United States Department of State
Overseas Buildings Operations

# Industry Advisory Panel
## December 13, 2007

I, Charles E. Williams, certify that this is the true and correct version of the Minutes of the December 13, 2007 Meeting of the Industry Advisory Panel.

Signed:

Charles E. Williams
Director/Chief Operating Officer
Overseas Buildings Operations

Date: 1/8/08

UNITED STATES DEPARTMENT OF STATE

OVERSEAS BUILDINGS OPERATIONS

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INDUSTRY ADVISORY PANEL

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December 13, 2007
9:30 a.m.

Department of State
2201 C Street, N.W.
Room 1107
Washington, D.C.

CHAIR: GENERAL CHARLES E. WILLIAMS
Director/Chief Operating Officer
Overseas Building Operations

INDUSTRY ADVISORY PANEL MEMBERS:

CLARE ARCHER
BILL FLEMMING
NANCY ABER GOSHOW, AIA
DARRYL K. HORNE
GREGORY S. KNOOP, AIA, LEED-AP
REGAN P. McDONALD, PE
MARVIN OEY, Ph.D., PE
SUMAN SORG, FAIA
JOHN O. WOODS, JR., PE

PARTICIPANTS:

JONATHAN BLYTH
PHYLLIS PATTEN
JAY HICKS
PAUL ROWE

**Free State Reporting, Inc.**
1378 Cape St. Claire Road
Annapolis, MD 21409
(410) 974-0947

PARTICIPANTS (cont.):

JOSEPH TOUSSAINT
JOE CAMPBELL
JÜRG HOCHULI
PATRICK McNAMARA
MARCUS HEBERT
WILL COLSTON
JOHN FENNER
MICHAEL SPRAGUE
ADELET KEGLEY
ANDREA WALK
CARMEN MONTGOMERY
ROBERTO COQUIS
SONG KELLER
SHIRLEY MILES
BILL MINER
KATHY BETHANY
HERBERT TREGER
STEPHEN KLEIN
ROB McKINNIE
NICK RETHERFORD
NANCY WILKIE
RICHARD GAUSSERES
BRIAN SCHMUECKER
GEORGE GLAVIS
MICHAEL CHRISTENSEN
DAVID LANGFITT
ALEX WILLMAN
JOHN ROBINSON
ANGELA COLLINS
LAURIE DENNIS
REZA DARVISHIAN
JOHN SMITHSON
DENA RICHARDSON

I-N-D-E-X

I-N-D-E-X (cont.)

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

(9:30 a.m.)

GENERAL WILLIAMS: Good morning. It's 9:30, so what we're going to try to do is stay on schedule. First of all, I would like to welcome each of you to our Industry Advisory Panel today. I was just reflecting a little bit last evening, and most of you know, my arithmetic is pretty good. This is our 19th IAP, and when this got started, we were probably one of the first organizations that decided to have such a panel. I understand there's a little mirroring of this around and about, but this has been a wonderful experience. It has been -- and I can say this because we are concluding the 7th year; in fact, it might have been this room back in 2000, when I joined Secretary Powell's transition team, and we did this before the Christmas holidays, and so this panel has been a very, very delightful arrangement.

So, from where I see it, it's been very helpful, very useful, and we've enjoyed all of the involvement; in particular, having our visitors. We try to make this as open as possible so that you can see what we're about, and hopefully we'll be in a position to de-conflict things that you hear about,

so that it can all move in the right direction.

We have our Court Reporter today, Tim Atkinson. He has been with us before, and he's here because he's very good, and so we request him by name. You know our works here are recorded and available; if anyone needs to retrieve them publicly, that's okay as well.

Anyone here for the very first time? Okay. Okay, we'll get to you later. Just let you know that you're welcome. You're fortunate because you don't have homework. When you come in these doors, you usually have some homework.

Do we have any administrative announcements, Michael?

MR. SPRAGUE: Just that if anyone needs to leave for any reason at all, to go to the facilities, whatever, there are staff waiting in the hallway that will escort you. You must be escorted at all times, and your badge must be clearly visible. We'll also be breaking for lunch around noontime, and I'll turn it back to General Williams.

GENERAL WILLIAMS: Okay, anything from Security? Okay. Fine. Okay, we're going to get started.

I'm going to start off by telling you that

I feel very good this morning because I have a lot of supporters, a little cheering section over here. These are former Board members, and I don't know why they showed up, but they are here today.

(Laughter.)

GENERAL WILLIAMS: But maybe they're trying to tell me something. But nevertheless, I'm delighted that our good friend Ida (ph.), who spent so much time on this board and was very, very helpful, she's back with us all the way from the west coast. And we've got Robin Olsen, who has been a long-standing supporter and friend from -- who sat on this Board, quite frankly, for many years, and she's back with us as well.

And then, let's see. Do we have any other alums here today? Okay. There may be others coming, but nevertheless, thank you for being here.

