

Administration of Barack H. Obama, 2009

Question-and-Answer Session With Crew Members of the International Space Station and Space Shuttle *Discovery*

March 24, 2009

The President. Hello, Commander, can you hear us?

Commander Mike Fincke. Welcome aboard the International Space Station, where we're joined with our international crew from the Space Shuttle *Discovery*. Welcome aboard. Glad to hear your voice. We hear you loud and clear, sir.

The President. Well, thank you so much for taking the time to speak with us. We've got a crew of wonderful schoolchildren here who are all interested in space, and we've got some Members of Congress who are like big kids when it comes to talking to astronauts.

I'm told that you're cruising at about 17,000 miles per hour, so we're glad that you are using the hands-free phone. [*Laughter*]

Commander Fincke. Mr. President, we go around the planet once every 90 minutes. It's quite a thrill, and it is very fast, and we see 16 sunrises and 16 sunsets every day.

The President. That is unbelievable. Well, the first thing we want to do is just let you know how proud we are of you. I've got to say especially once I found out that you're from Bellwood, Illinois.

Mission Specialist Sandra Magnus. Mr. President, it was a beautiful place to grow up, and I have a lot of roots that are still there.

International Space Station/Solar Panels

The President. Well, that's great. The—we are really excited about the project that you're doing. My understanding is, is that you are installing some additional solar panels on the space station, and that's actually going to increase the number of people that can work out of the space station, is that correct?

Mission Specialist John Phillips. Sir, that's correct. We've roughly doubled the amount of solar power available for experimentation and for supporting a larger crew, and we hope to go to a crew of six and a more aggressive experimental program this year.

The President. Well, this is really exciting, because we're investing back here on the ground a whole array of solar and other renewable energy projects, and so to find out that you're doing this up at the space station is particularly exciting.

Can I ask how exactly do you end up installing these solar panels? What's involved? Somebody want to give us a rundown on how you go about doing it?

Mission Specialist Steven Swanson. Yes, sir. First it comes up on a truss segment that is about 5-feet long. We use a robotic arm to attach it to the—into another truss segment. And then once that's attached and bolted on through spacewalks, then we'll go ahead and unfurl or actually deploy the solar arrays in a position so that we can unfurl them from inside during the commanding through software.

The President. About how long does it take?

Mission Specialist Swanson. It takes a lot if you put it all together, about 6 hours, but if you actually do the commanding to actually deploy them out to their full length—only takes about 2 hours.

International Cooperation in Space

The President. Well, obviously we're really proud about the extraordinary work that our American astronauts are doing. You are representative of the dedication and sense of adventure and discovery that we're so proud of. But one of the things that's wonderful about this is that it is an international space station. And I know that we have our Japanese and Russian counterparts on board as well. We'd love to say hello to them and hope that this is an example of the kind of spirit of cooperation that we can apply not just in space but here on the ground as well.

Mission Specialist Koichi Wakata. Yes, it's an honor to have a chance to talk with you, Mr. President. We have a Russian crew member, American crew member, and I'm from Japan. And we have 15 countries working together in this wonderful project—international space station, as well as on the ground, in space. And this really symbolizes the future of the scientific development of the world, and I'm just happy to be part of this.

The President. That's wonderful.

Flight Engineer Yuri Lonchikov. Mr. President, we work together to do everything. It's really, really important for us. And American, Russian, Japanese, Italian, everybody, people, all people, work together.

Working in Space/Talking to Schools

The President. Now, I notice you're bouncing around quite a bit there, guys. Are you wearing something to strap you down, or are you about to float away?

Commander Fincke. Mr. President, we're just holding on with our toes on to some handrails below us, and at any moment we could all just easily float up. And that's one of the fun things about flying in space; we get a chance to talk to a lot of kids and show them all the adventures that we have flying around. It's also—it's not just a lot of fun, it's a little bit tough on our bodies; you have to exercise. And so we get a chance to talk to a lot of schools while we're up here—schools all over the planet—to help inspire the next generation.

The President. Yes, I hear that you're going to be talking to my alma mater, Punahou School, when you fly over Hawaii.

