

MBARI MARS CABLE PROJECT EIS/EIR
PUBLIC SCOPING MEETING
TRANSCRIPT OF PROCEEDINGS
Santa Cruz, California
June 9, 2004

Taken on behalf of the Monterey Bay Aquarium
Research Institute at 8272 Moss Landing Road, Moss Landing,
California, before Melinda Nunley, CCR #9332, a Notary
Public within and for the County of Monterey, State of
California.

MBARI MARS Cable Project EIS/EIR Public Scoping Meeting, 6/9/04

1 PROJECT SPEAKERS

2 Vicki Hill, MBNMS

3 Marcia McNutt, MBARI

4 Keith Raybould, MBARI

5 Also Present:

6 Deirdre Hall, MBNMS

7 Michelle Brown, Project Manager, CSLC

8 Stephen L. Jenkins, Assistant Chief, Environmental Planning
& Management Division, CSLC

9 Nancy Quesada, Lease Negotiator, Land Management Division,
10 CSLC

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1 Moss Landing, California, Wednesday, June 9, 2004

2 4:12 p.m.

3

4 MS. HILL: Okay. I think we'll get started. If
5 everybody will take their seat, that would be great. I
6 want to welcome everyone here today to the scoping meeting
7 for the proposed Monterey Bay Aquarium Research Institute's
8 Cable Observatory Project. That is such a long name,
9 anyway, the MBARI cable. My name is Vicki Hill and I am
10 the environmental planning consultant under contract to the
11 Monterey Bay National Marine Sanctuary responsible for
12 overseeing the NEPA environmental analysis portion of the
13 project. We're holding a joint meeting today between the
14 state lands commission and the sanctuary since we've
15 decided to prepare a joint document assessing the
16 environmental impacts of the proposed project.

17 I want to take care of a couple of housekeeping
18 items before we launch into the presentation. I want to
19 make sure that everybody signed in on the sign-in sheet and
20 if you haven't done that, please do so before you leave,
21 and also check the column if you'd like to be on the
22 mailing list for the project notices for when the draft EIS
23 is available. Also there are speaker slips for that
24 portion of the meeting. Please fill those out if you're
25 planning on speaking about the project, not just asking

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1 questions but providing comments, and then also there are
2 other handouts, environmental issues list, as well as
3 application materials that they've filed with the state
4 lands commission and the sanctuary. Did I cover
5 everything? Okay. And please feel free to ask questions
6 on the project description when we get to that. That's one
7 of the purposes of today's meeting is to describe this
8 proposed project for you, and then the main purpose of the
9 meeting is to get the public input on the issues that you
10 think are important to the environmental analysis, and not
11 only the issues but also the alternatives that may be
12 feasible for this particular project. So our main purpose
13 is to hear from you, the members of the public that are
14 here today. And by the way, how many members of the public
15 are here that aren't consultants who may be bidding on the
16 project? You'll have the floor all to yourself.

17 Just real quickly, I'm going to give some
18 background information on the CEQA and NEPA process, and
19 then the applicant is here. MBARI is here to present
20 information on the project description. After that I'll
21 give a brief summary of the environmental issues and then
22 we'll open up the floor for public comments. As you may
23 have noted on the agenda, at the end of the public scoping
24 meeting, we'll have a separate session for the potential
25 bidders for the EIS/EIR, and at that time we can answer

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1 more detailed questions on the proposal, you know.

2 With that I'd like to introduce the other
3 agency -- sorry, Steve -- agency staff who are involved in
4 this project, and I'll start with Dierdre Hall from the
5 sanctuary.

6 MS. HALL: Yeah, I'm Dierdre with the sanctuary
7 and our role in this process is that we'll be looking at
8 the project, and one of the mandates of the sanctuary is to
9 facilitate research, so we will be looking at it from that
10 perspective as well as ensuring that there aren't any
11 environmental impacts of putting the cable in place, so
12 we'll be taking comments on that. Thanks.

13 MS. HILL: And then we have Stephen Jenkins from
14 the state lands commission.

15 MR. JENKINS: Hi, good afternoon. I'm the
16 Assistant chief of the environmental planning division.
17 Our role on this will be to serve as the CEQA lead agency
18 and also to enter into a contract with a consultant to
19 prepare the joint EIR/EIS, and with me today I have Michele
20 Brown who will be the project manager for the state lands
21 commission and Nancy Quesada. I'll give you the spelling
22 of her last name at the end, but she is the land management
23 negotiator for the lease that MBARI will have to have from
24 the state lands commission to put the cable out across the
25 state lands to the 3-mile limit. Thank you, Vicki.

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1 MS. HILL: Okay. Just a little background
2 information on the CEQA and NEPA process. This is a little
3 bit different since we're doing a joint document. The
4 National Environmental Policy Act requires environmental
5 assessment of projects under federal jurisdiction, and for
6 this project they're requiring an Environmental Impact
7 Statement, so that's the EIS component of the project.
8 Under the California Environmental Quality Act, which is
9 the state act that requires environmental impact analysis
10 for projects, an EIR is required. The requirements of both
11 an EIS and EIR are very similar and that's why we have
12 decided to prepare a joint document. Obviously the
13 offshore portion of the project is under the sanctuary's
14 jurisdiction and the state lands commission has
15 jurisdiction over both the onshore and offshore portion.
16 The scoping process was initiated through the
17 issuance of the Notice of Preparation and the Notice of
18 Intent. Both of those documents were published on June
19 21st and June 23rd, so the end of the 30-day -- I mean May
20 21st and May 23rd -- I am really jumping -- and the end of
21 the 30-day scoping period is June 24th. You might want to
22 mark that down. During that period of time, we're taking
23 written comments and the oral comments today, and on the
24 handouts on the table I believe the addresses for
25 submission of written comments are listed, and you don't

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1 need to send comments to both the state lands commission
2 and the sanctuary. One or the other will be fine. We'll
3 take those comments and put them together in a summary and
4 then give those to the environmental consultant who will be
5 preparing the EIS/EIR to use in scoping out the EIS/EIR.
6 The document will evaluate all onshore and offshore
7 components of the project including preconstruction
8 activities, construction and installation, operations,
9 repair and maintenance, and eventually abandonment and
10 removal of the cable. The document will include an
11 executive summary, a project description, environmental
12 setting meeting existing conditions, environmental impacts
13 and mitigation measures for any impacts that are identified
14 as being significant, cumulative effects, alternatives, and
15 also the documents will identify an environmentally
16 superior alternative. Please note that the EIS is an
17 information document, not a decision document, so there
18 will not be a recommendation in the document although it
19 will identify an environmentally superior alternative.

20 This is just the first step in the EIR/EIS
21 process and there will be other opportunities for the
22 public to get involved and make comments once the draft
23 EIS/EIR is prepared and published. We're hoping that a
24 public draft will be published around the first of the year
25 in 2005, January 2005. From there, there will be a 45-day

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1 public comment period, and following that, a final EIS/EIR
2 will be prepared in which all of the comments will be
3 responded to in a written format. The agencies will take
4 separate actions on the project after the final EIS/EIR is
5 published, and we're hoping that that will occur by next
6 summer or June of 2005. Don't hold us to that date but
7 that's what we're hoping for right now. Okay. Any
8 questions about that, the background, CEQA/NEPA process?
9 No?

10 Okay. With that I'd like to turn it over to
11 Marcia and Keith from MBARI to talk about project
12 description.

13 MS. McNUTT: Okay. Thanks, Vicki, and thank you,
14 everyone, for coming today. I'm just going to give a brief
15 presentation for those of you who are not familiar with
16 this project and hopefully I can provide some background
17 information that will get us all on the same page.