Okay, this morning, we will have one of our members that will be delayed -- well, will not be attending because he had an illness, but we all understand that, and so we just proceed ahead. But we do have Nancy, Darryl, Greg, and Bill and Clare and Suman and Regan, so we have a quorum, so we'll be ready to move forward.

Now, with that, I will do as we normally do

at the opening session: We'll give you an update of where we've been for the last three months. Some of this will be new information for you. We always repeat and try to tie the whole program together, so some of you will remember some of this, but it's important to repeat it.

Our mandate is very simple and straightforward. It's listed on the chart before you. We don't need to repeat that because it is very pivotal.

The next slide gives you the facts that we keep repeating because it's important to understand how we got started. I keep referring to the year 2000 and what the picture looked like because it's only relative if you know the start point. There's no question the hole was pretty deep, and you can see what we've been able to get done. And of course, the statement at the bottom of the page is one that we are very proud of, the entire organization.

I think you know, on the next slide, that we are a results-based organization, and our results-based operation is centered around these four pillars, the last one being the most important because without credibility, we obviously could not

have gone from 1 to 16 because it takes funding to get that done, and you only get funding with credibility and proven performance.

Communication and transparency have been mantras for us because we've felt that we have to hold forums like this. We have to let all that are concerned know how we operate, and we even invite you to examine even how we do internal work, like on this chart. It shows how open we are, and how much we try to communicate. You can see everything from a monthly open door, where any member of the thousand or so people who work for us can come in and talk about anything they want, and we get 15 to 25 people every month. Some people come in to just ask me how I'm feeling, and I appreciate that. Over one half of them do that, and occasionally we do have a bright idea that comes out, and sometimes there's a complaint or two. But nevertheless, people are able to communicate.

Then we have a weekly cross-cutting meeting, if you see down about number four there, which works well. Our Chief of Staff runs this, and that's a successor to the meeting that occurs each Monday morning -- that's listed before that -- and that's a weekly progress review for the projects

that are soft and need some propping up, and the programs.

Then, of course, there's a weekly risk management. We put a lot of time and effort into war-gaming the soft spots, and making certain that we protect the Government's interest. And then, of course, we have the procurement meetings. We don't do the procurement; we often get quoted as doing it, but we don't do the procurement in the Department for OBO. That's done by a separate bureau in a separate entity.

Then, of course, we have a "Lessons Learned" task force. That's an avenue for new ideas to come forth, and innovations that we can move forward with. And I think all of you are familiar with our real tool, and that is the project performance reviews that occur each month, and then the rest that are listed there.

It's important to revisit process because we have tried to be a disciplined organization. We go by a set of rules and protocol. This sort of lays out how you get an embassy or a consulate, a new or rehabilitated piece of work. It starts with a site, if we are looking for new, and then of course we have to purchase the site wherever it is

around the world, and there are certain Congressionally mandated processes, and I just want to highlight a couple because this is where the trip-up starts. Congress requires a certification on that portion of the design of the facility that would have anything to do with the protection of life safety and, obviously, the Government's interest. We have to certify how that design is put together, and what it will accomplish.

And then, of course, the procurement process cycles in. The project progresses to a point where the Project Director -- not me, not Joe Toussaint, not anyone -- will say in his or her judgment, professionally, that the project has reached substantial completion. And there's a lot of chatter these days about substantial completion, but that's the definition of that.

Then there's an accreditation process, which is the endgame of the certification part, where there's another separate team that didn't have anything to do with the construction, and not a part of the Project Director's apparatus, that will go out and render even a second opinion on the works themselves. And then, of course, the certificate of occupancy, and finally move in.

The confusion is that a substantial completion represents that now you give me the keys, and I walk in. That is not the way it works. Substantial completion is very critical for some contractual things. It signals that we are ready for the final inspection, and then, of course, the issuance of the certificate of occupancy, which is based on yet another pile of paper and certifications and the like. And then some time after all of that's over, the post would move in.

So, you need to understand that when we cite something as being complete, it doesn't mean that someone moves in the next day. There's a process that needs to take place, and I don't think this is unusual for -- if an office building is complete anywhere here in Washington, it doesn't mean that you occupy the building the next day.

The accreditation process, that was meant to be a joke because obviously you can't read it, so just get your first laugh in this morning at a joke. If you want to know what's on that, we do have that in a flowchart form. It just talks about the steps that we would go through. And the whole -- the serious part of that, we did want you to know that we did have such a process, and if someone was

looking for it and wanted to strain their eyes to read it, they could do that.

Joe Toussaint teased me with this one, so this shows our MOU on something that we're very proud of because we are very serious about moving ahead with environmental and sustainability matters, and we signed an agreement about a year ago that says we're going to get into this in a very big way. And with that, I just want to show you that Bill Miner and his great team, led by Donna McIntyre (ph.), they have put together a splendid Green team, integrating all of the aspects of our organization because we are getting very, very serious about this Green business. It's organized, you can see it there. I just wanted you to know we've advanced considerably on this front since we got started seven years ago.

And we had some fortunate things to happen. The Green building council has granted us certification on one of our difficult facilities, deep in the Balkans, Bulgaria, and the compound itself is LEED-certified.