Commander Fincke. We're looking forward to that, sir.

The President. All right, well, you tell them *aloha*.

Listen, we've got a bunch of young people here. I want to see if any of them have some questions.

Anybody have a question over here? Okay, this—hold on, we've got a young lady right here who's got a question.

Astronaut Diets

Q. As a astronaut, what do you eat?

The President. Did you hear that question? They want to know what you guys are eating up there.

Mission Specialist Richard Arnold. We're eating really well. We eat a lot of—it's prepared at NASA, but it's kind of like the backpacking food. It's dehydrated, re-rehydrated, and warm it up. We also use—have food similar to Meals Ready to Eat that they use for the military and that a few of us ate last year when the hurricane came through Houston.

The President. Do you guys still drink Tang up there? [*Laughter*] I've got Bill Nelson here, and he says that that's been taken off the menu. [*Laughter*] Any—that's, by the way, before the time of you young people. We used to drink Tang. [*Laughter*]

We've got a young man right here. Hold on one second.

Down Time in Space

Q. Can you play video games in space?

The President. Can you play video games in space?

Mission Specialist Phillips. We can, in fact. And in fact, a few years ago when I was up here for 6 months, I had a video game that I used to play in my spare time, although, unfortunately, we don't have much spare time. So we can; we have a lot of laptop computers. But for the most part we stay real busy doing real work.

Experiments

The President. The—so tell us what kinds of experiments are you doing? Once you got the panel up, what kinds of other activities are you doing? Is it mostly just maintaining the craft, or are there certain experiments or projects that you're engaged in as well?

Mission Specialist Magnus. Well, sir, we have experiments already up here that we've been doing for many years, and we'll be able to double that with the addition of the full array that our shuttle friends brought up.

We do a lot of experiments on combustion, understanding materials, understanding how—you know, we're guinea pigs—so understanding how people's bodies change in space, and all this is in preparation for long-duration missions to the Moon and Mars.

And the exciting thing about doing science up here is we really don't know what we don't know, and that gives you the greatest potential for learning. And we've had a lot of cases where people have set up experiments, and we've conducted them here on the space station, only to find out that we've learned something new, something more about the fundamentals of the processes and the science. So it's a really great place to learn a lot.

The President. Outstanding.

Any of the young people have another question—this young man right here? Hold on one second.

Discoveries

Q. Have you found any life forms or any plants out in space?

The President. That's a good question. Any life forms out there other than you guys?

Mission Specialist Magnus. We're actually doing an experiment on this mission to take a swab or a sample of the surface of the EVA, the spacewalker's gloves, both before and after the space walk. And that's a—that was sort of a demonstration of the type of technology that we'll be able to use on the Moon and Mars for the same purpose, to try and see if we can determine

what sort of bacteria or microorganisms are living in the various environments we're going to encounter.

We, unfortunately, haven't really found anything here. I think we'll have much more success at finding new types of life and different structures when we go to places like Moon and Mars and moons of Titan and these other types of environments.

The President. Excellent question. All right, I've got a young man back here.

Astronaut Training

Q. What things did you have to study to be a astronaut?

The President. All right, that's a good question. You guys are all extraordinarily trained. What—if we've got some budding astronauts over here, what should they be doing? I'm assuming they better hit the books on science and math.

Pilot Dominic "Tony" Antonelli. That's—you got it just right. The—one of the beautiful things about getting to work here is you can study just about anything that you're really interested in—science and math being a big part of it. But we have medical doctors, geologists, engineers, and physicists in the group here with us. So it's pretty much anything in the math and science field. We've got a couple of schoolteachers here with us so—studying education as well as the math and science.

But there really is room up here for everybody. The important part, though, is to work really hard and do well in school. It will make a difference in your future.

Physical Fitness Requirements

The President. And what about—what about fitness requirements these days? Some of us remember watching "The Right Stuff," where—that's pretty impressive. [*Laughter*] Is there a particular—

Commander Lee Archambault. Well, Mr. President, the fitness requirements are still—

The President. Go ahead. Go ahead, I'm sorry.

