

U.S. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

DISCOVERY
PREPROPOSAL CONFERENCE

FRIDAY
APRIL 23, 2004

The Preproposal Conference met in Rooms 12, 13 & 14 in the Renaissance Hotel, 999 9th Street, N.W., at 8:30 a.m., Susan Niebur, NASA Headquarters, presiding.

SPEAKERS:

DAVE BOHLIN
LARRY COOPER
ANDREW DANTZLER
GLORIA HERNANDEZ
GILBERT KIRKHAM
WALTER KIT
BILL KNOPF
SUSAN NIEBUR
JOHN SCHAEFER

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C-O-N-T-E-N-T-S

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P-R-O-C-E-E-D-I-N-G-S

(8:31 a.m.)

1
2
3 DR. NIEBUR: Good morning. If you'll
4 take your seats, we'll go ahead and get started.
5 Showing our commitment to schedule by starting at
6 8:31. If I don't do it, how can I expect you to do
7 it. So we're going to go ahead and begin. I'd
8 like to welcome you all to the 2004 Discovery AO
9 Pre-Proposal Conference. I'm glad you were all
10 able to come. This is going to be a good room and
11 a good day, I believe. We've got a number of
12 people coming from Headquarters to talk about the
13 various issues that you've been concerned about and
14 writing me about already.

15 We do have a session at 11:30 as well
16 for Q and A, which will start with answering all
17 your questions that you've sent in and then also
18 others as we have time. You see up here our
19 purpose and our outcomes. I'm here to talk to you
20 about the AO and to answer questions that you have.

21 I'm certainly willing to field anything that I
22 can. There will also be opportunities in the

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1 future to address Q and A through written questions
2 at any time.

3 All of our slide sets from today will be
4 available for download at this website. This is
5 your critical website. That's where everything
6 will be posted; your slide sets, your Q and A,
7 today's agenda, things like that. We're also going
8 to have a transcript prepared. That will be posted
9 along with the Q and A and that Q and A is going to
10 be a running thing. We're going to update it twice
11 a week, so you will always have fresh answers to
12 your questions.

13 In terms of contacts, you've already
14 found a way to contact me, which is great. There's
15 one of my e-mail addresses. If you have problems
16 with proposal submission and NOI submission, cover
17 pages, things like that, or if you have any
18 questions, feel free to e-mail us at
19 Proposals@hq.nasa.gov as well. And again, you see
20 this magical web address where any future changes
21 will be posted. You also see where you actually
22 download the AO from the main website.

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1 I'd like to begin this morning -- okay,
2 I'd like to begin this morning by introducing our
3 new -- thank you, new, fresh, freshly arrived
4 Director for Discovery and New Frontiers Programs.

5 He is also the Deputy Director for Solar System
6 Exploration. Andrew Dantzler will be speaking to
7 you with an overview and then we're going to move
8 into more of the mechanics of the review process
9 and the AO itself.

10 MR. DANTZLER: Just give me a second, I
11 enjoyed the Metro ride. Okay, so it's good to be
12 here. It's good to see a crowded room full of
13 Discovery enthusiasts. I thought I'd start the day
14 by backing away from the documents and AO and the
15 legalistics and the procedures and all and I'd just
16 like to talk for a minute about where the Discovery
17 Program has been and where it is right now and of
18 course, where it's going is up to the people in
19 this room.

20 I know you're all familiar with these
21 missions but I think it's worth spending a few
22 minutes just to go over these. NEAR, of course,

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1 successfully orbited and you know, orbited and
2 landed on an astroid. Mars Pathfinder, everyone
3 knows about the Pathfinder, went to, landed on,
4 roved around Mars. Lunar Prospector provided
5 detailed gravity and chemistry maps of the moon
6 surface. Stardust has followed and flown through
7 the tail of a comet and is on its way back to earth
8 now, truly a phenomenal feat. Genesis has finished
9 its capturing of the solar wind, has closed up and
10 is on its way back to earth as well. In fact, it
11 will be back, if all things go well, it will be
12 back in September.

13 Contour was a mission to a comet as
14 well, Unfortunately, it was lost on the way.
15 Messenger, a very ambitious mission to the thermal
16 environment of Mercury, made several fly-bys in
17 orbit -- orbiting Mercury. And that launch date
18 you'll notice is August, coming up very soon. Deep
19 Impact, also a mission to a comet to rendezvous
20 with comet and send an impactor into the surface of
21 that comet, study the ejecta from that. That
22 launch is planned for December. We're on track for

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1 that.

2 We have Dawn, which is currently still
3 in development. That's a mission to two asteroids,
4 Ceres and Vesta, and Kepler, which is the first
5 completed dedicated space craft to the -- well, the
6 new, sort of new and exciting field of extra-solar
7 planet finding.

8 So here we have 10, I think, truly
9 phenomenal missions that really are -- have
10 demonstrated that for relatively low cost,
11 relatively quick turnaround, I say relatively
12 compared to the flagship missions, you can do truly
13 world class science and headline grabbing science
14 within the same program. Now -- and by the way,
15 everybody associated with the Discovery program and
16 solar system exploration should be proud to be
17 associated with this.

18 With this complexity and with the
19 addition of more and more missions, as the number
20 of missions increases, comes some growing pains.
21 So the Discovery program today in a nutshell and we
22 could talk about some of these bullets all day and

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1 I'm sure there will be a lot of discussion about
2 these, but let me just set the highlights. First
3 of all, yes, 10 missions have been selected. This
4 is a successful, highly visible program. We strive
5 for continuous improvement in that program. We're
6 trying to improve the selection process as well as
7 the implementation process.

8 I think it's probably no secret that
9 some of the more recent missions have run into some
10 trouble and our independent review team recommended
11 that one of the ways to get out of that kind of
12 trouble is to set up a program office sort of like
13 the Explorer's office, the Explorer's office at
14 Goddard or the Mars Exploration office at JPL, the
15 idea being that these missions are in the depth and
16 breadth of this whole program, the missions in the
17 program, they can't be managed at the program level
18 from the structure within NASA headquarters. NASA
19 headquarters has a particular job and it's not in-
20 depth technical program management. So we did
21 establish just a couple months ago this office.
22 The office resides at JPL.

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1 As soon as the office was announced, we
2 received a flurry of questions and I'm going to try
3 to hit the two top ones now. Some of these, I know
4 Susan will go into later in detail but since this
5 seems to be the universal set of questions, I might
6 as well answer them now. Let me get the bullet
7 that's not here first.

8 Will this mean more reviews? Now, that
9 we've got a new office will this mean more reviews
10 and will proposers have to budget for those extra
11 reviews and the answer is no. No, there are no
12 more reviews. If a program gets -- if a project
13 gets into trouble, naturally there are reviews to
14 take a look at that trouble. All right. Those
15 extra reviews, whatever they may be, would occur
16 anyway whether there's a program there or not. The
17 idea of the program office is to coordinate and
18 conduct those reviews if they should occur, also
19 coordinate and conduct the standard reviews that
20 occur, such as the CDR, so that insight can be
21 provided to me and my office in order to keep
22 projects out of trouble.

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1 But are there additional reviews and do
2 people have to respond to additional reviews
3 because of this office? No. The other burning
4 question is cost. Because this project, this
5 Program Office is run at JPL, will there be the
6 standard renowned JPL burden and specifically, will
7 that burden be subtracted from the cost cap in
8 order to pay for the program. No, no, the cost,
9 I'll say it very clearly. The cost of running the
10 Program Office at JPL, Discovery/New Frontiers
11 Program Office at JPL, will be paid for by the
12 Solar System Exploration Division at Headquarters.

13 None of that cost comes out of the project. You
14 don't need to budget for it in your proposal. So
15 there is no whatever percentage JPL burden taken
16 off the cap.

17 So I started with pretty pictures. I'll
18 end with some boring org charts. The Assistant
19 Administrator, Ed Weiler sits on top of Space
20 Sciences as far as we're concerned in this room.
21 Below him is the Director of Solar Systems
22 Exploration. That's Orlando Figueroa. And here, I

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1 am his Deputy. My name is Andy Dantzler and in
2 that role, I am the Program Director for Discovery
3 and New Frontiers. What this basically means is I
4 am the Director as in the Orlando, of this program,
5 okay. So flow through -- that has to do with
6 information regarding Discovery and New Frontiers
7 stops here at me.

8 We have what we've had in the past, the
9 past several years, we have program execs and
10 program scientists for the Discovery missions and
11 also this chart just happens to show for New
12 Frontiers. And all above this line is NASA
13 Headquarters. Here answering to me is the
14 Discovery/New Frontiers Program Office at JPL. He
15 is -- or that office is the conduit from -- for
16 managing the projects that are selected through
17 Discovery. The program execs still interface
18 directly with the Program Manager -- the Project
19 Managers here and the program scientists still
20 interact directly with the principal investigators
21 at the working level. Overall program
22 management, independent quality assurance,

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1 independent system engineering that sort of thing,
2 that's what's offered here. I figure the first
3 chart was too easy to see, so I brought along this
4 one. And I won't go over every single box in this
5 chart. I believe these are posted on the Web, but
6 basically what this chart does is it says the same
7 thing but it gives you a sense for just how many
8 players are involved to date, even without the
9 current set of missions or, I'm sorry, the missions
10 to be selected.

11 We have the active missions as well as
12 their -- the analysis programs. We have, of
13 course, the program office at JPL, as I mentioned.

14 Langley is in there providing the TMC0, which you
15 all know and love and the independent review team.

16 And rather than go through every single box in
17 there, I'll let you peruse it at your leisure.

18 I do want to point out just in closing
19 please understand AO. If you don't understand it,
20 ask questions and that's obvious but I need to say
21 it anyway. Send your questions to Susan. She'll
22 answer them by the process she's talked about on

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1 the web. We have had a good history on Discovery
2 and we've had a rocky recent past. But this is a
3 very visible, highly successful still program and
4 we want to keep it that way. This is a cost cap
5 program and we're doing everything we can to keep
6 the current missions cost capped. And a lot of the
7 new language in AO is going to try to keep things
8 successful in terms of management and cost.

9 With that, I'll pass it onto the next
10 person, go run through the next bunch of stuff.

11 DR. NIEBUR: Thanks Andy. Dave?

12 DR. BOHLIN: Okay, I can hear my own
13 voice. I guess we're all right. My name is Dave
14 Bohlin. I'm the Deputy Associate Administrator for
15 Science. I work directly for Ed Weiler, in the
16 Office of Space Science. Contrary to popular
17 belief, we stopped reviewing proposals by throwing
18 them down the stairwell many years ago and went to
19 a different system and I'm sorry that this may be
20 just a bit hard to read but it will be posted, but
21 the point here is let me just say some introductory
22 points, that this review process and this entire

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1 selection -- this is a selection process starting
2 with the release of the AO up here and ending with
3 the selection down here. Most of this, except for
4 two boxes which I put in italics and you are here
5 by the way, pre-proposal briefing, is actually
6 required by NASA Far Supplement. FAR stands for
7 Federal Acquisition Regulations. Most of you, I
8 think, are aware that the government does have a
9 set of Federal Acquisition Regulations. I'm told
10 if they're totally printed out, they take about
11 three feet on your bookshelf. You can find them on
12 the web, they're all posted.

13 NASA is one of the three federal
14 agencies in the whole government that's allowed to
15 modify FAR for its own special purposes. And that
16 modification is called the NASA FAR Supplement or
17 NFS for short. This is under the NFS. You might
18 ask why is that the case. Well, very early in
19 NASA's history, it became obvious that we were
20 going to be selecting and funding investigations,
21 that is the pursuit of new knowledge. Now
22 you might say well, places like NIH or the National

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1 Science Foundation do that but they do that through
2 grants. A grant is basically a bag of money that
3 we give to a PI, tell him or her to do good and,
4 "When you get done, send us a report". A contract,
5 on the other hand, asks for and demands the
6 delivery of goods and services and we do a lot of
7 our research, especially our big missions through
8 contracts. So, in effect, when we are selecting
9 these big missions, first of all, it is for an
10 investigation. It's not for a piece of hardware.
11 I think you're all aware of that. The hardware is
12 simply the means to the end. The end is the
13 acquisition of new knowledge. You are not done
14 with your investigation until the data is taken,
15 it's reduced, analyzed, published and put in the
16 data base. That's a very important thing to keep
17 in mind. And I think, again, most of you are quite
18 experienced and realize that. That's why we use
19 the word "investigation" always in our AO's. If we
20 ever talk about hardware, it's only as a straw man
21 kind of thing. We say, "Oh, by the way, if you
22 want to analyze the atmosphere of Titan, you just

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1 might have have to build a spacecraft and populate
2 it with an appropriate payload and launch it and
3 operate it and get the data and analyze it. Now
4 you're done with your investigation". So the
5 hardware is simply the means to the end, not the
6 end itself.

7 So NASA was given this and part of the
8 FAR Supplement is to select investigations and fund
9 them through a contract. We are effectively buying
10 the pursuit of new knowledge through a contract
11 instead of buying a battleship or pencils, which
12 the government does through the RFP, Request for
13 Proposal. However, the selection process is very
14 similar to an RPF in the sense that we receive
15 proposals, they're duly logged in, they're duly
16 reviewed although in this case for our AO's we do
17 it through a peer review system where for the RFP
18 it's usually done by civil servants strictly within
19 the government. You go through another step here
20 which I'll talk about in a minute called
21 categorization and we have a couple of review steps
22 and you finally get to the selecting official, in

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1 this case the Associate Administrator for Space
2 Science. So it starts with the release of the AO
3 which is out now. The next thing on this here is a
4 pre-proposal briefing. You are here even if you
5 can't read it. And the reason that's in italics is
6 because it's really not required. We do this as an
7 optional event but it's getting to be so standard
8 that it is really getting to be part and parcel of
9 just about all of our big AO's now is to have a
10 pre-proposal conference, but it is an optional
11 event.

12 The next thing that is optional are the
13 notices of intent to propose. Those are the things
14 that you send in to us to let us know that, yes,
15 you think you're going to propose, roughly what the
16 proposal will be about and to the extent that you
17 know, it, who may be on your team. That is
18 optional. It's not required, but I wanted to
19 emphasize that it makes a lot of difference, it's a
20 big help to NASA to know who submits a notice of
21 intent, how many proposals we may be getting,
22 roughly what they're going to be about and to the

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1 extent that you know them, your team, because that
2 helps us get started on our next step which is to
3 set up the peer review. We all want the selection
4 as fast as possible.

5 One of the biggest pacing items in the
6 selection process is setting up the peer review
7 panels and the thing there is trying to sort out
8 and find out who can serve both from technical
9 expertise as well as conflicts on interest. That
10 leads me to say that many of you have wrestled with
11 our new cover page. We're now known as the
12 Sisyphus Data System. I won't get into the origin
13 or meaning of the term Sisyphus, but if you think
14 that was fun, we're switching over by the end of
15 this year to a new web based system which I
16 guarantee you is user friendly. You won't believe
17 it when you see it but it's going to have the same
18 feature, namely, when you go to register yourself
19 as a PI and either for our notice of intent or for
20 the proposal itself to submit your cover page,
21 every person named in your proposal as a Co-I or
22 collaborator has to be registered in that system

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1 and those people have to go to that web page and
2 they have to register for themselves. You cannot
3 register somebody as a second party. It's very
4 important we do this because we feel that only the
5 individuals themselves know their institutional
6 location and who they're responsible to and their
7 address and we want that as accurate as possible.
8 It makes an enormous difference in our bookkeeping
9 as we go downstream.

10 It also is a check to make sure the
11 people that are listed on a proposal know that
12 they're going to be on that proposal. Now, you
13 might say, "Oh, gosh, this never happens. It isn't
14 conceivable that somebody would be named by a PI to
15 be in a proposal and that person wouldn't know it".

16 Oh, yes, it does happen. We've had cases where
17 peer review committees have sat down and reviewers
18 open up a proposal and said, "Oh, my gosh, my
19 name's in this thing". They didn't even know it.
20 So there's a couple reasons why we do ask for that
21 registration and I guarantee you, you want to get
22 to that web page early and get your people

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1 registered. If there's a problem, there's a help
2 desk, there's a help phone number that you can use
3 to find your way through it. For the institutions,
4 you now have to have -- many of you are aware of
5 things called DUNS numbers and what's the other
6 one? There's two. There's Cage numbers that you
7 have to register with the Federal Government.
8 That's not NASA doing it to you. That's the new
9 Government Public Law 106/107 that was passed about
10 five years ago now.

11 It comes out of that so you have to get
12 registered. That's not overly cumbersome but you
13 don't want to do that on Thursday if the proposals
14 are due on Friday, I guarantee you. You want to
15 get a head start on that. My guess is by now most
16 of the big institutions in this country have
17 already registered themselves. By the way, even if
18 you're a single investigator operating as a private
19 consultant, you can register and get these numbers.
20 They're used for government-wide tracking.

21 So once we get beyond the notice of
22 intent to propose, we then get to the preliminary

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1 selection of the peer evaluators by NASA and we use
2 the data base that comes out of here and that gets
3 back to the question of why it's so important to do
4 this and these big proposals like Discovery, we
5 will get maybe between 20 and 30 proposals, maybe
6 something like that and because of the shameless
7 way the PI's have of putting on large teams these
8 days, we will have between five and 700 people
9 listed in those proposals. And trying to find out
10 who's left over in the community that can even
11 spell the term Discovery much less be qualified as
12 a reviewer is a challenge because you not only have
13 to sort through expertise but you have to sort for
14 institutional conflicts of interest which is very
15 important when you set up your peer panel. And
16 that's why we want this database so it's
17 electronic. That's one of the big reasons.