18 Our shorthand for this, rather than calling it the
19 MBARI Fiberoptic Cable Submarine Project or whatever, we
20 call it MARS, Monterey Accelerated Research System, so from
21 now on we can just refer to it as the MARS project which I
22 think is less of a mouthful. What MARS is is a fiberoptic
23 cable that's going to provide power, about 10 kilowatts
24 power, and high band width communications, about 100
25 megabits per second, to a deep sea observatory that we're

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1 planning to put out here at the cable end on Smooth Ridge
2 in Monterey Bay.

3 This project, although it's called an MBARI
4 project, in actual fact this project has been funded by the
5 National Science Foundation through a grant to MBARI to
6 install this, and so because this is public funding for
7 this, this will be a publicly available project for
8 researchers funded by the National Science Foundation,
9 funded by NOAA, funded by Office of Naval Research, funded
10 by state agencies. It's open to anyone who wants to come
11 and use the capabilities of this observatory for doing
12 science in the deep sea.

13 We anticipate that there will be a 25-year
14 lifetime to the observatory. This could be a conservative
15 estimate, but we think that reasonably, based on the
16 experiences from the telecommunications industry, that this
17 observatory should continue to provide data for 25 years or
18 more.

19 The primary purpose of it is to further ocean
20 research requiring long-term records particularly from
21 equipment that requires either large amounts of power or
22 real time communications to shore, neither of which can be
23 supplied by other sources of power or communications. And
24 our further purpose of this is to enhance public education
25 and understanding of ocean issues.

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1 So let me begin just with the challenges of ocean
2 observing. We are quite accustomed to being able to do
3 scientific -- make observations and do scientific
4 experiments on land, but this is far more difficult in the
5 ocean. For example, to begin with, in the ocean there's no
6 electricity grid. There's no equivalent of the wall socket
7 that we can just plug our equipment into. Solar panels are
8 fine for something floating at the surface, but once you
9 get below the very narrow sunlit zone at the surface, solar
10 panels don't work anymore, so our only opportunity to power
11 instruments in the deep sea is to use batteries, but it's
12 difficult and sometimes impossible to swap the batteries
13 when they die because of the difficulty of getting down to
14 instruments in the deep sea and installing new batteries
15 given in many locations in the ocean very limited weather
16 windows for ships to visit them and the need for very
17 sophisticated underwater vehicles to change out battery
18 packs.

19 In addition, there's of course no telephone grid
20 in the deep sea. We can't just plug in a modem. Wireless
21 networks which we're very accustomed to using on land for
22 internet don't work under sea because the RF only
23 propagates over a very, very short distance, and for many
24 scientific problems we need the data in real time. If we
25 don't get it back in real time, it's of very limited use.

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1 So although many instruments subsea are capable of doing
2 internal logging of the information, to get that data 3
3 months later, 4 months later, 6 months later, it's -- very
4 often for some decision we might need to make, that's too
5 late. So what this all really boils down to is the need
6 for power in the deep sea and the need for communications
7 and that's what MARS is intended to provide.

8 Now, this just shows a vision for the future. The
9 limiting factors of power and communications in the deep
10 sea are so overwhelming that it's led some very visionary
11 oceanographers to propose an entire network of fiberoptic
12 cables on the deep sea up here off the coast of Washington
13 and Oregon that would instrument 2 of the tectonic plates
14 the Gorda Plate, the Juan de Fuca Plate, and also, through
15 a Canadian extension, the Explorer Plate. These are
16 tectonic plates with active volcanic mid-ocean ridges,
17 active transpond faults along the edges of the plates, and
18 the idea would be to study at the plate scale processes
19 that are going on on the sea floor.

20 Now, this project has gained enough interest and
21 momentum from the scientific community that the Canadian
22 government has already pledged \$40 million to install the
23 northern portion of this and there are plans pending in the
24 National Science Foundation to put up 120 million U.S.
25 dollars for the southern portion of this installation, so a

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1 total \$160 million that the scientific community wants to
2 put into using fiberoptic cables to put observatories on
3 the deep sea floor. This plan has been endorsed by 5
4 separate scientific reviews in the past 6 years, so it's on
5 extremely firm ground in terms of very, very high priority
6 that the scientific community is placing on fiberoptic
7 observatories to monitor processes and events in the deep
8 sea.

9 Now, as you can imagine, this is a major
10 undertaking with big bucks associated with it, and
11 therefore, all of these reviews that have gone on have --
12 oh, I should say before I go on to that that the idea of
13 putting cables in the ocean is not something that's new.
14 Cables in fact are very common in the deep sea. This just
15 shows the area from San Francisco Bay up to the straits of
16 Juan de Fuca showing cables that have been installed for
17 telecommunications crisscrossing the ocean here. By the
18 year 1997 it was estimated that more than 300,000
19 kilometers of subsea cable had been installed, and we
20 anticipate that the amount that's been put in today is
21 nearly double that amount, so more than half a million
22 kilometers of submarine cable. The communications capacity
23 that's carried by these cables is between 10 and 100
24 gigabits, so that's 1,000 times of what's available from
25 satellites, so it very much reduces the cost and increases

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1 the amount of communication that is available by having
2 these cables under water.

3 But what's new with this scientific purpose of
4 installing cables is to deliver the communications and
5 power to undersea scientific nodes. These cables, the only
6 purpose of them is to get communications from one continent
7 to another continent or to an island. It is not to parse
8 out that communications to undersea nodes. The power that
9 goes through these cables is to reinforce the signal so it
10 doesn't die on the way. It is not to power undersea
11 instruments, and so what's new in what we're proposing is
12 to deliver that communications and power in order to study
13 problems that are displayed under the sea.

14 So now before someone's going to spend nearly 200
15 million on something that's never been done before, all of
16 these scientific studies have underscored the need for
17 a test bed. You've got to start with something that's
18 affordable and that's manageable and use that to build on
19 before you go out and spend \$200 million.

20 So we need a proving -- and there's a number of
21 reasons why we need a test bed. One is to provide a
22 proving ground for new instrumentation. The instruments
23 that will go on an observatory like this are probably
24 unlike most of the instruments we have today. For example,
25 because we will no longer be power limited, the kinds of

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1 instruments that will go on cable observatories will be far
2 more capable than anything we put down in the ocean before.
3 Secondly, because we can get real time information back, in
4 some sense the instruments can be cheaper and less
5 sophisticated because they won't have to have all of the
6 intelligence in the instrument to make decisions when
7 events happen. Because they're connected to shore in real
8 time, there's a human brain that can say "oh, this
9 happened, and therefore, the instrument should do that."
10 We don't have to count on the instrument being able to make
11 those decisions absent any human intervention.

12 Another reason for needing a test bed is to
13 provide a learning experience for researchers. When
14 researchers can be connected to these instruments on the
15 deep sea floor in real time, they're going to be able to do
16 science in entirely new ways that we've never been able to
17 do before. And before we get all of this in, this is going
18 to have a 25- or 30-year lifetime. We don't want to waste
19 5 years while the scientists learn how to use it. We want
20 to get something in the ocean quickly so that they can get
21 that learning experience. By the time this is up and
22 running, they're ready to use the full capability, the full
23 baud rate, the full power capabilities of this kind of
24 installation.

