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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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A02002 PREPROPOSAL CONFERENCE

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MONDAY

MAY 20, 2002

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The Conference was held at 1:00 o'clock p.m. in the auditorium of National Aeronautics and Space Administration, 300 E Street, S.W., Washington, D.C., Dr. Ramon DePaula, presiding.

PRESENT:

- Dr. Ramon DePaula, NASA
- Orlando Figueroa NASA
- Darrell Foster Kennedy Space Center
- Jim Garvin NASA
- Susan Keddie NASA Peer Review Services
- Steve Matousek NASA
- Wayne Richie Langley Research Center

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

2 1:09 a.m.

3 DR. DePAULA: Well, good morning. I am Ramon
4 DePaula. I'm the Acting Program Executive for the Mars Scout
5 project, and I'd like to welcome you to this pre-proposal
6 conference.

7 The purpose of this pre-proposal conference is to
8 have a direct interface with you, the community, before you
9 submit your Notice of Intent and of course eventually your
10 proposal. And the goal here is for us to provide you with
11 clarification of the issues so you can actually write a quality
12 proposal.

13 The questions that will be asked today, plus also
14 the material, is going to be -- will be posted on the web site,
15 including the transcripts which they are taking from the
16 conference. And that's going to be at the web site, which I
17 should have posted here but unfortunately I didn't:
18 <http://centauri.larc.nasa.gov>. Most of you know this web site;
19 in fact, that's why you are probably here -- and slash mars.

20 So at that time, then we will post all the
21 questions that have been asked and submitted. We will post all
22 the material that's being presented here and any other material

1 that's pertinent to this meeting.

2 So the agenda that we have for today then is that
3 -- well, we have gone through the registration, and also we're
4 going to post the names of the attendees, not their affiliations
5 but their names. So I'm going to introductions. We're going to
6 have a welcome by the Mars Exploration Director where he'll give
7 you a short overview and a little bit of the organization of the
8 Mars Program. Then we will have the science contacts of the
9 Mars Scout. Dr. Jim Garvin will discuss the overall science
10 perspective. Then we have the implementation process. Then we
11 also have the science evaluation process. We'll take a break.
12 Then we'll talk about the highlights of the AO and the TMCO
13 evaluation by Wayne Richie. Then we'll have questions and
14 answers and a wrap-up.

15 And we also have invited some of the experts from
16 the different codes in here to participate and to help us with
17 some of the questions. For example, we have Bob Elsbernd here
18 from Code M that will support us with some questions related to
19 launch vehicle. And I'd also like to acknowledge some of our
20 international visitors and welcome and appreciate your interest
21 on this.

22 All right. Well, with that, I would like to

1 introduce you to Mr. Orlando Figueroa, our Mars Program
2 Director, and he will give you a short overview of the Program.

3 MR. FIGUEROA: Well, welcome. Once again,
4 welcome to headquarters and welcome to, as I would like to think
5 about it today, Mars territory. There's nothing else here,
6 that's what we do -- Mars. Well, I happen to think that it's
7 the best program in the Agency, I don't care what anybody says.

8 What I would like to do is give you first
9 something that -- go over a few things that I know you're
10 probably already exposed to and know, but it doesn't hurt to be
11 reminded. Let you know a little bit about what the Program is
12 about and give you, at the same time, an update on the status of
13 the Program and where the scouts fit in that overarching
14 picture. I will describe also the organization at a very high
15 level, how we are organized here at headquarters and how is our
16 lead implementing center, the Jet Propulsion Laboratory, also
17 organized in order to support the Scout. And then that will
18 serve as a preamble to Jim Garvin to talk in more detail about
19 the context under which this opportunity is being offered.

20 Now, the Mars Program, ever since its
21 rearchitecting or reorganization two years ago, the main goal
22 was, and continues to be, understanding the martian system. All

1 of the elements that allows us to set the context to answer a
2 key question: Did life ever arose on Mars? So we want to
3 understand the climate, the geology, the environment, all to set
4 the stage to answer and better understand the question of life.

5 The strategy, "Follow the water," has been around
6 for quite some time, but it's one that allows to search for the
7 sites with evidence of past or present water activity that
8 either have preserved in one way or another bio-signatures or
9 that define life-hospitable environments, all leading to, again,
10 setting the context and having the highest probability to
11 address the question of life. So it's key and very important.
12 A key a driver in the whole Program, all the goals and
13 objectives, you know, understanding whether we are alone in the
14 Universe. And Mars offers a convenient opportunity to target it
15 often.

16 The approach, "seek-in-situ-sample," we have
17 series of orbiting, generally followed by surface-based missions
18 that are interlinked to target the best sites for detailed in-
19 situ analysis. And eventually, as part of that overarching
20 picture, a sample return or more than one sample return in
21 parallel with more intense in-situ analysis.

22 Of course, many of you are already familiar with

1 this picture, but not shown here is the Mars Global Surveyor
2 that is entering its second science phase, started in April of
3 this year and we hope will continue through the end of '04 and
4 maybe a little bit beyond that. Has revolutionized our
5 knowledge of the planet and opened the doors for what we think
6 is a fairly exciting decade of exploration, real scientific
7 assault on the planet.

8 Odyssey has just begun its -- in February begun
9 its scientific campaign. There's only one item remaining in
10 preparing the spacecraft for its continued observation plan, and
11 that is the deployment of a boom, but otherwise all of the
12 instruments, all of the components on the spacecraft are
13 performing as designed or better. So we're quite excited about
14 the scientific return that is starting to pour in at a really
15 exciting pace.

16 In 2003, the ESA -- these two missions are not
17 U.S. missions and not part of the Program, but the U.S. has
18 significant contributions to them. The ESA Mars Express, on
19 schedule for launch in '03, and the Japanese Nozomi Orbiter,
20 launch last decade, will arrive on Mars in 2003. And, of
21 course, our flagship mission of that opportunity, the Mars
22 Exploration Rovers, two rovers that will be sent to two sites on

1 the martian surface. And I must tell you right now they're
2 really presenting a real challenge to maintain that opportunity
3 viable but one that is very real and one where the excitement is
4 starting to build, if I can call it excitement, not to say
5 nervousness in everybody involved, to get there.

6 Mars Reconnaissance Orbiter just entered its
7 Phase B, or definition phase. All of the instruments of the
8 spacecraft, all of the key components are making excellent
9 progress and showing tremendous maturity for the level at which
10 they are.

11 The French Premier 07 Science Orbiter still on
12 track for launch in '07. They're going to deliver four
13 netlanders to the surface that were selected as part of a
14 Discovery Mission of Opportunity this past Discovery AO. Then
15 we'll conduct a on-orbit technology demonstration for sample or
16 detection and capture or at least come to enough proximity of an
17 object in martian orbit intended to simulate a sample return
18 container that we will at some point in the future recover from
19 the martian surface and bring back to Earth.

20 The Italian G. Marconi Telecom Orbiter has been
21 part of the Program since we started. I must tell you that
22 right now this part of the Italian contribution to the Program

1 is in question. The Italian Space Agency is going through a
2 significant revamping, if you will, under the new administrator
3 or president, Nuchela. And so we are still working with them
4 but don't know exactly where this is going to end.

5 Italians also have another contribution in 2009
6 that to a large extent is tied to their long-term plans for Mars
7 exploration as well as their whole space science agenda. And so
8 we -- it's not clear -- the picture is not clear as to the
9 contribution from the Italian Space Agency related to these two
10 components. More to be learned about that in this summer and
11 the next several months.

12 And now the Scouts. You know, this is the
13 opportunity for which you are all here, and I want to come back
14 to that in a moment, but suffice it to say that this is, what I
15 would hope, the first of continued Scout-type opportunities
16 offered every opportunity -- every other opportunity or so. So
17 our thinking, our plans, our strategies towards the next decade
18 is taking that into consideration: How can we make more
19 opportunities, such as the one we're offering now, available to
20 the community? I think we've heard enough and see enough
21 interest that it's in the best interest of the Program to try to
22 accommodate that.

1 Then in '09, we're once again challenged once
2 more with delivering to the surface a smart lander, a biology
3 and geology laboratory, if you will, that will have the
4 capability to rove around, we hope, significant distances and
5 significant time across Mars. We hope that as a leading
6 candidate that we will be able to outfit it with a nuclear
7 source that will significantly enhance our ability to visit many
8 places in Mars that today are not available to us due to power
9 management limitations and other concerns. But also an
10 opportunity to really reinvigorate this kind of capability for
11 future investigations in Mars science.

12 The next decade, at this stage, remains somewhat
13 open. We are working very closely with the science community to
14 define not only paths that lead us to sample return missions but
15 also pathways that lead us to increased investigations along
16 different paths, some of which will include sample return but
17 not necessarily make that the only goal. We will be in a
18 position to share with the community later in the summer and
19 next fall where those studies that involve a broad segment of
20 the science community they will be leading.

21 Now, coming back to the NASA Competed Scout
22 Mission, we've all along from the get-go defined this as a

1 Discovery class type of investigation. So we have in '07 an
2 opportunity open to the broad community, to the community-at-
3 large, all kinds of institutions -- Investigators coming from
4 private or foreign organizations, government, non-government,
5 FFRDCs, not-for-profit, educational institutions, NASA centers,
6 et cetera -- offering the opportunity for the investigators to
7 partner with, combine different segments of those communities in
8 assembling a winning scientific investigation, meritorious
9 scientifically investigation.

10 We, in the AO, bring that upfront because in
11 stating that it's open to all kinds of investigation we noted a
12 caveat, and that is that investigators -- that we're seeking for
13 a NASA center to provide management in end-to-end systems
14 engineering for their missions, that that can only be obtained
15 from two centers of the NASA family, and that is JPL and Goddard
16 Space Flight Center. That is an Agency policy, that is an
17 enterprise policy reflected in this AO and one that we are
18 abiding by.

19 Now, in terms of the resources available for that
20 mission, because I've heard also numerous questions about that,
21 the fact is that for the 2007 opportunity and for us to be able
22 to accommodate it in the program architecture, \$325 million is

1 the cap for the Scout Missions. So for this first opportunity
2 we're living by roughly the same kind of cap that you will see
3 in Discovery class investigations. And to a large extent, you
4 know, that is all we can afford right now. I think I have every
5 reason to believe that there is significant and quite exciting
6 scientific missions that fit within this cap. So we are
7 prepared to offer the opportunity to the community-at-large to
8 come up with the ideas that I know are going to challenge us and
9 maintain the family of very exciting missions to support the
10 program.

11 Having said that, and I'm sure Jim Garvin will
12 repeat this later on, but these missions are intended to
13 complement the core program that I described; in fact, not only
14 now but the next decade. In the future, they may become more
15 targeted to certain things based on the knowledge that we have
16 unveiled, but, nevertheless, it is not intended to repeat any of
17 the present components but rather to complement and enrich and
18 already incredibly exciting program. It's a key element of the
19 program, one that I am very excited to continue to see and one
20 where I am very committed to seeing succeed.

21 With that, I guess I will open the floor to, I
22 guess it's you, Steve, will be next on the agenda, or Jim?

1 DR. GARVIN: Okay. Well, thank you. I'm Jim
2 Garvin. I'll be talking about the science context for this
3 Program to follow on Orlando. Let me just get the slides
4 reCOORDINATED here. I think it's very important to echo what
5 Orlando said.

6 MR. FIGUEROA: Jim, I apologize, I skipped the
7 last chart.

8 DR. GARVIN: Do you want to --

9 MR. FIGUEROA: Let me come up. My apologies. I
10 got so excited about the Scouts that I forgot about it. My
11 apologies to you. I promised I would talk to this.

12 How is the Program organized? We have this here
13 divides -- it's not intended to be a hard division, by the way,
14 because we are great partners in executing the Program. The
15 Office of Space Science, Associate Administrator Ed Weiler, I
16 report directly to Ed and in fact the Mars Exploration Program
17 Office is at the same stature as the science divisions within
18 the enterprise, divisions meaning Astrophysics and Space
19 Physics, the Solar System Exploration and Solar Connection.