Now, moving on over, we'll talk more about this list, but that's the ride. It's over 50 new facilities that have been delivered for our people.

They're all listed there. Next slide.

This shows what it all means as the end of the day, and that's the number of people, your colleagues and mine, that have been moved out of unsafe facilities to safer facilities because there is no Utopia about safety, but we have done the best we can to make it safer. And that's the bottom line: Almost 15,000 -- well, about 15,000 people.

We have lots of work left. As you can see, the 50-plus that we have completed; we have another 34 new embassy compounds, embassy annex-type arrangements, under construction. You see the dollar amount associated with that. Quick math gets you to about 80 that we have either done or are doing, and I've just told you 50-plus have been done, and when you add that to another 11 that we just awarded in FY '07, this gets us to 101, so we are well over 100 in terms of what we have managed, or what we are currently managing.

Here are the 11 that I made reference to, and add that to the quick 80 -- I'm sorry. The quick 90, that gets us to 101, and we are planning in FY '08 for these facilities to be awarded. These are in the works now, and we hope to have these awarded before the end of the fiscal year.

Now, we took a pause several months ago, and sort of reflected on, you know, we've built 50 of these, and we had a little celebration, and a little time to reflect, and so we discovered that we had really accomplished a few things. We had begun to look at an integrated process to help us with the business side of our work. We reflected and discovered that we had been pretty good about protecting all of the things that relate to IT-type functions, that relates to the FISMA, which you know is a big deal in this town because of all of the problems with data and the protection of data. We also realized that we had done 50 at roughly $3 billion. We had earned that part score, being very effective, at 97% or so.

And then, of course, you see other statistics where we have built on 41 separate sites, over 675 acres. If you look on the next chart, you'll find that we have worked a lot of man-hours. That's a pretty hefty number. Only had 77 accidents; one is too many, but when you look at our lost time rate and compare that to the universal rate in the United States, you know that is very good.

Over 180 design reviews, fortunate to still

have a nice pool of contractors, and getting new ones all the time, which we are pleased about. A lot of concrete has been placed, but the most important thing is at that time, over 14,000, and we're closer now to 15,000 of our people being taken out of harm's way.

You've seen this before; this is a standard design, nothing magic. We'll just move ahead. And the first two projects that we completed are listed here, Uganda and Doha, and this was the next four. This was the next six, this was the next four, this was the next five, this was the next six, this was the next four, this was the next four, this was the next four, this was the next three, this was the next one, this was the next one, this was the next one, this was the next one, and this one, what I have going forward now has been done since we last met.

Then, of course, the next one and the next one, Managua in Nicaragua is done, the USAID piece as well.

Panama City is done, and Rangoon in Burma, this happened to be the 50th. And I just pause a minute because I tell this story because it's very important to me. After going to 50 openings and

having the opportunity to participate, I've never seen a group of people that were as proud as these people when this new embassy was opened. Usually there are a lot of cheers and a lot of happy feelings at these sessions, but there were more tears and sad faces when this was opened because the goings are pretty tough in Burma, and we were there at a time where the restrictions were pretty bad, and there were demonstrations in the streets as we were trying to get this opened.

So, I think that drove the point home that we are making a difference in the lives of people, and it was reflected at this ceremony.

So, Algiers is also open, and Accra, Ghana, USAID is now open -- completed, I should say. I'm not sure whether they're in or not. And we're wrapping up the project in Kigali; it'll be open some time in January.

Okay, and that list leads us into the 34 that we have under construction. I'm not going to read it, but you can see it's valued at about $3.2 billion. And if you take a look at Port-au-Prince in Haiti, you can see that all of this is on schedule to be complete during the first half of the new year. Berlin, around Easter time. Quito, late

fall. Ciudad Juarez should be around Christmas.

Khartoum is not good. We're having great difficulty there with the host country, so this will probably be our first white elephant because we're not going to be able to move forward unless the host country significantly changes its methods and means of cooperation. We cannot get the kind of materials that we need to complete the job there, so we are working through the appropriate activities with our contractor. Incidentally, the contractor, Harvard International, has just done a phenomenal job of hanging in there with us. I can't say enough about the partnership. It's been absolutely superb. So, we work together and do what we have to do.

Brazzaville, in West Africa, is listed here. Skopje in Macedonia, in the Balkans, listed here. Mumbai, in India, is listed here, and Surabaya, Indonesia, listed here. Libreville, in Gabon, West Africa, listed here. Johannesburg, in South Africa, is listed here. And then, of course, Suva, in Fiji, is just getting out of -- just getting started. Beijing in China is moving along now, roughly 80% complete. That's a very complicated and difficult project for us.

Last slide just lets you know there's a

tough road ahead. I mentioned Khartoum; we are in Karachi, we got Addis Ababa in Ethiopia just getting started. Tripoli is out there; Harare in Zimbabwe is out there. Jeddah is out there. I could go on and on. Beirut is out there, et cetera, so it's not getting any easier for us, but we'll continue to press ahead with the support we have received, particularly from this panel, and tackle it because we knew in the beginning that we were going out of the places that we could spell, and we would have to be dealing with this at some point.