Commander Archambault. Mr. President, the fitness requirements are still there. As a matter of fact, the International Space Station just recently incorporated a new fitness machine. It's like—it's a very, very fancy workout machine you see in a gym, but it's called the ARED, and we can do a lot of good exercises on it—the leg—strength training for your legs as well as your upper body. So, particularly for the long duration folks, it's very important to maintain your muscles in good tone and to help you readapt when you get back on planet Earth.

The President. Excellent. Okay, there's—a young lady back here had a question.

Exercising in Space

Q. When you say you "exercise," what do you do?

Mission Specialist Joseph Acaba. Well, we have a couple of different exercise machines up here. On the space shuttle we brought up a—it looks like a bicycle that you would find in a gymnasium. So we can use that. And they have one here on the space station.

And the other machine, you can do all kinds of stuff. You can do squats; you can do curls. We have a lot we can do. We also have a treadmill, so you can go ahead and run up here in space.

The President. Any—okay, we've got another question from a young man. Hold on.

Stars/International Cooperation on Space Exploration

Q. Do you know how many stars there are in space?

The President. Asking how many stars in space—I'll be interested in hearing the answer to this one. [Laughter]

Commander Fincke. Well, aboard the International Space Station, we can look down and see our beautiful planet Earth, and we can also look up and see the rest of the cosmos. And we can see that there are so many stars out there that it's very hard to count them all. And we can see that our Earth is a very small—very small planet in such a big universe. And it's just really amazing, because it gives us a deep perspective of—that we have to really take good care of our own planet—and that our own planet is just a—is a small place, and we have the whole rest of the universe to work together in an international sense and go explore this whole universe that's in front of us and all the discoveries that we'll make together.

So maybe we'll someday be able to count how many stars that we have, because we're starting to go to the stars as human beings together. And that's what's really exciting about serving aboard the International Space Station and flying up and down on space shuttles, is that we're part of that great adventure.

And we need you kids to study hard, because we can't do it all by ourselves. We really need you guys to work hard and do whatever you're supposed to do and do it well, like Tony said, because there's a whole universe in front of us.

Impact of Weightlessness on Sleep

The President. I had a quick question. Does weightlessness have an impact in terms of your ability to sleep?

Mission Specialist Arnold. Sir, we just arrived here, just a few days ago, and it's taken a while to get used to—for me, personally, missing a pillow. You're used to laying down on a mattress and having a place to rest your head. And—so it's taken a while to get used to that.

The President. Well, the—I know the kids got a chance to ask some questions. I want to make sure that if there are any Members of Congress who've got some questions that they're interested in, that they've got a chance too.

Okay, hold on. This is Kay Bailey Hutchison from Texas.

Salmonella Experiment

Senator Kay Bailey Hutchison. I understand that you are doing experiments on Salmonella and watching those organisms and how they react and grow. And we've had some Salmonella problems here on Earth. What do you think you will be able to learn from the environment in space that maybe you couldn't learn here on Earth?

Mission Specialist Phillips. I'm actually going to have a bit of a hard time answering that question. We do, indeed, have an experiment called the National Laboratory Program vaccine experiment, in which Salmonella are—in which certain micro-organisms are exposed to

Salmonella. My job as an astronaut was basically to turn the crank and activate the experiment, and then after about 4 or 5 days, I turn the crank again and deactivate it.

I'm not exactly sure what the scientists are going to do with the data back at home or with the samples. We are returning, however, eight big vials of samples of these cultures of microorganisms and Salmonella, and let the scientists go to work.

The President. Does Bill Nelson—he knows a little something about this stuff.

International Space Station Laboratory

Senator Bill Nelson. Hey, guys, I wish I were up there with you. You are just getting to the point where it's really looking like a full-up national laboratory where we can really do the experimentation. When will you have it full-up, ready to go, where we can then reap the results of that \$100 billion investment?