18 And believe me, if you were at our end
19 of the stick, you'd appreciate that, trying to sort
20 through all these issues. You then get to the
21 receipt of the proposals and their log in. The log
22 in means that we also go back, our support

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1 contractor now goes back and gives us an exact
2 itemized list of every proposal, the PI, all the
3 institutions, all the CO-Is and all the
4 collaborators and it comes out of that electronic
5 database. We do a compliance check of these
6 proposals and it's outlined in the AO. There's
7 even an appendix in there, I believe, right, Susan?

8 We put in an appendix for the compliance to give
9 you a pretty good idea of the things that we look
10 for in the proposal. They're all listed and
11 explained in the proposal and proposals that do not
12 have those items take a very real chance of being
13 dismissed at that point without further review
14 right here at the compliance check, so please try
15 to make sure that you check all those boxes and
16 that you've got that material in there.

17 We also right at the same time, really,
18 are doing this final confirmation of peer reviewers
19 and I've talked about that quite a bit. I don't
20 need to go over that any more. We then distribute
21 the proposals to two different flavors of
22 reviewers. One of the flavors is the technical

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1 management cost group team evaluation. It's a
2 pretty good sized team. This team would be
3 anywhere from 20 to 40 people, sometimes some of
4 them as part time, sometimes full time, sometimes
5 as advisors on very special topics has come up,
6 especially technology issues. Somebody wants to
7 propose to use a new technology that just simply is
8 not well-known. We'll go out and try to find
9 specialists in that area and get the reviews.

10 And then the second flavor, of course,
11 science, technical and feasibility merit. This is
12 the traditional science evaluation team that you
13 hear, populated mostly by scientists, occasionally
14 some technologists, but generally drawn from the
15 science community. They receive the proposals well
16 in advance of the team meetings. They actually
17 start their reviews then and depending on how we
18 set it up, there may be some corroboration or at
19 least submission of preliminary reviews at this
20 point so that the other team members can see issues
21 that are being raised. I think you've all had this
22 experience. That's the value of a team is you've

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1 got lots of eyes, lots of minds looking at things.
2 Somebody will say, "Gee, I discovered this fault",
3 and you think to yourself, "Gee, I completely
4 overlooked that, maybe I need to go look at that
5 proposal again". So we allow a certain amount of
6 visibility in this early stage for people to look
7 at the other reviews but not to actually have a
8 dialogue. The dialogue only occurs when the teams
9 actually meet in person. That's very important.
10 Gee, our Office of Legal Counsel is very stringent
11 on that but the team has to meet as independent of
12 each other. When they come into the meeting, they
13 should be as independent in their own thinking as
14 possible.

15 The team meetings are held. Generally
16 the TMC is held slightly in advance of the Science
17 Team because there's feedback from many times
18 especially in the technical area, they will feed
19 over the questions that the Science Team may have
20 about whether a particular new technology in fact,
21 is going to work. Scientists know the science but
22 they may not know all the technologies that are

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1 involved. And so sometimes we'll have people here
2 essentially on an advisory basis to answer
3 questions that the Science Team may have.

4 These team meetings typically go on for
5 the best part of a week. Typically 10 hours a day,
6 it's a pretty exhausting process. We then come to
7 an aspect that is unique as far as I know to NASA.

8 I'm not aware of any other place in the Federal
9 Government that does this. It's called
10 categorization. It's actually a subcommittee of a
11 committee that meets down here in a minute that
12 I'll talk about called the Space Science Steering
13 Committee.

14 Categorization, the best way to do this,
15 if you ever bought a new car, I guarantee you
16 whether you realize it or not, you went through a
17 form of categorization in your mind at least.
18 Let's take a look at the next chart. I guess I can
19 change it; is that right? Yeah. These come right
20 out of the NASA FAR Supplement. Category I, and I
21 know you're all thinking, "Hey, this describes my
22 proposal exactly". Right? Well, conceived and

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1 scientifically and technically sound
2 investigations. Notice the word, it says
3 "investigation". It doesn't say experiment or
4 hardware. Pertinent to the goals of the program
5 and the AO's objectives and offered by a competent
6 investigator from an institution capable of
7 supplying the necessary support to insure, catch my
8 breath, that any essential flight hardware, finally
9 we talk about flight hardware, or other support can
10 be delivered in time and that the data be properly
11 reduced, analyzed, interpreted and published,
12 there's your investigation, folks, this is the one
13 place it's defined, in a reasonable time.

14 Investigations are recommended for
15 acceptance and normally will be displaced only by
16 other Category I investigations. So basically, as
17 I said, in my analogy to buying a new car, you've
18 gone out and you've looked at seven or eight or
19 nine or 10 different cars and a small sub-group of
20 those in your mind at least become a Category I.
21 Notice this very important sentence down here that
22 a Category I investigation can only be replaced

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1 during the selection process by another Category I.

2 It doesn't say anything about cost here. It
3 doesn't say the cheapest investigation is selected,
4 but it could be. At this point you start to look
5 and if you've got two Category I investigations and
6 they're both scientifically very valuable, you
7 start looking at second and third and fourth order
8 of discriminators. One of those discriminators
9 could be cost. It could be a proposal that better
10 fits the strategic planning that the agency and the
11 science community has set up. It could be that it
12 has a better education outreach program in it. All
13 those factors in fact, have been invoked. I've
14 seen in over I'd say the last 10 years that I have
15 seen invoked to help discriminate between Category
16 I investigations.

17 Category II says well conceived and
18 scientific -- and this is the whole totality for
19 Category II, the definition. This is it. Ends and
20 ends right here. Well conceived scientifically or
21 technically sound investigation, notice it starts
22 out just like I, that are recommended for

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1 acceptance but a lower priority than Category I.
2 It simply means that there's something about that
3 investigation that, it's a great deal. You've
4 looked at this car and hey, it's everything you
5 think you want but for some reason it just doesn't
6 speak to you. Well, the car, it's a soul thing,
7 right? An investigation, we go back and we look
8 and okay, there's something about this thing down
9 here that means it's not quite as good. Usually it
10 has to do with scientific merit, very commonly
11 that's the deciding edge down here. It's very
12 important to note that you cannot take a Category
13 II proposal in place of a Category I even if the
14 Category II is less expensive. Expense has nothing
15 to do with the selection here at this stage. The
16 only time you select a Category II and the classic
17 example is if we're putting together a payload to
18 go to a mission, single payload, single mission.
19 You're going to Titan, you're looking at the
20 atmosphere. You need a spectrometer.

21 You've got two spectrometers that are
22 proposed; one's Category I, one's Category II. By

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1 definition you have to select the Category I
2 investigation. If both are Category I's then you
3 would decide on other discriminators. If neither
4 are Category I or both are Category II, you can
5 select a Category II but now you also look for
6 discriminators. That's the way the game is played.

7 When we're talking about full missions like this,
8 I can guarantee you, anything in Category II is
9 just not going to get selected because we almost
10 always have enough Category I investigations to
11 choose from and they're sufficiently different in
12 their objectives that we don't have competition in
13 that regard. Okay, any questions there?

14 Okay, let me talk about the other
15 categories to go a little bit faster. Category
16 III, scientifically or technically sound
17 investigation, again, it starts out just like
18 Category I, that require further, and I put in the
19 word "technology" because that's what's meant,
20 further technology development. The original
21 working just simply said development. The classic
22 example, going back to my spectrometer, in an

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1 investigation is absolutely top drawer, wonderful
2 statement of objectives, great team, good
3 management structure, cost, everything is in place
4 but they want to use a detector that's never gotten
5 out of the brass board stage in the laboratory.
6 That's where we would say, "Oh, wait a minute,
7 we're not going to take a chance and fly this
8 thing". That's where the technology development
9 issue comes in.

10 In the early days of NASA this was
11 important because the whole space program, the
12 technologies were just being developed. Stuff was
13 being proposed all the time that had never been
14 invented before, detectors, experiments, all sorts
15 of things. It was very common to have a whole slew
16 of Category III running around. They would be
17 selected for further technology development. The
18 agency would give the PI a certain amount of money
19 to go away and work on it and come back with
20 another proposal for another opportunity or in the
21 really early days, I'm told that they would
22 actually just say, "Okay, it's been patched up,

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1 it's now Category I", and they'd consider it for
2 flight, but those days are long past.

3 I don't know of any case in my tenure at
4 NASA where we have patched up a Category III. We
5 have funded Category III's for technology
6 development. I don't know of any cases where they
7 have been automatically put back into contention
8 for selection, although technically that is
9 possible. Category IV simply says proposed
10 investigations that are recommended for rejection
11 for the particular opportunity under consideration
12 whatever the reason. There can be lots of reasons.

13 The science isn't very good. The technology is
14 way off base, too expensive, risk, that's where the
15 risk issue comes in. Management structure is not
16 good. There could be all sorts of reasons why
17 something is Category IV.

18 Okay, let me cycle back now to my chart
19 here which most of you probably can't read but
20 anyway we go through categorization and by law that
21 has to be done by civil servants. It's a committee
22 typically of five to seven people. We

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1 occasionally, not always, use somebody from outside
2 NASA, Air Force for example, NOAA, so long as they
3 are knowledgeable a little bit or a reasonable
4 amount and knowledgeable enough to be able to read
5 the peer reviews. They do not reread the
6 proposals. They read the peer reviews and based on
7 the peer reviews, they categorize into one of those
8 four bins I just talked about.

9 That becomes essentially, now the
10 building blocks that allow you to move forward
11 towards the selection stage. At this point the
12 Program Scientist becomes active and they develop a
13 recommendation for a selection. Now for a program
14 like Discovery, we're reporting entire missions,
15 making an analogy here. It's like picking a
16 vacation. You're buying an entire package. You're
17 going to Sweden for two weeks. You're going to
18 Germany for two weeks, whatever it may be. The
19 only thing the program scientist does at this stage
20 and that will be true for this AO, is to make sure
21 that all the paperwork is in order and simply
22 present a list of the Category I and II

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1 investigations forward. That becomes the
2 recommendation.

3 If you were selecting a payload for a
4 single mission, let me go back to my spectrometer
5 issue. You're going to study the atmosphere of
6 Titan. Now, you've got half a dozen instruments
7 vying for a place on the payload and you have
8 issues now of what -- you've got these like
9 building a tinker toy set up, and what's going to
10 fit in terms of power, in terms of mass, in terms
11 of cost, in terms of fields of view and at this
12 stage is where we would then invoke a whole
13 combination study. And that becomes more fun for
14 the program scientist because he or she really gets
15 to sort of become very creative at that point and
16 try to put together a payload that represents the
17 best possible combination of the Category I
18 investigations.

19 But all this then comes to the Space
20 Science Steering Committee. Again, it's all civil
21 servants. It's drawn from Headquarters. The
22 person that's in my position in the Office of Space

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1 Science is the Chairman of that committee and our
2 role is to review the totality of everything that's
3 started right back here from the way the AO was
4 written, all the way down through the
5 categorization, all the paperwork. It's very
6 common at that point to have maybe as much as close
7 to a vertical foot of paper placed in front of us.

8 We go through it, try to make sure that the peer
9 reviews are -- led in a natural way to the
10 categorizations, that everything else is in order
11 because what we're doing is what the selecting
12 official would do if he or she had a week to do
13 nothing but look at paper.

14 To put it in the vernacular, one of the
15 jobs of the steering committee is to make sure that
16 the selecting official doesn't go to jail for
17 waste, fraud and mismanagement by signing off on a
18 selection that is somehow not justified. The
19 steering committee issues a finding, typically a
20 memo from two to four pages long. It may say sort
21 of a Good Housekeeping Seal of Approval saying, "A
22 okay, everything here is all lined up. The boss

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1 here, the Associate Administrator, feel free to
2 choose any Category I proposal you want," and it
3 will hold water if there was a challenge to that.
4 Or if we discover problems we raise those at this
5 point. We say, "Gee, we discovered a problem in
6 this or that. We don't think this should have been
7 a Category I, maybe Category II, something like
8 that", and we put that forward for the selecting
9 official to decide.

10 And then it comes to the selecting
11 official who makes the selection. At that point
12 there's a memo that's issued out to the center, ~~in~~
13 ~~this case it would be JPL~~, along with the original
14 and copies of the proposal telling them to go cut a
15 contract, let's get this show on the road. Are
16 there any questions?

17 PARTICIPANT: Time line, schedule, how
18 many weeks or months are we talking about for the -
19 -

20 MR. BOHLIN: Well, you know there's 90
21 days traditionally from the receipt of the -- I
22 mean, the AO to the sign-in of the proposals. From

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1 there to the evaluations there is typically about
2 two, two months, two to three months in here. Then
3 there's a pacing to get to the categorization
4 committee. It can be as short as a few days but
5 very commonly a week to 10 days to get to
6 categorization, and another week to 10 days to get
7 to the steering committee.

8 The reason for that spacing is you've
9 got paperwork that's going on in between. And then
10 from the steering committee to the selecting time
11 I've seen that vary all over the place from a few
12 days to actually weeks depending on schedules.
13 Sometimes the Associate Administrator just isn't
14 easy to get to because of schedules. So the end to
15 end process let's say from the time the proposals
16 are received down to the selection what did we say
17 in that AO, do you remember?

18 DR. NIEBUR: The end of January.

19 DR. BOHLIN: End of January. And we'll
20 do our best to make that. We realize that people's
21 whole carriers are based on these schedules and we
22 try very hard to make those schedules.

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1 But sometimes we get jerked around by
2 forces that are way outside of our control the last
3 few months.

4 PARTICIPANT: Who chairs the Space
5 Science Steering Committee?

6 DR. BOHLIN: I do or a person in my
7 position, a Deputy Associate Administrator for
8 Science, sometimes colloquially known as the Chief
9 Scientist for the Office of Space Science.

10 PARTICIPANT: At the selected
11 organization there's the civil service center, how
12 is the contracting done --

13 MR. BOHLIN: That is true but it's a
14 little bit out of my job description to say -- let
15 me just say that we do do that. Or contract with
16 JPL allows JPL to do that and if you have further -
17 - I wish I could answer that more clearly but if
18 you have more questions on that, we'll track down
19 the exact answer. Susan, you don't know any
20 further on that.

21 DR. NIEBUR: We'll get into that in a
22 few minutes.

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1 DR. BOHLIN: Yeah, we've been doing it
2 for years so I know it can be done. Questions?
3 Yes.

4 PARTICIPANT: The steering committee on
5 the bottom there only looks at Category I's?

6 DR. BOHLIN: No, the steering committee
7 looks at everything. We look at the whole smear
8 but we're particularly interested in making sure
9 that the categorizations are appropriate. So we
10 look at every proposal, every review and
11 essentially try to verify that its categorization
12 starting with the peer reviews, we do not re-review
13 proposals here. But if we detect something that
14 doesn't look right, we can tell the Program
15 Scientist to go back and re-examine some issue.
16 It's not done often but it can absolutely be done.

17
18 This is a quality control check
19 essentially, the Steering Committee. Any other
20 questions? Thank you.

21 DR. NIEBUR: Thank you, Dave. Well,
22 thank you, Dave for that. We're going to move onto

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1 the next section which is mine, which is AO
2 Highlights and Science Evaluation. After that
3 we're going into the TMC Evaluation, so if you have
4 questions about technical management and costs that
5 will be in the next presentation.

6 The three things I'd like you to keep in
7 mind as we discuss not only the AO highlights but
8 really the rest of the day. There are three
9 things that really aren't written down very often
10 but are four tenants of the Discovery Program and
11 I'd like you to remember them. Mission
12 Investigations must be appropriately scoped. There
13 are amazing things that can be done out there in
14 the solar system. We would love to do them all
15 through Discovery but it's simply not possible.
16 We've got other venues for that. We've got New
17 Frontiers which, as you know, is a great new
18 program with more money, more technology, more
19 everything available. That is a possibility.

20 There are also flagship missions,
21 although I know they don't come along very often.
22 But we're talking right now about Discovery

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1 missions, which are our solar system small class
2 missions, and do have limitations. So what we need
3 to do is to work within those limitations and just
4 scope the missions appropriately and propose the
5 appropriate amount of science investigation.

6 The proposals must all include adequate
7 reserve. You're going to see a number today for
8 the first time in the Discovery program. I know
9 that's new. I know that's a little disconcerting.

10 It's been done for years in other programs like
11 Explorer but it's our first foray into this. In
12 the past we've always left it up to you because we
13 figure you know your proposals best. You know your
14 management center. You know all of the things that
15 go into making a proposal turn into a very good
16 mission. We have had some problems and so we've
17 set a minimum number.

18 Now that is not a number that I would
19 recommend you all come in at. If we say minimum of
20 25 percent reserve, it's not really a good idea to
21 come in at 25.0 reserve just because that's what we
22 said. It's up to you as to how much reserve you

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1 think you need based on your analysis of your risks
2 and then proving it to us and to the TMC.

3 The last point is to remember the value
4 to the taxpayers. We, at Headquarters, work for
5 the people and this is a very important point, I
6 think, that gets missed sometimes. These are very
7 exciting missions. These are wonderful things to
8 do. We're going to get some great science. We're
9 going to do some awfully fun things along the way.

10 At the end of the day we need to be sure that we
11 provide value, we provide data, we provide
12 information, we provide EPO, we involve a lot of
13 people, not all as Co-I's, we'll talk more about
14 that, and that other people besides just the people
15 in this room know about things like this, exciting
16 10 missions that Andy put up at the very beginning.