25 A third reason for needing a test bed is to scope

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1 out operations management and maintenance costs. This MARS
2 observatory we're talking about putting in Monterey Bay is
3 50 kilometers of cable and it's one node with 8 science
4 ports on it. This is going to be 3,000 kilometers of cable
5 and it's going to have many nodes on it. We really need to
6 find out sooner rather than later what the costs are going
7 to be. Now, the experience from the telecommunications
8 companies is that this is a great way to do communications
9 because these networks are incredibly reliable. The cables
10 undersea have a very, very low failure rate. We want to
11 make sure that that's going to also be the case once we're
12 starting to use the power and communications for
13 instruments on the sea floor. Are we going to experience
14 similar kinds of reliability? Will we have reasonable
15 operations, management and maintenance costs?

16 There is certain aspects of the observatory
17 technology that we'd like to test out before we put this
18 in, and finally we'd like to experiment with effective
19 methods of bringing deep sea science to the public. This
20 is going to be a great opportunity for classrooms of school
21 children, for aquaria, for television, other ways to take
22 the deep sea floor and bring it into the classroom, bring
23 it into the living room, bring it into the museum, and MARS
24 will give us an opportunity to figure out how to do that,
25 so again we've got some good models to apply once this

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1 larger observatory is installed.

2 So given the very compelling arguments for
3 starting with a test bed, why has it been decided to put
4 that in Monterey? This could happen anywhere in the United
5 States theoretically or perhaps even overseas, but the
6 reason for wanting to put this in Monterey Bay is, first of
7 all, there is no other warm water U.S. site that offers
8 faster access to deep water. And what I mean by warm water
9 port is that it's someplace that we don't have -- I mean
10 there are places up in Alaska that actually get to deep sea
11 as fast as we can in Monterey, but let's face it. When
12 it's covered with ice, you know, 8 months of the year,
13 you're obviously not going to put the test bed in there.

14 The second reason for choosing Monterey as the
15 site for the test bed is year-round weather window for
16 operations. Although this larger network observatory is
17 going to go in off the Washington/Oregon coast, the problem
18 with that larger observatory is that there's only 3 or 4
19 months of the year that ships with remotely operated
20 vehicles can put instruments down on that, so if you're
21 going to be in a test and debug cycle where you might want
22 to go out on Tuesday and put something down and go back on
23 Thursday or go back 2 months from now and fix something
24 that's not working right, you're going to need to be
25 someplace that has a year-round weather window.

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1 The third reason is that this is the only region
2 that is accessible daily by scientific ROVs, and I think
3 that probably applies in the entire world. Because we have
4 2 scientific ROVs in Moss Landing, one of which is operated
5 as a day boat, that if there's any need to go out and swap
6 instruments or check on a failure, we can be there
7 immediately.

8 A fourth reason which should not be discounted is
9 the fact that Monterey Bay is home to a very ocean aware
10 audience. If there's any audience that's going to be
11 a great test audience for the kinds of outreach methods,
12 this is a great place to come because of the many members
13 of the public around Monterey Bay who really care about the
14 oceans, are really interested, scientifically savvy, et
15 cetera.

16 And then down here I've got also MBARI's
17 reputation for technological innovation. In the reviews
18 that came back on deciding on a test bed for this, what
19 stood out over and over again was MBARI's reputation for
20 pulling off technologically difficult maneuvers under
21 water. The scientific peer review community felt if
22 there's any group that could pull this off, it would be
23 MBARI.

24 And then of course there's no point in having
25 a test bed someplace where there's no scientific signal.

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1 If we need to test out instruments, there's got to be
2 something happening so the instruments can respond to it,
3 and there's strong signals of great scientific interest in
4 Monterey Bay such as climate change, the cycle of food
5 transport from the surface to the deep sea, lots of sound
6 in the sea because of all the marine mammals, and of course
7 earthquakes and landslides because we are on an active
8 plate boundary with a very active submarine canyon.

9 Just as an example, here's a distribution of
10 atmospheric weather stations in the United States just to
11 show you how very well monitored the land side of U.S.
12 territorial waters are. We know a lot about climate change
13 on land thanks to this dense network of continuously
14 operating weather stations, but by comparison we know
15 little about climate change in the ocean and nothing about
16 climate change in the deep sea because of the lack of this
17 kind of network, and in fact I've only showed you stations
18 that have been operating for more than 100 years. Imagine
19 if we had the equivalent of deep sea weather stations that
20 had been monitoring the changes in the deep sea over a
21 100-year time period, what we could do with that record,
22 how much further advanced we would be in understanding the
23 communication between the atmosphere and the ocean and how
24 that relates to changes in climate.

25 Now, MBARI has had a time series for ocean weather

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1 and climate that has been operating for 15 years now at the
2 surface of the ocean. We've been making measurements from
3 the surface to about 150 meters on changes in temperature
4 and changes in chlorophyll through our moorings and
5 shipboard time series over this 15-year period. What you
6 can see are the annual cycles between summer and winter.
7 You also see the large 1998 El Nio coming in here. You
8 also see a tendency for the decade of the 90's to be warmer
9 than the time period after the El Nio, and you also see
10 the anticorrelation between temperature and chlorophyll.
11 The ocean is much more productive here when it's cold.
12 It's less productive when it's warm. In particular you'll
13 notice that during the very warm ocean temperatures of the
14 1998 El Nio how the surface productivity as measured by
15 chlorophyll in the ocean plummeted. Now, a question we
16 have from this is how did that low productivity of plants
17 in the upper ocean affect the food supply to the ground
18 fish? Well, because this time series only shows a record
19 down to 150 meters, we don't know at a kilometer depth what
20 the effect was of that El Nio on the food supply to the
21 deep sea. These are the kind of questions that we can
22 begin to answer once we start to instrument the deep sea.

23 Here's a record from Toby Garfield at San
24 Francisco State which is a record showing time and minutes
25 from zero to 40 minutes and a frequency spectrum of sound

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1 in the sea that was taken by a -- a hydrophone that was
2 actually out on a cable. What you can see here are whale
3 calls coming in here at the lower frequencies. You see a
4 passing ship mostly up here at the higher frequencies. You
5 can see an earthquake, the T phases rumbling in. Now, this
6 is an example of a sound record from a hydrophone on an
7 early generation cabled observatory. This early generation
8 one was installed by the military for classified use.
9 What's the difference with this MARS cabled observatory, we
10 learned from the military that, yes, it is possible to do
11 observations from cables, but instead of our data being
12 classified, it will all go out real time on the Internet,
13 so anyone who is interested in understanding what kind of
14 sound is happening in the ocean will be able to go to a
15 website and see the data coming in in real time.

16 I also mentioned how education and outreach is an
17 important component of MARS and of the larger observatory
18 NEPTUNE which will go in further north. We have already
19 started a pilot project called EARTH, Education And
20 Research Testing Hypotheses, and we've had workshops now
21 which provide teachers with a means for integrating real
22 time data with existing educational standards and tested
23 curriculum in an interactive and engaging way, and this is
24 just a picture from one of the projects that was held at
25 MBARI. This project is using near real time data or will

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1 use near real time data from the MARS observatory. Right
2 now they're using near real time data from our buoys to
3 design and test outreach with the Internet as an interface
4 to scientists, to teachers, to students and to the public.
5 This project is in collaboration with the Monterey Bay
6 Aquarium.