20 James Garvin, the Lead Program Scientist, also
21 reports directly to Ed Weiler and is the science conscience of
22 the Mars Exploration Program. Now it is Jim who actually

1 assesses, provides input to me on all scientific matters dealing
2 with the Program. I have overly simplified this so I don't
3 confuse you as a community as to how this is organized. There
4 are many elements that are missing, but I wanted to focus the
5 attention on the key pieces that are pertinent at this moment.
6 You will get to and be more exposed to other components of the
7 Program as we go along.

8 Jim has also a group of program scientists under
9 him. At the present time, he's taking the lead as an acting
10 program scientist for Scouts, but at some point in the not too
11 distant future, we will also assign a program scientist that
12 will support Jim in fulfilling the role of being the science
13 conscience of the Program as they relate to Scouts.

14 I have a series of program executives under me.
15 Ramon DePaula is presently acting as the Program Executive for
16 Scouts, and their job is one of maintaining an interface with
17 the implementing center and making sure that policies,
18 strategies, direction from NASA Headquarters are reflected in
19 the implementation of the given missions.

20 The leadership for implementation of the Program
21 as a whole lies upon the capable hands of Farouz Naderi.
22 Farouz, if you can stand up, please, so they get to see you. He

1 is responsible for all Mars Program activities at JPL, single
2 point of entry for direction. So there's one-way direction from
3 me to Farouz and then to the individual implementation of each
4 of the missions. He, of course, has several more pieces than
5 just dotted lines under him.

6 But a key element for today's topic is Steve
7 Matousek has been acting as a Scout Mission Manager and by his
8 side, a mission scientist. So upon missions being selected,
9 upon selection of missions, we, at the Mars Program Office,
10 establish a point of contact Mission Manager. Steve will give
11 you more details later on the roles and responsibilities, but
12 they are the folks that will work closely with the PI, PI
13 institution to get the ball rolling and also to fulfill
14 fiduciary responsibilities of the government reflected through
15 the Mars Program Office.

16 Once things are up and running, the Program
17 Office will maintain close contact with everything that is going
18 on, not only on the core missions but Scout Missions as well.
19 And Steve becomes that point of entry to facilitate both ways
20 and at the same time fulfill the fiduciary responsibilities.
21 And, of course, all of that information is integrated into the
22 overall Mars Program picture, fed to me and through these folks.

1 We also make sure that the Program, as a whole, is maintained as
2 a system, not any of its components going off on its own. Now
3 we're ready for you, Jim. Thank you.

4 DR. GARVIN: Okay. Well, back to science. This
5 is a program really intended for the science community, the
6 industrial community and our international partner community to
7 have opportunities to innovate within the guidelines of the
8 resources available. So I am going to, for the next ten
9 minutes, try to provide a little bit of the context for that to
10 help steer you and guide you. I might point out that the
11 general directions are available in the AO, and this information
12 is just meant to amplify that a little bit.

13 So let me remind you then that in looking at Mars
14 as system, a system of interacting components like we have here
15 on Earth, there are a great many questions, and in fact the
16 science community and many of you in this room have helped us
17 over the last several years to craft at least a framework for
18 discussion. And that framework's very simple. It deals with
19 basic state variables of a planet, all aiming to answer very
20 tough questions, even tough questions here for Earth, about how
21 planets work and do their business, how are they habitable as
22 places where biology could or could not be resident, how they

1 interact over time, and what particular aspects of those
2 variables are the most telling, the most compelling?

3 And this simple chart, developed by our science
4 community, really puts that into context. It points out that
5 the solid planet in its interior is the resting point for the
6 records of climate, possibly the records of environments that
7 would have been hospitable toward biology, as we understand it,
8 that there are environment factors. And you can all read these.

9 These are the underpinnings of the core Program that Orlando
10 summarized a moment ago.

11 Now, I prefer to look at these in a slightly
12 different way -- and forgive my ternary diagram but we
13 geologists live and breathe by them -- and remind you that the
14 first amongst equals question that we're attacking for Mars is
15 really whether or not it indeed was or is still a habitable
16 planet. Now, habitability is a big question, and asking that
17 question really is -- it requires much context, much in the way
18 of understanding and predictability about the planet.

19 The Scout Program is designed to help attack
20 these big quests, and it can attack them from many standpoints,
21 but the one message I think is very important is there are a few
22 integrating themes. The one shown here is the role of this

1 magic molecule -- water. Water is a variable that does relate
2 to sedimentation, sedimentary processes in the geological
3 context, even differentiation of the planet. It also links to
4 some aspects of the role of climate. And, indeed, further about
5 possible habitability. And, furthermore, in the final sense, it
6 also deals with a resource that might be necessary for human
7 visitation and scientific exploration.

8 Now, that said, our science community are not
9 want for lack of giving us information. I show this eye-chart
10 purely to remind you that through the auspices of the Mars
11 Exploration Payload Analysis Group, MEPAG -- some of you, of
12 course, are members or have attended -- we have, from our
13 science colleagues, a list of some 57 investigations. This list
14 is meant to be exemplary of the kinds of questions that we would
15 like to see addressed by this Program, which of course includes
16 and embraces the Scout Program.

17 What the science community has done is attempted,
18 and this is only meant to be notional, to take given
19 investigations -- and I won't read them to you, they're
20 available in the appendices listed in the AO, in the appendices
21 to the AO and on the Library -- pigeonhole them into the types
22 of vantage points from which near-term progress could be made.

1 If you're looking for the role of sediments, you could obviously
2 do remote sensing to look to see that you can indeed find
3 depositional environments and sediments. You could also
4 identify sediments on the surface. You could also identify
5 sediments from samples returned from Mars, as an example. The
6 whole point of this chart is that there are great many
7 investigation elements that are open turf for the Scout Program,
8 and that's one of the reasons why we have that Program.

9 The Program really is, in my view, as the
10 scientist for this Exploration Program, meant to allow within
11 the constraints of the resources for different vantage points on
12 the problem, different investigation sensor suites and even
13 different ways of partnering with academic, industrial and
14 international partners. So that really is the precepts behind
15 the Program.

16 Let me just remind you a little bit about some of
17 the ways in which this Program might look, as an example, to
18 explain itself. I show this chart only to remind you all that
19 critical to any mission, any investigation, in the Scout Program
20 is the ability to demonstrate a traceability from these big
21 goals and the more specific investigations to types of sensors
22 that would make, in particular, measurement sets, measurement

1 sets that would address those issues. And you'll hear a little
2 later today in the science evaluation factors the ability to
3 demonstrate this traceability and articulate how measurement
4 sets produced by a Scout Mission or a Mission of Opportunity
5 investigation can indeed tie back to these big questions and
6 produce new data through the instruments and vantage points is
7 critical. I show an example of Odyssey here just to demonstrate
8 how this traceability is done.

9 Now, let me turn to what are we learning about
10 Mars and why the Scout Program really does offer so much promise
11 to Orlando and I and Farouz and all of us. This little chart
12 shows just some examples of discoveries in the making about the
13 planet Mars, largely, in this case, achieved by the Mars Global
14 Surveyor or the Mars Pathfinder mission. These two missions in
15 the last five years have given us new questions, new unknowns,
16 new states of predictability about Mars.

17 And you can just see from the smorgasbord here
18 things that are open season for follow up in the Scout Program:
19 Understanding, in fact, the nature of this lurking remnant
20 magnetic field that is recorded, in a limited sense, in the
21 crustal rocks, very interesting question; understanding the
22 dynamics of an atmosphere that on an annual basis, at times,

1 experiences changes that would mimic the greatest climatic
2 disturbances we've ever experienced on Earth; examples of the
3 role of modern volatiles, including possibly water, as a phase
4 in recent martian history; understanding the records of things
5 that are now revolutionizing the timing of events on Mars, the
6 buried population of impact craters in the Northern Plains being
7 just one example of a part of Mars we did not recognize until
8 the Global Surveyor and that we're now starting to recognize
9 with Odyssey; looking at the mineralogic record that we can see;
10 looking at the state of the smaller scale features that may be
11 telltales to such features; understanding cycling as a climate
12 variable and many other things. These are just example of
13 discoveries, recent results papers that missions and
14 investigations, in particular, can follow up on in the Scout
15 context. And I'd like to just leave those with you as foods for
16 thought.

17 Next, I'd like to spend just five minutes running
18 you through the science -- what should I say -- the science
19 measurement sets and core objectives of the primary core program
20 of the Mars Exploration Program. I think it's very important to
21 note that we have a very rich robust program this decade. We
22 just started it with the Odyssey, results in fact to be

1 presented in this room next week as the first space science
2 update from that mission. Each of these missions have a very
3 interlinked role in our Exploration Program, and we really are
4 not looking for the Scout Program to duplicate the measurement
5 sets these missions are making. We're looking, as Orlando said,
6 for them to complement, extend, provide context for and fill
7 gaps in the Program.

8 So Odyssey's job, I think you all know, is all
9 about looking at an inventory of the basic composition of the
10 planet and its crust, looking for a certain magic element, such
11 as hydrogen, as well as taking stock of the morphology of the
12 surface and new scales and new spectral windows to look for
13 mineralogical signatures, as well to make a first stab at
14 understanding the radiation environment, at least from martian
15 orbit and that which can be predicted to the surface. So
16 Odyssey is a very big job as a reconnaissance step.

17 And, as Orlando reminded you, our next step in
18 exploration in the core Program is to visit the surface with a
19 directed set of mobile laboratories, the Mars Exploration
20 Rovers. And their job, listed here, is to explore, for the
21 first time, the potential for seeing the role of water and other
22 volatile phases, indeed, at the surface in the rocks. This is a

1 rock mission; to quote Steve Squyres, not rock music but a rock
2 mission. Forgive that. Anyway, and its job is really also to
3 provide the first calibrated quantified ground truth for all the
4 reconnaissance steps we've had in the Program.

5 Obviously, getting to the surface with this class
6 of vehicle is very important. I'd like to add that getting to
7 the surface in other ways, with perhaps differing and smaller-
8 in-scope classes of vehicles is also important in understanding
9 the diversity of Mars.

10 This mission will be followed by our boldest
11 reconnaissance step for another planet yet, the Mars
12 Reconnaissance Orbiter. Its job is not only to complete the
13 work started with the Mars Climate Orbiter, in terms of
14 atmospheric transport and workings of that atmosphere as a
15 dynamic system, but also to look at the surface, what its made
16 of and basically attempt to find the places we must visit to
17 make progress against the goals of life-in-climate. These are
18 just examples of the kinds of data sets that this very exciting
19 mission will produce, and it is really designed to be the
20 gateway back to the surface and to the subsurface for the rest
21 of the Program.

22 That will be followed by in 2009 by, as Orlando

1 said, what we hope to be a radio-isotope powered mission, a
2 mobile surface lab with fully competed science, whose at least
3 prima facie objectives are to make measurements that will set
4 the context for life inference experiments on the surface in
5 materials that are relevant to that quest, and also to
6 demonstrate technologies that are necessary in greetings towards
7 the ability to conduct further intensive in-situ investigations
8 but also to enable the campaign of sample return missions that
9 the science community and all of us believe are so vital to
10 making progress for Mars. Next slide, please.

11 I want to remind you that data does not only come
12 from missions, but it also comes from Mother Nature, and indeed
13 Mars has delivered to us, in this case, some dozens of, at least
14 several dozen, samples of itself here on Earth. While they may
15 be delivered to us out of the kind of context that we need to
16 make possible next decade with Mars sample returns, they're
17 vital storehouses of information about the planet. Understanding
18 these rocks, these samples of Mars, here on Earth is in fact
19 something that would be a very useful challenge to missions and
20 investigations in the Scout Program. We don't know where these
21 are from, but they're chemistries, they're histories, as
22 recorded in the rocks and the samples. They're something we

1 need to understand and follow-up on. And the rate of discovery
2 of these types of materials, several per year, roughly on that
3 order. This is an exciting source of data here on Earth today
4 that missions investigations and Scout need to bear in mind.

5 Finally, I want to just leave you with a few
6 words that hopefully capture some of the precepts that I've
7 tried to deliver to you. I want to remind you that we do have
8 -- our community has really stepped up to provide us with the
9 science drivers for Mars Exploration, not only the MEPAG but the
10 Space Studies Board Group Complex, as well as what will soon be
11 the results of the solar system decadel survey. These are the
12 drivers for this Program, the Scout Program, and I draw your
13 attention to them.

