

**Media Briefing on E-mail Traffic**  
**Johnson Space Center**  
**February 26, 2003**

**Moderator:** OK, here is Jeff Kling, the entry Maintenance, Mechanical Arm and Crew System (MMACS) officer, for STS-107 and also to Jeff's right is Bob Doremus, lead for the mechanical systems' group which is the group that includes the MMACS officers for mission control. Now we won't have any opening remarks so we will go straight to questions -- then I will try -- please identify your name and affiliation we will try to keep it to one question and go around because they told me thirty minutes. They have places to be and it's late, and it's kind of impromptu, so -- you know -- thirty minutes and we will try to limit to one question first and then we will go back around if we get the chance. Marcia, they didn't really have any opening (inaudible).

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**Marcia Dunn,** I guess that all of us are thinking that there was these huge  
**Associated** concerns out there that were not addressed properly or were  
**Press** stifled and what's your take on that and especially you, Jeff,  
because you were inside mission control that morning, and I am  
wondering as things were happening real time on February 1<sup>st</sup>  
whether your mind just kept going back to all these e-mails you  
had shared?

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**Kling:** First of all, from our console standpoint there was not a huge concern out there. We have had our proper teams looking at thermal analyses and bring back what we thought was a good result I had no reason to doubt the thermal analysis that said that there was not going to be any burn through on the vehicle and we -- the e-mails that we had were 'what if' kind of scenarios where we talked about -- like we do at our normal jobs -- bad things and everything, 'what if' sort of things and work through the whole thing. Because I had confidence in the thermal analysis I was not all concerned with the health of the vehicle (inaudible). However, to answer your second question, when events started unfolding there was a little bit of disbelief right at first when we got the first indications and we just kind of went down that path of, I can't believe this is happening and what did I miss what did we miss as a team but we certainly never anticipated this. And that was not a concern from our console prior to the (inaudible)

**Moderator:** Mark

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**Mark Carreau, Houston Chronicle:** I wonder if in any way was any of this communication shared with the Shuttle crew to your knowledge, this sort of after-analysis that was going on?

**Kling:** As far as I know none of it was shared with the crew at all. Again, we did not think it was a concern and so we would not even waste the bandwidth to go send them that sort of information. They were just 'what-if' scenarios that we are talking about.

**Moderator:** Robin?

**Robyn Suriano, Orlando Sentinel:** I am wondering if any of the people cc'd in this process were managers or people -- were they all flight controllers?

**Kling:** In the E-mails that were released today?

**Suriano:** Right

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**Kling:** There were mid-level managers in there. It did not go up to any upper level area because, again, it was more of an exercise within our group to talk about these things and on entry-day things are very busy and when we know we have a good vehicle and we are going to go do a normal entry we don't send these things around to cause distractions. It just was within our group.

**Moderator:** If you want to direct to one of them in particular, do that.

**Suriano:** This was a question but it is not related to any e-mails either you wrote but there was an e-mail I read about regarding the external tank dump-line and whether or not that should be moved away from the orbiter more so that it wouldn't inflict ice on the Shuttle itself. Are you aware of any kind discussions on how far along that change in design might have been?

**Unknown speakers:** I am not aware of anything. (inaudible) I don't know.

**Moderator:** Jim (inaudible) record it for everybody --

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**Jim Oberg,** Jeff, with this concern did you have anything in your on-console  
**NBC:** log with cue cards or something special about this concern for  
you to look at, or is it just all in your head and you are using  
standard procedures on console? Did you have anything special  
notes about this available to you at console?

**Kling:** About the particular failure scenario that unfolded?

**Oberg:** Yes, Yes...

**Kling:** No, we don't have specific cue cards for that. Again, it is a case  
-- it's essentially an unsurvivable case. We don't practice those  
sort of things, we don't even make cards for them. Our concern  
was more with -- and the early e-mails were more concerned  
with -- if you had a breach in the wheel well and you had  
damaged tires what would you do once you got down to the  
ground where you could make that landing.

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**Oberg:** Oh, I saw that you were looking for what you would see, what you would decide in real time. Did you have any modifications to what you would be looking for and what decisions you would make on console, based upon these e-mails that were circling around, did you have anything to add to your reference material on console?