7 Okay. So the next question is while we have
8 identified -- while the peer review community has said that
9 Monterey Bay is the right place to put in this MARS test
10 bed, why did we choose Smooth Ridge? And just to orient
11 you who are not familiar with the geography here, you are
12 here, right here at the mouth of the Monterey Bay --
13 Monterey Canyon. Here's Monterey. Here's Santa Cruz. The
14 canyon moves down here, and this shelf area here -- I'm
15 sorry. My battery's dying -- is Smooth Ridge, and it turns
16 out that the neck of Smooth Ridge, which is this narrow
17 area here, is the only viable route to deep water. If we
18 go south of the canyon here, we can't get out to deep water
19 without crossing canyons. Oh, thank you very much, Mandy.
20 Okay. So this neck is an important route to get into deep
21 sea.

22 The next reason why we want to put it on Smooth
23 Ridge is it allows a seismometer to be connected from the
24 far side of the San Gregorio Fault to the seismic network.
25 This blue line right here is the San Gregorio Fault. It is

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1 the western-most fault strand in the San Andreas Fault
2 system. Currently the only seismometers that are reporting
3 data in real time to the Northern California Seismic
4 Network are all on land on this side of the fault. By
5 coming down Smooth Ridge and terminating the observatory
6 right here, we can put a seismometer to the west of the
7 fault, and that -- I'll show you what happens when you can
8 do that.

9 And finally, this location here allows easy access
10 for extension cables. You can sort of think of them as
11 like your Internet extension cables or your extension
12 cable -- or extension cords that you plug into a phone
13 socket, would allow us to put instruments to seeps, and
14 this just shows the location of seep sites that harbor
15 unusual chemosynthetic biological communities. It allows
16 us to reach the dynamically active Monterey Canyon and the
17 potential for core holes that would be installed by the
18 Integrated Ocean Drilling Program to look at processes
19 going on underneath the sediment surface.

20 Now, here's just an amplification on the need for
21 the seismometer. This shows all the seismometers that are
22 on land. You can see a lot of them. Here's the site of
23 where we would like to put the seismometer connected to the
24 MARS cable. As you can see, it's the only one that would
25 be west of all of the strands of the San Andreas Fault. By

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1 putting a seismometer out there, it improves our ability to
2 forecast seismic hazards in the Monterey Bay area. By
3 reducing the size of an earthquake that can be detected,
4 our magnitude threshold is reduced and we get far better
5 locations for the earthquakes. Just to show that, here are
6 the other strands, the Hayward Fault and the Calaveras that
7 go up through East Bay, and you can see in this area the
8 San Andreas is very well defined by the earthquakes lying
9 on the fault. Once we get offshore, it's kind of a sloppy
10 distribution of earthquakes with respect to the San
11 Gregorio Fault. We don't think this is real. This is just
12 because our earthquake locations are so lousy out there,
13 the earthquakes aren't falling on the faults and so we need
14 to really sharpen up our focus of the seismicity out here.
15 You can see lots of earthquakes that happened sort of north
16 of the canyon, very few that happened to the south. We
17 think this is a sort of long-term aftershock effect of the
18 Loma Prieta earthquake that brought this part of the fault
19 closer to failure and this part of the fault further from
20 failure, but we would like to monitor how that goes forward
21 in time so that we can understand better seismic hazards
22 for both the Monterey Bay area and the Santa Cruz area.

23 We -- we know from experience that giant
24 landslides -- some have been associated with large waves --
25 can occur in the Monterey Canyon which is shown in 3-D

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1 perspective here. What we think is there are very often
2 events that are like large landslides that send sand,
3 gravel and debris moving down the canyon in very large
4 volumes. By putting in the MARS observatory and being able
5 to instrument the canyon will allow us to understand the
6 frequency of such events, the risk they pose, and the
7 effect they have on deep sea communities. This is just a
8 picture of some MBARI equipment that a landslide moved a
9 1,000-kilogram instrument node hundreds of meters down the
10 canyon and it happened like that. So these are the kinds
11 of events that we would like to study. We know very little
12 about them.

13 Now, Monterey Bay here is part of the Great
14 Salinas Aquifer, but little is known about the quantity and
15 the history of fresh water seeps into the ocean. There are
16 some interesting stories that the fishermen will tell you
17 about fishermen being able to take bottles, and if they put
18 them over the side in the right place and pop the corks,
19 they can pull them up with fresh water in them. Well, we
20 certainly know that fresh water does seep from the Salinas
21 River into the ocean, but we have actually very little
22 study of the time history on that and how effects on land
23 affect that delivery of fresh water into the deep sea, but
24 the MARS observatory will allow us to better understand the
25 hydrological connection between land and sea by

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1 instrumenting some core holes which the Integrated Ocean
2 Drilling Program may put into the Smooth Ridge. By putting
3 the MARS node there, we'll be able to monitor the hydrology
4 of the submarine environment and understand better that
5 connection between land and sea.

6 Now, this just shows you our proposed route for
7 the cable coming here out of Moss Landing, running north of
8 Soquel Canyon, going down to snake onto Smooth Ridge and
9 then hugging the eastern side of Smooth Ridge to where the
10 node would be placed in about 900 meters water depth. Our
11 plan would be to bury the cable to about a meter depth
12 everywhere where feasible, and that means that all of this
13 area of the cable would be buried. There may be some areas
14 in here where there are some rocky outcrops that may be
15 problematic for burying it, but then it would be buried
16 again all the way until the node sits on the bottom here.

17 And I'll invite Keith Raybould who is the project
18 manager for MARS up to tell you a little bit more details
19 about both this end of the cable and that end of the
20 cable.

21 MR. RAYBOULD: Okay. So what I'm going to be
22 talking about will be the offshore cable route that Marcia
23 has mentioned, proposed landing locations, shore facility
24 of the cable, very briefly our installation plans and then
25 the alternative routes that we've considered.

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1 So this is the route Marcia's described, this
2 route. One thing Vicki asked me to mention was that we
3 have done a lot of work on surveys along the route. Last
4 year we did a full marine survey with a side bottom scan
5 and a subbottom profiling. We also took cores along here
6 for a full biological survey and we've had those samples
7 analyzed for infaunal and epifaunal samples. We did a full
8 video survey of the entire route and we did a burial
9 assessment for the cable, and that's the basis of the
10 information that we've asked the state lands commission for
11 the application.

12 So what I'm going to talk about now is the area
13 here where the cable landing is in Moss Landing. There are
14 2 proposed routes. The preferred route is north here. For
15 those who don't know the area around here, we are just
16 about down this region. This is Highway 1 that runs this
17 side of the harbor, this is the harbor entrance, and this
18 is a sand dune area on the north of the harbor and on the
19 south. The 2 routes that we were considering for the
20 landing is the northern one here and the southern landing
21 down this area here.

22 This is our preferred route, the northern site.
23 There is a pipeline that is already installed. It was
24 installed back in the 1930's by Duke so it's been in place
25 now for 60 or 70 years. The pipeline runs to about 600

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1 feet offshore and in about 70 feet of water. It then runs
2 to the shore. It's completely buried along here. You can
3 see a little bit of the pipe here near the harbor entrance.
4 It's buried going into the harbor, then it takes a sharp
5 turn here right at the shore as it comes out of the harbor
6 and that's what this is a photograph of here. This is the
7 Highway 1 bridge which is up here. The pipeline comes out
8 of the water and takes a sharp turn and it runs actually
9 parallel to the harbor for something like 100 yards and
10 then takes a turn and goes through a tunnel underneath
11 Highway 1 into the Duke facility on this side. So we would
12 be installing the cable out here in about 70 feet of water
13 about 600 feet offshore. It would be inside this pipeline
14 all the way through to the shore until it gets to this
15 shore landing facility here, and in a short time I'll
16 discuss what we're going to do in the shore facility. So I
17 just want to stress again this is an installed, main
18 pipeline. We don't want to disturb it. It's been there 60
19 or 70 years so far already.