14 I want to point out that we're not looking for
15 duplication of our core Program missions, we're doing those for
16 the community, the science community. So Scout needs to fit in
17 that way, and that includes our partners internationally, our
18 colleagues from the international arena in Mars Exploration,
19 which also includes Canada, ESA, France, Italy, Russia and
20 Japan. We're looking to work with them, not to, in a sense,
21 duplicate their efforts.

22 We also want to make sure you understand that

1 there are foundation data sets about Mars as a planet that we
2 will not achieve this decade of discovery. And these are very
3 important aspects that a Scout investigation could pursue.
4 There are many, I won't list them here, but you can find them in
5 these documents.

6 One of the things that I think is a very
7 important message, that I think you all know but I am required
8 to remind you, it is the job of the proposing Scout teams to
9 make the case of how the new measurements, that their missions,
10 their investigations would enable, extend the present state of
11 knowledge. This is one of the critical aspects of science merit
12 that we will be looking for. How does the state of knowledge
13 change from the measurements provided by your missions?

14 I want to point out also that our favorite
15 "follow the water" theme is a nice integrator of questions and
16 objectives, but it is not the only one, and while it may help us
17 to explain our Program now, there are other tacts one could take
18 that fit into these goals that are certainly open season in the
19 Scout science context.

20 Finally then, I just want to remind you then a
21 few other messages that are very important. First, science is a
22 very important part of the Step 1 evaluation, and we'll get to

1 that in a few minutes. But please bear that in mind. We're
2 looking for high science value for the available resource
3 envelope that Orlando has announced. We really, really are
4 looking for cases where innovation of science measurements to be
5 responsive to the kinds of discoveries that, for example, the
6 Global Surveyor and the Pathfinder have provided us.

7 I also want to remind you that buying too much
8 science scope is also at risk and risk science matters as well.

9 By science risk I mean if measurements are attempted that
10 cannot be facilitated by the implementation plan, by the vantage
11 point that is proposed, that of course is not a good thing to
12 have. So keeping the scope at the scale of the resource, the
13 technical readiness and such things is very important.

14 Finally, the ultimate measurement of success of a
15 Scout investigation, ultimately to be selected by Dr. Ed Weiler,
16 is measured by the legacy of the calibrated, validated
17 measurements that they deposit into the archive for the
18 community. And so delivering science products as measurement
19 sets that extend our knowledge is the ultimate goal of science
20 in this Program, this first step, and I really think that's a
21 metric. So delivering that data in a timely fashion for the
22 broadest possible use by the community is a vital step.

1 So that, in a nutshell, is the science context of
2 this Program. Thank you.

3 MR. FIGUEROA: Jim, before you come down, when
4 you were describing the meteorites and the ground-based work, I
5 want to make certain people didn't get confused that this is
6 about flight investigation.

7 DR. GARVIN: Oh, yes. Orlando's point to me is a
8 very important point of clarification, forgive me in my
9 excitement, is that while meteorites here on Earth, our data
10 here on Earth, that tell us about Mars, the meteorites from
11 Mars, I should add, this Mars Scout opportunity is a flight
12 opportunity for investigating Mars at Mars and in the Mars
13 environment, not here on Earth. So I want to call that to your
14 attention. We're looking for missions and investigations that
15 actually go to Mars to understand the context of those meteorite
16 samples of data. Thank you, Orlando, for that point.

17 Okay. I'll turn it over to Steve Matousek to
18 describe the Mars Scout Program Office at our implementing
19 center at JPL. Steve?

20 MR. MATOUSEK: Good afternoon. Today, I'd like,
21 in just a few short minutes, to give you a brief high-level
22 overview of what to expect after step one. First, though, I

1 wanted to echo a few words that were from the AO. The Scout
2 Management Office oversees the mission implementation, also
3 coordinates government-furnished services, equipment and
4 facilities, should there be any, managed the contracts of
5 selected investigations and coordinate independent review of the
6 major project reviews, for example, PDR and CDR.

7 Now, that's what was in the AO, but I wanted to
8 give a little high-level view of what to expect after step one.

9 It's very important everybody knows that we're shooting for
10 getting to Mars, and because of that, the schedule stays pretty
11 fixed. So the Scout Management Office is going to be visible
12 and accessible, very similar to the Discovery Management Office,
13 act as the interface to the Mars Exploration Program, and I
14 think very important, enables fast start of any required
15 contracts that you need after you're selected in step one. For
16 step two, for instance, that period of time is up to six months,
17 and so they'll have to be very quickly moving contracts, so
18 we're getting things set up even now to be able to do that. And
19 then once you're selected for flight, fast start of the required
20 contracts, as the clock is ticking to get to Mars.

21 In addition to that, ensure the adherence to
22 7120.5, which tailored for Code S. And important with that is

1 that there's clear milestones that your investigation must go
2 through after you're selected PDR, CDR. And the funding,
3 therefore, does not all come to you in one big block of funding.

4 You get a part of your funding identified before these
5 milestones, you go through the milestone, then you get the next
6 increment of funding. And also conduct monthly status telecons,
7 videocons, quarterly face-to-face meetings, as needed.

8 Now, I'll just briefly go at a high level what
9 the Office looks like. Orlando talked about the organization up
10 here. There's the Mars Scout Manager, we have a scientist,
11 resource administrator, missions assurance and then various
12 technical support, as needed. Now, one thing I wanted to point
13 out here is this isn't a large office. There's a total of about
14 four FTEs across the whole -- three to four FTEs. So I put the
15 asterisk there for full-time people and then these are roughly
16 half-time down there.

17 I wanted to gain some time in my presentation,
18 and it looks like I did, so now I will hand over to -- Jim is
19 back up here.

20 DR. GARVIN: Well, thank you, Steve. That was
21 amazingly parsimonious of time. I'd like to now turn to the
22 nitty gritty of these Scout scientific evaluation process, and

1 I'll be followed by -- Wayne Richie will talk about the AO
2 process in general and that for the technical management cost.

3 This first chart is the wiring diagram that many
4 of you are familiar with from Discovery and many of the
5 solicitation processes here in the Office of Space Science, and
6 I'd like to walk you through it for a minute just to clarify.
7 Let me in fact put my mobile walking unit on now, at least
8 attempt to, so I can walk you through it because I can't see it
9 from here without new glasses.

10 AUDIENCE MEMBER: We may not be able to record
11 you if you stray too far from the podium.

12 DR. GARVIN: Oh, all right, never mind. I won't
13 use that then. I'll just do it from here. That's fine. Okay.

14 So we're here on May 20, about two and a half
15 weeks after the release of the AO and at this pre-proposal
16 briefing here at headquarters. The next major milestone in the
17 schedule that you need to, of course, be aware of is the
18 submission of your notices of intent. And we use those, of
19 course, not to be something that is a burden to you but also to
20 help us to gauge the evaluation process, to identify conflicts
21 so we can fairly evaluation your proposals. And it's very
22 important, so I really -- it really benefits those of us putting

1 together the evaluation.

2 In parallel, we are in the process of developing
3 a formal evaluation plan document, which is the guidelines
4 through which we will follow the evaluation as listed in the AO.

5 It's developed and derived from the AO, and it's a work in
6 progress that we'll finish when we understand from the notices
7 of intent where we are.

8 Then at that point the technical management and
9 cost evaluation process will be launched. Wayne will talk about
10 that. That is launched early to get the technical feasibility
11 data and the team in order. I'm working toward the receipt of
12 proposals here on August 1. So, of course, you all know the
13 deadline is August 1.

14 In parallel also, we will be forming the Science
15 Evaluation Panel, which will be spawned in parallel to the TMC
16 Panel. Once we receive the proposals, the first step, of
17 course, is a compliance check to ensure, of course, that all the
18 dictates and guidelines in the AO are followed. This is the
19 necessary first step.

20 At that time, the proposals for science will be
21 sent out to specific external expert reviewers, of course non-
22 conflicted experts, peer experts in the fields of the science

1 disciplines that are proposed, and also sent to the physical
2 subpanel members who will participate on the Science Panel.
3 We're looking to use both types of individuals to capture the
4 full scope of expertise that the community has in a non-
5 conflicted sense, of course, for science. So we're over here.
6 This will be done in parallel with the technical management and
7 cost evaluation.

8 The science merit and feasibility assessment will
9 go on then after receipt of proposals, until which point the
10 science reviewers will meet in plenary with input and feedback
11 from the TMC Panel. I'll go through the specifics in a moment.
12 That will then all come together with a categorization
13 assessment by NASA civil servants as required by the FAR
14 supplement here at NASA Headquarters. I'll remind you of that
15 in a moment.

16 And then once those data are available, together
17 with other programmatic constraints and factors, there will be
18 an assessment developed by myself and hopefully my surrogate
19 program scientist for this opportunity since I'm acting in it.
20 It will be the basis for our presentation to the Steering
21 Committee, which is a group of experts that Ed Weiler calls into
22 play to review the process and the date before presentation of

1 the data to him at a targeted date of selection at this first by
2 Ed Weiler in early December. That's the process.

3 Now I want to amplify that with some of the
4 details. Again, I want to call your attention to the fact that
5 all of these data that I'm presenting are in the AO, and that is
6 the ultimate arbiter and source of data for this process. Let
7 me just remind you, first, that science is a very important
8 factor in the evaluation in step one. It is -- science merit
9 and the science feasibility are two of the three significant
10 factors that will be evaluated in step one, because these
11 missions--investigations--at Mars are all about science.

12 I think you also know the rules with respect to
13 the cost. Orlando gave you the absolute cost maxima that we
14 will be following, and there's also the proviso that any
15 proposal that is bid under that cost cannot grow after selection
16 in step one by more than the 20 percent, never to exceed that
17 cap, again, as stated in the AO.

18 I also want to point out, as you can see here,
19 that there are other elements of this proposal, including E/PO
20 and data management and such, which are important to have for
21 completeness in the proposals, as submitted on August 1. Next
22 slide.

1 Just to remind you again, after the scientific
2 and technical management cost evaluations are complete and
3 consensus reviews are captured, a Categorization Committee of
4 civil servants will meet, and they will use these definitions
5 instead of the usual definitions to categorize the
6 investigations proposed. And I think you all know these.

7 The only point I'd like to mention is the
8 Category III. It's very important to understand that
9 scientifically, highly motivated missions of great
10 attractiveness to the community sometimes fall into this bin on
11 the basis of their state of readiness and feasibility. And just
12 to remind you that that is one of the categories that we will of
13 course be -- the Categorization Committee will be looking at.
14 Next slide.

15 So what are the key points about the evaluation
16 process? I have separated here in two columns, left and right,
17 the two types of investigations we are looking for in this first
18 Scout solicitation. Those on the left are for the missions. Of
19 course they're very similar. And these are just little catch
20 words to remind you of what we're looking for in the area of
21 specific missions to Mars, in the area of scientific merit. Of
22 course, we're looking for new things that fill in the holes.

1 Some of these holes are actually described in the Space Studies
2 Board Complex report. We're also looking, of course, for
3 furthering the specific science goals that I mentioned before.

4 We're looking also for, of course, specific
5 complementarity, and we're also very attentive to the value of
6 what we might call the science floor for the mission. This is
7 the lowest science deliverable level at which we would, and you,
8 the proposing PIs and teams, would propose to actually fly your
9 mission, and that's important to be identified. Likewise,
10 similar types of metrics for the Missions of Opportunity
11 investigations as well. And I call your attention to this
12 specific area because it is the only scientific wiggle room you
13 will have in proposing your investigations.

14 In the area of the technical merit and
15 feasibility of the science that one is trying to do, of course
16 the qualifications of the science team, the state of technical
17 readiness of any proposed instruments, the nature of the data
18 and its adequacy to addressing the specific science objectives,
19 these are the usual things. The other ones that I think are
20 very important, that we think are very important include the
21 resiliency of the investigation, the resiliency to the usual
22 vagaries of deep space flight. There're many categories they can

1 fall into, but what will allow us to retain the ability to make
2 some set of the measurements that would still further our
3 progress in understanding Mars?