17 The highlights of that AO itself; well,
18 it's been out for a week. I know that's not very
19 long. I know many of you probably read it on the
20 plane here and I appreciate that. I'm going to go
21 over some top level things and then talk about some
22 changes that we've made in this AO to try to

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1 address the things that we've learned over the past
2 10 years. Discovery missions, as always, are
3 solicitations for complete investigations, cradle
4 to grave. The cost cap has been increased to cover
5 increase in costs. It is now \$360 million up from
6 299 in the last round. We are instituting a
7 minimum of 25 percent reserve but again, please
8 don't take this as the number that you need to
9 show. It is a minimum and anything -- any number
10 that you bring in needs to be adequately supported
11 and will be reviewed.

12 These are free fliers. On the Delta II,
13 the Delta II Heavy or smaller ELV's. If you guys
14 think it can go on something smaller, that's fine.
15 Talk to Kennedy and let's move on from there.
16 Must include analysis and publication of data in
17 the peer review literature. I know that's the fun
18 part. That's exciting. Delivery of the data to
19 the PDS in the proper format, no later than six
20 months. This is something that is extremely
21 important and you'll hear Bill Knopf talk about it
22 later on and a full EPO Program funded at one to

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1 two percent of the NASA OSSC cost.

2 We also are soliciting missions of
3 opportunity as we do typically on Office of Space
4 Science AO's. There are three options this year
5 for scientific investigations. One of them is to
6 work with a foreign partner. Another one is to
7 propose an extended mission of something that is
8 nearing the end of its prime mission and has a
9 science investigation related to solar system
10 exploration. And the third is new science missions
11 which you could actually repurpose something
12 existing up there and tell us something else that
13 you could do with it to support solar system
14 exploration science.

15 Launch date for all of these is no later
16 than December 31st, 2009. All of the
17 investigations must support the science themes in
18 the AO for the missions. That is both solar system
19 exploration, excluding, of course, the study of
20 Mars because we have Mars Scout for that, and also
21 the extra solar planetary system search element of
22 the Astronomical Search of Origins theme. So

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1 rather specific there, can't be any Origins
2 mission. It's just a search for planetary systems.

3 And you saw that in the last round with the
4 selection of Kepler.

5 All investigations must be PI led. That
6 is something that we are very committed to. It's
7 been a hallmark of the program since we began. We
8 allow you the freedom to choose your team and to
9 choose how you want to use that team, choose your
10 management structure, all of that is up to the PI
11 in our view. That's what we see. There are only a
12 couple of things that we even ask for in the
13 proposal. We do ask for the name of your project
14 manager. We want to know that you have one. We
15 want to know who it is. That is something that is
16 new this year. We feel it's an important step
17 because the project manager is a key team player,
18 key member of the team.

19 A Deputy Project manager is encouraged,
20 but not required. We have found that position to
21 be extremely helpful in current missions and would
22 like to see either that position filled or

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1 something like that if you've got -- and if you've
2 got something that works for you, if you want to
3 call it a lead systems engineer, if you've got
4 something else that works, that's fine, but please
5 show that you've thought about those kinds of
6 issues.

7 Your own investigations must be scoped
8 to fit within the cost cap. That's the very first
9 thing I said was that, yes, we have constraints.
10 And no, they're not ideal but we have the money
11 that Congress gives us and I have the money that
12 Orlando gives me and that's what we have. The same
13 thing about technology constraints, the same thing
14 about time constraints. These are what we have, so
15 working within those constraints, let's see what
16 kind of science can be done and what kinds of
17 investigations.

18 And again, you're going to hear me say
19 it all day long, incorporate appropriate reserves
20 and appropriate management techniques. That's
21 everything from your management structure to
22 descope options, other things that you come up

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1 with, all of these things will help you as we go
2 through the review. Performance floor is also
3 something we require. It's not something anybody
4 wants to do, but the question here is at what point
5 is the mission not worth doing? At what point
6 would you be unhappy and not worth flying the
7 mission? And you'll see more words about that in
8 the AO and I'll refer you to that because that is a
9 very important part of it.

10 Co-investigators. Dave talked about the
11 fact that every Co-I has to be entered in
12 separately and that is it often a challenge to find
13 qualified, knowledgeable reviewers who are non-
14 conflicted. Please name as Co-Is only those that
15 play a necessary role in the investigation. It
16 would be nice to have everybody as part of every
17 team but it makes things a little impossible when
18 you're running a competition such as this as well
19 as getting you guys the best review possible. And
20 so that there are people left out there, please
21 don't put them all on your team. If you want to
22 involve them later on, fantastic. There are other

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1 ways to do it.

2 There are, in particular these last
3 three, for other scientists that you want to
4 involve at a later point. There are participating
5 scientists programs, which are programs that are
6 run out of headquarters as an open competition.
7 Often as you get closer to your target, or after
8 launch depending on the configuration of your
9 mission, to bring in other people to help and also
10 to learn to become involved so that they can do
11 this some time down the road. Data analysis
12 programs. Guest observer programs, that's new in
13 this AO but certainly may be appropriate depending
14 on what kind of missions you propose. So these are
15 ways to involve scientists. We're always
16 emphasizing education and public outreach,
17 extremely important. These are the people who pay
18 the bills and so we need to reach them and their
19 kids as often as possible. And of course, small
20 disadvantaged businesses as required by law.

21 Technology. We do allow RHUs. We do
22 not allow RTGs. I understand this is a constraint.

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1 Again, if you need an RTG, I direct you to New
2 Frontiers. They do allow it. We do not. We have
3 a cost cap. We have technology limitations and
4 time. I've received a number of questions about
5 these potential new mini-RTGs that everyone is very
6 excited about. I'm excited about them, too. I've
7 had several briefings. I think it's an interesting
8 way to go. They are all paper at this point.
9 There is not an RTG, a mini-RTG sitting anywhere
10 that you can go look at and touch that's ready to
11 go. They are not eligible for this round of the
12 Discovery program.

13 Financial. I direct your particular
14 attention to the NASA New Start inflation index.
15 When you're doing your inflation, just a little
16 tiny note, please use the one that we're required
17 to use to judge you by. This is extremely
18 important. If you use something else, you will be
19 recalculated. And if you come out over the cap,
20 you'll be very disappointed. So please use that
21 and note that you've used that. We do allow
22 contributions. There's a whole section in the AO

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1 on what's allowed, what's not allowed, from
2 domestic as well as foreign partners.

3 In any case, total contributions may not
4 exceed one-third of the total cost. The only
5 distinction here is if you're a mission of
6 opportunity flying on a foreign mission. You don't
7 have to include the rest of the cost of the
8 mission, of course, when you're calculating
9 something like that. We're only talking about
10 contributions to your mission.

11 Other resources that you need to be
12 really familiar with are the Discovery Program
13 Library and the AO Q&A pages. Those Q&A pages will
14 be updated twice a week, if not more often. And
15 when you have questions, feel free to send them to
16 me. I will answer them all publicly. As a
17 procurement thing, when I get questions, everybody
18 needs to be able to hear the answer. So I will not
19 publish your name. If you don't want to send me
20 details, that's absolutely fine. I most likely
21 will not publish details but you need to know that
22 the Q&As are all going to be public.

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1 And the NOIs are due May 14th, the
2 typical month after release. Please do an NOI if
3 you can at all possible even if it's incomplete
4 because that does help us plan. Okay, new items
5 some of which have already been hinted at. Oh,
6 look, there it is again. All projects must show at
7 least a 25 percent reserve, okay, at proposal
8 through the end of Phase A and selection and
9 through the end of Phase B and confirmation.
10 This is an Office of Space Science policy. It's an
11 Ed Weiler policy. It was handed down to me to
12 implement for this round of the Discovery AO and so
13 that's why it's there. It's non-negotiable, but
14 again, it's a minimum.

15 There are new opportunities to involve
16 other scientists, guest observer programs, for the
17 first time officially and new types of missions of
18 opportunity and I've talked a little bit about
19 those. There are more details in the AO.

20 Project management options have been
21 expanded. Previously, if you had a NASA Center
22 managing, you needed to have it from Goddard and

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1 JPL. That also was an OSS policy that has now been
2 reversed. And so program management is now
3 possible from any of the NASA Centers or none of
4 the NASA Centers. We don't require you to have
5 NASA Center involvement. Again these are PI led
6 missions. It's completely up to you. A project
7 manager must be named and along with this name, if
8 you later decide to replace your project manager or
9 your deputy or your PI, which I don't think has
10 ever been done in Discovery, or your Deputy PI,
11 that does require a Headquarters concurrence.
12 That's just something we need to talk about as time
13 goes on.

14 Program management at Headquarters, and
15 then the new program office at the Jet Propulsion
16 Laboratory, Andy explained that to you. I remind
17 you that he's the Director and John McNamee is the
18 Program Manager. John reports to Andy on this and
19 the note about that I want to remind you is that
20 the AO is run entirely out of Headquarters.
21 There's no involvement by this new JPL program
22 office. So don't bother calling John. He's going

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1 to refer you to me or the AO. Call me for that and
2 I'm glad to answer all of your questions and if I
3 need an answer from someone else, I'll go out and
4 get that and we'll report that to you.

5 We do have a compliance checklist for
6 the first time. Hopefully that will help to have
7 some traceability to the AO. So this is the flow
8 chart that you've seen for the first time from
9 Dave. You're going to see again a version from
10 Gloria. I'm going to -- the rest of this talk is
11 going to be about the science evaluation so just
12 that little bit.

13 The Discovery Program is 10 years old,
14 so you know pretty much what we're about by now.
15 Just to remind you, we're doing high quality
16 planetary systems science to compliment the NASA
17 OSS Strategic Plan. Frequent access to space, now
18 when we were initially proposed in 1994, this was a
19 major component. We're going to go frequently.
20 Well, it's been awhile since we've all been in a
21 room together. It's been almost four years and
22 that's something that has concerned us and so we

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1 remind you that we at NASA live in a cost capped
2 environment, we Discovery live in a cost capped
3 environment and so we the programs and the projects
4 also have to live in a cost capped environment.
5 These are complete PI led investigations;
6 everything, talk about everything from your Phase A
7 all the way to your data analysis, your PDS, your
8 involvement of other people and involving other
9 people through all of those mechanisms that I
10 mentioned before.

11 Well, when we review them, what do we
12 look for? It's the same thing, high quality
13 science, focused scientific investigations, this is
14 where we don't evaluate costs in the science
15 evaluation. That's over in the other section, the
16 TMC, but to get something that's going to fit in
17 the cost cap, you're going to have to have a
18 focused investigation. It's really difficult to
19 just go somewhere and do everything in a small cost
20 cap. We understand it, we feel the pain, so let's
21 choose what to do.

22 Evaluation criteria; well, when we get

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1 to the end, the scientific merit will be 40 percent
2 of the overall rating. Technical merit and
3 feasibility is 30 percent. The feasibility of your
4 implementation approach, including cost risk and
5 subcontracting plans is 30 percent. If there are
6 any mission of opportunity data buy only proposals,
7 clearly implementation isn't something that you can
8 really judge as well and so those numbers will be
9 60 and 40 percent for the first two items.

10 Additional selection factors, as Dave
11 alluded to, will be things like cost and associated
12 reserve as well as EPO and SDB commitment. Those
13 are not judged by TMC because they're numbers,
14 they're just numbers. What's your reserve, how is
15 it supported which is judged by TMC, and your EPO
16 plan.

17 Well, when we come to the science
18 review, here's the challenge, getting non-
19 conflicted reviewers, no institutional Co-Is, so
20 there will be no institutional conflicts. If I get
21 a proposal from an institution, I can't call any
22 reviewers from that institution whether they know

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1 the people or not. That's just something we do for
2 all of our proposals, whether they're tiny DAP
3 grants or whether they're something as big as a
4 Discovery mission investigation. No Co-Is, no
5 collaborators. Highly qualified. Your reviewers
6 will be highly qualified in their area of expertise
7 and will be able to consider well-written proposals
8 slightly outside their area of expertise.

9 Something we talk about with R&A a lot
10 is being sure that you give enough information so
11 that somebody who maybe doesn't live and breathe
12 the exact same topic that you do in terms of the
13 very tiny details will be able to pick them up and
14 to make a reasonable decision. So that's always
15 something to keep in mind with all of the
16 proposals. We do our best to get the absolute best
17 qualified people and trust me I'll be beating the
18 bushes.

19 What we do is we send out all of those
20 copies that you have to send in. Those go directly
21 to the reviewers, both the paper and the CD. Each
22 reviewer will get one of each so that they can

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1 review it in a way that works for them. They
2 evaluate them individually, will submit their
3 preliminary reviews via the website and then we
4 have several weeks of meetings, one week for
5 science, one week plus for TMC and do normal peer
6 review. The result -- we do include plenaries.
7 The result are consensus evaluations using
8 categorization as Dave talked to you.

9 Now what do we expect the outcomes to
10 be? Well, approximately three. I expect three, I
11 can't swear to it. We'll see what the selecting
12 official decides that day. To be selected for
13 concept studies you can have up to a six-month
14 Phase A, up to one million dollars, that doesn't
15 mean you have to propose a six-month Phase A at one
16 million dollars but it's certainly fine. One or
17 more missions of opportunity may be selected,
18 again, up to a six-month Phase A and up to a
19 quarter million dollars there.

20 After the Phase A concept studies are
21 complete, they come back, we do the TMC process
22 again, we review them again and then we expect to

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1 select one Discovery mission and possibly one or
2 more Missions of Opportunity to go into Phase B and
3 hopefully eventually fly. And I can't speak as to
4 the number of Missions of Opportunity because I
5 have no idea. The very nature is simply, do you
6 have a really good idea that is an opportunity to
7 fly something else. We're interested to see what
8 you come up with.

9 I'd like to leave you with this slide,
10 which is, "A mission investigation must be
11 appropriately scoped. Focused scientific
12 investigations", please, please, please do not
13 propose a flagship mission to this AO. There are
14 other venues for that. We're looking for small
15 missions here that will fit within the constraints.
16 Mission proposals must include adequate reserve.
17 You decide, prove it to us, tell us what you got
18 and then make sure it's 25 percent or more, value
19 to the taxpayers.

20 I'm going to conclude with that and turn
21 it over to Gloria for TMC. If you have any
22 questions about these slides, I'm glad to answer

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1 them now or we can do it in the Q&A later. Yes.

2 PARTICIPANT: I'd like to know what that
3 25 percent reserve covers, over what phase or the
4 entire mission, other mission costs, other mission
5 costs minus the ELV? That 25 percent could be 25
6 percent of almost anything. What's your definition
7 of that 25 percent reserve?

8 DR. NIEBUR: I understand. There were
9 different discussions that went into that. It is
10 defined exactly in the AO, which I refer you to. I
11 believe the definition is 25 percent of everything
12 excluding launch vehicle.

13 PARTICIPANT: It doesn't say for Phase
14 E. It says adequate for Phase E.

15 DR. NIEBUR: Correct, thank you. So use
16 the definition in the AO because you're right,
17 there are a number of ways to calculate. We went
18 through all of them, I think. Okay, great. Oh,
19 yes, one more.

20 PARTICIPANT: Yes. Will attached pallet
21 payloads on the space station be eligible under the
22 MO category?

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1 DR. NIEBUR: That is a question that --
2 the question is about attached payloads, sorry.
3 The question about attached payloads with the ISS.
4 That question has been asked and will be answered
5 in full this afternoon, but I will tell you the
6 short answer is that we do not prohibit payloads to
7 the ISS. However, we are not offering the space
8 shuttle as a launch vehicle. Good luck.

9 Okay, the next speaker is Gloria
10 Hernandez. She's my counterpart at Langley and
11 she'll be running the TMC review, so I'm going to
12 pass this off to her.

13 MS. HERNANDEZ: Hi, my name is Gloria
14 Hernandez. I'm the new Discovery Acquisitions
15 Manager. I come from Langley. This is my first
16 TMC so bear with me if I don't have all the
17 questions that you have. I can get them to you
18 later. I just thought I'd give some of the
19 standard features in this AO. Like Susan said,
20 they're all PI led, therefore, complete end-to-end
21 efforts. The Mission of Opportunities are for non-
22 Office of Space Science Missions. The ELV ~~may be~~

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1 ~~contributed by NASA -- I mean, it~~ will be provided
2 by NASA or it could be contributed but we're not
3 paying for an ELV. Contributions are encouraged
4 but are limited to one-third of the total cost to
5 OSS, that way we have kind of comparable missions
6 to compare.

7 As Susan said, there will be no RTGs
8 that you can put on these missions, but RHUs are
9 okay. All the data is non-proprietary and must be
10 entered into the PDS and made available to the
11 community. Proposed subcontracting plans for SDB
12 participation targets are going to be evaluated in
13 Step 1 proposals for any contracts over \$500K and
14 also you must provide a commitment to carry out the
15 E/PO Program and an overview of the E/PO
16 activities.

17 Some highlights unique to this Discovery
18 AO, the full mission cost cap is \$360M FY04
19 dollars. Mission launch date no later than
20 December 31st, 2009. Selected mission will be
21 funded to perform Phase A for up to six months at a
22 level to a million dollars. Mission of

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1 Opportunities, the cost cap is \$35 million in FY04
2 dollars. It could be part of a mission that's
3 launched no later than December 09 and require a
4 commitment from NASA by December of 05 and a
5 concept study if deemed necessary, will be funded
6 not to exceed \$250K.

7 You've seen this slide before from David
8 and Susan and I'm going to concentrate on this talk
9 on this part right here in blue, the TMC evaluation
10 meeting. The slide looks a little bit different.
11 I think it's got the same information that Susan
12 and David had but this probably should be moved a
13 little further since it doesn't go on concurrent.
14 Like Susan said, some of our instrument experts or
15 some of our evaluators may go to the Science
16 Evaluation Team meeting to answer any questions
17 that they might have from our evaluation.