20 The alternative landing is here right near Moss
21 Landing's pier. There was actually an old pier that was
22 destroyed a couple winters ago and there's plans to
23 construct another pier on this same site. The cable, if we
24 use this alternative landing, will run along the same route
25 to the end of this pipe. It will come past here in about

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1 40 or 50 feet of water. It will come to the end of the new
2 pier that's not constructed yet. It will then come up the
3 pier and then go through the pier across the shore landing,
4 so again there would be no drilling or anything necessary
5 to get across this critical shore landing at this place.
6 And then the pier would end just close to where MBARI
7 buildings are right here where we would have a shore
8 facility. Complications with the southern route, we would
9 have to come across the mouth of the canyon. The mouth of
10 the canyon runs right into the harbor entrance. It's very
11 active. We know the soil sediments have been massively
12 transported down the coast seasonally and the height of the
13 sediment varies by 9, 10 feet between the seasons, thus a
14 very active place to have a cable survive for extended
15 times. So for that reason and the reason that this
16 pipeline is already in place, this is our preferred landing
17 site.

18 So just to show you, the area where the pipeline
19 runs down the -- down the landing here, it takes a sharp
20 left-hand turn here into this facility on the -- just on
21 the west side of the Highway 1. It looks like this, so
22 this is the pipe that's come along the -- along the shore
23 and it takes this sharp turn and then it goes through a
24 tunnel to the other side of the Highway 1 to the Duke
25 facility. There's an existing concrete pad and this

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1 contains -- on this area here, and this is where the filter
2 system is for the Duke Energy for their water intakes. We
3 would run our cable from where it came out just near that
4 first sharp turn. We would probably run it either inside
5 this pipeline or in a conduit along the side of this pipe.
6 It would then go across to essentially a shore facility
7 which is going to be either a 20-foot container very
8 similar to what's here already or a modular building of the
9 same size, so it's a modular construction. It would sit on
10 an existing concrete pad. We would then connect this shore
11 facility to shore power and fiberoptics to get through to
12 the Internet. So the extent of the shore facility is very
13 minimal. This is where the Highway 1 runs. It's very
14 unusual -- well, we'd been passing this area for years and
15 never even knew this area existed, so actually it would
16 look very similar to a container already down in that
17 region.

18 So for the installation of the cable and the
19 landing, we would be using Alcatel which is a reputable
20 cable installer. Their vessel on the west coast is the Ile
21 De Re. The cable is actually -- we've purchased the cable.
22 It's on the ship. They would install the cable and the
23 main node. The node -- I showed this real briefly -- is
24 actually in 2 sections. There's this part here which is
25 called the trawl resistant mount and then this part here

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1 which is the main science node which is removable. This is
2 the cable that comes from the shore from the shore landing.
3 It's terminated in this large frame. This frame, to give
4 you the size of it, it's about 2 tons in weight. It's 50
5 feet by 12 foot, so it's a good size office. It's a steel
6 structure. There's no active electronics in the system.
7 It's been designed with all high reliability industrial
8 telecom practices so it's got a long life. We don't
9 envision ever having to remove this and put it up for
10 repair, and in fact that's part of the main intent of this
11 design to put all the electronics into these 2 pressure
12 housings here. This unit is -- in water it's essentially
13 almost naturally buoyant, so the way this will be installed
14 and retrieved, we can attach this to one of our ROVs that
15 operate daily from Moss Landing. We touch the bottom. It
16 then just drops down inside this mount and then there's 2
17 connectors to take the power and communications between
18 this fiber to the shore and connect it up into the pressure
19 housings. These are the cables then that would go to the
20 science experiments and the science instrumentation that
21 Marcia just talked about.

22 So with installation, the Ile De Re will install
23 this cable, these mounts. The following day we will fly
24 these down with our own ROVs and install the cable system.
25 The cable installation will be varied. This is a cable

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1 plow. This is a unit that's going to be used for -- for
2 burying the cable. It cannot bury the cable right near the
3 node or near the shore landing, so after the main cable and
4 mount is installed, the contractors will take down the ROV
5 and use the ROV to plow in the cable near the node and near
6 the shore landing to the same level of depth as the rest of
7 the -- rest of the rounds. Before we do the final
8 installation of the cable, the ship moves us to a grapnel
9 run to make sure any debris, anchors and such are not in
10 the way of the cable because that could cause problems with
11 the cable long term. After installation there will be a
12 post lay inspection and burial. We'll also be revisiting
13 critical areas of the installation periodically after the
14 installation, so every 5 years we'll go back and use an ROV
15 for 2 or 3 days to inspect critical areas of installation
16 to make sure the cable's buried and make sure there's no
17 problem with the installation.

18 On the shore end operations of the installation,
19 this is the area we mentioned before with the bridge going
20 across Highway 1. This is where the pipeline comes out.
21 This pipeline just here takes a sharp 90-degree bend, so we
22 would pull the marine cable from the ocean side through
23 this cable -- through here, so we would be installing a
24 winch here that is a temporary installation for pulling the
25 cable ashore. It would then be connected to the threshold

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1 cable and be brought down to the shore facility that I
2 showed you earlier.

3 And lastly the alternative routes. One
4 alternative route that we investigated for a while was a
5 route that came to the same location on Smooth Ridge. We
6 really need to get over to Smooth Ridge for the many
7 reasons that Marcia mentioned in terms of the science that
8 we want undertaken in this area. This route, in terms of
9 its feasibility, is very similar to going across the
10 continental shelf. We can bury it to the same depth, to
11 the substrate as we've said many times. To get across this
12 new bridge, we would then have to actually cross the canyon
13 and then take a bend that takes it then around to Smooth
14 Ridge. The canyon walls here are too steep to run a cable
15 straight up. This is the smallest gradient that we could
16 actually bury the cable. The turn here is problematic in
17 terms of ensuring that the cable can be buried.
18 Particularly in deeper water doing turns or sharp turns in
19 plowing is what's led to problems I believe up at the
20 Olympia installation where during a turn they did actually
21 find the cable plow and then the cable to the side of that,
22 so -- and the reason was during the sharp turns, the cable
23 does bury when you go through the turn, but the tension as
24 you're going round does cause the cable to come out in this
25 area, so for that reason we do prefer this route going out

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1 on Smooth Ridge. We want to ensure that the cable is
2 buried throughout as much as possible. We're also
3 concerned about the survivability of the cable going across
4 the canyons. We've had a great deal of difficulty losing
5 equipment. We can't guarantee survival of anything we put
6 into the canyon. And that's all I have.

7 MS. HILL: Keith, do you maybe want to show them
8 what the cable looks like?

9 MR. RAYBOULD: Oh, I brought along a section of
10 cable. This is not the actual cable but it's very similar
11 and you're welcome to take a look at this. The cable we'll
12 be using is armored. It's a single armored cable. The
13 fibers are through the center and sort of housed in a small
14 one millimeter in diameter stainless steel tube and then
15 the conductors around that and various insulation, but this
16 is roughly the size of the fiber that will be buried one
17 meter.

18 MS. HILL: Because I think the conduit gives a --

19 MR. RAYBOULD: The conduit is a 24-inch conduit.

20 MS. HILL: It's much larger.

21 MR. RAYBOULD: So this is the cable that will be
22 installed. It's really less than an inch, just about an
23 inch in diameter.