4 One other variable that is important to at least
5 call your attention to is the timeliness of release of
6 calibrated, validated data to the scientific archives and to the
7 public. This is something important. Both of these sets of
8 factors are important to pay attention to in both the full
9 mission investigations and the Missions of Opportunity
10 investigations.

11 Let me now turn to just a little bit more detail
12 in the scientific evaluation process. As I mentioned, we are
13 going to be using specific expert external reviewers in parallel
14 with the non-conflicted science panelists. We will divide the
15 science panelists into subpanels organized by discipline. This
16 is a usual operating procedure. We'll do that to keep experts
17 together. Then we will use the vehicle of the plenaries to
18 build the final consensus on the scorings in the areas of merit
19 and feasibility and iterate when there are issues and additions
20 and lack of sense of consensus until we have a final set of
21 evaluation materials.

22 Just one point that I think I need to remind you

1 of is that the final evaluation materials, of course, will be
2 presented to the Categorization Committees and to the Steering
3 Committee. These are what are considered pre-decisional
4 information and will only be provided to those proposing in
5 debrief form, as we usually do in the Office of Space Science.

6 Next slide. There we go.

7 There are some basic principles, you can all read
8 these, and I won't go through them. Obviously, the highest
9 science value per unit cost, given the resources available and
10 the -- what should I say -- the reasonableness of the
11 implementation approach and the technical readiness are very
12 important factors. We're looking to attempt to level the
13 playing field by using these types of evaluation precepts so
14 that smaller, lower cost missions with more focused scientific
15 scope can compete against the larger, right at the cap scale
16 missions, for example, that might have a broader scope. So our
17 aim is to not only receive proposals with very attractive
18 scientific scope right at bid, right at the cost cap, but also
19 to achieve those which might fall at different niche levels in
20 the resource envelope. So we will be really looking to try to
21 allow for that to occur.

22 Again, we are looking for science missions

1 investigations which are missions or Missions of Opportunity,
2 and we're looking for the proposers and their teams to
3 demonstrate adequate contingency in terms of both the science
4 and the resources. This is very important. And, of course,
5 ultimately, if missions that are bid and even ultimately
6 selected cannot fulfill those, they are subject, of course, to
7 cancellation on those grounds.

8 Now, the science evaluation factors, again,
9 listed in the AO, there's a few that I just wanted to call your
10 attention to. Of course, I mentioned the gaps, the
11 complementarity and the fact that the performance floors, the
12 kind of minimum science, it's very important to have that
13 articulated. That is one of the bases for our panels to judge
14 the resiliency of the missions.

15 The technical merit and feasibility for science
16 is also a very important selection factor, because it relates to
17 not only whether the measurement sets can be delivered but their
18 doability and ultimately to whether the data will flow to the
19 community in a timely enough fashion.

20 Also, there is a question that always comes up in
21 the science merit and the feasibility area is are the sensors,
22 the measurement suites, the experiments that are proposed,

1 adequate in terms of their stated performance or their technical
2 readiness level for those performances to actually achieve the
3 measurements. And this is one thing we look at very carefully.

4 As an example, if you're proposing something that claims it can
5 measure some critical state variability at one given level and
6 that can't be demonstrated, then the ability to actually produce
7 the science you've advertised and proposed against would be at
8 risk.

9 And, of course, I've mentioned the resiliency
10 factor as well. I think that's something we need to look at.
11 And you can all read these. But we are looking for completeness
12 in these proposals with respect to archiving data, to producing
13 scientific research results in the form of papers and data sets
14 and to demonstrating that the resources that are proposed are
15 adequate to achieving these tasks.

16 And, finally, I want to remind you about how I
17 and my team of program scientists here will be forming the
18 Science Evaluation Panel. We always, at first, balance that
19 Panel with the expertise in the academia, in industry, in our
20 international partners, in the specific areas of science that
21 are bid against. We'll know that from the NOIs and from the
22 proposals. We, of course, avoid all conflicts and even senses of

1 conflict. Cases where we have scientists from institutions that
2 are in play in the proposing, we will attempt to balance and
3 minimize so there are no specific conflicts, external reviewers,
4 as needed. You can all read this, it's what I described before.
5 We will vote to -- we will not vote, we will ensure consensus
6 evaluation scorings in the plenaries so that they are consistent
7 and we have a common voice from the Panel, and we will insist
8 upon that. And that will be used as the basis for the science
9 evaluation scores, which will be scored using adjectival
10 methods.

11 So that's the science evaluation process. It's
12 very much aligned with the experience we have with Discovery for
13 the general Solar System exploration, tuned in particular for
14 this Mars opportunity. Questions about it will come up, I
15 guess, on the floor later in this Program. So I'll turn it back
16 now to Wayne Richie who will talk about the overall evaluation
17 process and the TMC0. Wayne.

18 MR. RICHIE: Okay. Before I introduce myself, on
19 the original agenda, we did have a coffee break in here. That
20 was in case you guys had asked us any world-class, show-stopping
21 questions we had to get together on. What we think best now is
22 to go ahead and go through this part of the presentation, and

1 then if we need to take a short break and let you guys get
2 together and scratch your heads and say, "Have they answered my
3 questions or do I need to ask ones from the floor?" So Ramon,
4 if that's okay with you, we'll take a short break afterwards.

5 The second thing that might be on your mind is,
6 "Who is this Wayne Richie from Langley Research Center, and why
7 is he giving me a briefing up there? I didn't see his name on
8 the organization charts anywhere." Well, my office was
9 established in 1996 down at Langley by the Office of Space
10 Science for the purpose of assisting NASA Headquarters with
11 developing Announcements of Opportunity and for providing
12 technical evaluations and assessments for both AOs and anything
13 else that Headquarters needs assessing.

14 So that's who I am, and I'm going to talk to you
15 -- because of that, I got nominated to cover the entire process.

16 And the first thing I wanted to tell you about the process is,
17 as Orlando mentioned before, we're building this from scratch,
18 yes, but, no, we're really trying to make it look a whole lot
19 like the Discovery and Explorer AO processes that the Agency's
20 been pretty happy with.

21 So when I talk to you about the AO process here,
22 I'm going to go through it relatively fast and without quoting

1 the exact AO bullets, et cetera, back to you. I'm going to try
2 to highlight those kind of things that will make it apparent to
3 you that we're doing pretty much what you would expect us to be
4 doing with this (Scout) process.

5 First of all, for example, this process is going
6 to be a two-phase process. You've already got a piece of that
7 idea from the folks who've been up here before. In Phase I, we
8 are soliciting the science proposals. These are science
9 proposals -- but we need sufficient implementation data to
10 evaluate the risk. This slide is out of date but based on the
11 solicitation and the acquisition is, approximately four -- the
12 AO says approximately four----proposals will be selected and
13 awarded contracts for Phase A concept studies.

14 In Phase II, I'm not going to talk a lot about
15 Phase II, but in Phase II, after the science is selected and
16 they/Headquarters decide, "These are the missions we want to go
17 for," then we/NASA will ask about the implementing details, and
18 that's where we'll come back and ask for more details.

19 So what are some of the standard AO features?
20 First of all, all the investigations need to be PI-led. The
21 mission investigations -- there are two kinds of investigations:
22 mission investigations and Missions of Opportunity. The

1 mission investigations are complete, everything, womb-to-tomb.
2 Don't bid something and assume you're going to get money
3 elsewhere to augment it. You have to either have it and have it
4 costed or have it contributed----this applies to the entire
5 investigation. The second type of investigation is for Missions
6 of Opportunity. They are also investigations that are ----that
7 is, the investigations are---complete, but some of the elements
8 of the investigation might be provided by somebody else and the
9 investigation is flying on someone else's mission----this could
10 be any organization's mission outside of Code S.

11 For the ELV, you only have two choices: You go
12 with the NASA-provided or you contribute it. The contributions,
13 obviously NASA wants to get as much as they can for their money.

14 Contributions are certainly encouraged, but for it to be a
15 Scout investigation NASA wants to make sure that this is a NASA
16 investigation, so the contributions in total are going to be
17 limited to one-third the total cost to NASA.

18 We mentioned a little bit about the management
19 process, and, yes, we're going to be following all the standard
20 NPG 7120.5(a)(b), or whatever the version will be out at that
21 time. However, in it (NPG) you won't find these (phases) --
22 you'll find, basically, development and implementation

1 definitions in the NPG, and Code S has opted and continues to
2 opt to allow you to break those two major phases into phase A,
3 B, C, D and E.

4 No RTGs. The limits to the schedule and the
5 budget for these kinds of investigations just doesn't allow you
6 to go with an RTG. Some limited amount of nuclear material is
7 acceptable. If you have it available and are providing it, that
8 will be okay. But you would never make it fit into the envelope
9 with a full RTG.

10 Scout investigations, you've heard a lot said by
11 Jim and others about the importance of the data. And I wanted
12 to just emphasize that all the data, the science data, is non-
13 proprietary, and the results of investigations have to be shared
14 with everybody and has to be put into PDS as soon as possible.

15 The last bullet says when you bid in round one be
16 sure you recognize that you have to also adhere to the other
17 programmatic and plan for and provide resources and commitment
18 to NASA's E/PO, SDB, Tech Infusion and Transfer Programs. We
19 might say a little bit more about that in a minute.

20 Some of the specifics, the cost cap has already
21 been discussed, but the cost cap for the Mission of Opportunity
22 is \$25 million, a little bit smaller than some of the other AOs.

1 The launch date for the investigation should be no later than
2 December 31, 2007. And if you have a Mission of Opportunity
3 that is going to fly, we don't know -- maybe we do or don't know
4 when that Mission of Opportunity flies, but you need to -- it
5 must be in order to submit this solicitation that you need a
6 NASA commitment before December 31, 2003.

7 Project management was mentioned and discussed, I
8 think, well enough by Orlando, but project management can come
9 from anywhere. But if it is to be provided from a NASA center,
10 it needs to come from JPL or Goddard.

11 I think that you'll see other points about the
12 infrastructure but one thing I wanted to mention specifically
13 that if you're proposing an orbital mission of one Mars year or
14 more, the MEP is going to require you to fly a UHF communication
15 package. All your investigations should plan for -- this is a
16 little bit different than Discovery -- all the investigations
17 must plan for interfacing with and being compatible with what's
18 already planned in the MEP, both the missions and the
19 architecture. And as you've already seen, program management
20 for this Scout -- well, the whole MEP is located there, but the
21 Scout management is located at JPL.

22 One thing I wanted to highlight that's not in

1 this AO and so don't bother -- don't submit it, we don't need
2 it, and the decision to do these things will be made later, but
3 Orlando and NASA Headquarters decided not to solicit PSP,
4 Participating Scientist Program, Data Analysis Program and
5 Extended Missions in this solicitation. So you are wasting
6 paper if you submit anything along those lines. This will be
7 potentially subject to a separate at a later time.

8 As I said, I want to say a little bit more about
9 E/PO, and we glossed over this a little bit, but one of the
10 things that's going to be done -- Jeff Rosendhal is not here, is
11 he? Okay. Jeff advises us that after the investigations are
12 selected that he will put together a peer review team to review
13 the investigations that are selected -- the E/PO Program that
14 you have submitted they will evaluate that, they will assess
15 that and provide comments back to you before you start your
16 Phase A concept study. So I wanted you to know about that.

17 You have seen the famous block diagram, Jim's
18 already walked you through all of it. Let's see if there's
19 anything else I wanted to highlight out of it. I think Jim
20 covered most of it admirably, and I don't see anything that I
21 would really want to highlight. Let me emphasize again the same
22 thing he has said here. Although the AO does not require you

1 100 percent to submit a Notice of Intent, we encourage you to do
2 that. Jim and I can't put together the team, we can't plan for
3 you appropriately unless we know what might or might not be
4 coming. If you think you might submit, just go ahead and give
5 us a Notice of Intent. A Notice of Intent does not mean you
6 have to submit either, okay? I think that would be the only
7 thing I would emphasize that wasn't already covered. And except
8 for this target right here (Selection), Orlando assures me that
9 we will get that done right there (early December).