So, that's my presentation. That's the opening remarks, and I've given you the update as we know it. So, are there any questions on any of that?

Okay. Let's launch. We will proceed now with our first discussion topic, and what we decided to do this time because of the number of requests, and also because of the interest displayed during our interaction, we decided to revisit some of the subjects that we had some lead-in discussions about because we didn't want to leave these until we felt we had all the juice that we could get from them, and with your support, the champions on our side, and also from the panel, have been very supportive

of this revisitation.

So, we're going to begin this morning with improving air quality, to be led by George Glavis and David. They've been before us before, on our side, and they'll be assisted by Darryl Horne, and so, George, you can lead us through.

MR. GLAVIS: Thank you, General, and ladies and gentlemen. It's a privilege to be able to expand this subject. The last time, we got into a little bit more mechanical issues; this should be of interest to everybody because we're talking about indoor air quality in a general sense, the broadest sense. We're talking about the issues where you spend all your life, and typically homes and autos are pretty leaky. You get rid of them in five, ten years. Some of them that you do keep for a while, you always open the windows or the doors, and do upgrades. In our Government facilities, another story. We're in them an awful long time. We design them to last 50 years, roughly, and of course, the equipment doesn't last that long, but many of these monuments have been around and aren't going away, certainly not in the Federal Government's sense. And so, we have to do it right.

When we start looking at the next slide, it

has some standards there. We have a host of ambiguities, and I say that because when I started looking at this years ago, we got a handle on indoor quality in general when people were getting really frustrated with lighting, for instance, and the excessive lighting that we had was giving people reflections off of the glossy paper, and they were going home with headaches, so we were looking at all kinds of issues where we hadn't upgrade to meet modern technology.

So, as modern technology in the lighting industry came forward, we lowered the standards, and everybody started getting a handle on it, and you were able to measure it. And there's a key issue there: You were able to put a standard on, and we called it foot-candles. It's an intensity that hits the table so you can read what you're looking at, and it also gets into contrast, so you're not going from a real bright sunlight into what would be a moonlight equivalent, right next to you, and trying to read that. Your eyes just don't adjust that fast, and you get a headache.

So we got past an awful lot of that. Indoor air quality took a back seat. We really never did get a good handle on it, and so when we

started looking at standards, the first one that comes up is the American Society of Heating, Ventilation, and Air Conditioning, and if you look at their definition -- I won't bore you with the words, but it says, "As long as we get it to the point where 20% of the people aren't happy, that's good enough."

Well, that's not good enough for me, and so we decided to go way past that, and unfortunately, that's still in the literature today, and we felt that in our buildings, we need to get as high to 100% level of quality of life for our people in our embassies as we can get. If you go to this standard, you're going to get sub-standard air conditioning equipment that's not going to work. You're going to have heating problems and cooling problems and lack of oxygen and all that sort of thing. And we went through some of that detail last time.

But the important thing is, we have to get a good handle on our objectives, and you won't find it there because they still say, "If it's good enough for 80% of the people, it's good enough." We went a lot further.

When you started looking at EPA, there's

some good lessons to learn there. They were born during the time of the first energy crisis, and one of their first buildings they inherited was as a result of that energy crisis, down on 901 M Street, where their headquarters was until they were forced to move out. They were forced to move out because the first time we got a handle on the cost of gas going up, we reduced the amount of ventilation coming in, and what happened was, it was inadequate from the get go, and it went downhill from there. So, quite frankly, EPA's new residence is in the Reagan Building because they had to get out of that other building where they were.

We don't advertise that, but I think in this forum, we need to know that that was one of the overriding reasons. Throughout that whole period, when we started looking at NIST, we would expect that the National Institute of Standards would have some standards for indoor air quality. "No, we're not there." The Occupational Safety and Health Administration did handle noise; we did get a handle on industrial noise and that sort of thing, but when you come right down to it, one of the problems we're dealing with is it's an intangible, very difficult to get a handle on, and when you get people like the

Legionella issues in Philadelphia many years ago, they ran into all kinds of "what happened" when you got into the asbestos issues. "What happened?" So, you get to the AMA and Bar Association with the legal issues, and nobody wants to tell you how clean is clean enough in the buildings.

And that's where we are, going past that dilemma, and establishing standards that will last as long as possible in a cost-effective manner, so that you're healthy and productivity continues to go forward. Otherwise, we have sick buildings, we have mold growth, we have problems that just ruin our day, and the cost of tearing down the Court Building in Florida should be one example of why we don't want to go there. And so, armed with that, I'm going to stop and let David tell you how we got going on safe building for our people.

MR. LANGFITT: Okay, thanks, George. One of the things that -- I'm David Langfitt. I actually work for George. Thanks for inviting me.

One of the -- for those of you who've not found that you do have a handout, at least at the table, underneath your pad, so if you happen to want to take notes, that would be good.