Commander Fincke. It's nice to hear you again, sir. The International Space Station has already been delivering some of the science we've promised. With—where we are now is—in Expedition 18, our crew, is—we're making the turn from three people to six people. The next crew that comes after us—a few months after we get replaced—will have six people onboard the International Space Station. So that's why we needed the solar power; that's why we needed the second toilet and other things, so that we'd have room and facilities for six people.

And once we have six people, we'll have enough time and energy—solar power, I mean—to run all the experiments that we can. And then it's just a matter of getting enough experiments up and down from the space station to really reap on that science. We've already been delivering, and we've got a lot more to come. And like Sandy said, there's a lot of things we don't know, so there's some really interesting discoveries out in front of us.

The President. Do any of the young people have any more questions? Hold on one second, we've got one here.

Being an Astronaut

Q. Do you love doing your job?

The President. They asked if you love doing your job.

Mission Specialist Wakata. Yes, it's wonderful to work in space. Ever since I saw Apollo 11, the lunar landing, when I was 5-years-old, I always longed for going to space and work. And here dreams came true. I had to study hard and worked hard, but I'm so happy to be here, and I'm loving living here and working with so many wonderful people here.

Time it Takes to Get into Space

The President. The—just a couple of logistical questions. How long did it take—from the time of launch, how long does it get—does it take to get to the space station?

Commander Archambault. Well, Mr. President, let me answer that in two ways. First of all, it takes us about 8½ minutes to get to orbit, and at that time we're going 17,500 miles an hour. But we're in a bit of a tail chase with the space station, and it's approximately about a day and a half to 2 days later that we actually rejoin with the space station.

The President. Okay, so 8 minutes just to get into orbit, but then you've got to basically try to catch up with the space station and match up so that you can lock in.

Commander Archambault. Sir, that's exactly right.

The President. Okay.

Anybody have any more questions? Hold on one second.

Favorite Experiment

Q. What's your favorite or the most interesting experiment you're working on up at the space station?

The President. Okay, do you guys have a favorite experiment right now?

Mission Specialist Magnus. That's a really tough question, because they're all interesting in different ways. Mike and I were doing a flame experiment where we're trying to help the scientists on the ground understand how fire behaves up here. There's all kinds of reason for that. So that was interesting because it's sort of an unusual environment to intentionally put a fire.

I think one of the ones I like the most is an experiment that we're doing on ourselves to try and understand how our nutritional state changes and our biochemistry changes, and that will help us design food and understand a little bit more about the processes that the human body undergoes. That's probably my favorite one. But there's all kinds of interesting things in all of the experiments.

Weightlessness

The President. Now, can I ask you a question? Were you tempted to cut your hair shorter while you were up there, or do you—is it fun in weightlessness? [*Laughter*]

Mission Specialist Magnus. Well, that's a really good question, because it is a little bit of an overhead to take care of long hair here. I think ideally a short haircut is the way to go, but quite frankly, on me it wouldn't be so nice, so I kept it long.

The President. I think it's a real fashion statement. [*Laughter*]

Hold on one second, we've got another young man back here.

Spare Time

Q. How much spare time do you have on the day—in the day?

The President. How much spare time do you have? It sounds like you guys are pretty busy.

Mission Specialist Acaba. They do keep us pretty busy up here, and we have a very tight schedule that starts from the moment you wake up until the moment you go to sleep. But they give us a little bit of time in the morning to get yourself ready, get yourself cleaned up, have some breakfast, and the same in the evening. So we can use that time to either call down to our family and friends or maybe even check our e-mail and see how things are going back on Earth.

Communication With Earth

The President. Now, that's interesting. Does e-mail work pretty much the same between the space station and computers here on Earth?

Commander Fincke. Mr. President, as just about everybody on the planet knows, is that e-mail is a pretty important way for us to keep in touch with each other. Even though we're really far away and traveling really fast, we still use e-mail also. Unfortunately, we only synchronize our e-mail once or twice a day, sometimes three times a day. So it's not as fast and

instantaneous as we are used to on the ground, but even so, it's a really useful way to get in touch with other people.