10 I think we covered this. Some of the slides in
11 this presentation are redundant and identical to the science
12 slides, and the reason for that I wanted to emphasize to you
13 that there is one evaluation, it's all together, and I'll be
14 doing a piece, I'll report to Jim and he'll be doing the science
15 and the overall. So if you see the same slides, that's because
16 we're working off the same sheet music and we're doing the same
17 thing. So the AO says that the first two criteria are science
18 and the third one is the part that we'll be evaluating at
19 Langley, from Langley. I'll talk about that when I get to the
20 evaluation part.

21 We've already talked to all of these things on
22 here, so I don't see anything else that we need to cover, except

1 Categorization, the only thing is Category I is going to provide
2 the only Selection candidates -- theoretically, Category I and
3 II are selectable, but you cannot select a Category II if there
4 is a Category I science investigation of the same category. So,
5 basically, you guys are shooting for Category I, everybody in
6 here, I hope.

7 Okay. Now, this is a flow (Downselection) you
8 haven't seen, and don't write down all these dates and hold me
9 to it, because if we don't select on December the 4th, then we
10 will not come out here on July 31 either. But assuming we do,
11 here is a plan for downselection so you'll know. One, if you're
12 a winner, we would hope to convene you here at NASA Headquarters
13 mid-December, so be thinking about that. Plan on being a
14 winner, plan on being here mid-December, and we'll hold a
15 kickoff. We will be able to do it in a smaller room since we'll
16 only have up to four winners. And you'll hear details about
17 that later in your selection letters.

18 So we'll meet here and we'll give you the details
19 and we'll all talk about the schedule and the requirements for
20 the concept study. Then we'll turn you loose for Christmas, and
21 we'll go to working on another evaluation plan of how we're
22 going to precisely do the downselect. Actually, I have one now,

1 but I'll have to get it approved. And then we will be looking
2 for receipts of your concept studies back somewhere in the
3 neighborhood of May. We'll do the same things as we've done
4 before, compliance check.

5 Ah, but the science is selected, so in round two
6 we would hope that you do not change your science. If you got
7 selected on the basis of science, it would not be a good idea
8 to, in the implementation details, decide that you need to
9 change the science, because if you do, we have to relook at this
10 then. So in round two, we would hope that you keep the science
11 the same and you already won that, so we'll come right through
12 here and we would start looking at putting together and
13 evaluating the technical details of how you're going to
14 implement your world-class investigation.

15 Because we are, in round one, only able to
16 communicate with you at this conference right here, when we
17 leave here we will not be talking to you very much and we'll get
18 your investigations back in and we will evaluate them virtually
19 with no communication. This time, in the downselect process, we
20 allow for making sure that we understand that your investigation
21 exactly and precisely, and so any questions we have would come
22 out to you. We would come spend one full day with you to make

1 sure we understand how you're implementing it and what your
2 tools, equipment, people, et cetera are. Then we would reconvene
3 and do a final evaluation and we would rate all the
4 investigations.

5 One point neither Jim nor I covered in the slides
6 prior to here, so I'll cover it now, is all of our findings are
7 presented to the selection officials, all of the findings. They
8 are not ranked in any way. We present all the findings, and
9 they're not ordered in any way. What we find is what we find,
10 and the selection officials can make their determination from
11 that. It's the same here, we will not order the results-- we
12 will not have any order of who's first and so forth, it's just
13 the evaluations. Jim and I haven't talked about this yet, but
14 in the last round of Discovery, we allowed the PIs themselves to
15 come present to the selection officials -- Ed and the selection
16 officials their science, not the implementation details. So we
17 might provide a day for you to do that, and then we would follow
18 that with our generalized evaluation on the investigations and a
19 decision in August. And we need to stick with that schedule if
20 we're going to make the opportunity.

21 Okay. Now, that's all on process and overview on
22 what the process is. This first slide gets you into me talking

1 about implementation and implementation details. And this is a
2 slide that I put together for Ed Weiler to make sure that our
3 selection officials know what we are evaluating with our
4 technical management and cost and other Program factors
5 evaluation.

6 First of all, the top block -- and many of you
7 have seen this who've been debriefed before -- the top block
8 says that there are no easy science missions in space science,
9 they're all tough. And the kind of things you're going to be
10 running into is inherent risk of the mission. We don't have to
11 guess, everybody's going to Mars, and we already know Mars is a
12 tough place to get to and conduct investigations. You've got to
13 survive a launch environment, space environment, the duration of
14 the mission. If you're going out on a limb on technologies, you
15 have to deal with that. And there's a lot of unknowns.

16 A second thing that you have to deal with is the
17 programmatic risks themselves. There's a lot of things that
18 will be almost not under your complete control, the
19 environmental assessments that you'll be asked to do, or any
20 kind of assessment that the Agency or other federal regulatory
21 bodies may ask you to perform. We all know the uncertainties of
22 the budgets these days and you're working to a funding profile

1 that maybe isn't the exact funding profile that you want.
2 Political impacts, somebody may be on the launch pad saying,
3 "No, we don't want this launch to Mars" and mess up Mars. And
4 there are some elements of your project that may be under NASA's
5 control to deliver. So all of these things right here are
6 things that we are not evaluating, we, the technical management
7 costs of the program factors are not evaluating.

8 What are we evaluating? Your implementation, the
9 risk associated with adequate planning, management, your
10 development approach, schedule, funding. Ah, but we've got a
11 catch-all down here, it says risk management. Because we know
12 you've got to deal with all of these, have you provided a good
13 risk management plan and a capability for dealing with all the
14 known and unknown parts of your mission and your investigations?

15 So that's what we're evaluating.

16 You've seen this slide from a different
17 standpoint, but I want to address risk and TCMO risks that we're
18 looking at. Basically, in round one, the selection is based on
19 science. The TCMO risk assessment is going to be at a fairly
20 high level. We're looking at preliminary concepts from you guys
21 that may not be the detailed and final concept, nor is it a full
22 design of the investigation. Ed Weiler has asked us to look at

1 cost, and so we will be looking at cost and providing that
2 feedback in the overall risk integration.

3 I've got one goal in round one proposals
4 evaluation and that's to not pass on for selection---not
5 recommend an investigation---that is high risk; one that when we
6 get into step two it may not can make it. So I would look
7 forward to all of your proposals being either medium or low
8 risk, and if the science is compelling, you get selected.

9 I'm not going to talk about Phase II, because
10 we've already said that you've got to first get that far, but
11 that's where we will then concentrate on implementing details.

12 These charts are parallel to the ones that Jim
13 has, and I've already mentioned to you why a Langley guy is
14 doing this. We support Code S. The fact is all of our
15 governing ISOs are Code S and we live at Langley but we actually
16 report and functionally support Code S, and now also Code Y.

17 Let's see, another thing that Jim hit but I want
18 to make sure you know is that we will put together an evaluation
19 plan. We will -- Jim and I will make sure he's happy with it,
20 then he will present it to Orlando and other senior management,
21 and everybody will know how we're going to do the entire
22 evaluation, science and technical, before -- long before we get

1 any proposals. Then we'll follow that plan and we'll evaluate
2 it that way.

3 Like the science, we want to try to provide to
4 you peers, technical peers in the area of what you're proposing,
5 and, yes, I'm located at Langley but there will be very, very,
6 very few Langley participants in this evaluation, myself being
7 one and possibly one or so other persons. I don't really know
8 at this point in time nor will I commit to it, but most of my
9 evaluators come from contractors, consultants, other government
10 agencies, DOD. Again, people who've listened to the debriefing
11 before know that most of my evaluators will not be Langley--
12 will be from around the country and they will be hopefully the
13 best I can provide you based on their expertise. And here again
14 is why -- that's why I need to see in the Notice of Intent what
15 it is I'm going to be expected to evaluate so I can make sure I
16 have appropriate expertise.

17 My basic assumption is that you guys are the
18 experts on your proposal, not the panel that I put together that
19 has to look at it in a very short period of time. And our job
20 is to convince ourselves that you've done a good job and give
21 you a low risk. Your job is to convince us that you've got all
22 the bases covered.

1 I won't go into this because it's a lot of
2 details but -- basically, I usually take technical, management,
3 cost and break it up into subfactors of a smaller variety, and
4 those of you who have been debriefed before know generally those
5 are the five categories.

6 For Missions of Opportunity, we will be looking
7 at the same -- again, just like Jim, we will be looking at the
8 same things that we look for for a full investigation, only for
9 those parts of the things that you control. We will not be
10 evaluating foreign launch vehicles capability, et cetera, or the
11 mission itself. We will ask that you provide us sufficient
12 details on that investigation that we know what you're trying to
13 do and what it interfaces with.

14 I'm not going to read you all these words because
15 I have now generated a new picture slide that goes along with
16 this, but as I've explained to many people, we're only looking
17 for can you do it---are you likely to be able to do it, are you
18 likely not to be able to do it or can you maybe do it? That's
19 high, medium and low risk. And pictorially, pictorially, I put
20 together this -- this is a way that you can look at what you're
21 providing me in a round one proposal. Propose to us an available
22 technical, management, cost envelope that exceeds what we know

1 and you know it will take to get the job done. So if what's
2 required fits comfortably inside of what's available, you're in
3 good shape. If it's pretty tight, then we'll maybe give you the
4 benefit of the doubt. If what you're proposing in any one of
5 these or all of these areas exceed what's available, you're in
6 trouble and we'll definitely rate you high risk.

7 Because cost is so important, I want to make sure
8 you know what I'm doing about cost and how we do it. First of
9 all, most of the evaluation will be based on what you tell me.
10 The bottom of the pyramid says the analysis of your proposal
11 data is what we mainly concentrate on first. We analyze what
12 you say, how you say you're going to do it, et cetera.

13 In addition to that, though, I do run some
14 parametric assessments and analogies, and I have more than one
15 contractor who will supply those assessments. Those assessments
16 will be played against all the technical evaluators we have, and
17 we'll all determine whether those models make any sense or not.

18 From that, we identify cost threats, risk items
19 and in some cases explain why you can get away with doing it for
20 as cheap as you say you can do it -- risk mitigation. Summarize
21 all that into cost assessment. The entire team does the cost
22 analysis, not just cost analysts.

1 I believe that's my last slide. No? Okay. I'm
2 not going to cover these slides. The same as Jim, these are the
3 parallel of how we think we might run it -- run the Panel, but
4 you needn't worry about that. And I think we've covered these
5 already. These are some buzz words. Oh, don't forget, we're
6 going to look at mission design to launch vehicle, mission cost
7 realism, how you're managed, how your ground system works,
8 schedules, I&Ts, your interfaces with the MEP, et cetera. And
9 as we said before, we're not assessing the other program
10 requirements in round one, they will not be evaluated, but they
11 will be evaluated in great detail in round two. With that, that
12 ought to be the last slide.

13 Now, I'll turn it back over to Ramon. You can
14 either take a coffee break and -- you want to take a break? Is
15 that okay? Take about ten or 15 minutes and then we'll come
16 back in and do Q&As. Okay. Let's reconvene at 2:45? Okay.

17 (Whereupon, the foregoing matter went off
18 the record at 2:33 p.m. and went back on
19 the record at 2:45 p.m.)

20 DR. GARVIN: -- highly awaited question and
21 answer period. And Orlando's wiring up here, so we're going to
22 be poised for -- okay. Is everyone -- I think a few more people

1 are coming back. There's Ramon herding them in. Okay. I just
2 saw John Rummel, Planetary Protection Officer, coming in with
3 coffee. Okay.

4 Well, now begins the question and answer period.

5 I want to begin with a couple of words of protocol and context.

6 First, I will hold up the document, which is the guiding
7 document for this solicitation. We do not intend the question
8 and answer period here to be a way of walking through the AO
9 with you. This is the document, the answers are in here, I'm
10 required to remind you of that. So we have received several
11 dozen questions from you all. We will be posting detailed
12 answers on the web. Ramon reminded you of the web site where
13 these will be posted. We will be updating that as questions
14 come in, as well as the products that were presented here at
15 this meeting.

16 What we're going to do is on the basis of the
17 questions received to date, they have fallen into four primary
18 bins, if you will. I will describe those bins and then go
19 through some example questions. The protocol I will use is I
20 will attempt to capture and paraphrase the answers that our team
21 has developed. When there are questions of clarification beyond
22 that, I will turn to our Director, Orlando, who's wired up

1 ready. And then after we go through these examples, we will
2 turn it open to the floor, and I will attempt to MC, answer
3 those questions pertaining to science, as I can, and hand it to
4 Orlando for distribution amongst the other experts here in the
5 room. That will be our protocol, okay?