One of the items that the General mentioned

briefly that comes into play is LEED. You know, he's signed a memorandum of understanding saying that we are going to be environmentally responsible. LEED is a word -- you hear "Green," you hear "LEED" kind of interchangeably in the media. They are not really the same thing, though they are trying to approach the same goal. LEAD stands for Leadership in Energy and Environmental Design. It is something that under the General's leadership, we have tried to implement as a standard piece of the standard embassy design.

Some of the choices here, some of the things that we are trying to do in the OBO design of our buildings is the reduction of source pollutants. We're not really trying to make the cities cleaner; what we're trying to do is make sure that the air that is going into our buildings is as clean as we can make it. There are two different ways of doing that. One, we've raised the outside handler -- we've raised the source of our ventilation air, the outside air to the building, to the roof. We tried to get it away from the traffic issues, from the pollution issues created by traffic and pedestrians. We've also, through responsible purchasing, we're trying make sure that the carpets that go in, the

furniture that goes in, has as low of emissions as possible. If you go in -- you know, you paint your house, you know your house smells bad for several days. You install carpet, you know it smells like carpet glue for several days. So, we're trying to make sure that we pick an appropriate item that minimizes the health issues that could occur.

We've included pressurization in our buildings, trying to control our own destiny. This way, we know where the air is coming from. We're forcing it to come from our outside air handler on the roof instead of letting it just show up wherever it shows up. We also, through this outside air handling unit, we provide filtration, both particles, and we take out some of the gaseous issues that occur, you know, the diesel fumes and the like. So, we have carbon filtration and our outside air handling unit to make sure that the air going to each floor for your ventilation purposes is as clean as we can make it.

Throughout the building, we've included enhanced filtration. The filtration that we include in our buildings is extremely good. The HEPA filtration, it's just a level of filtration, HEPA, but that -- the HEPA filtration that we include in

our buildings catches pretty much everything. We're catching everything down to mini-viruses, so bacteria are being caught. Particles coming up off the carpet are being caught. If you have any spores that may be in the air, if they get to the air handler, they are caught, and so the minimum filtration that's available is 99.97. That's what we advertise. That means that only three particles out of every 10,000 that make it to the air handler make it through the air handler to get back into the airstream and available to you. So, we are doing what we can to make sure that your air is as clean and as healthy as possible.

Environmental control, the design that George has implemented, pretty much makes each floor an air capsule of its own. This is one of the questions that Marvin Oey had asked us, so I'll use his name here. It does -- in order to make a satisfactory air system like we have, the building has to be extremely tight. That means that you don't have air moving between areas that you don't want it to move between. You don't want it come in from outside without you knowing where it's coming in; you don't want it to go across the wall without you knowing that. So, our building, by design, for

other issues, is extremely tight. So, what we have done is, we've leveraged that tight building, the no air movement going some places we don't want, we've leveraged that to be able to make our building extremely environmentally friendly, and it's improved our security from a life/safety point of view.

If you talk about source pollutants, this is the one that I mentioned earlier. You're talking about minimizing additional chemicals, volatile organic compounds; sometimes you see it as VOCs. Some of these -- many of these words, actually, show up in the media on a regular basis, so you've probably heard them. You may not know what they are; hopefully, this will help you out a little bit.

Pressurization. If you go to that, as I mentioned, one of the things that we've done is, we've raised the air handlers to the outside of the building, to the roof of the building. Then, we have kind of -- we keep each area of the building that performs a specific type of function, it maintains a specific air pressure. It's a very low pressure; you don't even notice it pretty much as you go through the door. If you have a small crack in your door, you would be able to feel air moving

the direction that these arrows point. So, it's not like it's a lot of air, but we're just trying to make sure that air coming into our building goes the direction we want it to go so that we're able to control our environment for both health and safety reasons.

The last time we were here, if any of you came to the last meeting, sitting out front, we had actual examples of these filters that you have pictures of here. You have the HEPA filter on top, which I've already discussed. You had the -- including this enhanced filtration has increased our initial cost somewhat. We've tried to mitigate that by having our maintenance requirements go from changing the filters every three to six months, which is kind of an industry standard in the United States, we've worked with the filter manufacturers and the air handler manufacturers, and we believe we're getting five years out of our filters. So, we only change our filters once every five years, as opposed to once or twice a year.

The higher energy costs -- in order to make our building safe, we do run our equipment 24/7. We do also include nighttime temperature setback, which allows us to reduce the amount of air that we're

circulating, and there's no way other than the engineering-ese to do it. If you recall fans, as you reduce the speed of a fan, if you can take a fan that's going 100 RPM and reduce it to 50 RPM, the power required to run that fan goes from 100% to 12%. So, just by going -- even though the fan is still running, by reducing the speed by half, we've reduced the energy consumption by 87%. So, that's a significant number. So, yes, there is a small penalty to pay for running these 24/7, but there are some additional benefits from that. We'll talk about them in a minute. Actually, we'll talk about them on the next page.