18 The target date for selection, somebody
19 had asked, the AO has the middle of January, so
20 that's really the date that we're looking for.
21 That's really a typo there. It's got the end of
22 January. Here is the evaluation flow for the TMC.

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1 The individuals get all -- all the individuals on
2 the subpanels get all the proposals to evaluate.
3 Let's say we have 30 proposals. There might be
4 three subpanels, so each of the subpanels will have
5 10 proposals to evaluate in full and then when we
6 get to the plenary session, they'll look at all the
7 other ones and also vote on the whole number. They
8 find consensus findings for risk gains for each of
9 the proposals. They submit the consensus form on a
10 website. It's a remote evaluation system. We go
11 through these on telecons. We go through the
12 findings. We change things. We get input from
13 specialists. We change them again, so there's an
14 iteration, maybe two or three times on the
15 consensuses that we get. We go to a plenary
16 session with all the voting members. We go through
17 all the consensus findings again. We vote and
18 that's where we get the final consensus for each
19 proposal.

20 Some of the TMC principles for
21 Discovery, we are assuming that you guys are the
22 experts on your proposals. You know exactly what

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1 you're providing. Our job is to validate that it's
2 a low risk mission. Your job is to provide
3 evidence to us to be able to validate that. All
4 these proposals are evaluated to a standard
5 evaluation process by the Earth and Space Science
6 Support Office which is where I work at Langley.
7 It was established in 1996 to support the Discovery
8 and Explorer Programs. We now also evaluate New
9 Frontiers, Office of Earth Science and some others.

10 We use a standard process and all the
11 proposals are evaluated the same. All the
12 evaluators on our panel are experts in their field.

13 They evaluate the whole proposal, anything that
14 they're comfortable evaluating but they're really
15 experts in their particular field that they're
16 there for. And the TMC findings are going to be a
17 consensus of the whole TMC panel, so we have
18 results of strengths, major and minor strengths of
19 your proposal, major and minor weaknesses in your
20 proposal and then stuff that's just expected.

21 For the Step 1 risk assessment, we
22 realize that this is a preliminary concept, so

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1 we're giving a lot of the benefit of the doubt to
2 you guys. We don't have feedback with you on this
3 Step like we do in Step 2. We do a separate cost
4 analysis and they also do this cost analysis
5 without any feedback from you. We have to, based
6 on what's in the proposal, so the more information
7 you put in the proposal, the better we can do our
8 job. And the MOs, Mission of Opportunities,
9 they're going to be investigated using the same
10 criteria as the full missions.

11 So at the end of the evaluation, we
12 have, like I said, major and minor weaknesses,
13 major and minor strengths, but we also give it a
14 risk rating. There are three possible risk
15 ratings, low, medium and high, and the next slide
16 I'll show you a little graphical display of this
17 same slide, but for low risk that means that there
18 are no problems. Any problems that come up, you
19 guys can take care of it with your schedule or your
20 money and it's not going to be a problem.

21 Medium, you might have problems, you
22 could take care of it but it's going to be tight.

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1 And high risk the problems are so big that don't
2 even bother. Like I said, here's kind of like a
3 graphical display. If the black box or the white
4 box here are all the available resources to you,
5 funding, schedule, margins, everything, and this is
6 what's required, okay the colored boxes, this is
7 the very low risk because the resources that are
8 available are certainly -- or the ones that are
9 required are certainly within the envelope of
10 what's available.

11 Here this is for a medium risk where
12 what's required is within the envelope but like I
13 said, it's a tight squeeze but it's doable and for
14 high risk what's available is in here. What you
15 need is out here, you're likely to fail. Here's
16 kind of a list of risks for space science missions
17 that kind of encompass everything. There is
18 inherent risks that are kind of unavoidable; the
19 launch environments, space environments, the
20 durations and stuff. There are going to be risks
21 that are inherent in the mission. There's not that
22 much you can do about it.

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1 Then there's programmatic risks that are
2 beyond the project control and these are, you know,
3 political impacts, budget uncertainties, but then
4 there's implementation risks that are within the
5 control of the proposer and that's what we're
6 evaluating in TMC, the adequacy of your planning,
7 your management, development approach, schedule of
8 funding, risk management, risk mitigation. So
9 these are all the aspects that we're looking at
10 when we're reading your proposal for evaluation.

11 We look at them in the design of the
12 launch vehicle, the mass margins, the trajectory.
13 We go ahead and we do the analysis and we look at
14 the launch services. We look at all the flight
15 systems, the ground systems, the management,
16 organization and schedule, you know, who's
17 responsible, who's doing what, does everybody know
18 what they're doing, does your schedule have the
19 critical path identified, do you have enough
20 reserves? And then, like I said, we do a separate
21 cost estimate and I'll talk a little bit more about
22 that.

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1 Okay, so I'm going to read these slides
2 because I don't want to get in trouble by saying
3 something that I shouldn't. So that when we're
4 looking at this, we're looking to evaluate the
5 likelihood of the implementation as proposed.
6 Okay, can we do it within the time that you're
7 saying and within the cost? Is the organization
8 structure adequate? You know, do we know the
9 partners? Do they have a good communications
10 approach? Do they understand who is doing what?
11 The relationship of the work to the project
12 schedule, the project element inter-dependencies,
13 the associated schedule margins, we're looking at
14 all this stuff as we're evaluating. New
15 technology, if you're proposing new technology, you
16 have to make sure that you have adequate plans to
17 take care of any problems that arise if the
18 technology doesn't get developed on time.
19 Rationale for your cost estimate, this is really
20 important. If you let us know exactly what you're
21 using, that way the cost guys could go back and see
22 how realistic that is. If you don't give them

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1 enough information, they don't have that to go back
2 to and they can't really give you a low risk
3 ranking if they don't have the information.

4 Like Susan said, there should be at
5 (least) 25 percent unencumbered reserve. It's
6 actually all the way through the end of Phase D,
7 not including the ELV, and if you don't have that
8 it might be judged high risk. And like I said, the
9 evaluation results is a narrative text, major and
10 minor weaknesses, major and minor strengths as well
11 as risk rating.

12 Cost realism is evaluated, however, we
13 never give you back how much we think you should
14 cost.

15 PARTICIPANT: (Inaudible off microphone)

16 MS. HERNANDEZ: They're different. We
17 don't really have -- we don't know exactly what
18 we're going to be using. There's different models.

19 We do analogies, we do a basic estimate of what
20 you give us. There's just a bunch of different
21 things. I really couldn't tell you.

22 PARTICIPANT: (Inaudible, off the

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1 microphone.)

2 MS. HERNANDEZ: What was that? Okay,
3 Susan is telling me over here, we do have standard
4 models that we use. We just don't disclose them.

5 PARTICIPANT: Does your definition of
6 ELV include all stages of propulsion?

7 MS. HERNANDEZ: That's a good question.
8 You mean so that you can take that out of the
9 amount that you need to cost reserve for?

10 PARTICIPANT: Well, so that you wouldn't
11 have to put in risk reserve for that third stage.

12 PARTICIPANT: (Inaudible, off the
13 microphone.)

14 MS. HERNANDEZ: Yeah, that's John's
15 thing. He'll be talking about the ELVs in his
16 presentation later on.

17 Here's kind of a graph like I was
18 talking about before. We do an analysis of the
19 proposal as far as the cost by all the things that
20 are in the proposal. You know, there's funding
21 profiles, reserve levels, costs, contributed costs,
22 from the different places, NASA full cost

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1 accounting if you're using any NASA resources. We
2 also use these independent models and some high
3 level analogies and reconciled difference come up
4 with a cost comparison, life cycle cost comparison,
5 then from these studies we identify some threats,
6 cost threats, risk items, risk mitigations. We
7 come up with a summary of the findings and we come
8 up with a risk rating for cost.

9 So these are some of the typical
10 evaluation questions that we're going to try to
11 answer. So if you could look at these questions
12 and make sure that your proposal answers them
13 before we get it, it will make the job a lot
14 easier. Will the overall investigation approach
15 allow successful implementation as proposed? If
16 not, are there sufficient resources, time and
17 money, to correctly identify problems?

18 Does the proposed design development
19 allow the investigation to have a reasonable
20 probability of accomplishing its objective and
21 include all needed tools? Does it depend on new
22 development that has not yet been flight qualified?

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1 Are requirements within existing capabilities or
2 are advances required? Does the proposal
3 accommodate sufficient resiliency and appropriate
4 resources, for example, money, mass, power to
5 accommodate the development uncertainties? Is
6 there a risk management approach adequate to
7 identify problems with sufficient warning to allow
8 for mitigation without impacting the
9 investigation's objective? Does the proposer
10 understand their known risks and are there adequate
11 fall-back plans to mitigate them, including risk of
12 using new developments to assure that
13 investigations can be completed as proposed?

14 Is the schedule doable? Does it reflect
15 an understanding of work to be done and the time
16 that it takes to do it? Is there reasonable
17 probability of delivering the investigation on time
18 to meet the project schedules? Does it include
19 schedule margin? Will the management approach
20 work, the institution's personnel, organization,
21 rules and responsibilities, experience, commitment,
22 performance measurement tools, decision processes?

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1 Do they allow sufficient completion of the
2 investigation? Is the PI in charge? Does the
3 investigation as proposed have a reasonable chance
4 of being accomplished within the proposed costs?
5 Are proposed costs within appropriate caps and
6 profiles and does cost estimate cover all costs
7 including full cost accounting for NASA centers?
8 Are costs phased reasonably? Is there evidence in
9 the proposal to give confidence in the proposed
10 cost? Does the proposer recognize all potential
11 risks, threats for additional costs or cost growth?

12

13 Those are all the questions that we're
14 answering as we're evaluating these. And here are
15 some characteristics that are applicable to a low
16 risk rating. Okay, all the risks in the project
17 have been identified and managed by the team with
18 plans to reduce or retire the risk before launch.
19 No risk is where there is neither work around
20 planned or a very sound plan to develop and qualify
21 the risk items for flight. The project team and
22 its critical partners are competent, qualified and

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1 committed to execute the project. The project will
2 be self-managed till successful conclusion while
3 providing reasonable visibility of NASA for
4 oversight. The team has analyzed all project
5 requirements and they're appropriate including a
6 percentage for growth during the design and
7 development. And then a margin on top of that for
8 anything that's unforeseen.

9 Is there enough time in the schedule to
10 fix any problems? Is there enough of a reserve?
11 Any contributed assets for the projects are backed
12 by letters of commitment and the team understands
13 the seriousness of failing to meet the technical
14 schedule or cost commitments in the project in
15 today's environment. It's very, very important to
16 meet everything that you're going to say. You
17 know, within the cost cap and the schedule, be a
18 successful mission.

19 Here's kind of -- it's really a draft
20 schedule for a downselect. After the Step 1
21 proposals are accepted by the Office of Space
22 Science, there's a concept study kickoff scheduled

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1 for those proposals that are selected in the middle
2 of February. There's another TMC evaluation. If
3 the science hasn't changed, there won't be another
4 science evaluation but if there is, then it has to
5 go through another evaluation. We'll go through
6 another TMC. This one is going to be a little bit
7 more detailed. There is feedback to the proposers
8 with site visits.

9 We have a plenary session. We come up
10 with questions that we're not really sure about and
11 we give you guys a chance to respond. We go over
12 there like two weeks later and listen to your
13 answers. And there's a final plenary at Langley.
14 And it goes through the whole cycle again. And
15 selection or downselections are announced in
16 November of 05. Any questions? Great, thank you.

17 DR. NIEBUR: Thanks, Gloria. We're now
18 going to proceed to a break, having 15 minutes of
19 reserve and we'll start again at 10:15.

20 (A brief recess was taken.)

21 DR. NIEBUR: It is now 10:15, if you
22 could take your seats, please. We're going to get

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1 started with the next presentation. The next
2 speaker is Walter Kit, from the Office of Export
3 Control.

4 MR. KIT: I'm speaking for John Hall
5 today. He couldn't make it. He had something very
6 urgent that he had to do, so he asked me to kind of
7 step in for him and give this talk. This is his
8 talk. And my topic is NASA Export Control. This
9 is a somewhat simplistic presentation in the sense
10 that I'm just going to go over some general
11 principles and acquaint you with export control.
12 I'm not going to go into any detail. If you have
13 any questions, I'll try to answer them.

14 Okay. Let's see, so what is an export?
15 That's a very basic question. Okay, an export is
16 really the transfer of anything by any means, any
17 time, any place, anywhere, okay, to a foreign
18 person or entity. And this transfer can also be
19 accomplished by a US person acting as an agent to a
20 foreign person or foreign entity. And here are
21 some examples of different kinds of exports. Of
22 course, you have your traditional shipments of

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1 items from your Centers, which can include
2 components, software, parts, and so on and so
3 forth.

4 Okay, there are three main reasons for,
5 or foundational reasons for, export control. Okay,
6 one is, of course, national security. We don't
7 want to be giving -- exporting items abroad where
8 these items can be used against us. Okay, foreign
9 policy, export control, can be a very effective
10 foreign policy tool. We want to limit
11 proliferation, for obvious reasons, proliferation
12 of missile technology, of nuclear weapons, of
13 chemical and biological weapons, can be not very
14 good for us.

15 Okay, we have two basic laws. One is
16 which are sets of regulations associated -- one is
17 called the International Traffic and Arms
18 Regulation and the other -- which is governed by
19 the State Department and the other is your Export
20 and Administration Regulation which is a Department
21 of Commerce set of regulations. They both control
22 the export of goods and technical data to -- abroad

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1 and the items associated with the International --
2 with the ITAR, the International Trade in Arms
3 Regulations, they're -- the items that are
4 controlled are on the United States munitions list.

5 The items that are controlled on the Department of
6 Commerce list is called the Commerce Control List.

7 Now, the Commerce Control List is composed of
8 items that are basically dual use items. The ITAR
9 items are essentially a military use type items.
10 And these export control laws are very important.

11 Okay, well, not all exports are
12 controlled. You have information, for example,
13 that is in the public domain and this information
14 is uncontrolled and can be totally unrestricted as
15 far as dissemination is concerned. Controlled
16 information would have, of course, restricted
17 dissemination and it may require a license. It
18 could also -- this kind of information could be
19 eligible for license exceptions or exemptions.
20 Exemptions are associated with the ITAR regulations
21 and exceptions are associated with you EAR
22 regulations. EAR has to do with Department of

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1 Commerce. ITAR with State Department.

2 And these are just some examples of
3 license exemptions associated with the ITAR. I'll
4 let you look at them. Some of interest would be
5 like temporary imports, temporary exports, exports
6 by a U.S. agency and so on. And then EAR license
7 exceptions, the Department of Commerce calls their
8 exemptions exceptions. This is a mistake, that's
9 my error. Very important principle, violation of
10 export control laws can result in criminal and
11 civil prosecution and ITAR penalties can be as high
12 as a million dollars and/or 10 years in prison.
13 That's per violation and typically you have
14 multiple violations. EAR, your Export
15 Administration Regulations, they have criminal and
16 civil penalties as high as 100,000 and up and
17 imprisonment up to 10 years.

18 Okay, now, John is accountable -- John
19 Hall, the NASA Export Administrator, he's
20 accountable for compliance with export control laws
21 and this is his worst nightmare. This could also
22 be considered punishment for export control

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1 violations at Ames Research Center. Okay, what's
2 the -- what are some really important underlying
3 reasons for export control? Well, as far as NASA
4 is concerned, if you -- if we didn't have export
5 control privileges, if they were revoked, our
6 international activities, our international
7 programs would be severely effected if not
8 canceled.

9 NASA has tremendous expertise in a lot
10 of scientific areas. And not only space but for
11 example, Code U, biological sciences, physical
12 sciences and so forth. A lot of foreign countries,
13 foreign persons are very interested, would like to
14 have our information. So what does our export
15 control program look like? Well, we have an NPD
16 and an NPR. I forget to change NPG to NPR 2190.
17 2190 describes -- NPR 2190 describes the program,
18 the roles and responsibilities of all the people
19 involved, what the functions are, what the
20 interface is and the overall structure of the
21 program. The structure of the program is such that
22 it -- well, it's very centralized.

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1 Basically, all of the policy compliance,
2 is managed directly at Headquarters by John Hall.
3 Okay, license -- preparation of NASA licenses and
4 coordination of contractor licenses is also done at
5 Headquarters. We have -- every center has a Center
6 Export Administrator and a Center Export Counsel.
7 The counsel is the source of expertise in your
8 regulations, your ITAR and your EAR regulations.
9 Your Center Export Administrator is familiar with
10 the procedures for preparing licenses, not
11 preparing licenses but for applying for licenses
12 and is familiar with all the procedures associated
13 with export control at NASA.

14 Well, the bottom line is every NASA
15 employee is responsible for being aware of what
16 export control is and have some awareness of the
17 regulations. I think you need a caveat here and
18 the caveat is, if you're involved in some export
19 control activity associated with your program. Now
20 every program is supposed to develop an export
21 control plan, okay. Now licenses is extremely
22 important. Just recently we had a license that was

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1 submitted a week before shipment of the licensed
2 items or export items. Considering that your lead
3 times for ITAR license is 90 days, for EAR license
4 is 45 days, this puts -- we had to expedite the
5 license processing. So I prepared the license and
6 I was on the phone all day with Department of
7 Commerce. We did it in roughly three days.