**Kling:** No, we didn't. The only reference material actually would have been the e-mails, and that's part of the reason to go through and talk about it with the entire group is to build a -- to look ahead and see what you would do and what you would look for. We all had the e-mails that were available to us, yes.

**Suriano:** Bob, for lay people, would you tell me a little bit about this 'what if' planning that you do? This is fairly routine, is this not? Just explain a little bit about this 'what if' scenario that you run through.

**Moderator:** Turn your mic over to you, just a little bit, yeah (inaudible)

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**Doremus:** What we got in an e-mail originally was a discussion of if the analyses that we had seen was not correct, what would it do to the wheel well? What types of things might we expect to encounter on entry? And as experts on landing gear systems that's something that we are interested in and so that something I like, as a group, I like to pass on to the group to discuss because the exchange of ideas -- and that's what essentially those e-mails were that y'all saw, the internal ones -- helps us all learn more about the systems and what we might do in different cases. And you know if we discuss cases sometimes that we don't necessarily expect to happen. But in doing so we expand our own knowledge and kind of challenge ourselves to think outside the box and be ready for things.

**Moderator:** Chris?

**Chris Kridler, Florida Today:** This is also for you. Could you talk about maybe how serious the 'what if' scenarios have been for other missions? Have they talked about scenarios perhaps this serious?



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**Doremus:** Well, I guess if you mean by serious when we are talking about things that were potentially catastrophic? (Yeah.) We've done -- an example would be STS-80 there was a hatch on the air-lock that was jammed and that was the way the crew would use to exit the vehicle and go into the air-lock to do a space walk. And a space walk was not possible through the air-lock with the hatch jammed and so there were a lot of discussions along the lines of what might we do in different scenarios that might require a space walk in order to come home safely. That's an example of the kind of 'what if' discussions that get done. And they are generally kept internally because, you know, we didn't want to have to use those type of scenarios, we don't want to encounter those types of situations, but that's one example of what we do.

**Kridler:** Was this one considered alarmist, would you say, this time, I mean, was with any of this -- how seriously did you take this?

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**Doremus:** Well, there wasn't any new data that came to us originally that said that the tile problem might be worse than the analysis said. Had there been data in, the e-mail that we got, yeah there would have been quite a bit of concern raised. And we would have definitely started looking at what we needed to change as far as entry is concerned. But what we got was, well, if the analysis is not correct, this is what it might look like. And we were joining in on that discussion. But it was not an alarm because it didn't contain additional information that would have told us we had a concern.

**Moderator:** Dan

**Dan Molina,**  
**NBC News:** I addressed this question to Mr. [Leroy] Cain the other day, and I wonder what you gentlemen think about this. In hindsight we know that something happened somewhere some analysis was insufficient, something wasn't spotted. When you ask yourself that question -- what did I miss, what did we miss as a team -- what are your answers to that?

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**Kling:** Right now we don't have the answers. We have a lot of data still to look at, it's hard to say. It is part of our nature to question if something happens what you have missed and that's why we are going to find out what it is, hopefully identify it, and, when we do we'll go fix it. I don't know at this time we can say that we have anything real hard to hang our hats on.

**Molina:** Is there any concern that the process was insufficient in some way? The identification of potential problems under analysis? Is there any concern that the process might not have been sufficient?

**Doremus:** It's really hard to say now, not knowing what the actual problem was, it's really hard to assess how effective the process was, because we don't know what it may or may not have missed.

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**Moderator:** Darren, Let her get to the mic over there, yeah.

**Darren Lynn (sp?)** I'd like a response from both of you regarding the fact that you said that these are worst-case scenarios, 'what if' plans.

**ABC13/Houston:** Knowing though now ex-post facto, if these worst-case scenarios were something that you thought were more realistic, then by giving that information to both NASA top managers as well as the crew, what if anything could they have done with those worst-case scenarios that you brought up beforehand, twenty-four hours in advance where some of these e-mails came out?

**Kling:** I don't know that there was a whole lot we could have done, had we known. And this was all presuming that this is a tile damage thing, but we don't know this yet. But had we looked at tile and known that we had a problem at that point in the flight I don't think we had a whole lot of options.

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**Doremus:** Without knowing the exact problem that we had it would have been difficult to know what we could have done to come up with a really good plan without knowing the exact problem.

**Moderator:** No do we have people still telecon in or not? Ok why don't we take some telecon questions? Who all is on, I don't even know.