In addition, we have kind of an Internet over—voice-over Internet protocol telephone, so it's really nice that we can get the—a chance to talk to our families—not 24/7, but when we do have good satellite coverage we do get the chance to call home. And that's—for those of us who stay up for a long time, that's what's really important to us.

The President. Excellent. All right, well, I know that you guys probably have a whole bunch of stuff to do, but I think that we may have one more question from a Member of Congress. Hold on one second.

Representative Suzanne Kosmas. Thank you very much. My name is Suzanne Kosmas, and I actually represent central Florida, the area that includes the Kennedy Space Center. So I want to first thank you on behalf of all Americans for your service to us and for what you represent in terms of America and our supremacy in space exploration, along with our international partners, and for what you're doing there at the International Space Station.

I had the honor of being at the Kennedy Space Center last week when you took off, and it was a fabulous, absolutely fantastic launch. And we—so I wished you *adieu* from there, and now I'm wishing you hello from here.

I want to thank you again for your service and tell you how excited I am to be representing the Kennedy Space Station and that area, but also for what you do that inspires people to be interested in the science and technology that has led us to this pioneering place where you are. And the things that we anticipate that we will be able to reap from your service I'm very thrilled about, particularly the idea, as the President has said, of alternative energies and the fact that you're using solar panels in space. What we're hoping, in the long run, that you will be able to, from space, use solar energy to come back to Earth.

And again, I'm thrilled to be here and very excited to have the opportunity to talk to you. And thank you so much for your service to our country.

The President. Well, I think that all of us echo——

Commander Archambault. Thank you, ma'am, we appreciate that. And each one of us here is very lucky and honored to be right where we're at here today, so the honor is all ours. We're honored to be here doing this great work.

The President. Well, I think all of us echo the sentiment. We are extraordinarily proud of you. We're so grateful that you took the time to speak to all of us. I know these young people are pretty excited to be on a direct link with astronauts in space.

So does everybody want to say good-bye?

Audience members. Good-bye.

The President. All right. They're all beaming. And we appreciate you guys, so look forward to seeing you when you're back on the ground. God bless you.

Commander Archambault. Thank you, Mr. President. And on behalf of the Space Shuttle *Discovery* crew here in the dark blue shirts, I want to say we're very honored that you spent some time with us today. It meant a lot to us. We thank you very much.

And from one Chicago guy to another, I wish you well, sir.

The President. That's it.

Commander Archambault. And for closing comments, I'll pass the microphone off to Commander Mike Fincke, the commander of the International Space Station.

The President. Thank you.

Commander Fincke. Mr. President, I'm not from Chicago. I'm sorry about that. But my crew and I were—are really happy to have a chance to talk to you and share our adventure with even more people. It's pretty impressive what human beings can do when we work together constructively and not destructively. And that's the mission of the International Space Station.

So thanks for joining us. Thanks for flying with us at 17,500 miles an hour today. We sure—we're glad to have a chance to share it with you and the distinguished Members from Congress, as well as all the kids out there.

So, everybody, thanks again for joining us.

The President. Thank you, guys. Bye-bye.

NOTE: The President spoke at 9:52 a.m. via satellite in the Oval Office at the White House.

Categories: Addresses and Remarks : Space shuttle Discovery and International Space Station crew members, question-and-answer session.

Locations: Washington, DC.

Names: Acaba, Joseph M.; Antonelli, Dominic A. "Tony"; Archambault, Lee J.; Arnold, Richard R.; Fincke, E. Michael; Hutchinson, Kathryn A. Bailey "Kay"; Kosmas, Suzanne M.; Lonchakov, Yury V.; Magnus, Sandra H. ; Magnus, Sandra H.; Nelson, Clarence W. "Bill"; Phillips, John L.; Swanson, Steven R.; Wakata, Koichi.

Subjects: Education : Science and math programs; Energy : Alternative and renewable sources and technologies; Energy : Solar and wind energy; Space program : Astronaut physical fitness requirements; Space program : International cooperation; Space program : Scientific research projects aboard the shuttle; Space program : Shuttle; Space Station, International.

DCPD Number: DCPD200900183.