8 But this was -- the Commerce Business --
9 rather the Commerce BIS organization, it's your
10 Bureau of Industry and Security, they're the ones
11 that do the license processing, that particular
12 organization, I mean, I went through convulsions.
13 The impact of trying to get license expedited by
14 your licensing agencies is very traumatic because
15 they have to staff these licenses with other
16 agencies, organizations such as Department of
17 Defense, Department of Treasury, Department of
18 Energy and so on. It's a very lengthy process. A
19 lot of people are involved and anyway the
20 Department of Commerce did us a favor and -- but
21 they said, "Gee, guys, you know, you can't do this
22 kind of thing. You've got to be much more pro-

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1 active. You have to do some planning".

2 And so the point of this is -- of this
3 picture is you're going to be waiting if you don't
4 -- waiting for your license to get approved by
5 either Department of State or Department of
6 Commerce if you don't do some planning and schedule
7 your licenses as part of your project planning.
8 Okay, if you need help, John Hall is the focal
9 point for assistance. I help John and, of course,
10 you can -- I'd be very happy to answer your calls
11 and try to help you as well. That concludes my
12 presentation. Do you have any questions?

13 DR. NIEBUR: Thank you, John.

14 MR. KIT: Walter.

15 DR. NIEBUR: I'm sorry. I apologize.

16 MR. KIT: No problem.

17 DR. NIEBUR: Glad you're here.

18 MR. KIT: John is much better looking.

19 DR. NIEBUR: That's all right, I'm not
20 in the market.

21 The next speaker of, yes, we have
22 skipped Gib Kirkham, for those of you following the

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1 agenda and wondering what happened. It's all
2 right, he'll be here. He's going to be a little
3 late and so we are privileged to have John Schaefer
4 here with launch vehicles next and he's going to
5 give you an outline -- wow, everybody just perked
6 up. He's going to give you an outline of the
7 options available in this AO.

8 MR. SCHAEFER: Good morning, everybody.
9 I'm John Schaefer. I'm from NASA Headquarters,
10 NASA Launch Services and I'll be talking about the
11 launch vehicle options and some of the things our
12 office is responsible for. Next slide, please.

13 Oh, it's me. Okay, the manual process.
14 Our launch services is clear down here at the
15 bottom of the food chain. We support the entire
16 NASA Strategic Plan, Strategic Enterprise, Science
17 Goals and Objectives, Science Programs in this case
18 the Discovery Program and whatever mission is
19 selected, whatever space transportation is
20 appropriate and we manage the launch services for
21 the agency.

22 What we do up at NASA Headquarters along

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1 with our launch services program, we're responsible
2 for identifying and aggregating the agency launch
3 requirements, that's for all launch requirements
4 for space transportation. We assure space access
5 on all available launch systems, which can include
6 shuttle, DOD space transportation, commercial
7 launch vehicles, and in a few cases, foreign launch
8 vehicles. We provide the front door to the agency
9 and for DOD payload customers.

10 We lead the Headquarters strategy for
11 our requirements in managing priorities and
12 conflicts with the other launch services and
13 customers. We're responsible for integrating
14 manifest on both shuttle and ELV even though we're
15 looking for ELV on the Discovery Program. We
16 provide program direction for the launch services
17 program. We identify and acquire any new or
18 emerging launch services as they arrive. We are
19 responsible for providing agency technical
20 leadership for space transportation policy
21 discussions. We're responsible for providing a
22 single point interface for our enterprise

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1 customers, in this case Code S, Space Science. And
2 we establish the launch manifest for the agency per
3 a process that we use commonly called the flight
4 planning. Next slide.

5 NASA Launch Services for the primary
6 payload, of course proposals are selected to meet
7 scientific objectives for our agency and, of
8 course, the AO provides guidelines to the
9 spacecraft and the launch vehicles that are
10 currently available. Proposals, as talked about
11 many times, they're selected based on scientific
12 merit, technical management and costs. The
13 technical management and cost is the portion that
14 we'll be evaluating with respect to launch
15 vehicles.

16 The science enterprise, in this case
17 Space Science, will bring whatever new requirements
18 they have for the Discovery Program to the Flight
19 Planning Board and the Flight Planning Board
20 considers many factors for these launch
21 requirements such as risk, that's risk tolerance of
22 the mission, risk of the launch service that's

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1 being considered, the launch date, the launch
2 vehicle, its availability in the time frame that's
3 needed in its launch history and the launch service
4 contracts and the launch services that we have on
5 contract.

6 Our launch services program is located
7 down at Kennedy Space Center. And they are
8 authorized by our Flight Planning Board process to
9 go out and acquire whatever launch services are
10 decided on at the Flight Planning Board. Next
11 slide. I won't go through all these options
12 particularly since we're not looking at the space
13 shuttle. This is kind of a flow chart of how we
14 get to a launch service, depending on what option
15 you want to look at, we have to adhere to the
16 Launch Services Purchases Act and our primary
17 method, along the top row here, is to acquire
18 commercial launch service from US domestic sources
19 and if they're not available or not cost effective
20 or not -- or can't meet our schedule or science
21 opportunity, which is rare I think in the Discovery
22 Program, there are other options for US Government

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1 sources or to acquire a foreign launch service.
2 That's a very arduous process and again, for this
3 program, I don't really anticipate having to go
4 that route.

5 Our launch services include expendable
6 launch services which, again, are procured and
7 managed by NASA. The Science Enterprise, the Space
8 Science, has baselined the medium classed vehicle.

9 In this case the vehicle that we have under
10 contract on our -- on what we call our launch --
11 NASA Launch Services Contract is the Delta II. For
12 vehicles and other performance classes, I know in
13 the AO it states that we're looking at Delta II
14 medium class and smaller. Those will be handled on
15 a case by case basis. Please contact our
16 representative that's named in the AO program
17 library to get details on those such as performance
18 and cost, availability, things like that.

19 For the different launch vehicles within
20 each launch vehicle class, for example, Delta II,
21 the proposer is not required to try to discern
22 differences in risk between say a Delta 7400 or

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1 7900 or 79 heavy, those will all be considered
2 essentially equivalent in risk and flight history.

3
4 The launch services cost, we provide a
5 cost that you should use for the Delta II in the
6 program library, again those costs you don't need
7 to put any kind of a margin or hold back the 25
8 percent as I think Susan Niebur had discussed.
9 Foreign launch services, they will be considered
10 only on a no funds exchanged basis, only for non-
11 nuclear payloads. It's up to the proposer to
12 address any kind of export control or technology
13 transfers issues as was talked about earlier and
14 the proposer should address how this foreign launch
15 service may meet our NASA Policy Directive 8610.7,
16 that's our risk mitigation policy and it talks
17 about flight history, technical risk mitigation,
18 costs for technical insight and in risk mitigation,
19 since it's a foreign launch and each of those will
20 be evaluated on a case by case basis.

21 Again, in AO we'll consider secondary
22 payloads or dual manifested payloads. It's up to

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1 the bidder, proposer, to go and find a partner say
2 for a dual manifested mission and address technical
3 management and cost.

4 These are three overarching NASA
5 policies that I would encourage you to become
6 familiar with. Again, the Launch Services Risk
7 Mitigation Policy, our technical oversight of the
8 expendable launch vehicles services, that's how we
9 do our insight and oversight, and the various
10 readiness reviews we have for our launch services.

11 And these are all out on the web. I think I gave
12 the address in the program library and again, I
13 would encourage you to get familiar with those.

14 Our launch service risk mitigation
15 policy, I bring that up again because it's
16 important to us. It establishes a process for us
17 to manage our risk, make sure we're not putting a
18 high risk payload on a launch vehicle that may or
19 may not have a demonstrated success history that we
20 would like for that kind of payload. We divided
21 these into three risk categories. Category I is
22 for non-mission critical missions. Category II the

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1 launch vehicle has to have had a minimum of one
2 launch and Category III, which many Discovery
3 missions are categorized as a Category III,
4 requires at least 14 consecutive flights of the
5 launch vehicle. The launch vehicles that we have
6 identified in this AO meet the requirements for the
7 Category III. Our launch services includes -
8 - it's like a turnkey service. Includes the launch
9 vehicle and any kind of standard services that come
10 with the launch vehicle, mission unique, the
11 nominal allocation for mission unique, includes a
12 payload processing facility, mission unique
13 modifications, includes our technical management
14 insight oversight, includes launch vehicle
15 telemetry, independent assessment, our independent
16 assessment team and day of launch or launch
17 campaign and day of launch management.

18 If you're considering a nuclear mission
19 within the constraints of the AO, I think we
20 provide a cost in the program library to include
21 with those. It includes data book, launch site
22 accommodations for nuclear material. It includes

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1 material handling and logistics by Department of
2 Energy. It includes range safety requirements.
3 That's a turnkey service.

4 This first bullet here is important. We
5 would like to ask the proposers to coordinate with
6 NASA at Kennedy Space Center our Launch Services
7 Program. A lot of times people feel compelled to
8 go directly to the launch service provider and what
9 we call basically shopping for answers. If we
10 don't like the answer we give them, they go
11 directly to one of the launch service providers.
12 Please understand that when you submit your
13 proposal, it will be evaluated against the criteria
14 that our launch services program at KSC would be
15 providing and we don't really have insight into the
16 pedigree or the assumptions made if you get
17 performance data or cost data from a different
18 source.

19 Evaluation of the launch services
20 include basically an overall assessment. We
21 provide in the program library a -- I guess a form
22 that we fill out. It will give you insight into

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1 how we evaluate these proposals. We look at
2 performance margin costs, launch vehicle interfaces
3 and I don't have it up here but also on-service
4 availability.

5 As of February 23rd, the President's
6 budget, 2005 budget, that's what this manifests,
7 reflects the on-service that we're considering is
8 in this medium class for the Delta -- or, sorry,
9 for the Discovery Program. We have Discovery 11
10 kind of benchmarked out here. Don't take that as
11 the date we have to launch, that's later than
12 December 31st of 09 but you can see it's a fairly
13 heavy manifest, so when you're considering launch
14 dates, please keep in mind that you have other
15 customers out there.

16 Okay, are we taking questions now or at
17 the end?

18 DR. NIEBUR: Sure.

19 MR. SCHAEFER: Yes.

20 PARTICIPANT: I'm Ray Ernest from
21 Lockeed Martin. I just wanted to let everybody
22 know in here that we've submitted a bit to NASA KSC

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1 for an on-ramp in their NLS contract for a medium
2 class Atlas V, 400 series. NASA is evaluating that
3 proposal opportunity. Those costs are being
4 submitted here at the meeting in heavy classes of
5 the Delta mission and it's our -- those of you who
6 don't know us, our single stage rocket and we hope
7 that NASA is going to come back to us and let us
8 know about whether that proposal is evaluated
9 properly and successfully and provide another
10 opportunity for launch service. We'll let you
11 know. (Inaudible)

12 DR. NIEBUR: Are there any questions?
13 Yes.

14 PARTICIPANT: John, two questions.

15 MR. SCHAEFER: I can just barely hear
16 you.

17 PARTICIPANT: I'm sorry. Two questions
18 on the turnkey costs that are in attendance. One
19 is as far as use of the field payload processing
20 facility, does that create simply a benchmark on
21 one month leading to the pad. The second question
22 is, is does that cost also include the required --

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1 Headquarters' required report of all critical
2 events leading up to and including separation from
3 the launch vehicle?

4 MR. SCHAEFER: First, the payload
5 processing facility, we include a nominal amount
6 for the payload processing facility. If you have
7 some unusual requirements, again, we'd have to
8 revisit that. For the purposes of this AO, you can
9 consider that -- unless you can identify something
10 very unusual, you can consider this as all
11 inclusive for your payload processing.

12 As we get closer and understand your
13 requirements more, again, we may, you know, re-
14 address that. But for the AO use the cost that we
15 have and the second question was telemetry, I
16 believe for launch vehicle. That includes
17 telemetry up to separation and that's launch
18 vehicle telemetry only. It does not include space
19 craft telemetry but includes all the events
20 required for launch vehicle.

21 PARTICIPANT: (Inaudible off the
22 microphone.)

1 MR. SCHAEFER: If we're already picking
2 up the launch vehicle telemetry, then -- it would
3 depend on the specific requirements. I encourage
4 you to submit a formal question if you have
5 specifics. Yes?

6 PARTICIPANT: Yeah, launch vehicle costs
7 have just increased about seven to 10 percent.
8 Will the cap be adjusted for that?

9 DR. NIEBUR: What do you mean by just?

10 PARTICIPANT: Will the Discovery cost
11 cap be adjusted for the increase in launch vehicle
12 costs?

13 DR. NIEBUR: You said they were just
14 increased. What do you mean by just?

15 PARTICIPANT: About a few weeks ago, I
16 believe there was a cost issue.

17 DR. NIEBUR: Oh, compared to New
18 Frontiers, yeah, we're not New Frontiers, so you
19 can't use those planning numbers. The numbers that
20 you're using in planning are the ones that came out
21 in the AO and the cap has been adjusted to
22 compensate for the increases.

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1 PARTICIPANT: It has?

2 DR. NIEBUR: Yes, it has. Any other
3 questions? Yes.

4 PARTICIPANT: Let me ask the same
5 question a different way. Because launch vehicle
6 costs are outside the control of the development
7 team --

8 DR. NIEBUR: That's right.

9 PARTICIPANT: -- what happens when the
10 cost for launch services increases during Phase
11 C/D. Who is responsible for those costs?

12 DR. NIEBUR: We are; the Discovery
13 Program pays for it. When there is an increase
14 after selection in launch vehicle costs, the -- we
15 understand that it would be a burden on the
16 proposing team to incorporate that into an already
17 tight cost cap mission, not that tight but still,
18 we understand that's an issue and the Discovery
19 Program assumes all risk -- and in fact, has
20 typically paid an up-charge when launch vehicle
21 cost increased during development. We're prepared
22 to do so again. And you'll have that in writing

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1 with the questions this afternoon.

2 Any other questions? All right, one
3 more.

4 PARTICIPANT: Are these costs for
5 launches from either coast?

6 MR. SCHAEFER: These are assuming an
7 East Coast launch. If you're contemplating a West
8 Coast launch, please get with our Launch Services
9 Program at Kennedy and they'll be able to help you.

10

11 DR. NIEBUR: Great, thanks, John.

12 MR. SCHAEFER: Okay, thank you.

13 DR. NIEBUR: Our next speaker will be
14 Gib Kirkham, on International Participation.

15 MR. KIRKHAM: Thank you, Susan, for
16 inviting me to speak here and I understand that
17 this is a conference that's being held four years
18 after the last one was held. Many of you may have
19 been at the last one where Diane Rausch presented.

20 I'm now working in the office where she was
21 working. Some of these slides may look familiar.

22 We had a couple of changes since then so we're

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1 hoping to give you a pretty interesting
2 presentation here this morning.

3 To start off, we encourage international
4 participation, not just from the Office of External
5 Relations' perspective, but from NASA, in general.

6 You all, I'm sure, have seen the President's
7 Vision which clearly states that international
8 collaboration is to be promoted and we're trying to
9 do that in our office under the auspices of the
10 Office of External Relations. We try and follow
11 and help you all with following the guidelines that
12 are out there. And those guidelines essentially
13 fall into two categories. There are NASA internal
14 guidelines and then national guidelines, US
15 Government guidelines.

16 The NASA internal guidelines are that we
17 want to encourage international collaboration on a
18 no exchange of funds basis where we can. And that
19 the foreign partner covers its own costs. We don't
20 fund foreign research as a general rule. It's
21 possible to contract for some services except with
22 regard to Russia. In 2000 we passed in the

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1 Congress a Iran Non-Proliferation Act which makes
2 it very difficult for us to contract with Russia.
3 So we do not encourage the contracting mechanism
4 with Russia.

5 When we are talking about use of foreign
6 launch vehicles, as John just mentioned and alluded
7 to, we need to take into account the National Space
8 Transportation Policy that was signed and that
9 essentially promotes the use of US launch vehicles
10 and what we found in our experience is that using
11 foreign launch vehicles is a long and arduous
12 process. So if you're interested in using the
13 foreign launch vehicle, you ought to identify that
14 up front real early and notify our office and we'll
15 work with the inter-agency community to make sure
16 that that can be provided or if not, that you know
17 up front and early that it can't.

18 Some real important factors for you all
19 to consider when putting together your response,
20 the international participation ought to
21 demonstrate significant benefit to NASA and it has
22 to be measurable to the extent possible. It's best

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1 if that's written early and that you are in contact
2 with our office to help make sure that the language
3 that you're writing is clear and up front. We try
4 to make sure that you all find that you have clean
5 interfaces. Clean interface is real important with
6 international collaboration. The greater the
7 technical complexity, it's harder to have clean
8 interfaces, I understand, but I think that to the
9 extent that you can have clean interfaces, I think
10 your proposals will be helped.

11 Your foreign contributions need to be
12 significant and you ought to try to protect against
13 unwarranted technology transfer. Some documents
14 that are important to include as a strong
15 endorsement, a letter from the foreign partner, in
16 this case to the extent possible, it's real good to
17 get foreign government level endorsement. That
18 helps us in understanding exactly where the
19 cooperation is being conducted and then if
20 selected, you're going to need to have an agreement
21 and having an agreement as early as possible from
22 our perspective is a good thing.

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1 We have different types of agreements
2 that we can sign with foreign governments and
3 foreign participants. Letters of agreement are the
4 lowest level and then that moves up to a memorandum
5 of understanding between our agency and the foreign
6 government which is at a higher level and requires
7 U.S. Government review. When I talk about clean
8 interfaces, it's very useful, I think, to draw it
9 out and I don't know if Code S has provided this as
10 a model but this is a pretty good model for drawing
11 it out.