24 AUDIENCE MEMBER: How big would the node be?

25 MR. RAYBOULD: The node. The node itself, the

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1 part that stays down there, that's about 15 feet by 11
2 feet. The element that's removed is closer to 10 feet by
3 7. And it's something like 6, 6 feet high. Okay.

4 MS. HILL: Okay. Any other questions? Thanks.

5 Okay. If there aren't any other questions on the
6 project description, we'll go on to the next item and that
7 is the opportunity for public comments on the scope of the
8 EIS/EIR.

9 Actually I was supposed to go through the
10 environmental issues, but given the time, I just want to
11 make sure that everyone has the handout that was on the
12 table, and this is the preliminary list of environmental
13 issues that was based on our knowledge of the project and
14 on previous experiences on similar projects. The state
15 lands commission and the sanctuary put our heads together
16 and created this list, and the list is also in the notice
17 of intent that was published in the Federal Register. Like
18 I say, it is preliminary because additional issues may be
19 identified during the scoping process either today or
20 through written comments and we also may receive input from
21 the potential bidders on the EIS/EIR on other issues that
22 they may think are important, so I'm not going to take the
23 time to go through this list unless someone has a specific
24 question that they'd like to ask. Don't all speak at once.

25 Okay. With that, I think we should just -- I'd

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1 like to turn it over to public comments, and is there
2 anyone here who would like to make a comment, a scoping
3 comment? Great. If you could fill out a speaker slip.

4 MS. FOSMARK: Got one.

5 MS. HILL: And bring it up front, and my only
6 instruction is that you identify yourself for the court
7 reporter and then give me your speaker slip and speak
8 slowly and clearly so that we can help out the court
9 reporter. Okay? So Kathy, would you like to go first?

10 MS. FOSMARK: Yes.

11 MS. HILL: Okay. This is Kathy --

12 MS. FOSMARK: I'm Kathy Fosmark from the
13 Fishermen's Association of Moss Landing and I represent
14 about 900 fishing families, and the -- we have some
15 questions and we also have some statements we'd like to
16 make with regard to the cable project. The EIS should
17 identify the socioeconomic impact to fishing in and around
18 the cable and the EIS should identify all economic
19 interests, direct and indirect. There needs to be an
20 evaluation of the recurring impact yearly and forever in
21 these 2 areas.

22 And the question I have is several. What is the
23 market potential -- and this should be answered I think in
24 the EIS -- for revenue drawing benefits from this
25 development of technology? Will the EIS include a thorough

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1 evaluation of the possibility of even consultation fees,
2 long range use, and the potential for future development
3 benefits? The EIS evaluation should identify the
4 possibility of fishing gear snagging, and not only gears
5 from bottom trawling but other gears, and if it becomes a
6 closed area from -- for fishing and entails a no fishing
7 zone, it needs to be viewed as a marine protected area and
8 the EIS should explore if fishermen will get credit for it,
9 and scientists need to accept the NPS credit. If it does
10 not qualify for NPA, there should not be a cable there.

11 Thank you.

12 MS. HILL: Thanks for your comments.

13 MR. JENKINS: Kathy, do you have a copy that you
14 could leave of your statement?

15 MS. FOSMARK: Yes.

16 MR. JENKINS: We'll make that available to you.

17 MS. HILL: Tom Hart?

18 MR. HART: My name's Tom Hart. I'm president of
19 our fishing association here in Moss Landing. I've made my
20 living here for 40 years. I really won't get into talking
21 about EISs and all this but I can see from where it's
22 placed that it will be a problem. It will be something
23 that I have to deal with every day when I go fishing. I
24 will have to modify how I approach, how I make my living.
25 I fish a lot of cracks here, and just like you said, where

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1 it comes off of Smooth Ridge on the neck, these little
2 necks and ridges and everything that come out of the canyon
3 are how things like crabs that don't normally swim in the
4 cracks do get up and swim, something people don't really
5 think about a lot, but they're the highways and that's how
6 some of these organisms come up out of the deep, and these
7 are the places we fish. The sanctuary really needs to make
8 sure that MBARI works with fishermen on where they place
9 this and not just where but when. One of the bigger
10 problems is going to be when it's actually -- while it's
11 being installed. It certainly can't be in the opening week
12 of salmon season or something. We have to use our mind
13 about this, you know. There needs to be insurance, you
14 know, for loss of gear and for loss of vessel or life
15 because, you know, this is putting something in the middle
16 of my road. I'm out there every day 200 days a year, 40
17 years. I'm going to have to deal with it. Thank you.

18 MS. HILL: Thank you.

19 Kaitilin?

20 MS. GAFFNEY: Yes, thank you. My name is Kaitilin
21 Gaffney and I'm with the Ocean Conservancy. We are a
22 national environmental organization and I work out of an
23 office in Santa Cruz. We have commented on multiple cable
24 projects in the past, particularly a couple years ago when
25 we had many, many projects, commercial cable projects

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1 coming forward in California, and some of the comments that
2 we've made in the past are not directly relevant to this
3 project as a research cable. We've raised concerns before
4 the state lands commission, the coastal commission and the
5 Monterey Bay Sanctuary regarding sort of policy consistency
6 issues that relate to commercial cables for utility
7 purposes that I think are quite different than what we're
8 looking at today, and we certainly recognize that the end
9 result of this research cable could be information that
10 could be quite helpful for resource management and
11 protection in the future and appreciate that distinction.

12 However, there are a lot of the environmental
13 impacts that are the same, whatever kind of cable it is,
14 and I think the summary sheet here actually does a pretty
15 good job of identifying those so I won't repeat them, but I
16 guess what I would urge is that in the environmental
17 analysis for this cable that you take a pretty careful look
18 at what we've learned from previous cable projects in terms
19 of issues such as frackouts, the spill issue that we've
20 seen both in Northern and Southern California with cable
21 installation projects, you know, not predicted but an
22 impact that has occurred during installation, difficulty in
23 meeting parallel target rates. That's something that we've
24 certainly seen with cable projects. There are EISs and
25 EIRs that we've seen in the past that frequently predicted

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1 near 100 percent burial rates or 95, 97 percent, and then
2 when the cable is actually installed, going back in and
3 taking a look seeing that actually the burial rates do not
4 come anywhere near meeting those goals in any of those
5 cases, and the issues that follow from that, the strumming
6 impact, suspensions over rocky outcrops, so essentially
7 just arguing that it's really important to try to make sure
8 that the environmental documents do an accurate job of
9 predicting the impacts associated with the cable over its
10 full lifetime by taking advantage of the information we
11 have from cable projects that have been done recently in
12 California.

13 I was glad to see a plan for ongoing maintenance.
14 I think that is a critical issue to cover and something to
15 discuss in the environmental documentation again
16 particularly because burial rates have not been met in
17 other cable projects. I think it's also important that
18 there's is a discussion about what happens at the end of
19 life, and we have consistently argued that cable
20 projects -- there should be an expectation that the cables
21 are removed once the project is over. There's frequently a
22 lot of incentive to invest a lot of money in putting it in
23 and maybe even in maintaining it but a lot less incentive
24 to investing in removal of the cable at end of life, so
25 making sure that that commitment is made up front and held

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1 to is something that would be important for us.

2 And then also that there be discussion of
3 cumulative impacts if there are still other cable projects
4 being considered in this area. We've had a couple in the
5 past. It seems like they're not moving forward. Many of
6 these companies are now in bankruptcy proceedings, the
7 commercial cable companies, and perhaps those projects will
8 not come back, but it would be important to do a thorough
9 job of analyzing cumulative impacts either with other cable
10 projects that might be on the horizon or other types of
11 projects that might result with similar impacts, whatever
12 those might be.