6 So we received on the order of three dozen
7 questions from you. They fell into essentially four primary
8 bins. The first were questions dealing with science and sort of
9 the science evaluation process. I will describe a couple of
10 example questions that capture a lot of the sense of the
11 uncertainty by you all. The next area is broadly lumped into
12 the area of management. We'll describe some answers to those,
13 and I'll allow Orlando to embellish and provide the answers.
14 Another area that's in the -- another bin is the expendable
15 launch vehicle arena. We have experts from the Kennedy Space
16 Center here poised to help us address those issues, and Orlando
17 of course as well. We have some general questions there that
18 will be of value to this group. And, finally, in the area of
19 general Mars Program infrastructure and we have some questions
20 there.

21 So let me go through some specific questions that
22 you've provided and some answers, the first in the area of

1 science and evaluation. I will read the question, and, by the
2 way, the protocol we use for questions from the floor is if
3 those of you would stand up and enunciate your question, I will
4 then repeat it so that everyone can hear it, and then pass it on
5 to the appropriate answering official through Orlando. Okay.

6 So the first question in the area of science and
7 evaluation was as follows: "The AO would lead us to believe
8 that proposals will be selected primarily based upon the science
9 proposed. Meanwhile, however, a considerable amount of
10 implementation data seems to be requested. Is this consistent?"

11 We have an answer here, and I'll let Orlando comment as well.

12 The answer is very short and simple. Indeed,
13 while the selection is based primarily on the proposed science,
14 and you heard about that earlier from several of us in the
15 presentation, mission implementation is also one of the
16 evaluation criteria, and it does exercise an important influence
17 on selection. For round one, the one we're talking about here,
18 for round one science proposals, it is recognized that all
19 implementation details must be provided at some level but that
20 there is inadequate page count to discuss these fully. So it is
21 important that all major aspects of the implementation concepts
22 must be provided in sufficient detail for NASA, for the

1 processes we've discussed, to judge the feasibility. Let me
2 allow Orlando, if he would, to comment further if he'd like.

3 MR. FIGUEROA: Well, I think, you know, I guess
4 the answer is fairly complete. The evaluation and selection is
5 largely on the basis of science and scientific merit. However,
6 NASA needs to be in a position to pass judgment, and you
7 yourselves owe it to yourselves to put boundaries on the sanity
8 of what you are proposing and whether it fits within the
9 envelopes we're talking about. So that will have -- obviously
10 will play into the ultimate selections of the missions.

11 DR. GARVIN: Okay. Thanks, Orlando. Another
12 question then that was endemic of those we received is one more
13 about the Mission of Opportunity investigation niche. I'll read
14 the question and the answer and allow Orlando further to
15 comment. The question from the community is, and I quote, "We
16 are proposing an investigation to fly on the CNES," -- that's
17 the French Space Agency's, "07 Mars science orbiter, which
18 includes U.S.-provided hardware and U.S. co-investigators, which
19 we are confident will be selected to fly if we have NASA's
20 support for funding. Can we submit a Mission of Opportunity
21 proposal for Scout?" Orlando, would you like to respond first
22 or should I read the answer? I'll let you respond.

1 MR. FIGUEROA: Go ahead.

2 DR. GARVIN: Well, the answer is, of course, yes,
3 you may submit a proposal. The caveat is that one should be
4 aware, however, that such a proposal must be for an
5 investigation which would be conducted from the vantage point of
6 the CNES-07 science orbiter. As such, it will require a letter
7 from CNES, from France, stating that the proposed investigation
8 is or is likely to be selected pending selection and funding by
9 NASA through the Scout vehicle. And such a proposal would need
10 to meet all of the required Mission of Opportunity submittal
11 requirements outlined in the Scout AO in naming a U.S. principal
12 investigator who would lead that effort from the NASA
13 perspective. Orlando, do you care to embellish?

14 MR. FIGUEROA: No. I think, you know, the CNES
15 has been kind enough to allow some visibility to the processes
16 that they're following for selection of -- potential selection
17 of investigations submitted by U.S. investigators who
18 collaborate with French investigators. After that they have, in
19 essence, passed judgment, as to the scientific merits from their
20 perspective of that mission. We, parallel to our process, will
21 accelerate the point where we can be prepared to select, from
22 our perspective, if any one is meritorious so that indeed we can

1 apply Mars Program funding to the investigation. That, in
2 essence, seals the deal. The French will, on their side, say,
3 "Yes, this is meritorious from our perspective, our process."
4 In an accelerated fashion, we'll get to the point where we,
5 NASA, say, "We agree with its entirety, portions of or none of
6 it." So our Science Committee needs to be in agreement, and Jim
7 and Weiler, that this is indeed meritorious and for us to make
8 it part of the Mars Exploration Program.

9 DR. GARVIN: Thanks, Orlando. Okay. Those are
10 the Program-wide areas in science. Let me next turn to the bin
11 that we describe as management, and there are several questions
12 here. I'll read them and let Orlando respond. First question
13 is one we received several times. The question is as follows,
14 "The total of the available dollars when converted to the fiscal
15 years in the funding profiles, in the AO Appendix E, do not seem
16 to, quote, unquote, 'add up,' within the guidelines of the cost
17 caps in the AO. Can you please provide us with some rationale
18 as to why?" Orlando, do you care to comment directly or should I
19 read --

20 MR. FIGUEROA: Read the sentence there.

21 DR. GARVIN: Okay. I think the answer is
22 straightforward. First, there was no intention that these

1 figures match. The funding profile guideline in the AO reflects
2 the maximum amount of funding available each year. Proposals
3 require funding beyond the -- let me leave it at that and let
4 Orlando finish. Anything further you'd like to add?

5 MR. FIGUEROA: Read the full sentence.

6 DR. GARVIN: Okay. Proposals requiring funding
7 beyond the last year in the AO funding profile are free to
8 propose any funding profile beyond that last year, as described
9 in Appendix E, as long as they stay below the \$325 million
10 that's in fiscal '03 cost cap.

11 MR. FIGUEROA: In essence, the -- actually,
12 Wayne, why don't you add to that?

13 MR. RICHIE: I really can't add to that.
14 Basically, yes, we know that some missions won't want a big,
15 long, expensive operational period, but what's available is
16 what's available, so we would hope that you'll be well within
17 the cost cap and wouldn't need the full \$325 million.

18 DR. GARVIN: Okay.

19 MR. FIGUEROA: Yes. The yearly profile is -- the
20 yearly numbers provided were intended to reflect the
21 availability of funds of any given year. So when you add it all
22 up, however, you should have more than enough resources to fit

1 within the \$325 million cap.

2 DR. GARVIN: Okay. Thanks, Orlando. The next
3 question, which is sort of a corollary or related question is as
4 follows: "In Appendix E -- Appendix E, that is, provides the
5 maximum available funding from the Mars Exploration Program for
6 each year. If the max of a preceding year is not used, it can
7 be carried to the next year provided" -- I'm sorry, I'm reading
8 the wrong question. Here we go, sorry. Restart. "Given the AO-
9 provided Scout schedule and the expected funding for the Phase A
10 concept study of \$500K, can part of some portion of the cost of
11 the investigations be carried over into fiscal '04? And also
12 since the total of fiscal year dollars is only in a cumulated
13 sense, \$313.5 million through fiscal '08, how can we accrue the
14 additional funds in an earlier year; in other words, can be the
15 funding profile be manipulated to fit a give mission?" Orlando,
16 do you care to comment?

17 MR. FIGUEROA: Remember that what we provide on a
18 fiscal year basis captures the maximum funds available on those
19 years. Now, it's \$325 million total mission cost cap. So
20 whatever monies, with reason, that are not used in any
21 particular year obviously can be carried over to the next one.
22 But I say within reason because the intent here is not to

1 frontload it so much, number one, it violates the yearly cap
2 that we have, and, number two, that it leaves a significant
3 amount of money sitting around from year to year. That is not
4 in the best interest of the Program either.

5 DR. GARVIN: Okay. Thank you. Sorry about that
6 confusion there, folks. The next one in management is a final
7 one dealing with these cost issues. The question is from the
8 community that there is confusion about Section 4.5.3 in the AO.

9 The question is, "Are there any costs that must be included in
10 the total mission cost but which do not count against the \$325
11 million fiscal '03 cost cap?" And I guess I can read the answer.

12 All, underlined in bold, contributions are outside the OSS cost
13 cap but must be included in the total mission costs. That is
14 answer. Orlando, any other comments?

15 MR. FIGUEROA: The only thing I would add is the
16 one-third limit.

17 DR. GARVIN: Oh, okay. And Orlando is commenting
18 that maximum value of contribution, as stated in the AO, is one-
19 third of the total mission value of the \$325 million. There is
20 an upper limit on the contribution. I think it's pretty clear.

21 Okay. Last one in the management area, and I'll
22 let Orlando answer directly to this. It's a lengthy question

1 dealing with the nominal roles and responsibilities of a project
2 manager, and I'll read the question, Orlando, and let you give a
3 quick comment. In AO Section 3 -- I'm sorry, sorry. Section
4 3.72 in the AO states that the project manager responsibility
5 will include award and management of subcontracts. Essentially,
6 the question is what does this mean specifically? In other
7 words, does this mean that funding for a stand-alone instrument,
8 built either at a PI's institution or another institution, must
9 be as subcontract from the project manager's institution?
10 Orlando, would you care to comment?

11 MR. FIGUEROA: Well, in the -- I alluded to at
12 the very beginning the fact that the investigators can assemble
13 a team from a multitude of organizations. Instruments, for
14 example -- and there could be a million permutations on how this
15 is done. Instruments, for example, can come from a variety of
16 institutions, some of which will be subcontracts to the prime
17 contract awarded through the JPL Office, some of which may be
18 best and coordinated through the Program Office for the PI at
19 the given institution, now, this is at the instrument level, to
20 have a separate contract that then delivers the components to
21 the primary one. But all of that and how one is organized needs
22 to be part of -- the proposal itself needs to be broken so that

1 pieces are clear and add up to the total.

2 DR. GARVIN: Okay. Thank you, Orlando. The final
3 one I meant to say, as just a point of clarification question,
4 and I'll just be proactive and read, in the area of management,
5 the question was, "Can a Mission of Opportunity investigation
6 fly on a Mars Scout 07 mission itself?"

7 Orlando, I can read the answer or would you like
8 -- and the answer is rather dramatically, no, a Mission of
9 Opportunity is by definition an investigation to fly on an
10 existing non-Code S, non Office of Space Science mission. Since
11 the Mars Scout 07 will be an OSS mission and does not currently
12 exist, flying a mission of opportunity investigation on an
13 otherwise Mars Scout 07 mission does not meet the definition of
14 the MOO. Okay.

15 Next, we'll move into the very fertile bin area
16 of launch vehicles. I'll read a few questions and let Orlando
17 call upon our experts here from Kennedy and Code M to adjudicate
18 the answers. This has been a very fertile area of questioning,
19 by the way, I might add -- extremely fertile. The first -- I
20 kid you not. The first question from the community, "Must a PI
21 use the NASA-provided launch services described in the Mars
22 Scout launch services information summary document, which is

1 resident in the Mars Scout Library, for their specific Mars
2 Scout investigation?" And the answer is?

3 MR. FOSTER: If it is a domestic launch service
4 that we already have under contract, then, yes, you need to use
5 a NASA-procured launch service. If you plan to use a foreign
6 launch vehicle, then that needs to be contributed on a funding
7 basis.

8 DR. GARVIN: Okay. Thank you. Next question,
9 equally fertile, and, again, I quote, "Several programs could
10 offer," -- meaning several potential Scout proposed
11 investigations -- "several programs could offer reduced cost
12 risk through the use of smaller launch vehicles. What is the
13 availability of the Delta II 2425 or other small launch vehicles
14 for the Scout Program?"