12 It helps us to -- in understanding where
13 the interfaces are overseas. The role of our
14 office and the Office of External Relations, we
15 have a number of divisions. My division supports
16 the Space Science Office and we take in the
17 requirements for collaborating with a foreign
18 government or a foreign partner and help develop
19 the letter of agreement as well as the MOUs that
20 follow from that. We have the lead responsibility
21 for negotiating these agreements and then
22 finalizing them. And we also help in coordinating

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1 and liaising with international partners.

2 Just a real quick work on the vision,
3 basically we're promoting international
4 collaboration the vision and we expect that that
5 will continue through this process as well. And a
6 real quick summary, I want to open this up for
7 questions. I know that the international process
8 can be a little bit confusing. So why don't I end
9 here just saying that we're ready and willing to
10 help and look forward to engaging with you in
11 whatever way we can be helpful. I appreciate your
12 attention and we'll open it up to questions. Any
13 questions? Very good. Good, thank you very much.

14 DR. NIEBUR: We're going to move
15 directly into Q&A. I have received 20 questions
16 over the past week, so that's good. All right,
17 thank you. Oh, no. Thanks. Great. So we're
18 going to move into Q&A. I have received 20
19 questions. It sounds like a game. The tradition
20 at pre-proposal conferences is to read you the
21 questions and the answers so that all of you who
22 submitted a question will have it answered today

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1 with no delay and everybody else will be able to
2 hear and view it as well. I'm putting this up so
3 you'll have something to look at while I talk.

4 If the speakers come, we may diverge,
5 give you guys a break. This is the document that
6 has been sent to Langley and will be posted. They
7 do the website and will post it. You can always
8 find the latest version at the magic acquisition
9 page. It's divided by sections so it's not going
10 to be in chronological order. All right, starting
11 right off with a biggie, so technology. I got a
12 number of questions on RTGs and I'm going to read
13 these verbatim so that we have the same
14 understandings.

15 "Regarding power supplies, can mini-RTGs
16 be used or mini-RHUs", and the answer to that is,
17 no. While we're aware that concepts for mini-RTGs
18 are in development, and, in fact, we're funding
19 some or I think there are proposals in, none are
20 projected to be complete for a 2009 launch. We're
21 talking about limiting risk here and these are new
22 things.

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1 "Can the JPL initiative to produce an
2 impact hardened mini-RTG be incorporated into the
3 mission design?" No, no RTGs at all. "We are
4 considering the application of small radioactive
5 power sources to a mission. At present some RPS
6 concepts use RHUs while others are built around
7 somewhat larger sources. What is the maximum
8 amount of radioactive material that's allowable in
9 a Discovery proposal?" Very nice try, but we're
10 not allowing small RPSs. As stated in Section
11 5.3.2, only RHUs and radioactive material sources
12 for science instruments are permitted.

13 "When will these reference documents
14 become available"? Yes, that one was not ready in
15 time. I do apologize for that. I don't like to
16 put out an AO without all the supporting
17 information, but this person has been in Europe for
18 several weeks, and we needed to get final
19 concurrence, so that will be posted early next
20 week. The guidelines and criteria document is
21 typically posted in draft form during the proposal
22 process so you know what to expect and so that will

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1 be out within the next month.

2 Are you ready? Excellent. We're going
3 to stop here and move into -- we're nothing if not
4 flexible. I mean, come on, we've got to respond to
5 the changing environment. Bill Knopf is going to
6 talk about the PDS and so I'm going to hand this
7 over to him.

8 MR. KNOPF: Yes, hello, everyone. I'm
9 going to talk a little bit about what the archiving
10 requirements are with the PDS for the Discovery
11 Mission. These are the topics I'm going to go
12 over, talk a little bit about the Science Data
13 Management Policy that we have in the Office of
14 Space Science, giving a bit of an overview of the
15 Planetary Data System, who the players are, the
16 participating organizations that are part of it,
17 talking about the services that they provide and
18 considerations that you should keep in mind as
19 you're putting together your proposals.

20 The key objectives are to preserve and
21 utilize space science data because this is a
22 national resource. Everything -- all the money

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1 that is paid for this, this is very valuable
2 science. We want to make sure that this data is
3 preserved for generations in the future. We want
4 to be able to do correlative studies over time, so
5 that's one of the main things that the PDS is
6 chartered to do.

7 We're to keep the data open ultimately
8 because it belongs to the science community and the
9 public that has paid for, taxpayers' dollars for,
10 this. We need to have an appropriate and balanced
11 allocation of resources for data issues throughout
12 the mission life cycle and this is well beyond when
13 the primary mission is done, when an extended
14 mission is done, because we still need to have the
15 expertise somewhere captured and if it's not at the
16 project level any longer it needs to be captured at
17 the PDS.

18 One of the requirements that you have is
19 to develop a project data management plan. This
20 will be reviewed as part of the NAR, the Non-
21 Advocate Review. The other requirement is timely
22 delivery of the science data products and you'll

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1 notice that I have that in red and italics in case
2 it stands out, there's certainly no double meaning
3 there. At one of the other requirements now is any
4 data analysis programs that are to be funded in the
5 future, will require you to be doing your data
6 analysis on data that is in the PDS. So this is
7 another thing to keep in mind.

8 Well, we are the official planetary
9 science data archive for OSS, in the Solar System
10 Exploration Division. There are some other
11 archives in OSS in the Astronomy and Physics
12 Division and Sun/Earth Connection. This is for
13 solar system exploration. We're chartered to
14 insure that all that data is archived and available
15 to the scientific community and as a result we have
16 a distributed system that we've put together which
17 will help to optimize the science oversight in the
18 archiving process. I'll talk at little bit more in
19 the next few slides about how we do that and who we
20 have as experts in certain science disciplines.

21 Now, the PDS has been around for awhile.
22 It's evolved over time. It only recently has

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1 become a program. It had been an RTOP before that.

2 So it's been evolving over about a 12-year period.

3 And part of that evolution is that it's gone from
4 a system where you could call somebody on the
5 phone, say you wanted data, they would send you a
6 tape, they would send you a CD, they would send you
7 a DVD. Too, of course, we're in the Internet age.

8 We're now trying to do as much as possible through
9 electronic means to allow you to have a distributed
10 online system. This doesn't say that there aren't
11 other ways of getting data out of the PDS and
12 certainly for very, very high volume data requests
13 that we have, there will be other ways to get data
14 out of the PDS, talk about data bricks, actually
15 FedExing data to you, things like that.

16 So how is it organized? Well, we have a
17 central node that is at JPL and that node is
18 responsible for the program management or the
19 project level management of the day-to-day
20 operations of the PDS. It's also responsible for
21 the system engineering of putting the architecture
22 together and developing the system as a whole.

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1 They also maintain the top level catalogue and they
2 work on standards. PDS standards are a difficult
3 concept to try to keep together all the time
4 because you're dealing with very different types of
5 data sets over many, many different types of
6 missions. And trying to capture this is a way that
7 is useful, 10, 20, 50, 100 years from now is one of
8 the responsibilities of the PDS. We also have
9 discipline nodes and this is what I mentioned
10 before, where we have specific discipline
11 scientists who are essentially Co-Is at their
12 institutions who interface with the flight program
13 scientists and the central node. And I mention
14 here that the current discipline nodes are, the
15 atmosphere node is at New Mexico State University.
16 Rita Bebbe heads that up. She's also the project
17 scientist for the PDS. The geoscientist node is at
18 Washington University in St. Louis. Ray Arvidson
19 heads that node up. Imaging node has split
20 responsibility. USGS at Flagstaff is the primary
21 lead. Lisa Gaddis is in charge there and Sue Lavoy
22 is at JPL.

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1 The NAIF facility, Navigation Ancillary
2 Information Facility, is one of our nodes. That's
3 at JPL and Chuck Atkins runs that node. Planetary
4 Plasma Interactions is at UCLA. Ray Walker runs up
5 that node. Radio-science is currently at Stanford
6 University. Dick Simpson is the PI in charge
7 there. The Rings Node is at NASA Ames, Mark
8 Showalter is in charge and small bodies is just up
9 the road here at the University of Maryland, Mike
10 A'Hearn is in charge there.

11 Now, the reason I said current is that
12 we had a recent discipline node NRA that went out
13 soliciting potentially new competition in the
14 discipline nodes and those proposals have come in.

15 We've gone through a review process. We're in the
16 process of making selections now, so that again is
17 why I say that these are current. There may be
18 some institutional changes but the overall
19 structure of the PDS from what we see right now, is
20 going to remain the same.

21 So what kind of services does the PDS
22 provide? Well, they establish and maintain

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1 standards for high quality data archives and these
2 standards are established with the discipline node
3 scientists in mind. They are the main interface
4 between the daily operations of the PDS as being a
5 data archive itself and talking to the rest of the
6 science community. They're the ones who attempt,
7 at least to try, to understand the science that you
8 are doing as PIs and Co-Is.

9 We work with the missions and try to
10 work very closely to create very complete data sets
11 because we want to be able to get not just raw data
12 but calibrated data, any documentation that is
13 necessary to understand how to use this data in the
14 future, any meta-data that will also be useful is
15 pulled in as well. So they develop and maintain a
16 suite of tools and we try to make these tools
17 available from the central node out to the various
18 discipline nodes, but also make them available to
19 the flight projects themselves, to help them create
20 and archive validated data products that meet the
21 PDS standards, the formatting standards, et cetera.

22 PDS personnel are available and can be

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1 funded separately by missions to perform additional
2 archiving tasks as necessary. That's something you
3 can call a particular discipline node because for a
4 given flight project, it may be multi-disciplinary
5 in nature as far as the data that's being retrieved
6 but we have one node that is considered the prime
7 discipline node for that and that's the main point
8 of contact.

9 As a result, that point of contact will
10 work with you and other nodes to provide expert
11 assistance to the scientists who use the archives
12 both in providing data and the science community at
13 large. And we insure the viability of the
14 planetary data that might otherwise be lost. In
15 fact, the PDS, since it's been evolving has been
16 dealing with a number of restoration efforts on
17 some very, very old data sets and this has turned
18 out to be -- if you've ever watched Turner Classic
19 Movies and watch them trying to resurrect old films
20 that are disintegrating, we have similar things
21 that happen with this data, so although we don't
22 get air time on TV to talk about it.

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1 But the things that you really should
2 consider: early involvement and interfacing with
3 the PDS is critical to simplify your data delivery
4 pipeline and making sure that the products are
5 correct. You should work very closely with these
6 people. They will try to help you in as many ways
7 as they possibly can to give you all the
8 information you need, especially in the proposal
9 generation phase to help you make sure that you're
10 scoping things out properly. Those lead scientists
11 will actually guide you in the use of the standards
12 that should be specific for your particular
13 discipline because we have a number of standards
14 across the PDS but there are certain standards that
15 might apply specifically to comets that don't
16 necessarily apply to an atmosphere type node.

17 The other thing you need to consider is
18 that data as it's -- after you receive data, that
19 should be delivered to the PDS within six months of
20 collection, so there is an exclusive use period is
21 what we call it. The PI's are able to have that
22 data, do evaluations on it, do studies on it for

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1 about a six-month period by the PIs and Co-Is. And
2 our future goal is to try to make things as
3 seamless as possible, while you would still have an
4 exclusive use period. The idea would be to
5 essentially create what we would call a data node
6 at the various flight projects and part of their
7 ground data system or science data systems would
8 then be scoped in such a way that they would very
9 easily in a turnkey fashion at the end of that six-
10 month point, we would be able to port the data very
11 easily to the PDS and have a very smooth
12 transition. This is something we're working
13 toward. We're not quite there yet but you should
14 keep it in mind, because it is coming up. Again, I
15 have to point out that archiving with PDS is a
16 requirement, not an option. Frequently what ends
17 up happening, and this is understandable, there are
18 a lot of challenges in putting together these
19 missions. And one of the things that has tended to
20 suffer in the past has been the final data
21 archiving.

22 We do have -- it's our responsibility to

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1 make sure that we get this data archived properly
2 and make sure it's out there for the community
3 because flight projects do eventually go away. X
4 number of years after the end of mission, they will
5 away. There's no guarantee that there will be
6 funding for your particular websites or things like
7 that, no guarantee that people will stay in the
8 same institution. PDS has to maintain some level
9 of cognizance over that data and be able to inform
10 the rest of the community and the community
11 tomorrow.

12 But we are evolving. I mentioned that
13 before, one of the latest things we've gone through
14 in part of our evolution is there was a major
15 release the beginning of March, PDS DD02. It's
16 essentially what we were calling our distribution
17 function. In a nutshell, it included a lot of
18 changes to the web interface, a lot of changes to
19 the query functionality within the PDS, making sure
20 that the catalogs were updated to make sure that
21 you were able to actually find all of the data
22 because there had been times in the past that data

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1 has slipped through the crack. It's in there; you
2 can't get it out. That's been one of my main
3 concerns. I've been trying to make that more
4 viable in the PDS. So I would encourage you to go
5 and look at the PDS now. There's the link for it.

6 It's PDS.jpl.nasa.gov. You'll see that it's gone
7 -- if you haven't been there in awhile, literally
8 in a few months, it's gone through a major
9 revision. Other than having kind of a nice looking
10 feel which is nice, it actually does have better --
11 much better functionality than it used to have.

12 Part of what you'll be able to find as
13 you drill down into the document section, which
14 will be very useful for you, is we have a
15 proposer's archive guide. And this guide will
16 provide all sorts of assistance in what --
17 determining what the costing should be the things
18 that you need to do to develop your interface
19 specifications with the PDS. There's a cost model
20 that's in there. Again, the cost model is the sort
21 of thing that you should check back with the PDS
22 people to see if it makes sense based on the scope

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1 of your program, the number of instruments you have
2 involved, the complexity that's there, whether or
3 not you've interfaced with the PDS in the past or
4 not, because there is a bit of a learning curve
5 that we've seen over time. So that's part of the
6 cost model.

7 If you're experienced with PDS, it's
8 probably easier than if you're not experienced with
9 PDS. So you can use that to try to determine
10 things. Also the latest standards that we have are
11 out there. And any other information as far as
12 sample archive plans, some archive plans that we've
13 had in the past, that sort of information is also
14 in there. And there's a variety of ways to look
15 for data. And again, I would encourage you to look
16 at this.

17 This is changing still. We have another
18 release or another upgrade to this that is going to
19 be coming out in the beginning of May, so you may
20 see some things that may not look quite right, but
21 it's being worked on very diligently by a number of
22 people who aren't sleeping much every, every day.

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1 So I think that's all I had. Does anyone have any
2 questions about the PDS? Yes.

3 PARTICIPANT: Under this AO can we
4 propose to archive in one of the other OSS data
5 archives?

6 MR. KNOPF: It depends on the type of
7 discipline.

8 PARTICIPANT: For example, where is
9 Kepler being archived?

10 DR. NIEBUR: Kepler is currently under
11 negotiation, actually. What we believe the
12 solution will be is to put it in the appropriate
13 astronomical data archive and then provide proper
14 links from the PDS to that archive. So if you are
15 looking at something through the Astronomical
16 Search for Origins, planetary search element, then
17 yes, propose your appropriate data archive, and it
18 would be good to include a line stating that you
19 also are willing to work with PDS. That's
20 appropriate. We just want to be sure that all of
21 the money available through Discovery produces
22 output that can be used by Discovery types;

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1 typically the rest of the proposing community for
2 Discovery would go to the PDS, but we understand
3 that astronomical data is different and requires
4 different archives. So, yes, no problem.

5 MR. KNOPF: And we've been working very
6 closely with the other archives to make sure that
7 we're tying things together as well, so that's the
8 other thing. We want to make sure that if someone
9 comes to us that we're able to at least vector them
10 to the right location if it's not in the PDS. Any
11 other questions? Okay, thanks.

12 DR. NIEBUR: Thank you, Bill. We'll now
13 hear from Larry Cooper, who is a member of the
14 Office of Space Science and will be speaking to us
15 about education.

16 MR. COOPER: Good morning, everybody. I
17 just want to start by saying that we have high
18 expectations of the Discovery Program in terms of
19 its contribution to the OSS E/PO Program and the
20 missions that are flown on the Discovery Program in
21 the past have been major contributors to the impact
22 of our program and we fully expect you to continue

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1 in that tradition. And eventually, we'll have
2 charts.

3 Basically, we have two major thrusts
4 within the E/PO Program. The first is focused on
5 teachers and students and in particular focusing on
6 students and getting them to pursue math, science
7 and technology careers and the second trust is in -
8 - directed toward the public and engaging them in
9 our missions, our science and bringing them along
10 for the ride to experience the thrill of
11 exploration and discovery. We've been at this for
12 going on 10 years now and consequently, we've built
13 up a pretty good sized portfolio of prior
14 activities as well as ongoing activities and I'll
15 talk briefly about some of those this morning.

16 Just for I guess a couple points of
17 clarification, we bin our educational and public
18 outreach program into three major area, the first
19 being formal education, the second informal
20 education and the third public outreach and you see
21 examples here. Typically, formal education deals
22 with the classrooms and students and teachers.

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1 Informal tends to be the things that you'd see at
2 museums and planetariums and the like. And the
3 third, the public outreach is more the one-shot go
4 out to a star party or those kind of things.
5 There's a lot of overlap between these and there
6 are examples listed here. All of these things are
7 fair game for using your E/PO funding for.