If you take a look inside the little red circles, you may have seen this in a hotel room and weren't real excited when you saw it. It's mold growth. One of the things we try to do in our buildings is maintain them at 23 degrees. This is the nominal number; we allow it to vary slightly, up or down a couple of degrees. But 23 degrees C, 50% humidity, that is a good number to keep mold growth to a minimum.

Doing the setback temperature that I talked about on the last slide allows the temperature as you -- when you go home in the afternoon, you don't

need to keep the building at a temperature that is comfortable for you. So, in the summer you let it get hotter, in the winter you let it get colder, and then in the morning, you'll warm it back up before people show up.

By keeping our equipment running 24/7 and maintaining this 50% humidity, give or take a little bit, you're able to minimize or eliminate mold growth within the building. If you turn the equipment off on the weekend, if you're in a humid climate, you have two days of humid, you know, potentially 100% humidity or close to that in your building for two days, so that mold gets a foothold. You're trying to stay away from that. That's part of why we do what we do.

New technologies. We have chosen to do a passive approach; it's just filtration. Our air handlers are bigger than what you have in your house; our filters are bigger and more extensive than what you have in your house, but it is the same idea. It's just really good filters and a big fan.

Some of the things that are coming down the pike, you hear people talking about the UV lights. They say, "Gee, we can take care of everything with UV lights. We can kill all the spores, you know,

kill bacteria," and some of that has borne out. The challenge is, you have to continue to do maintenance. Our filters, once every five years. UV lights wear out every several months, and they have a continuous electricity draw. So, we look at new stuff as it comes out. In many cases, we have yet to find anything that we feel any more confident will provide a safe, healthy environment for our people and what we're doing.

You want to talk about any more of these?

MR. GLAVIS: Yeah, I'll grab some of this. I think it's marvelous that this is an opportunity to compare notes because I have some thoughts, he has some. When we get into the chemical and biological sensors, once again, we looked all over the map, continuing to look all over the map, and found they are too expensive and they're too unreliable, and no way can we expect our people overseas to maintain those things when it takes a team of well-trained soldiers to keep them running and recalibrated every six months.

We just came back from another briefing on the Pentagon renovation. They're doing a lot of work related to sensors. They're doing an awful lot of things that, in our opinion, are very costly to

run, and require an awful lot of, shall we say, signals in advance to keep you safe. The system that he described is running all the time. You don't need the sensors, and it keeps you safe as long as we do the routine maintenance, as long as we can provide, shall we say, some checking sensors; that is, validation sensors that don't need to be instantaneous, and they don't need to have 100% reliability in a moment's notice to tell you where to go. They just need to be able to tell you that the air conditioning system is running the way that it's designed to run, and that's a very valid, important thing so that we can convince our people that we are taking care of them, that the maintenance work is being done, and that they're in a safe, healthy environment.

So much for the sensors. They are coming down to the point where we are now prototyping something that can we put in together with our HVAC system and, like I say, they're in the advanced development where we're getting ready to install them.

With regard to the finishes, we talked about noise briefly. The modular concept is great; it does provide noise attenuation. The carpets

provide noise attenuation, but as David said, in some places, if you don't get a handle on cleaning the air, that stuff is going to settle, it's going to settle into the furniture, and even -- we have -- the classic was an applied physics lab in Johns Hopkins where we tested that sort of thing, and we walked into a room on a Monday morning and we measured all the nasty stuff coming right up to the nostril level where you breathe it in, and that's the sort of thing we just don't want to perpetuate, and by going through this enhanced filtration that we have designed, it catches that. If you don't have the enhanced filtration, yeah, we can save a few bucks up front, but it's going to come back and haunt us because we're going to have all of that nasty stuff in our nostrils and our lungs, and we're not going to be safe and healthy, as we'd like to be.

With regard to the building automation systems, we're struggling with this. In the design/build concept, we give the contractor an opportunity to build something, and obviously he wants to make sure that it's not too costly, and so he gives a price tag, and now we're realizing that some of those things could have been done a lot

easier if we just used the automation system as a monitoring system, a building management system, so that we can turn around and make sure that everything's working right, and if it's designed properly with a few extra bucks up front, each one of those spaces has its own controls and doesn't need a monster, shall we say, smart box in a building manager's office somewhere far away.

And so, we're keeping it simple. We are getting there, but for a while, we found out that some of these wires were crossing hard lines, and it just wasn't working. So, we're focusing on upgrading the building management system so that it is a sensor-type, and so that the people back here at Headquarters can get a signal at the same time Post 1 gets a signal, if it's a severe problem like an air conditioning system went down. We don't have that today, and we need that.

The ideal would be, when you look at the last bullet on computer-controlled access and the heating controls and the fire alarm controls, we ought to be able to pull them together. We have a lot of turf battles -- I just mentioned one with Ashray (ph.), you have another one with the fire protection folks, where they don't want you onto

their turf, and we have to get past that, and if we could get past that, you card, then would do the ICASS (ph.) work -- we call it ICASS, it's controlling and budgeting and paying for things as you go, so when you come through the front door, they know you're coming. You have a clearance, and as you go into your area, the clock starts ticking on the energy you're using. The systems start up. Until you come on in there, they're in the setback mode. That's where we ought to go, and it's not that hard. Technology is here. We just have to overcome, shall we say, some of the human elements and some of the turf areas, which says, "Don't tread on me, and this is my turf."