15 MR. FOSTER: I would say at this point if there's
16 a proposal that's interested in those launch vehicles, go ahead
17 and contact us at KSC. The reason that we put only the 7925 and
18 7925 heavy in that medium range is because there's certain
19 discussions that are going on in the Program that are -- we're
20 evaluating our future requirements, and there's some
21 questionability as to the availability of the smaller -- I
22 shouldn't say smaller -- but less capable configurations. But

1 we know for a fact that 7925 and the heavy will be available in
2 that time frame on our contracts. So we need to cover the cost
3 risk associated with the smaller configuration. So it's not
4 that -- I think if you're wanting to go with a smaller
5 configuration, let's talk. I think the purpose of step one is
6 mainly the science, as was mentioned quite a few times earlier,
7 and in Phase II, or Phase A, I guess, we can get into more
8 detail on the launch vehicle. But at this point in time, I
9 think you need to use, at the minimum, the cost for the 7925 at
10 this point.

11 MR. RICHIE: So the answer, Darrell, is propose
12 to a 7925 the cost is -- everybody's got to use the same cost,
13 is that it?

14 MR. FOSTER: That's right. That's right. And if
15 you think you can do it with a smaller launch vehicle, go ahead
16 and mention that in your proposal, but we need to stick with the
17 higher cost at this point until we can determine that that
18 smaller -- or less configurable configuration can be worked out
19 on our end. Right now it's not in the plan, but we don't want
20 to rule that out, and we may be able to work that as time goes
21 on. We just need to evaluate requirements.

22 DR. GARVIN: Okay. Thanks, Darrell. Did

1 everyone get that, that you should bid to the numbers in the AO
2 appendices, and in the Phase A downselect period there may be
3 adjustments possible is what I think we were -- Wayne's point
4 was well made.

5 Next question in the area of launch vehicles, and
6 I'll quote again, "If proposers use a NASA-provided launch
7 service," as Darrell's been commenting, "can we assume that the
8 AO-provided costs cover all launch services needed for their
9 investigation?"

10 MR. FOSTER: Yes. Yes.

11 DR. GARVIN: The answer is yes. Thanks, Darrell.

12 MR. FOSTER: Yes. Let me just -- I can --

13 DR. GARVIN: Please, Darrell.

14 MR. FOSTER: In the numbers that we have in
15 there, specifically what that includes is the projected cost for
16 the standard launch service for the vehicles mentioned there.
17 We have a typical allocation for mission-unique services. We've
18 done quite a few Mars missions in the past. We know, basically,
19 about the amount of money we need for mission-unique options on
20 the launch vehicle. Payload processing, that includes the
21 facility, the commodities that you'll need at the launch site,
22 as well as downrange telemetry support for the ascent phase

1 through separation. That's what's in that number. And also for
2 the data will take environmental assessment type support you
3 need related directly to the launch vehicle if you're using RHUs
4 in your experiment.

5 MR. RICHIE: But if they have very unique
6 requirements, they need to contact you to find out what it might
7 be.

8 MR. FOSTER: Yes.

9 DR. GARVIN: If they're very unique requirements.

10 MR. FOSTER: Right. If you have something that's
11 out of the box, which I encourage you to try to stay within the
12 launch vehicle box, because mission modifications can get
13 expensive pretty quickly, and we want to try to prevent that,
14 obviously. But if you need something that's not standard or in
15 the options list, I've provided a web site in the AO, launch
16 vehicle section, that you go into, find out what our standard
17 services are, non-standard services, and if it's not in those
18 lists, then let's talk. And my information is in the ELV
19 section.

20 DR. GARVIN: Okay. Thank you. Just after we go
21 through these pre-submitted questions, we can go to the floor
22 and Darrell and the team will be here to address further

1 questions.

2 Let me move on then to the area of the Mars
3 Program infrastructure, the area of questions. There are three
4 that were program-wide for this solicitation, and we'll talk
5 about those. The first deals with one specific area. Question
6 is, and I quote, can you clarify the conditions under which the
7 Program would provide the electra UHF communications package to
8 a Scout proposer at no cost?" Orlando, would you like me to
9 read the answer or would you like to provide it?

10 The answer then is, in general, Scout proposers
11 that desire relaying their data through a Mars Program
12 infrastructure relay orbiter, such as the relay components of
13 the Mars Reconnaissance Orbiter or the G. Marconi Orbiter, are
14 responsible for providing their own UHF subsystem. The only
15 case in which the Mars Exploration Program will provide the
16 electra UHF communication package is for a Scout Orbiter mission
17 that plans an on-orbit lifetime of one Mars year or longer --
18 that's one Mars year or longer. Such proposals are required to
19 carry the Program-provided electra payload for the purpose of
20 supporting subsequent Mars Exploration Program missions. The
21 proposer is responsible for interface design, integration and
22 test costs in this case. Okay?

1 Next one in the area of Program infrastructure,
2 and I quote, "My" -- I quote, so this is not me, I'm not writing
3 a proposal -- "My Scout proposal concept includes an orbiter and
4 a lander. Per the AO, I understand that if my expected orbiter
5 lifetime is one Mars year or longer, I am required to carry a
6 Mars Program-provided electra UHF transceiver for providing
7 relay services to future Mars Program missions. May I also use
8 this payload to support my own lander's relay communication
9 needs."

10 And the answer is, yes, but you will need to
11 provide your own UHF radio package for your lander that goes to
12 the surface. The Program will use the electra UHF transceiver
13 on your orbiter as a Mars Exploration Program resource to
14 support Mars missions which would include your Scout Mission.
15 Okay?

16 And then the final program-wide question in this
17 area is as follows, and I quote, "Section 3.5 in the AO states
18 that the Mars Exploration Program requires missions with more
19 than one year of expected life in Mars orbit to carry a UHF
20 communications package. Please clarify whether a mission with a
21 design life for science operations of precisely one martian year
22 is the requirement to carry a UHF package." This is a variant

1 on the previous question dealing with the issue of design life.

2 I guess I'll read the answer. "A mission with a
3 design life of one Mars year, okay, could be expected to last in
4 excess of one Mars year in orbit," pretty clearly. "Therefore,
5 a mission with a design life of precisely one Mars year will be
6 required to carry the UHF electra package." So that, I think,
7 makes it clear.

8 Okay. That concludes the specific pre-submitted
9 questions that deal with program-wide themes. I'd like to now
10 open up the floor to questions from the audience, and we will
11 attempt to apportion their answers appropriately. So are there
12 questions from the assembled masses? Any questions? Yes.

13 AUDIENCE MEMBER: Would you clarify that again?
14 On the case where someone carries an electra for the benefit of
15 MEP, do they need to pay their own integration costs?

16 DR. GARVIN: This question so I repeat it is, in
17 the case where a Mars Scout Mission carries the UHF electra for
18 Program needs, does the PI and his or her team need to pay the
19 integration costs for that package? Orlando, would you care to
20 --

21 MR. FIGUEROA: We will provide the package and
22 associated interface definition, et cetera, because it's a

1 mature package at least through the MRO will certainly be a
2 level of maturity. From that point on, then the PI needs to
3 integrate it and test it as part of the whole system.

4 DR. GARVIN: Is that --

5 AUDIENCE MEMBER: Yes.

6 DR. GARVIN: Okay.

7 MR. FOSTER: The AO said that you are not to
8 include to integration costs in the total mission costs. So are
9 you wanting that broken out separately?

10 DR. GARVIN: The question is, according to the
11 reading of the AO by one colleague, it states that one is not
12 supposed to include the integration costs specifically in their
13 proposal, and how is one to handle this cost now that Orlando
14 just commented upon?

15 MR. FIGUEROA: The AO states what I said earlier.
16 I mean it will be provided as a package and you are to, as part
17 of your system integration costs, include that. We really need
18 to separate as a single item.

19 DR. GARVIN: Okay.

20 MR. RICHIE: Let me just add, what we're trying
21 to tell you is we may not be looking at that level of detail for
22 round one. You need to just keep in mind what you cover is what

1 you got to cover. We may not be looking at that level of detail
2 in round one.

3 MR. FIGUEROA: You need to make certain that that
4 is included in your overall information on costs.

5 MR. RICHIE: Because if you have a bunch of
6 things that you forgot, that we told you to include, and it
7 busts the cost cap in round two, that's not good.

8 MR. FIGUEROA: And what we want to make certain
9 also that electra all of a sudden doesn't become such an
10 attention getter that you forget about the other integration
11 costs that you need to be worried about.

12 DR. GARVIN: Okay. Any other questions from the
13 audience back there?

14 AUDIENCE MEMBER: What is the initial number of
15 RHUs we can carry? And I guess if you don't have that answer,
16 who would be the point of contact there?

17 DR. GARVIN: The question is from the audience,
18 what is -- or is there a permissible number of radioactive
19 isotope heater units that one would be permitted to carry as
20 part of this opportunity? And if there is no specific number,
21 who, she or he, is the point of contact for this question?
22 Orlando?

1 MR. FIGUEROA: Well, I actually am not sure we
2 have -- there is no definitive number nor do I think anyone can
3 tell you the number is one, two or three. I mean we can vary
4 all over the place according to your needs. In the case of MER,
5 for example, a pretty significant mission, every one of the
6 rovers carries about 11, 11 RHUs. So there isn't a precise
7 number, you just got to look at your mission needs and define
8 what those are, and we will take it from there.

9 AUDIENCE MEMBER: It sounds like --

10 MR. FIGUEROA: No. In fact, there are several
11 layers of heaters, some that deal with launch approval, others
12 deal with public perceptions. In the case of public perception,
13 whether it's is one gram or ten grams, they don't distinguish
14 between that. And from the point of view of launch approval, we
15 need to deal with the amount anyway, whatever amount.

16 DR. GARVIN: Okay. Is that question -- is that
17 answer reasonable?

18 AUDIENCE MEMBER: Yes.

19 DR. GARVIN: Okay. Further questions from the
20 audience? A Gentleman over here on the right.

21 AUDIENCE MEMBER: A basic instrument that would
22 do some science but the main purpose is to support other science

1 instruments that was proposed to MIDP, for example, is it
2 permissible to propose a part of a need for this for the Mars
3 Scout?

4 DR. GARVIN: The question is, is an instrument
5 that would be supportive of other science, perhaps ongoing at
6 Mars, that has been proposed recently, I guess, to the Mars
7 Instrument Development Program, is that permissible as a
8 proposed investigation for Mars Scout? And I'll make one
9 comment and let Orlando fill in.

10 The Scout offering that we have is all about end-
11 to-end complete science investigations that deliver products
12 with published results and data sets. As such, essentially
13 there's two natural bins in which you know we can propose:
14 missions that go to Mars to collect such measurements via
15 instruments and experiments and Missions of Opportunity to fly,
16 for example, on the CNES-07 Science Orbiter. Instruments that
17 are in the state of readiness suggested by MIDP, the Mars
18 Instrument Development Program, are certainly not at the
19 technical readiness level that would necessarily warm the souls
20 of the Technical, Cost, Management Panel for this opportunity
21 nor are they complete missions that would implement
22 investigations. That would be my comment. I'll let Orlando --

1 MR. FIGUEROA: Well, I think it's pretty
2 complete. I want to make certain that was what you asked.

3 AUDIENCE MEMBER: Yes. I guess, in talking to
4 some proposers of a suite of instruments and what's the
5 possibility of doing that with a package, so it won't be in
6 total.

7 DR. GARVIN: So the question is whether an
8 instrument has been proposed to MIDP recently could be proposed
9 as an element of a science package on an end-to-end Mars Scout
10 Mission?

11 ANOTHER AUDIENCE MEMBER: As a technology
12 demonstration?

13 DR. GARVIN: Oh, as a technology demonstration.

14 AUDIENCE MEMBER: No, as a --

15 MR. FIGUEROA: Let me tell you, the one thing I
16 can add is you've got to make certain that the instrument
17 package you're including remember is being evaluated on the
18 basis of risk. So if the technology readiness of the instrument
19 or any of its component is not up to par, then you've got to
20 conscious of that, because it will hit you in other areas of
21 concern. It makes the assumption that whatever MIDP has
22 investigated will take it to the level of maturity where you can

1 actually integrate it onto this mission. It's a judgment you
2 need to ask, but Jim is correct, it has to be not a Christmas
3 tree but an investigation to Mars, well-coordinated with all the
4 pieces contributing the objectives of that investigation.