13 So we will be submitting written comments. I
14 don't have anything prepared to give you today but we will
15 do that before the 24th, and I appreciate for opportunity
16 to come.

17 MR. JENKINS: Just for the record, Kaitilin had a
18 -- Steve Jenkins with state lands commission. I'd just
19 like to clarify a couple of items on things that you've
20 raised. With the respect to the cumulative impacts of
21 potential cables, we will be looking at that. At this
22 point the state lands commission is not aware of any other
23 cables that are being proposed in this area.

24 With respect to frackouts that have occurred on
25 some of the other cables, based on how this particular

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1 cable is being constructed, there's no potential for
2 frackouts being associated with this because there is no
3 HTD type of drilling, so I just wanted to clarify those 2
4 points.

5 MS. GAFFNEY: And we definitely appreciated the
6 use of the existing pipeline because that's a great thing
7 to do to try to avoid some of those near shore impacts.

8 MR. JENKINS: Thank you.

9 MS. HILL: Are there any other comments? That's
10 it? Okay. Just a reminder for you to make sure you signed
11 in on the sheet there, and I think at this time we can
12 close the meeting. Remember that the written comments
13 deadline is June 24th and the comments should be directed
14 to either the state lands commission or the sanctuary, and
15 the next opportunity for public comments will hopefully be
16 in January 2005 and there will be notice in the local
17 newspapers as well as the Federal Register when the draft
18 EIS/EIR is made public, and there are additional
19 application materials on the back table if anybody would
20 like to take a look at those. I think that's it. Anything
21 else?

22 MR. JENKINS: That's it from the state lands
23 commission.

24 Now, we will be closing this aspect of the
25 hearing. We will have another hearing on the NOP and the

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1 SOI at 6:30 for people that were not able to come today.
2 Once we close this particular hearing right now, we're
3 going to stop the court reporter and then we're going to
4 convene a prebid conference for all of the consultants that
5 are here so that we can talk to them about our solicitation
6 for proposals and that.

7 MS. HILL: Okay. With that, the public scoping
8 meeting is closed. Thanks a lot for coming out.

9 (The public hearing was recessed at 5:15 and
10 reconvened at 6:30.)

11 MR. JENKINS: Why don't we start the 6:30 meeting?
12 Vicki, why don't you go ahead and find out who's here from
13 the public and whether they're going to comment again?

14 MS. HILL: Okay. Who is here who is not a
15 consultant and who is a member of the public interested in
16 finding out more about the project? Okay. Are you guys
17 members --

18 MS. HALL: They're from MBARI.

19 MS. HILL: They're from MBARI. Oh, gosh. Okay.
20 So is there anyone here from the public? No one? Did I
21 miss anybody? Okay. If there is no one here from the
22 public and we're just a repeat of the consultants from
23 earlier today, I don't think that there's any reason to go
24 on with this, but I'm going to give people just a few more
25 minutes in case they're stuck in traffic or something like

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1 that.

2 MS. McNUTT: Or a lot of times they show up at
3 MBARI thinking it's Moss Landing. Maybe we should quickly
4 have Mandy drive down there and see if there are any people
5 kind of banging on the door. It happens.

6 MS. HILL: We'll just wait a few minutes.

7 (Recess taken.)

8 MS. HILL: Okay. I think we're going to start
9 now. Welcome everyone. My name is Vicki Hill and I am an
10 environmental planning consultant under contract to the
11 Monterey Bay National Marine Sanctuary. I'm in charge of
12 directing the NEPA portion of the joint EIS/EIR that is
13 being prepared for the proposed Monterey Bay Aquarium
14 Institute's cabled observatory project and tonight is our
15 scoping meeting, the second scoping meeting today, and
16 we're convening at 6:40. I've been told that there are no
17 members of the public in the audience, but there is one
18 person who is here -- there is one member of the public in
19 the audience, and we will therefore go ahead and give the
20 project description overview, but we are going to do an
21 abbreviated version of what we did earlier today, and with
22 that I would like to introduce the other agency
23 representatives who are here who will also be involved in
24 the project. To my right is Steve Jenkins from the state
25 lands commission and Dierdre Hall from the sanctuary who

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1 will be in charge of the permitting aspects of the project.
2 As we go along, if you have any questions, please feel free
3 to ask regarding the project description, and with that I'm
4 going to turn the meeting over to Marsha McNutt from MBARI
5 to go over the project description.

6 MR. JENKINS: And Marcia, before you do that, I'm
7 not familiar with the gentleman who is here. Do you
8 anticipate making comments on the scope of the
9 environmental impact report EIR/EIS at this point or are
10 you more interested in just understanding the project
11 description?

12 AUDIENCE MEMBER: Just understanding the project
13 description.

14 MR. JENKINS: Okay. Thank you very much.

15 MS. HILL: Okay. So that will be the focus of our
16 meeting so that we can direct it to his interests.

17 MS. McNUTT: And in fact, since I'm giving just an
18 abbreviated version of the presentation, what I'll suggest
19 is that, as I go through these slides, if there's anything
20 in particular you're interested in that you'd like to know
21 more about, why don't you just go ahead and feel free to
22 ask questions because -- and I can focus on those things
23 that might be of more interest to you? Okay.

24 So the name of this project is the Monterey
25 Accelerated Research System. We call it MARS for short.

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1 It's to provide a fiberoptic cable that will provide
2 kilowatts of power and megabits of communications
3 capability to a deep sea observatory that will be out here
4 on Smooth Ridge. Although MBARI is executing the project,
5 it is really not an MBARI project. It's been funded by the
6 National Science Foundation for the benefit of scientists
7 in the U.S. and will also be undoubtedly used by scientists
8 internationally.

9 We anticipate a 25-year lifetime to the
10 observatory, and the prime purposes are to further ocean
11 research that require long-term records, records that
12 require a presence in the sea 24 hours a day 7 days a week
13 and to enhance public education and understanding of ocean
14 issues.

15 Now, these are just some of the reasons why it's
16 hard to make observations in the ocean. When we look at
17 this list, the problem of providing power, the problem of
18 providing communications, it basically boils down to we do
19 not have Internet drops. We do not have wall sockets in
20 the deep sea, and that's prevented us from doing lots of
21 observance in the ocean.

22 There is in the planning stages a very ambitious
23 project to use fiberoptic cables to instrument a very large
24 network of scientific observing nodes along the western
25 coast of Canada and the U.S. stretching from Northern

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1 California up through British Columbia. This is called
2 Project NEPTUNE. The Canadians have already invested \$40
3 million in this project and the U.S. has pending a request
4 for \$120 million for the National Science Foundation for
5 this project, so \$160 million to do this project for the
6 purposes of science. The plan for this has been endorsed
7 by 5 separate scientific reviews in the past 6 years and is
8 very, very highly rated in terms of its potential for
9 illuminating ocean issues in the deep sea.

10 Now, this idea of putting fiberoptic cables in the
11 deep sea is not new. There are -- by 1997 there were
12 already 300,000 kilometers of subsea cable installed. It's
13 probably double that today. What is new about this project
14 is not laying cable on the sea floor. That's been done
15 before, but basically it's breaking out the communications
16 and power to do science under the ocean as opposed to just
17 running information from here to somewhere else far away.