8 Things that are not fair game are the
9 marketing and media and those kind of things. We
10 recognize that those are important things but they
11 don't come out of your E/PO budget. They come out
12 of your other part of your budgets. All this
13 started, as I say about 10 years ago. We were less
14 than a million dollars at that point in time,
15 primarily in the Hubble Space Telescope Program at
16 the Space Telescope Science Institute. We're now
17 approaching about \$40 million a year of annual
18 expenditures on E/PO. The focus of the program is
19 on building partnerships, building relationships
20 with people who have direct connections and access
21 to the target audiences, i.e., students, teachers
22 and the public. We don't expect the scientists to

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1 become E/PO experts. We expect you to partner with
2 people who can make that -- work with you and make
3 that bridge to the target audience.

4 About a year ago, education within NASA
5 was elevated to the status of an enterprise. We
6 have an AA for education, just like we have an AA
7 for space science. A lot of people have said,
8 "Well, what does this all mean? You know, is the
9 OSS program going away?" "No." The answer is that
10 there is one NASA education program. We are a
11 significant contributor to that program in helping
12 to carry it out as well as shaping where it's
13 going. It's directed by the Office of Education.
14 We manage our programs, you know, under them and
15 all of our guidelines, goals and the like are fully
16 aligned with the agency education strategic goals
17 and objectives for education.

18 Last year shows the reach of the OSS
19 E/PO program. These are just the partners, the
20 people who work closely with us in developing
21 programs, products or carrying out activities. And
22 it's literally a cast of thousands; 115 missions,

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1 1300 OSS affiliated scientists were directly
2 involved, 500 institutional partners and you see
3 the list there, but if you'd seen this map 10 years
4 ago, there would have been two or three dots on it.

5 In terms of level of activity and events, over
6 5,000 events last year, 500 new products and
7 activities, presence in every state, the District
8 of Columbia, Puerto Rico, Virgin Islands, we even
9 had some things going on out in Guam.

10 Presence at national conferences,
11 garnering a significant number of awards, you know,
12 on an ongoing basis. You can see the level of
13 participants here. We had, you know, close to
14 400,000 direct participants. Those are the people
15 that we could actually go into a data base and pull
16 up their name and what they actually participated
17 in as well as, you know, the people who got on the
18 Internet, participated on Web Cast, there are like
19 6 million of those and all told we think that we
20 could have reached if everybody had picked up the
21 paper and read the articles and things like that,
22 you know, literally two-thirds of the US

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1 population.

2 Now, to what you're really here to hear
3 about, proposal preparation. What are we looking
4 for in your proposals at the Phase I here?
5 Basically we are looking for an indication that the
6 PI understands what the requirements are for
7 carrying out an OSS E/PO program and that he or she
8 is committed to doing so. We want you to identify
9 unique characteristics of your mission which you
10 want to use as the vehicle to reach the target
11 audiences. We want an overview of the planned
12 activities, who are the target audiences, what are
13 the areas of emphasis that you want to place on,
14 you know, in the formal, informal and public
15 outreach areas. We want you to make sure that you
16 understand the role and the importance that we
17 place on evaluation as a part of the education and
18 public outreach programs, to be embedded from the
19 very beginning, to have this in your mind, that you
20 have to have an evaluation component.

21 And finally, one to two percent is the
22 guideline for what you should be committed to the

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1 E/PO portion of your program. Those of you who are
2 selected to go on and do concept study reports,
3 you'll have an opportunity to flesh all this out.
4 What we're looking for at the first stage here is
5 those -- you know, those of you who are selected,
6 an opportunity for use to get a preview of where
7 you're going to be going in your concept studies as
8 well, as to understand and give you some feedback
9 about whether you're on the right track or not.

10 The OSS explanatory guide is the single
11 most important document that you probably need to
12 be familiar with. It was just updated in March.
13 It has evaluation criteria, what they mean, how you
14 meet them. A lot of frequently asked questions and
15 answers to what do you mean by informal, what do
16 you mean by alignment with National Science and
17 Education Standards, those things are in that
18 document. You or whoever you're going to delegate,
19 you know, the responsibility for E/PO needs to be
20 intimately familiar with this document.

21 In addition, we have education and
22 public outreach annual reports that are online,

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1 which will give you a context for what else is --
2 you know, what else is going on. We expect you to
3 work with us and other missions in the Discovery
4 Program, other missions in the Explorers Program to
5 make sure that we're not duplicating things. We
6 only need so many, you know, videos on the infrared
7 or visible light or black holes. There's a process
8 by which we get together and try to sort these
9 things out and you know, make contributions, but
10 you should be aware of what has gone on in the past
11 and what is going on now. And a lot of that is
12 detailed in the annual reports. We have E/PO
13 newsletters, which also talk about things that are
14 currently going on as well as the support net
15 folks, which are the education forums and brokers.
16 We established the support net around the country.
17 This is the picture of the country and it's
18 divided -- there are seven brokers. They're
19 scattered around the country. They're responsible
20 for regions of the country and they're responsible
21 for helping you identify needs in that area, target
22 audiences, helping, you know, in a variety of ways.

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1 They help up front, you know, during the proposal
2 phase and if you're selected they can be of great
3 help in getting the word out to people about
4 opportunities, you know, if your program may be off
5 or -- there are also four forum. The Solar
6 Exploration Forum is at JPL. The Sun Earth
7 Connection Forum is UC Berkeley and an East Coast
8 one at Goddard. Structure and Evolution of the
9 Universe is up at Harvard Smithsonian. And Origins
10 is at the Space Telescope Science Institute. Call
11 your local broker or forum; I can't emphasize this
12 enough. I mean, everything that they do is treated
13 in strict confidentiality so you don't have to
14 worry about -- or you shouldn't worry overly about
15 intellectual property leakage as I call it.

16 And if you've got questions, you know,
17 give me a call. Other sources of information,
18 strategic plans, you know, all the way down from
19 the NASA big plan to the Enterprise plans, and down
20 to, you know, our implementation plan for education
21 and public outreach. We're serious about this and
22 we expect to take it, you know, equally seriously.

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1 The bar has continually been raised. What was
2 considered to be good E/PO, you know, even five
3 years ago is now considered to be marginal. We are
4 continually pushing the envelope of how best to
5 reach the target audience to how to excite them,
6 you know, how to get them involved.

7 PARTICIPANT: A question, is the E/PO
8 evaluated and part of the selection process?

9 MR. COOPER: E/PO is evaluated and we're
10 looking for, as I said, those four things. And
11 it's a compliance check. It's not going to make a
12 difference on whether you're selected for a concept
13 study or -- unless you completely fail to address
14 those issues.

15 DR. NIEBUR: To make a clarification, it
16 may make a difference at selection level. The
17 selection official, of course, has complete freedom
18 to use E/PO as a selection factor among equal
19 Category I, among Category I proposals. So that is
20 a possibility, yes, but it does not go into
21 determining your categorization. Does that help
22 any?

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1 MR. COOPER: And read the explanatory
2 guide. This is a promo for a workshop that we're
3 holding in Chicago in June. If any of you are
4 thinking about or need to think about engagement of
5 minorities in your program, this would be a great
6 workshop to come to. We're expecting about -- a
7 group of about 200 people to show up. We're
8 inviting minority scientists from all across the
9 country who have expressed interest in getting
10 involved in OSS sponsored, you know, research
11 programs. There will be lots of time for
12 networking and the like. Information about where
13 it's at is there.

14 The three people listed here are the
15 three people to get in touch with for details on
16 that. That's it. I'm done. Questions? Yes, sir.

17 PARTICIPANT: That one or two percent
18 cost you mentioned is that included in the \$360
19 million mission cap?

20 MR. COOPER: Excuse me?

21 PARTICIPANT: Is the E/PO cost included
22 in the mission cap?

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1 MR. COOPER: Yes.

2 PARTICIPANT: Is that a percentage of
3 the entire project or just the development part or
4 -- is that a percent of the whole life cycle?

5 MR. COOPER: Well, the whole life cycle
6 excluding launch vehicle. Yeah. Any other
7 questions?

8 DR. NIEBUR: Okay, thank you, Larry.
9 Great, well, that concludes the formal
10 presentations for today. We're going to continue
11 with the Q&A. We're going to begin by discussing
12 the management questions. We are doing well on the
13 schedule, so there will be time at the end,
14 although I caution you that answers will be off the
15 cuff. You laugh; what are you worried about? Oh,
16 I have no cuffs, thank you, Larry.

17 Okay, management type questions. What
18 is the procedure for involving industrial partners?
19 The Discovery Program encourages teaming
20 arrangements that utilize industry participation to
21 the fullest extent possible but leaves the
22 specifics of such arrangements up to the PI and his

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1 or her team, compliant of course, with NPR 7120.5B,
2 which used to be called NPG 7120.5B which used to
3 be called NPG 7120.5A or maybe just .5, anyway, you
4 probably recognize it, it's in the DPL.

5 Can the Discovery Program explain the
6 rationale for having the JPL Program Office awarded
7 to administer contracts with all successful
8 offerors? If the JPL burden is applied to
9 contracts outside of JPL, doesn't this provide an
10 unfair cost advantage to JPL offerors? The
11 Discovery/New Frontiers program office is
12 responsible for program management of all Discovery
13 missions. In order to effectively perform in this
14 capacity, the Discovery/New Frontiers office will
15 administer contracts with successful proposal
16 teams. There will be no costs applied to non-JPL
17 missions that are not applied to JPL proposed
18 missions.

19 Section 5.4.2 says each Discovery
20 investigation proposal must have a fully qualified
21 and experienced PM who will oversee the technical
22 implementation of the project. This PM must be

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1 named at the time of proposal. Surely, you didn't
2 mean that for Step I. That would be a major break
3 from the past. Yes, it is a major break from the
4 past. This is a requirement of the 2004 Discovery
5 AO, just as it was for the 2003 New Frontiers AO.
6 Each proposal must include a named PM. Please note
7 also that after proposal any change of the PM, the
8 Deputy PM, the PI, the Deputy PI as I showed you on
9 the first slide, requires concurrence by the NASA
10 Discovery Program Management.

11 What will the Discovery Program do to
12 limit the risk inherent with the increasingly back-
13 loaded funding profiles? The funding profile
14 appears to have reduced only funding with respect
15 to New Frontiers and Mars Scout Step 1 AO's. Well,
16 we agree that is a concern when first looking at
17 the profiles. Let me explain a little bit. Stay
18 with me and if this is confusing after I go through
19 this question and another similar question, I'm
20 glad to extrapolate.

21 Experience has shown that more time and
22 funding may be needed during the requirements

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1 definition in Phase A and B. The new profile does
2 include significant increases in both Phase A and
3 Phase B as compared to the 2000 Discovery AO. The
4 2004 Discovery AO also shows proportionately more
5 funding available in the first two years in either
6 Mars Scout or New Frontiers. The proposer is
7 cautioned about comparing absolute amounts between
8 AO cycles. As the funding available to and from
9 NASA is distributed by fiscal year, just as we
10 receive it, proposers are free to distribute that
11 between phases as they wish. Okay, we get money
12 from Congress by fiscal year. We give it to you by
13 fiscal year. You get to choose how long your Phase
14 B is. If you have a nine-month Phase B, you will
15 have more money per month. If you have a 25-month
16 Phase B, you'll have less money per month. This is
17 something that is up to you.

18 A proposer is further cautioned when
19 comparing these numbers between different program
20 lines, as missions begin Phase B during different
21 months of the year. Now, I'll put in an example.
22 Mars Scout began their Phase B in August of 03.

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1 Discovery is scheduled to begin theirs November 05.

2 So when you take out October and probably
3 November, since we won't start till probably the
4 end of November, you've got even more money per
5 month available to Discovery than first appears.
6 It's tricky but we have thought about it.

7 Can the Discovery Program confirm that
8 software IV & V costs are not to be included in the
9 NASA OSS cost cap? Yes, the cost for the NASA IV
10 and V facility in West Virginia will be covered by
11 NASA through the Discovery Program, but outside
12 each project's NASA OSS cost cap. You do see
13 though that we are paying for it. We're just not
14 requiring you to include it inside your cap.

15 Can the Discovery Program explain the
16 rationale for adding a clause to enable acceptance
17 of late proposals? Yes, the language regarding
18 late proposals is mandated by federal procurement
19 regulations: NASA Federal Acquisition Regulation
20 Supplement 1815.208 as well as NASA FAR Supplement
21 1817.705-1.

22 Should the use of "may" with navigation

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1 services be interpreted to mean proposers may
2 obtain navigation services from other than JPL?
3 Yes.

4 Should the use of "may" with respect to
5 navigation services be interpreted to mean that JPL
6 also may refuse to provide services? This section
7 refers to use of the Deep Space Network, the DSN.
8 The selected mission requires use of the DSN and
9 this use is budgeted in the proposal. NASA
10 Headquarters will work with the JPL DSN management
11 to insure availability of the DSN.

12 P6, low risk is referenced at Section
13 5.1 as critical to selectability but criteria for
14 determining low risk are not provided. What
15 criteria will be used to evaluate risk? A low risk
16 mission is one whose required resources, including
17 schedule and funding reserves, reserves in margins
18 on physical resources such as mass, power and data,
19 descope options, fall-back plans and personnel fit
20 well within the resources available. I refer you
21 also to the TMC presentation that you saw Gloria
22 provide today. This question was submitted in

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1 advance, so I hope that clears things up.

2 Okay, this is another question and, you
3 know, I need a blackboard to really sit down and go
4 through the numbers, but what we're talking about
5 again is the funding profile. This person has done
6 some analysis and says it converts to \$290.4
7 million in fiscal year 04. This doesn't seem to
8 include Phase E, so he concludes that the minimum
9 of \$69.6 million is reserved for Phase E. Also the
10 numbers in the equivalent appendix of 2000 is
11 higher even though the cost cap then was supposed
12 to be lower. Is Appendix F really correct and is
13 the real cost cap effectively less in the fiscal
14 year 2004, \$360 million, unless you can manage to
15 spend nearly \$70 million on Phase E? Okay, do you
16 understand the question? You all have the
17 question, don't you? All right. Yes, Appendix F
18 is really correct. However, the real cost cap is
19 indeed \$360 million.

20 This is where I started talking about it
21 before. We have limited funds in any given fiscal
22 year. That's just the way we have to operate since

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1 we're on a year to year appropriation from
2 Congress. This distribution is calculated to fit
3 within, the distribution listed in Appendix F is
4 calculated to fit within, the available resources
5 while providing you with appropriate funding
6 profile. Please note that fiscal year 2010 begins
7 on October 1st, 2009 and the end of the launch
8 window is December 31st, 2009. If you use a spend
9 rate similar to the one that you used in 09, and
10 you have a launch in December -- I understand we
11 don't all have the options, I'm just giving you a
12 case study -- then you would consume approximately
13 \$23 million of your fiscal year 2010 funds leaving
14 a more reasonable amount for Phase E, operations,
15 which, of course, you have to adjust for inflation
16 and all of that but you can easily find yourself
17 with about the same amount of money that other
18 proposers in the past have needed and used for
19 Phase E.

20 No fixed fiscal year 2010 budget is
21 listed because the NASA forecast for specific
22 budgets beyond fiscal year 2009 are not yet

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1 available to us. That is not something that we
2 have. And then I refer you back to a previous --
3 the previous question. There's a point here that -
4 - I got a number of questions and you'll see some
5 if it is in the questions here, the people say,
6 "Well, but once you think about it, once you think
7 about what the launch vehicle costs and inflation
8 and everything else, there's really not much left
9 over in the increase in the cap". That's right,
10 there wasn't intended to be anything left over.
11 The cost cap increase was implemented to cover the
12 increase in costs that we know everyone has had
13 over the past few years, not to allow a greater
14 purchasing power for Discovery missions. We are
15 not getting bigger. Discovery missions are charged
16 with doing focused scientific investigations, and
17 the proposer would do well to concentrate on a
18 focused topic achievable within the stated funding
19 constraints.

20 Launch vehicles, question 1. We are
21 looking at a mission proposal in which the
22 allowable launch mass is under 700 kilograms. The

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1 ELV performance website now states that payloads
2 that are less than 680 kilograms may require NCS
3 modifications. In the recent past, the threshold
4 in which light payloads required NCS modifications
5 was 567 kilograms. Is this change real and if so,
6 what was the reason for the change? The current
7 website number is the guaranteed contractual number
8 with margin, to insure that NCS can handle a
9 specific spacecraft. Any lower numbers are not
10 contractual and should not be used as such. The
11 567 kilogram number stated may have been a specific
12 spacecraft configuration. The issue is the ability
13 of the third stage NCS to control coning during the
14 end of the third stage burn with a light
15 spacecraft. For example -- I'll let you read that
16 example for a minute. You probably can't see it in
17 the back of the room so I'll read it.

18 If a certain spacecraft mass is in the range
19 of 445 to 465 kilograms and is also very flat or
20 disk-like, very spacecraft specific, they would
21 have to fly a 33-inch tall PAF to adjust the mass
22 properties characteristics to bring them within the

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1 family of previously flown configurations. The
2 mass penalty would be the additional PAF height.
3 This issue would be very spacecraft configuration
4 dependent and would have to be addressed on a
5 spacecraft specific basis. The current website
6 number is the planned number you should use. If a
7 deviation of further NCS details are required a
8 mission unique funded study may have to be
9 initiated.