**Female** Bill Harwood and I think Miles O'Brien.

**Voice:**

**Moderator:** OK, Bill Harwood are you on, you can go and ask your question.

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**Bill Harwood,**  
**CBS News:** Can you hear me Kevin? (Yeah, we can hear you.) OK, thanks, well, Kevin I was going to ask I noticed in one of those e-mails from I mean, not Kevin, Jeffrey, I'm sorry. One of the e-mails from Kevin McCluney (sp?), if I guess, the day before really outlined a 'what if' that's almost identical to what it actually happened. I was curious as to when it sunk in for you that day, that you were in effect playing out that scenario. When did you realize the reality of it, is part A of my question, and then I guess in the second part of the question was kind of a management related, actually it was two questions but I will squeeze them both in. Which is, in hindsight, you know when you have a known incident -- in this case debris hitting the underside of the wing -- do you think 'what if' scenario you guys were playing out maybe should have had some management insight just so you could share that expertise with the guys that have to make the decisions?

**Kling:** I'm sorry could you repeat the first part of the question please?

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**Moderator:** They lost them both. Do one at a time and we will go to you for the follow-up?

**Bill Harewood:** OK. Can you hear me now? (Yes) I'm sorry. No, the first part was Kevin McCluney, I guess, there was a e-mail you were addressed to, Jeff, the day before about a 'what if' scenario that he pretty much -- if you assume the breach in the wheel well area or plasma in the wheel well -- he walked through a scenario that's almost identical to what actually happened and I was just wondering when on February 1<sup>st</sup> it began to sink into you that you guys were in that scenario and that was actually happening?

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**Kling:** OK, on entry day when we lost the first set of sensors, there was a little bit of disbelief and some concern, but we had been trained to do that sort of stuff before. The fact that it was on the left side -- it kind of raised our eyebrows a little bit with the first set of sensors. When the second set came along you start playing back some of the things that you went through and wondering it didn't actually sink in for me until probably actually until I saw some of the taped video footage of the vehicle itself. The rest of the time I was going through my job talking to the escape officer looking for evidence of the crew bailing out or whatever.

**Moderator:** Bill you had second one?



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**Harewood:** Yeah, thanks I was just wondering -- for either one of you --when you have a known incident like you did in this case of debris hitting the tank at launch. When you have a known incident like that, the what ifting that you guys do after the fact, just maybe in those scenarios and -- again, with hindsight -- maybe management should be part of that just to share the experience you were talking about earlier with the guys that have to make the decisions.

**Doremus:** You really need to be careful bringing up a 'what if' scenario when you going to possibly change something that is as complicated as our entry timelines. You really should have some concrete evidence that there is going to be a problem before you start proposing making changes unless you have something real and you really can't come forward with kind of 'what if' type of things, unless you have something solid to hang your hat on. So, I think that's where we were. It was a surprise to us when the 'what if' scenario played out. We were not expecting that.

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**Moderator:** OK, Miles O'Brien if you are on the line?

**Miles O'Brien, CNN:** Yes, can you hear me? (Yeah, Miles go ahead.) Gentlemen, with the benefit of twenty-twenty hindsight what would you do differently as you look upon your actions and you look at those e-mails?

**Kling:** I'll take a stab at that. The short answer is absolutely nothing. We had the proper teams in place to go do the thermal analysis to provide us the answer that we needed to go operate the vehicle. Everything that I had been given, everything that the flight control team had been given to go operate the Shuttle safely had been given to us and we had full confidence that the analysis was done. So I had no reason to doubt the analysis. Nobody had brought new data up that said we needed to doubt it, so given the same situation I would do exactly the same thing. I would trust the engineering folks to come through with the information they had and I would go operate the vehicle like we normally do.

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**Moderator:** Miles, do you have a follow-up?

**O'Brien:** Well, I'm Sorry; I didn't get your first name on the other gentlemen I apologize (Bob) I like to get your response to that as well if I could.

**Doremus:** Yeah, I have thought about that and I really would have to say the same thing as Jeff. I don't really think I would've handled it any differently. We made sure that the other folks on the flight control team were aware of the analysis and they already were and that's really what we were basing our entry plan was on the analysis. Our 'what if' scenarios we kept in the house because we didn't expect them to play out.