18 So because that's a new part of it, all of these
19 studies which have endorsed this NEPTUNE plan have
20 identified the need for a test bed. Before you want to
21 spend nearly \$200 million on something this ambitious, you
22 need to do it in a smaller scale beforehand. By doing
23 that, we can prove out new instruments, instruments that
24 have never before been deployed in the sea because of their
25 power requirements or their real time communications

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1 requirements, provide a learning experience for researchers
2 so by the time this is installed, the research community
3 knows how to use this new capability to its full potential,
4 to scope out the cost of how much will it cost to operate
5 it, to manage it, to maintain it, to test some aspects of
6 the technology of this undersea observatory, and to
7 experiment with effective methods of bringing the deep sea
8 science to the public.

9 So why was Monterey selected? And this wasn't
10 something that MBARI said "oh, let's do it here." We
11 stepped up to the plate when we were asked. And the reason
12 why we were asked to do this in Monterey Bay is that there
13 is no other warm water U.S. port that gets faster access to
14 the deep sea. We've got year-round window for operations
15 which is not true of the NEPTUNE site further north. It's
16 the only region in the entire world that's accessible daily
17 by scientific ROVs. We've got an ocean aware audience
18 around the bay here to test-drive some of our methods for
19 outreach. MBARI frankly has a reputation for technological
20 innovation and for pulling off very difficult tasks under
21 water and that was a big part of it, and also there's
22 strong signals of great scientific interest. No point in
23 doing a test bed for instruments in someplace where there's
24 nothing to measure, and fortunately here we've got evidence
25 of climate change, of the carbon cycle, lots of sound in

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1 the ocean, and of course active geological events such as
2 earthquakes and landslides.

3 This is just contrasting the fact that, in terms
4 of looking at climate change, we've got this huge network
5 on land of stations that have been operating for more than
6 100 years and yet we have nothing like this in the deep sea
7 to see how climate is affecting the deep ocean.

8 Here's just some time series from MBARI showing
9 from 1990 up to the present the seasonal cycles, the El
10 Nio cycles, and the Pacific decadal oscillation cycles
11 from a warm period in the 90's to a cold period since and
12 how temperature strongly correlated with the productivity
13 of the upper ocean as measured by chlorophyll. The one
14 question we can't answer, which is an important one, is for
15 example, how did the low productivity of plants in the
16 upper ocean that was coincident with the 1998 El Nio
17 affect the food supply of the ground fish in the deep sea?
18 Because these records have all been confined to the upper
19 ocean, we have no way to answer questions that are as
20 fundamental as that.

21 This is just a sound record showing a time series
22 from zero minutes up to 40 minutes here in frequencies from
23 low frequencies up to high frequencies of sound in the
24 ocean. Here we see some blue whale calls. Here's the T
25 phase of an earthquake. Here's a passing ship. You can

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1 see a lot of noise at the higher frequencies compared to
2 the lower frequency whale calls and the very low frequency
3 earthquakes. Now, this record is from a hydrophone that
4 was on an early generation cable observatory that was
5 installed by the military for classified use. It's only
6 recently that such data was made available at all, but the
7 important thing about the MARS observatory is that the data
8 will be available real time on the Internet to anyone who's
9 interested in looking at sound in the sea or anything else
10 that's from instruments on the MARS observatory.

11 In terms of education and outreach, we have
12 already started a pilot program at MBARI called EARTH,
13 Education And Research Testing Hypotheses, which provides
14 teachers with the means for integrating real time data from
15 ocean observatories and shows them how they're compatible
16 with their educational standards and providing them with
17 tested curriculum that they can use in the classroom in an
18 interactive and engaging way. The whole reason for
19 starting the EARTH project was to be ready for when MARS
20 comes on line and to use that data in the classroom, and
21 this is in collaboration with the Monterey Bay Aquarium.

22 We are proposing to have the observatory down here
23 on Smooth Ridge which is this feature right before the
24 mouth to Monterey Bay. The reason we've chosen this site
25 is that the neck of Smooth Ridge provides the only viable

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1 route to deep water here and we have to put the observatory
2 in deep water in order to test the maintenance and
3 operation procedures that will be used to the north on the
4 NEPTUNE observatory.

5 Furthermore, this blue line here is the San
6 Gregorio Fault. We want to be able to place a seismometer
7 on the far side of that fault to help with monitoring
8 seismicity on this fault, and it has easy access by
9 extension cables to the many seep sites which are shown in
10 this diagram and also to the dynamically active Monterey
11 Bay Canyon. There's also the potential that the Integrated
12 Ocean Drilling Program would put some core holes out here
13 for research in marine hydrology.

14 This just shows there are many seismometers on
15 land here but there is no continuously operating
16 seismometer west of the San Andreas Fault System of all of
17 its strands, and this is the proposed site for the
18 seismometer which would be connected to MARS. This shows
19 it in greater detail. You can see on land we can precisely
20 locate the earthquakes and you see that they indeed fall on
21 the faults, which is what you would expect. In the ocean
22 it's sort of a clouded picture. One reason for that is our
23 inability to precisely locate earthquakes if we only have
24 seismometers on the land side. We need at least one
25 seismometer on this side to improve the location of the

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1 earthquakes.

2 We know from experience that giant landslides,
3 some that have been associated with large waves, can occur
4 in Monterey Canyon. MARS will allow us to monitor the
5 frequency of such events, the risk that they pose, and the
6 effect they have on deep sea communities. This just shows
7 how a catastrophic event that happened just 2 weeks after
8 the deployment of some scientific equipment destroyed it.
9 A landslide moved a 1,000-kilogram instrument node hundreds
10 of meters down the canyon in an extremely short-lived
11 event.

12 The Monterey Bay is part of the Great Salinas
13 Aquifer but little is known about the quantity and history
14 of fresh water seeps into the ocean. MARS is going to
15 allow us to better understand the hydrological connection
16 between land and sea by instrumenting core holes. Here it
17 just shows a possibility of putting some core holes out
18 here in the sediments on Smooth Ridge and using connecting
19 instruments then from these core holes to the MARS node so
20 we can understand the flow of water between these sites.

21 And finally this just shows the route of the cable
22 coming here from Moss Landing skirting north of Soquel
23 Canyon and down here to the final observatory site in 900
24 meters of water depth down on the eastern side of Smooth
25 Ridge.

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1 MR. JENKINS: Marcia, before -- I think right now
2 you're going to transition to Keith and that?

3 MS. McNUTT: Yeah.

4 MR. JENKINS: Before you do, I'm going to ask one
5 more time if there is anyone that wants to make comments on
6 the Notice of Preparation or Notice of Intent? If not,
7 what we're going to do, because this is meeting being
8 recorded for that purpose, we're going to stop the
9 transcription and close the public hearing, and then we'll
10 continue with the project description, so one more time, is
11 there anyone here that intends to make comments during this
12 hearing on the Notice of Preparation or Notice of Intent?
13 No one has come forward, and therefore, at this point at
14 6:55, Vicki, are you in agreement that we close?

15 MS. HILL: Yes, sure.

16 MR. JENKINS: Okay. We'll close the hearing and
17 then at this point we will go ahead and stop the
18 transcription.

19 (The recorded proceedings concluded at 6:55.)

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1 STATE OF CALIFORNIA)
) ss.
2 COUNTY OF SANTA CRUZ)

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6 I, MELINDA NUNLEY, a Certified Shorthand
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9 That the said Transcript of Proceedings was
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15 I further certify that I am not of counsel nor
16 related to any of the parties hereto, nor in any way
17 interested in the outcome of these proceedings.

18 IN WITNESS WHEREOF, I have hereunto subscribed my
19 name and affixed my official seal this 18th day of June
20 2004.

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