10 Launch vehicle question 2, which may not
11 have known that was a launch vehicle question but
12 in this context of this AO it is. I was told that
13 Missions of Opportunity for instruments that would
14 utilize the ISS that would be launched by the space
15 shuttle were specifically prohibited in the current
16 Discovery Program AO. I've looked through the AO
17 several times -- thanks, good for you -- and cannot
18 find anything to substantiate such a statement. I
19 may be looking in the wrong place or I may have
20 been misinformed. Can I propose a Mission of
21 Opportunity to build and fly an instrument to be
22 mounted on the International Space Station that

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1 would address one or more of the scientific goals
2 of the Solar System Exploration Division? The 2004
3 Discovery AO does not permit the use of the space
4 shuttle. Missions must be launched using ELVs.
5 Missions of Opportunity to the ISS are not
6 specifically prohibited, but the space shuttle may
7 not be used as a launch vehicle. And that was the
8 question that was asked earlier as well. Yeah.

9 PARTICIPANT: What about a foreign
10 launch such as on Soyuz or whatever?

11 DR. NIEBUR: You know, I'm not in charge
12 of Soyuz. That would have to be something that is
13 worked through the same process that you would do
14 for a Mission of Opportunity or any other foreign
15 launch vehicle mission that is going.

16 PARTICIPANT: Right.

17 DR. NIEBUR: It would be evaluated in
18 the same kind of event.

19 What would the Discovery Program do to
20 limit the impact of proposed missions of steadily
21 increasing launch vehicle costs? The Discovery
22 Program has increased the cost cap for the 2004

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1 Discovery AO from 299 million in fiscal year 99
2 dollars, to 360 million in fiscal year 04 dollars
3 in order to increase the launch -- to cover
4 increased launch vehicle costs quoted in the
5 Discovery Program library, inflation and other
6 factors. The Discovery Program will, as in years
7 past, cover any increase or benefit from any
8 decrease in the cost of the launch vehicle after
9 selection.

10 So once you get a price for a launch
11 vehicle, that's a fixed cost. It should not be a
12 concern. You've got enough things to manage. Let
13 us worry about that one.

14 The reduced inflation index further
15 increases launch vehicle costs in FY 04 dollars
16 with respect to the New Frontiers Step 1 AO. You
17 all have been busy. Well, we used the NASA New
18 Start Inflation Index required by NASA for new
19 procurements.

20 Are the extra costs indicated in the ELV
21 document in the DPL applicable for use of any
22 radioactive material? Yes, for planning purposes

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1 this is a fully inclusive cost for all tasks
2 connected with radioactive material. But please
3 also read answers to the questions above because
4 that question probably just became moot.

5 International partnerships: are foreign
6 partners and collaborators allowed for Discovery
7 missions? Yes, see Section 5.10 of the AO for an
8 overview. This question came in before the AO was
9 out, so I decided not to repeat everything here.

10 Wow, that was only 15 minutes. Okay.
11 We have time and I'm happy to entertain questions
12 from the floor. Will you be able to get a
13 transcript if I repeat the questions? Excellent.
14 Yes, could you state your name and affiliation?

15 PARTICIPANT: My name is Ken Boyer
16 (inaudible).

17 DR. NIEBUR: Thank you, Ken.

18 PARTICIPANT: Going back to your
19 explanation on Appendix F, maybe I didn't
20 understand you but what I -- I looked at those same
21 numbers and the way I see it, is that when you look
22 at all the monies that are allocated for FY 09 for

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1 your profile, you're about \$40 million short of
2 what you would need. I mean if you just subtract
3 out everything you would need, operations, post-
4 launch, I mean, you've identified as part of one of
5 your supplements how you would have to (inaudible)
6 so the crux of this whole thing is if you take a
7 look at a normal ramp up that you have for pre-
8 development (inaudible). The profile does not
9 match (inaudible). It doesn't match. I mean maybe
10 I didn't understand your logic or maybe someone
11 else could help me understand but I truly didn't.

12 DR. NIEBUR: The Discovery profile for
13 this AO is consistent and, in fact, is much more
14 generous than previous Discovery and Scout. We
15 understand that that is an issue and we did look at
16 that. We did do analysis for it. I understand
17 your frustration that with your configuration for
18 Phase E, you don't need that much money in Phase E.
19 That is something that then I see where you're
20 coming from.

21 I don't believe there is any extra money
22 in the program to do anything about it now. I'd be

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1 glad to go back and look. I was not able to repeat
2 that question due to its length. Could you talk to
3 him later? I'm not sure what else to say. Andy,
4 any crack, meaning take a crack at it.

5 MR. DANTZLER: Yeah, it's an interesting
6 statement but what's your question? Does it change
7 the profile, no. Will we add more money, no.

8 PARTICIPANT: I have a follow-up
9 question on that. Why are the numbers -- most of
10 the numbers are lower than they were in the 2000
11 AO. The total amount of dollars is significantly
12 lower than in the 2000 AO.

13 DR. NIEBUR: The total amount of dollars
14 are not significantly lower. We have \$360 million,
15 I understand in 04. If you do the inflation you're
16 only at 317 for fiscal -- for the dollars that were
17 used in the Discovery AO. This is a real increase.

18 PARTICIPANT: Right, but the profile
19 that was in the year 2000 AO was -- totaled a much
20 higher amount in real year dollars than the total
21 content.

22 DR. NIEBUR: You have to look again at

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1 when the concept studies started. This one starts
2 at the beginning more or less of the fiscal year,
3 in November. That was not the case of when the
4 concept studies were planned to start in the
5 previous AO. To do this, you have to look at a
6 month by month analysis as opposed to simply
7 looking at the fiscal year.

8 PARTICIPANT: Well, they're different
9 by, you know, \$50 million.

10 DR. NIEBUR: Not in the first two years.
11 The first two years we were higher this time.

12 PARTICIPANT: Right, but the subsequent
13 years.

14 DR. NIEBUR: Yes.

15 PARTICIPANT: Just to beat a horse to
16 death here, I just added the numbers in Appendix F.
17 They total 314 million.

18 DR. NIEBUR: Yes, I know, in year 09.

19 PARTICIPANT: But that's in real year
20 dollars.

21 DR. NIEBUR: Yes, I know.

22 PARTICIPANT: So in FY 04 dollars it's

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1 probably 20 percent less.

2 PARTICIPANT: 290.

3 DR. NIEBUR: 290 as the question was
4 asked.

5 PARTICIPANT: Okay, so where's the 70
6 million difference between 360 and 291?

7 DR. NIEBUR: In fiscal year 2110 and in
8 the out years.

9 PARTICIPANT: (Inaudible)

10 DR. NIEBUR: I don't have the
11 appropriation from Congress to do so.

12 PARTICIPANT: (Inaudible)

13 PARTICIPANT: Let's do that.

14 DR. NIEBUR: I don't think so. No, I
15 understand that's an issue. The only thing we
16 could have done was to postpone the Discovery AO
17 further until we were able to do that, and that
18 would have pushed it out another fiscal year,
19 another calendar year, and that was not what I was
20 hearing from the community. Every time I went to a
21 meeting or a conference I heard, "We want an AO out
22 as soon as possible." This makes it possible to

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1 have an AO out and hopefully we'll have another one
2 in 18 months to two years, you know. I appreciate
3 the comments; this is a concern. It's a concern
4 for us. We have a tight budget and every time we
5 have a current mission that overruns, it gets
6 tighter and tighter and tighter. They take away my
7 flexibility to do anything about it.

8 MR. DANTZLER: But I'll just add,
9 remember one of the tenants of the program is
10 relatively quick turnaround, frequent launches. If
11 we had pushed this off another year, 18 months, two
12 years, we may end up not having this AO at all. So
13 you know, it's between a rock and a hard place. At
14 least there's an AO out and here's your
15 opportunity. You should be innovative.

16 DR. NIEBUR: Yes.

17 PARTICIPANT: I've seen some previous
18 NASA AO's and this has to do with subcontracting
19 and what counts towards your goals and so on. The
20 way I understand this will work is that JPL will
21 contract with the PI institute which makes that PI
22 institute first tier sub. Anything they put out

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1 makes that a second tier sub and so on down the
2 line. It seems like you're adding one level of
3 subcontracting in there. What counts towards
4 meeting your goals, only the first tier, second
5 tier, second -- all the way down to the fifth tier
6 or what?

7 DR. NIEBUR: Are you talking about SDBs?

8 PARTICIPANT: Huh?

9 DR. NIEBUR: Are you talking about SDBs?

10 PARTICIPANT: SDB, subcontracting goals,
11 those -- yeah, basically that kind of thing.

12 DR. NIEBUR: Well, we have to follow
13 federal law for any specific questions --

14 PARTICIPANT: No, but what I'm saying is
15 NASA doesn't because NASA has different
16 interpretations depending which AO comes out. So
17 they don't really follow -- there's no rule, I
18 guess I'm saying, no law. NASA has the ability to
19 manipulate that, that's a better word. I have seen
20 different things in different AO's so I know that
21 there is one or the other. For this AO, how many
22 levels of subcontracting can you count towards

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1 meeting your goals?

2 DR. NIEBUR: I believe we don't specify.

3 You have seen it specified in other areas? Well,
4 we don't specify it in this one so forgive me for
5 being clueless. We didn't count --

6 PARTICIPANT: Well in your evaluation
7 what counts?

8 DR. NIEBUR: You will not be penalized
9 for an additional level of management by the
10 program office. Does that answer your question?
11 You're asking will I be penalized? You're not
12 asking -- hang on, he's asking the question. Monte
13 asked about the new, JPL, issuing the contracts
14 rather than doing it through where we typically do
15 which is the Headquarters office out at Goddard.
16 And I will tell you, you will not be penalized for
17 that decision in your level of subcontracting.

18 PARTICIPANT: I wasn't asking about
19 being penalized. I was just asking what counts.
20 If I say I'm meeting the goals of eight percent but
21 somebody comes back and says, "Oh, you're not
22 really meeting them because you've subcontracted

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1 with this particular person to do, I don't care,
2 thermal design".

3 DR. NIEBUR: I'm not aware of any level
4 restrictions but could you please put a little star
5 by that and we'll get that in writing for you.

6 PARTICIPANT: Do you want me to submit
7 it in writing?

8 DR. NIEBUR: Sure. Oh, please feel free
9 to send it to me; I want to be sure I get your
10 words right. Yes, Gregg.

11 PARTICIPANT: I'm a little concerned
12 about the language you've used for the -- using the
13 *** start connects. Typically, we've been able to
14 use our own pricing rates in the past and we find
15 that NASA New Start Inflation Index tends to
16 underestimate their cost increases per year in
17 aerospace. If we carefully document our own
18 forward pricing rates can we use those instead of
19 the NASA inflation rate?

20 DR. NIEBUR: This AO requires that in
21 the proposal that you submit to us we need to see
22 it using the NASA New Start Inflation Index.

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1 That's what we're required to use by NASA policy
2 and that's what we'll be using when we do that
3 evaluations. If for your own planning purposes you
4 want to use something else so that you have a
5 better idea of what your real costs might be, feel
6 free. The New Star inflation index that we need
7 you to use for the proposal submitted to us, is
8 actually based on -- it's not just the CPI index,
9 it's actually based on the aerospace sub-sector of
10 the CPI index. We used those factors and lots of
11 magic is done by our budget people and this is
12 something that has worked well for us in the past.

13 If you have concerns about its use in your own
14 planning purposes, I can't stop you but I need to
15 see it in the New Start Inflation Index and that is
16 firm. That's firm. The rationale of course --
17 well, go on.

18 PARTICIPANT: A follow-up question.
19 When we asked about cost increases and
20 implementation for the launch vehicle, NASA will be
21 able to cover those price increases. Are real
22 costs increases after we get selected due to

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1 inflationary differences, will NASA cover those as
2 well?

3 DR. NIEBUR: No, of course not. Of
4 course not. The conflict, do you know what, I
5 don't get an increase from Congress because
6 inflation went up, okay? I don't and so that's
7 where part of the problem comes in. There is no
8 extra money in the program. Now we require
9 everyone to use the NASA New Start inflation index
10 so that everyone will be evaluated on an equal
11 footing. That is the most important part when
12 doing evaluations of competing proposals. It's got
13 to be on an equal footing. You've all got to use
14 the same inputs. Okay? Any questions?

15 PARTICIPANT: Yeah, I want to go back to
16 stomping on the dead horse. A big difference
17 between 2000 and now is that 2000 had an 18-month
18 launch window and if -- an easy way to get around
19 the funding profile was simply to launch in the
20 later part of that window. This year assuming the
21 most optimistic development, you've got about a
22 seven-month launch window and so the profile is far

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1 more constraining than it was in previous years.
2 And you have 60 percent of the money in the last
3 two years which doesn't make any sense in regard to
4 a low risk engineering development with a typically
5 30 to 36-month C/D phase. So I think this profile
6 is very unrealistic and you have to really -- you
7 can't just with numerology and whatnot, try and get
8 around those numbers.

9 MR. DANTZLER: And your suggestion is?

10 PARTICIPANT: The suggestion is to not
11 invoke the profiles to move some money in earlier
12 years particularly 07.

13 MR. DANTZLER: And your --

14 PARTICIPANT: Allow a later launch.
15 Allow a later launch.

16 MR. DANTZLER: The AO is as it is.
17 There seems to be a ground swell of support for
18 pushing this off and we can always go back and ask
19 the community, if necessary, but the AO is as it
20 is. And if there's an amendment on that, keep your
21 eyes open but no new promise. I'm just saying
22 since there's so much support for this sort of

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1 thing -- but we can't move money, forget that.

2 PARTICIPANT: I think you could allow a
3 later launch and the profile would release that
4 money. What's happening is you're constricting the
5 launch vehicle and this is, you know, celestial
6 mechanics. You know that and we're doing things to
7 meet celestial mechanics and that forces a launch
8 within a certain time, forces a development cycle
9 at a certain type. If you use more flexibility in
10 the launch, one can conceive of a development plan
11 that would allow you to profile. It would not allow
12 a larger launch window, we're going to have an
13 already risky development plan because of your
14 limited launch opportunities because of celestial
15 mechanics.

16 DR. NIEBUR: Of course, they're
17 different in different cases.

18 PARTICIPANT: Yes, of course.

19 MR. DANTZLER: Any other questions?

20 DR. NIEBUR: Yes.

21 PARTICIPANT: The exact language of
22 Appendix F says that for underscore planning

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1 purposes, the five-year forecast is as given below.

2 I think the underscoring was certainly
3 intentional, the two words for planning purposes.

4 DR. NIEBUR: That's Appendix F again?
5 Okay, yeah, for planning -- I'm sorry, what's your
6 question?

7 PARTICIPANT: My question is, does that
8 mean that if we don't -- if we exceed these levels
9 shown on the table in any given fiscal year, will
10 we be deemed as non-responsive to the AO?

11 DR. NIEBUR: Yes. That's the money we
12 have. The reason it says for planning purposes is
13 because I can't guarantee that Congress will give
14 us that money. We will meet our commitment to you
15 but that's the point. We don't have that money in
16 the bank. We can't print it in the basement. It
17 exists only in the current fiscal year after
18 Congress, you know, gives us a budget and that's
19 why it says for planning purposes.

20 PARTICIPANT: I just want to make sure I
21 understand your answer. So any proposal that comes
22 in that exceeds the funding profile will be thrown

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1 out, will not pass the initial compliance check.

2 DR. NIEBUR: Yes. Correct, since the
3 money isn't projected to be there, it increases
4 your risk.

5 PARTICIPANT: But we can put in, in FY
6 ?10, that three-month window between October 1st
7 and December 31st, some launch vehicles, some
8 launch activity and fund everything for the launch
9 vehicle?

10 DR. NIEBUR: Your launch vehicle
11 payments are negotiated with KSC, not through me,
12 but you can use the number that you feel
13 appropriate for fiscal year 2010. Yes. I don't
14 even have any numbers for that yet.

15 PARTICIPANT: But we can put 60 million
16 there and still be within the cost cap.

17 PARTICIPANT: But there's a profile on
18 that.

19 PARTICIPANT: In the Discovery library
20 there's a profile that has all the money for --

21 DR. NIEBUR: That's on the launch
22 vehicle, yes, that comes from Kennedy. It's

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1 negotiated by our launch vehicle services personnel
2 in the back. John says typically they're not very
3 flexible. All right, any other questions? Yes.

4 PARTICIPANT: Yeah, I have a question
5 with regards to your cost modeling, the parametric
6 or whatever tools you're using typically are based
7 on historical data. How are you adjusting your
8 models to account for full cost accounting?

9 DR. NIEBUR: If you'd like to submit
10 that in writing, we can get back to you on that.
11 I'm not prepared to answer that verbally off the
12 top of my head.

13 PARTICIPANT: Then I have another
14 question. One of the things we've seen in the past
15 is that evaluators will sometimes come in with
16 different grading curves, if you will, or different
17 levels of expectation for design maturity and so
18 forth. Are you doing anything to try and establish
19 a common level of expectation or expected detail in
20 design maturity for the Step 1?

21 DR. NIEBUR: Are you talking about the
22 technical or the science?

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1 PARTICIPANT: Technical.

2 MS. HERNANDEZ: After the evaluations
3 there's always a leveling process that we go
4 through in all the proposals.

5 PARTICIPANT: I was thinking something
6 kind of introductory to the team. Are you giving
7 them instructions prior to the receipt of
8 proposals?

9 MS. HERNANDEZ: Yes, we do before the
10 proposals are received.

11 PARTICIPANT: Okay.

12 DR. NIEBUR: All right, that concludes
13 the pre-proposal conference. Thank you all for
14 coming. I'm sorry we couldn't meet all of your
15 needs. We do the best we can. I appreciate seeing
16 you all here and encourage you to send me Q&A at
17 any time. Glad to help.

18 (Whereupon, at 12:02 p.m. the above
19 entitled matter concluded.)
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