GENERAL WILLIAMS: Okay.

MR. GLAVIS: And that's it, sir.

GENERAL WILLIAMS: Okay. George, David, thank you. Let me raise a couple of points before Darryl comes on because I think it's appropriate that we connect these dots right away. I trust that our O&M family was listening and attuned because some of this information, I'm hopeful that it is getting down to those who plan budgets for O&M because I heard several approaches that George and David were talking about that have direct

connections to some issues I know that we're dealing with.

Five years life on filters; the real issue there is, are we seeing this to be a reality, or are we budgeting and changing filters every year? That's something for our O&M people to consider. The 100% down to 12% speed on fans, to help, since the system has to stay on all the time, it might be just a small dent on the electrical utility bill, but every little bit will help.

The admission that the BAS system, you find BASses that are not working as well as you would like because they were not all designed in a test tube. You heard him say that part of our design/build concept is to simply indicate to the contractor in the specifications and the RFP that one has to be put in. So, the propensity for the contractor is driven any number of things, cost, et cetera. So, this might be a suggestion to the contracting community that we probably will have to tighten that up if our O&M and customers can't lash up a little bit better with us. We can begin to specify, and when we specify, obviously, as George pointed out, it's more money up front, and that has a little contractor implication. And then -- but it

would eliminate the little bump that we have going with our O&M side.

So, these are excellent points, and this is one of the reasons we wanted to revisit.

Also, on mold growth, I hope that we are sensitive to the temperature control, which, obviously, is an on-site discipline. You have to ensure that the temperature is where it should be, and in order to not have mold growth -- because here of late, we've had a little bump every now and then about mold, but it takes the whole apparatus to work together on these things to make certain that we can get where we need to get.

And the other interesting point was the LEED and the Green side of the house, and I -- there may be others who might want to chime in on this, but it was interesting to hear that sometimes we loosely get these things sort of connected to each other where they were designed and, in fact, are different. They are kin, maybe cousins, but they are not that close.

Did I get that right, George?

MR. GLAVIS: Yes, sir.

GENERAL WILLIAMS: Okay. Are there any other questions, comments, regarding that subject?

(Pause.)

GENERAL WILLIAMS: Well, I can assume you got what I got. Okay. Darryl?

MR. HORNE: General Williams, good morning everyone. I think David and George did a very good job of describing what we're talking about here in indoor air quality. Dr. Oey and I were asked to really focus on the benefits of indoor air quality.

Building air quality has emerged as a major issue involving the health and productivity of its occupants, and we really focused around -- and I'm going to hit a few points because I think really, the integration of our two presentations really overlap quite a bit. We want to just highlight a couple of things, and before we really get to the benefits, we want to talk about some of the burdens of poor indoor air quality.

And I'd like to counter that and basically say that some of this is perceived, and some of this is real. People working in building today, and where we are as a society, globally, we're reacting to a lot of perceived and real. So, what George and David are working on are really, really getting at the rigorous pieces of really making sure that they understand the facts of the building that they're

operating.

Approximately 30% of the new and remodeled buildings worldwide will be subject to excessive environmental pollutants that cause indoor air quality problems. So, the burdens of poor indoor quality -- basically, when you get to it, businesses are estimating, on an annual basis, about a billion dollars a year; this is the impact of poor indoor air quality, about a billion dollars annually.

The health risks of poor indoor air quality: We mentioned the sick building syndrome, oxygen deficiency disease. I won't go into the great details of those things, but that's really what the impact of having a poor health -- poor indoor air quality.

None too less to mention the litigation risks; I would say that's where the hundred billion dollars will come from, really focused on all those effective parties, from the builders to the developers to the Facility Managers, everybody's involved in how we get at that deficit.

And what I think I really heard George really talk about this morning, and really it's just the safety and health compliance. When the management works to establish an effective indoor

air quality program, which is what we described this morning and what we've heard before, you really get at the rigorous process needed to really get to the facts of what we're talking about here, and George really laid out all of the regulatory compliance schemes he has to deal with, and there are numerous of them.

So, I'll move into the benefits of the improved air quality. We're really focused on the enhanced occupant comfort, health and work productivity. We're really focused on a competitive advantage over other employees of other buildings. The positive effect on the environment, increased fuel efficiencies when you're running your buildings effectively, the contribution to the overall improvement in the quality of life in the environment.

And the last one I mentioned is cost competitiveness. I'm sure George would tell you that the cost -- he just mentioned some of that about the bio side of it -- the initial costs -- but the initial cost is usually offset by reduced maintenance in a lot of these facilities.