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**O'Brien:** Can I do one more follow-up? For people, who are not engineers, who are not rocket scientists, if you will, when they read this and see the level to which the 'what if' goes on I think it probably might be hard for them to understand that, in a sense, some of this is mental gymnastics for engineers, but you also can walk away with it saying, why? Were they just putting their head in the sand as they walk down these scenarios?

**Doremus:** Well, yeah, I guess I have to say we really were dealing with what we thought was a 'what if' scenario. Again, had anybody raised a concern that said this analysis on the tile is not accurate and there is likely to be a breach on entry. And it would have been a whole different flavor to it. We probably would have been maybe even less free in our 'what if' discussion if we were anticipating something happening. So really it was just on the level of that 'what if' discussion.

**O'Brien:** I'm sorry, I don't understand. Why would you be less free in the discussion if you had concrete -- or more reason to suspect?

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**Doremus:** Well, I think we would be -- rather than doing a 'what if' discussion -- we would be doing a pretty heavy entry re-planning effort rather than a technical discussion. It can be a whole different ball game.

**Harwood:** Hey James, this is Bill Harwood. Peter King is up here. Can he squeeze a question in before you go back to the --

**Moderator:** Oh yeah, I didn't know we had somebody else on. Go ahead. Can we just have one more? Go ahead Peter.

**Peter King,  
CBS Radio:** Thanks James, and my question is this. These weren't in any e-mails, I don't think, written by you. But there were some pretty strong language and statements said on some of the earlier e-mails we were looking at in a flurry. Some talk about someone being upset that you really had to pull strings to get some simulations run, and somebody, I think, said, 'some people treat information like the plague around here.' I suppose this is more of a process question, since these weren't your quotes, but I mean, is something like that part of the process? Is that normal? It sounds like it is more than 'what if.'

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**Moderator:** (inaudible) I'm not sure they've even seen the emails you're talking about, Peter.

**King:** I believe one of them was one of the Dougherty e-mails and I can't remember what the second one was, but I am just wondering, and I can't ask you to comment on those specific e-mails without you having seen them and I don't have one in front of me. I was just wondering something like that is really part of the process. It would suggest to me it means a little bit more than that.

**Doremus:** I didn't really experience anything that looks like information being 'treated like the plague.' People were real good about passing their thoughts on to us, and when appropriate we passed ours on. But I didn't personally experience anything like that.

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**Kling:** No, without speculating too much, I sense some frustration in words like that. But the process is if you feel like something is not right certainly there's avenues to go to express that concern, but us to go take action on something we have to any good reason -- any new data to support it, and we had a large engineering team out there that brought very good data that we thought. There was no additional data from the folks that are quoted here so I don't see it as a big deal.

**Dunn:** Some of these e-mails talk about flat tires coming in with that sort of thing. And are you telling me that Rick Husbands (sic) was never even informed that he might have to deal with a flat tire, at the very least? I mean doesn't a pilot have to mentally prepare for something like that, brace himself just in case -- or did you relay at least that much information to him?

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**Kling:** No, we didn't relay that information to him again because we did not expect that to happen. The thermal analysis said that there would be no burn through. And without burn through you won't damage tires, you won't even go through these things. This was just a mental exercise that we went through to 'what if' the whole thing. But there was no concern for the crew. There was not any reason to ever tell him to look for your tires going out.

**Doremus:** If we had had a reason to believe he would have had something along those lines – absolutely, he would have been informed.

**Dunn:** As far as you know how much was the crew told about any of all of this. I mean were they just told about the final outcome coming from the engineering analysis, that was it, did they ask any questions that you were aware of were they trying to follow up on their own?



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**Kling:** Not that I know of. I don't know that they asked any questions but they were told that the analysis came back as positive. And that we would not see any burn through. And it would not be any impact to their entry.

**Dunn:** So you didn't sense any concern on his part?

**Kling:** I don't know (inaudible)

**Reporter:** I guess I will follow the plan too. Part of the exchange of e-mails dealt with an opportunity that was either passed up to try and look at the Shuttle with something from the Department of Defense dealing with this issue. Can either one of you replay what was being thought about and why it was or wasn't done? It seems like in the end it wasn't done for some reason. It's hard to understand when reading the e-mails.