5 DR. GARVIN: Let me just make it clear, because
6 Orlando said it well, I think our point is if you choose to
7 contribute as a co-investigator hardware supplier to a complete
8 mission to Mars through this offering, that's fine. I mean you
9 will be judged for the ensemble science value of that mission.
10 And if it's a technology enabling capability, that certainly can
11 be part of a mission. In its own right, though, if your mission
12 is just a technology enabling mission, that might not score that
13 well scientifically against your peers who might propose
14 otherwise. Question from the audience.

15 AUDIENCE MEMBER: Jim, can you clarify on the
16 electra mission again where there may be a difference in the
17 plausible survival time of the spacecraft in orbit and the
18 operation time that one proposes based on a cost cap? Are we
19 proposing the electra within the confines of that operation
20 period of the -- set in one's proposal or will the Panel will be
21 looking at sort of the inferred survival time of that spacecraft
22 to judge whether or not electra should have been --

1 DR. GARVIN: Did everyone hear the question?
2 This is a very interesting one. The question is, in evaluating
3 the lifetime of science operations for a mission, how will the
4 panels judge the requirement that an electra be flown vis-a-vis
5 that which is need by the proposed science to deliver the
6 mission results, particularly for missions that could have
7 lifetimes in excess of that? I think -- Orlando, would you
8 care to comment?

9 MR. FIGUEROA: Well, what is said in the AO or
10 stated in the AO is that missions are, one, expected to be one
11 year, martian year or more. We, as a Program, will require that
12 they have the electra payload. We rely upon all these missions
13 to build the components, in essence, a virtual network around
14 Mars and in particular to support landed assets. As you all
15 know, with the exception of the addition of Marconi or a
16 suitable replacement for it, that's all we have to provide the
17 kind of communications for Mars.

18 If you are asking, "My mission is three-quarters
19 of a martian year are we going to, as a Program, push it so that
20 an electra payload is added," that is not the case. But if you
21 are right at the martian year, you're entering now a territory
22 that we as a Program would like to camel on it as part of the

1 communication assets.

2 DR. GARVIN: I would add one comment, that I
3 think it would be the job of the PI proposing team to make the
4 case in their proposal for the lifetime needed to achieve a
5 certain level of science. And so I think, I'll be fair to say,
6 that a panel would read between the lines if one proposed a
7 mission for 680 days and that delivers all the science one would
8 want in measurements, whatever, and one could -- you know, or
9 some other not large delta from a martian year see that that
10 might be extendable a few weeks into a full martian year and
11 hence raise this issue. So I think the onus is on the proposer
12 to make a judgment and if the science floor of a mission is six
13 months to do the science, then that's the job of the PI to make
14 that case, whether or not it lasts or could potentially last
15 longer in the science operations orbit. Okay. Question from
16 the back?

17 AUDIENCE MEMBER: Just another cost question for
18 clarity? As long as you're within the cost cap, are we free to
19 propose costs in FY '09 even though they were not explicitly
20 stated in the AO?

21 DR. GARVIN: The question was, as long as the
22 cost cap is indeed the bound of the mission proposed, can a

1 proposing team propose costs in fiscal year '09 in their
2 proposed mission? Orlando?

3 MR. FIGUEROA: The AO stated that we are looking
4 for missions to be launched in the '07 opportunity, so that is
5 the timetable opportunity. Only in those extreme cases where the
6 science is so compelling or had a good scientific reason for it
7 to be in '09 would we consider it. And if that is the case, the
8 cap still applies.

9 DR. GARVIN: Is that clear?

10 AUDIENCE MEMBER: I realize the cap still
11 applies, but if there's some science evaluation with costs
12 incurred in FY '09, that's where the question comes in because
13 the Mission of Opportunity has FY '09 limit in it but the main
14 Mars mission does not.

15 MR. FIGUEROA: You're asking whether the costing
16 curve from a launching '07 that stretches through '09; is that
17 what you're asking?

18 AUDIENCE MEMBER: If there are costs in '09, is
19 that acceptable?

20 DR. GARVIN: Can the proposer, Orlando, can the
21 proposer include costs in fiscal '09 even though the profile
22 given in the AO only goes through --

1 MR. FIGUEROA: As long as it's within the cap,
2 yes.

3 DR. GARVIN: Yes. Okay. Good. Other questions.
4 Yes, sir, please.

5 AUDIENCE MEMBER: I had a question about the
6 compact disc that's submitted along with the hard copies. Does
7 that contain -- does the compact disc contain precisely the
8 material that's in the hard copies or can it contain additional
9 materials, such as graphs and CAD drawings?

10 DR. GARVIN: The question is, the CD-Rom that is
11 required to be submitted with the proposals, the hard copies,
12 must it contain only that which is submitted on the paper copies
13 or can it contain additional information?

14 MR. RICHIE: The CD-Rom we're not going to flunk
15 you if you don't give it to us, but that does facilitate, Jim
16 and I, having one tool to do a compatible search for certain
17 things that are about your investigation. Obviously, in the
18 heat of battle, if they get to print out and send things in and
19 you suddenly change something, your CD-Rom may already be cut,
20 but we didn't presume that that would be a very difficult
21 technological challenge for today, so we assume that most people
22 would have a CD-Rom that was exactly was submitted.

1 DR. GARVIN: So I guess what Wayne is saying is
2 that we would understand and be tolerant of slight differences
3 based on the hurried nature of a final submission character that
4 we know and love in the community and would be willing to be
5 tolerant of that. But major differences that reflect
6 differences of content is not permitted. Question from the
7 gentleman in yellow.

8 AUDIENCE MEMBER: I think the question may have
9 been targeted as is supplemental material possible in the CD-
10 Rom?

11 MR. FIGUEROA: No, no. That is not allowed. We
12 need to stay within the bounds of what the AO states very
13 precisely. In fact, I'm even nervous about allowing a CD-Rom
14 that contains something that could be totally different from
15 what was first submitted. But, yes, we cannot submit extra
16 material, extra appendices, anything extra that violates the
17 limitations of the Announcement of Opportunity. It would be
18 considered non-compliant.

19 MR. RICHIE: Yes. It's only one copy, so only
20 one person would evaluate it; you don't want that.

21 DR. GARVIN: Right. Wayne just pointed out that
22 there's only one CD-Rom copy required or suggested strongly and

1 as such it will be difficult to evaluate that by more than one
2 person without lots of sharing. Okay? Other questions? Points
3 of clarification? Yes, sir.

4 AUDIENCE MEMBER: I wanted to ask about the
5 launch vehicle services. You mentioned that price of the launch
6 vehicle services includes RHUs, so is it true that it includes
7 RHUs that you don't have to include any more extra costs for the
8 launch vehicle?

9 DR. GARVIN: Okay. The question is in the launch
10 vehicles and the launch services there is the question from the
11 floor that this gentleman understood that that includes the cost
12 of RHUs and is that indeed the case or not is the point? Steve?

13 MR. MATOUSEK: For the launch approval costs,
14 there will be posted in the question and answers from this
15 meeting there will be a simple table that will give what costs
16 need to be included, given what your mission includes in the
17 RHUs. Because some of those costs are not included in the
18 launch vehicle.

19 DR. GARVIN: So you can't assume RHU costs are
20 accommodated in the launch vehicle services. Darrell?

21 MR. FOSTER: Point of clarification.

22 DR. GARVIN: Point of clarification by our Launch

1 Vehicle Services providers.

2 MR. FOSTER: The cost of the actual RHU
3 themselves is not in our number, okay. I just want to make sure
4 --

5 DR. GARVIN: Right. The point is that you have
6 to pay for the RHUs yourself. They're not part of the launch
7 vehicle provision.

8 MR. FOSTER: Right.

9 DR. GARVIN: Other comments and questions, points
10 of clarification? Yes, gentleman there, I can't see you in the
11 dark but, yes, please.

12 AUDIENCE MEMBER: There is a -- you've tried to
13 identify that you're accepting or steering towards very low
14 risk, at least away from high risk. But can you provide any
15 examples of what constitutes low risk in terms of test
16 requirements or mission procurement requirements or redundancy
17 or other traditional methods of use?

18 DR. GARVIN: The question is from the floor is
19 the sentiment that the gentleman has that we are steering toward
20 low risk as the posture for selection, and the gentleman is
21 requesting some example of specifics with respect to the risk
22 posture that would be desired, I should add, for successful

1 missions that are proposed to this offering. Wayne, do you want
2 to comment?

3 MR. RICHIE: Yes. I want to answer. You've got
4 an AO, you've got an appendices, Appendix B. We're going to
5 tell you what all we're looking at, and I don't even have the
6 evaluators, so I don't know what all is in their minds either
7 when they go to look at it. But we have iteratively said here
8 today we are looking for science proposals that are -- may be
9 dual, medium and low risk are okay, high risk is not okay. So we
10 are not emphasizing low risk. I would hope you would try to
11 convince us you've got a low risk. Medium risk, as many people
12 in the audience know, are selectable, have been selected and may
13 get selected again this time. What you don't want is a high
14 risk. Not on my watch has Ed Weiler and selection officials
15 selected anything we told them was high risk.

16 DR. GARVIN: Okay. Thanks, Wayne. Yes?

17 AUDIENCE MEMBER: Is it available for the -- with
18 the Star 37 as opposed to only the 7925, which is currently all
19 that's listed?

20 DR. GARVIN: The question from the audience is,
21 is the 7926 configuration available in contrast to the 7925 that
22 is listed in the offerings of the services?

1 MR. FOSTER: I'll have to get back to you on that
2 one. I think there's some question as to whether that
3 configuration will be available. If you need -- well, I don't
4 want to ask why you're asking but if it's a cost issue, it's
5 actually probably a little bit more expensive for the 7926,
6 believe it or not. But I need to get back to you on the
7 availability -- our certain of the availability, so let me take
8 that back.

9 DR. GARVIN: Okay. Other questions? Did you have
10 a question? Okay. I saw your hand up, whatever. Okay. Well,
11 Ramon is coming up here, and I guess there's no further
12 questions from the floor. Ramon.

13 DR. DePAULA: I just want to wrap up with some
14 important points here. First of all, I want to acknowledge the
15 support of the NASA Peer Review Service, Angie Adams and Susan
16 Keddie. They are going to be dealing with, they're going to be
17 collecting all your proposals, and they have prepared the
18 announcements, and they actually are also going to be the people
19 that you're going to contact for any help. So, Susan and Angie,
20 if you guys can just -- girls, can you just stand up, please, or
21 wave your hands?

22 DR. KEDDIE: Angie actually is not here.

1 DR. DePAULA: Oh, she's not here. Okay.

2 DR. KEDDIE: Proposals@nasaprs.com is a better e-
3 mail address, although that one will also work.

4 DR. GARVIN: Did everyone hear that? It's
5 proposals at, instead of r dash help.

6 DR. DePAULA: Okay. So proposals, I'm sorry.
7 All right. So proposals@nasaprs.com. So this is if you have
8 any mechanics issue. Okay. All the material discussed here
9 today, all the questions and so on will be posted in the pre-
10 proposal conference material posted at the web site, and so any
11 questions, all the questions there will be transcribed with
12 proper answers and so on. Hopefully within a week or so, maybe
13 two weeks at the latest. One week? Okay.

14 All right. From now on there will be a blackout
15 for questions to anyone. I believe the only point of contact
16 from this point on is Jim Garvin, and so if there are any --
17 some really burning questions that you have, Jim Garvin will be
18 the person for you to contact.

19 If there are no further questions or anything,
20 then I would like to thank you all for attending, participating.

21 We appreciate all the questions that you all have asked. And,
22 again, please look at the web site on the top. All the changes,

1 any burning questions, anything will be posted on the web site
2 in the top, and then if you need any questions again or if you
3 have any issues regarding mechanical submission of your
4 proposal, please contact the NASA Peer Review Service, either
5 Angie Adams or Susan Keddie or to the web site or to their e-
6 mail.

7 Thank you very much, and I wish you all success
8 in your proposal.

9 (Whereupon, at 3:36 p.m., Pre-Proposal Conference
10 was concluded.)

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