permits the maximum opportunity for human involvement, and then in those cases in which nothing else will do than human intervention and cognitive judgment and determination, and making selections that only humans can do, where do you use those judiciously

in order to avoid the unnecessary risk that's attendant to space flight for only those purposes and causes that are of greatest gain.

MR. MAHONE: Right here.

QUESTION: David Chandler with New Scientist Magazine. One thing that the Board explicitly avoided talking about, not because they didn't think it was important but because they didn't see it as their role to do, was issues of personal accountability. I'm wondering what your thoughts are on whether it is your role, and for example, people within the agency who failed to follow NASA's own rules. What kind of a message about the importance of safety will be sent if there is no personal accountability or personal consequences for people who didn't follow your own rules in this mission?

MR. O'KEEFE: Well, first and foremost, I am personally accountable, myself, for all the activities of this agency. I take that as a responsibility and I do not equivocate on that

point. I think it is absolutely imperative that we all view our responsibilities, and that one is mine.

The approach I think that is absolutely imperative to follow through with in this institutional change that we've talked about here, and had lots of different comments and observations about, that the report covers in depth, is that you must select folks in leadership and senior management capacities who understand exactly what that set of institutional change requirements are. So rather than saying I'm going to remove so-and-so, it's more a case of, I need to appoint folks who understand that.

At this juncture of the four space flight centers that have any specific activity over Shuttle operations, International Space Station, et cetera, so among the 10 centers there are four that specifically and uniquely deal with space flight operations. The longest-serving tenure center director was appointed in April of 2002. He is now the elder statesman among them. The

rest have been appointed since. And those are the folks who are, in my judgment, the kinds of leaders who very clearly understand, they get it, that this is about institutional change. Those are the folks that I fully anticipate are going to be the ones who will be the folks who will carry this out and accomplish the objectives we talked about here today, and they in turn select those managers, engineers, technical folks who share that same ethos.

So as we work through this we've got to be very, very deliberate in relying on the judgment of individuals who have committed to those objectives. And I encourage you to just kind of scan through the senior leadership as well as the senior positions here throughout the agency that have been conducted, and you'll find a rather significant new management team in those capacities, new leadership team, and all of them share the view that I've just talked about here, which is this is an institutional challenge which is greater than any one of us individually or even collectively. It's about the longer-term values,

discipline and principles that this agency should adhere to, and they share those goals and views.

MR. MAHONE: Last question.

QUESTION: Steven Young with SpaceFlightNow.com. I'm wondering if you've actually read the report cover to cover, or whether you intend to do that, and whether you would make it required reading for NASA employees and contractors?

MR. O'KEEFE: I think I don't need to direct that it be required reading. I haven't run into anybody in this agency, any colleague in the organization who have not felt that this is something they want to read in its fullness. So I think no amount of direction from me is going to make a difference. People are doing it because they view that as a responsibility, that we all need to view this is a responsibility that all of us must carry.

I have read through it as of--again, it was a long day yesterday, but I started when Admiral Gehman dropped it off at 10 o'clock yesterday

morning, so I had about a one hour head start from his press conference. And again, what I found in reading through it was that it remarkably patterns exactly what they said in all their public statements. So in many respects I was reading the same things I've been hearing, in listening to those public hearings, listening to their public comments. I've got to go back this weekend and read every single word for its content to do that right, but in reading through it briskly, as of yesterday morning and then last night after we left them, after a long session with them, had a chance for several hours to read through it again. But again, it struck me immediately as being remarkably close and right on to what it is they've been saying. So there were no surprises in that regard.

But this weekend, you bet, word for word, from the first page to the last word on page 248 is what I intend to read. I don't need to instruct that anybody in the agency do that. I'll bet everybody is, because I think this is the sense of responsibility we all need to share, and I think that doesn't need to be directed by anybody.

MR. MAHONE: Mr. Administrator, thank you very much, and thank all of you for being here today.

[Whereupon, at 12:31 p.m., the press briefing was concluded.]