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- That happened outside of what we do I heard that it happened,  
**Kling:** but I really can't comment on that.
- Doremus:** That's another part of the team that does that.
- Reporter:** OK, but that wasn't relayed to you all that they were thinking about that and talking about that, that didn't come to you the MMACS group?
- Kling:** It didn't come officially. It came through hearing folks talk, they talked about looking at it with different assets or whatever, but that it was not necessary because the thermal analyses said we would have no burn through.
- Moderator:** Jim?

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**Molina:** Back to the scenario, which I believe was one of the tires overheating and over pressurizing and bursting, without stepping on the toes of the investigation, have you seen any evidence that in fact the tire did overheat or over pressurize or give information that it did not, in fact, do so?

**Kling:** That's a good question and probably one that the accident investigation board will ultimately come up with the answer, but for my real time perspective I believe that the transducers that we lost were instrumentation only and I don't believe that the tires exploded.

**Moderator:** Jean

**Gina Treadgold (sp?), ABC News** Gentlemen, would you just tell me -- define your positions and your roles down there just to help me fill in the blanks here exactly what you do and your role in this process please.

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**Kling:** My role in this particularly process I am the mechanical system officer, which is one of the team in mission control that reports to the flight director and I got a subset of subsystems on the orbiter that I am responsible for monitoring, and each flight I get trained to monitor those specific systems with a flight-specific crew and they put me on a mission and we train that way, and so my part of this particular mission was to perform the ascent, one of the orbit shifts and the entry shift for the crew.

**Doremus:** I am also a flight controller. I'm also the lead for the group, the mechanical systems group, that includes the MMACS flight controllers. And the initial communication about this I got and passed on to the group.

**Moderator:** Gina, anymore questions? No, OK.

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**Lynn:** Bob, from what you told me before, when the analysis was made at that point the engineers had not determined any damage to for the thermal tiles for the reentry. You said if you had hard information then you could go on your 'what if' scenarios that you had been discussing, so if indeed the analysis had come back with a damage on there that could've put detriment to Columbia, what would you have done differently then to try and ensure a safe landing of Columbia?

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**Doremus:** I think what we would have done -- and you can jump in anytime -- is relay the consequences of such a failed tile. What would it look like? What would a breach look like? And you saw in the e-mails what our folks on our team came up with that could possibly happen in that circumstance. One of the jobs that the MMACS team has in mission control is to determine if there is a tile failure what are the affected systems from that failure, and we would have done that and passed that on. The flight director and the mission management team would have come up with the scenario -- 'so OK, here's what the impacts are from this problem, what are we going to do about it for a safe entry?' That's our role in that process.

**Lynn:** With your expertise of what you have could there have been a scenario for a safe entry knowing that there was a damaged tile?

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**Doremus:** If you read the e-mails I think the answer is there. We were having trouble coming up with a scenario where we could have had a safe entry.

**Kling:** Let me add one more thing to that. Since there seems to --looks like there is, sort of, an us-versus-them sort of thing, it would not just be us raising the concern here if we had hard data to go look at. The entire engineering community that provides us that data would also be going full steam down their path, and if we would arrive to a parallel path then we would not necessarily have to be the ones to raise the concern. It would be an agency-wide thing.

**Moderator:** (Inaudible) Why don't we wrap up this part and we go stand out there we will take a few more questions from the TV --.  
(Inaudible)

**Reporter:** (jumbled conversation about when Ron Dittmore asked for email traffic.)

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**Moderator:** (Inaudible) Bill, what was the problem? (I just wanted to know if I could get one more in before you kill the line). OK, last one then we are going to do a TV bit outside so. (OK, thanks)

**Harwood:** Jeff, this is a follow-up on what you have already been asked twice. I just want to be specific in my mind because one of the questions I always get from editors and folks is: if they had known that something horrible with that wing cause that had altered the reentry to get that Shuttle to a bail-out attitude? And Dittmore said you know in the briefing at one point, that maybe there might be a way to do that. He wasn't sure. I was just wondering what both of your professional opinion was, if you ride off getting to a runway, knowing what the heating requirements are coming in through peak heating, if you guys could see any way you could got the Shuttle with this kind of a problem to a point where they could have bailed out.



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**Kling:** Without stepping too far out because that is a little bit out of my area. We already minimized as best we can the entry profile to make the orbiter have the safest possible entry that it can have, so I don't think aside from a few tweaks that we could have gotten there without that particular scenario.

**Harwood:** Thanks.

END