Cost benefits: The occupant health and comfort is directly associated with operational

costs, in terms of increased productivity, decrease in absenteeism, reduced health care claims, and minimized remediation. I won't go into all of the actual studies that have been conducted, but improved indoor air quality has significant and measurable financial benefits, and there are a number of studies that have been taken in this regard to prove what those percentages are in reduction of poor indoor air quality.

But what highlights that? The mitigation costs. Depending on the extent of the work required, and the timelines required, getting into mitigation versus doing the effective IAQ upfront, the mitigation costs are astronomically higher than doing it right upfront.

There was some mention of Green buildings in indoor air quality. I pulled up this recent study on why -- what are the requirements that people are buying facilities, what are they looking for. A recent report indicated that the average buyer chooses Green for health benefits at somewhat 42%. That's the highest rating. They're looking at Green facilities for the health benefit which comes from living and working in a Green facility. That's compared to economic benefits, which are 17%, or

environmental reasons, which are 12%. This demonstrates that the public does not view cost as the most important driver.

Now, the cost-effective solutions for addressing indoor air quality pollution, I think David really -- and I won't -- David pretty much did this part of our presentation this morning. Really getting at achieving better indoor air quality during design and construction. The capital selection of building materials, minimizing the need for surface coatings or other finished surfaces, selecting low-emitting building materials, so forth and so on. When you get into the LEED requirements, you get into those. And the proper operation, ventilization, and preventive maintenance.

And I'll end with this one, it's collecting air quality during commissioning and occupancy, really establishing a benchmark for where are you when you open the building, versus where you are from an operation standpoint going down the road. Getting some measure of where you are, going in.

Like I said, David got to most of these. I would like to end with, though, the energy improvements and environmental responsibility. I started with, the building air quality has emerged

as a major issue, primarily around this notion of corporate social responsibility, and what building owners are really faced with today as they think about what they're investing in going forward.

We've got an energy efficiency building requirements under the Energy Policy Act of 2005, and it really goes into some of the tradeoffs, but the principles are basically this: The energy consumption and minimization is a requirement. A design and construction team must keep in mind that a building must serve its primary purpose of serving occupancy, serving the occupying organizations effectively, and all tradeoffs must be decided against that principle. That's really what we're focused on.

So, there are lots of requirements, a lot of compliance/regulatory things that George is dealing with, but there are tradeoffs, and I think for the most part they really hit how they're working from an IAQ standpoint, to get the management really engaged in all of the issues they're dealing with. So, with that, I'll close. Thank you.

GENERAL WILLIAMS: Okay. Thanks to the team. Are there questions or comments concerning

this very important subject that we happen to be talking about this morning, indoor air quality? So -- yes?

MR. FLEMMING: I didn't hear anybody talk about the construction-related issues that have to be dealt with to keep the building --

GENERAL WILLIAMS: Right.

MR. FLEMMING: -- from having mold issues, and I don't know if you have standards of desiccant driers to dry out concrete-framed buildings. If you move into standards of mold-resistant gyp board, if you have standards on a particulate count before you close up walls, things of that nature because my experience would say that if you don't develop those standards fairly quickly, you're just masking the problems and adding cost to the HVAC system to pull out problems that can be dealt with in construction.

So, I was curious if you guys could talk a little bit about what you're doing there, if anything.

GENERAL WILLIAMS: George?

MR. GLAVIS: Good question, crummy answer. We're not there. We probably should be out there monitoring a lot of the indoor air quality issues. We do know, of course, that as we get into the

volatile organic compounds and the painting, as we get into the drying of the concrete, there's tremendous opportunity to such things if we started sealing the buildings up right away. A lot of this is climate-driven; we're building these buildings, thank goodness, in a lot shorter time, so hopefully we're doing this work a lot faster than a lot of industries do, or certainly a lot faster than we used to do, where there was a tremendous amount of dead time before we got our systems running, and therein lies a tremendous problem in the past.

The accelerated pace of getting these buildings done, I think, is in our favor. I don't have any measurement devices out there; we don't have that kind of, shall we say, control. It's a valid question, and we ought to look at it.

GENERAL WILLIAMS: Thank you. Yes, Suman?

MS. SORG: I just have a question on interior finishes. You know, standardization and, you know, specifications that are provided to the design builder are very good and useful in getting, you know, apples and apples, but you know, for example, just in the carpet, tile, that's a requirement all over the world, whereas in some areas, terrazzo is actually cheaper and easier to

maintain, and you know, it's sort of the norm in that part of the world, and yet I think there's maybe some room to provide some kind of a leeway in the organization so that these kinds of special materials that are germane to that area can be provided.

But we run into a lot of hurdles in that, one, the builder, he hasn't priced that, so in the short time that we have to think about it, he's not going to -- he's resistant to changing it. When you go to the reviewer, it's also a little bit of a struggle to get, you know, to go away from what was in the specs, and they're used to seeing. But there could really be -- on this, just one thing, the carpet. I mean, the whole building could really have a lot more room for providing indigenous materials that are less mold -- that are more mold-resistant.

GENERAL WILLIAMS: Um-hmm.

MS. SORG: Especially in tropical areas.

GENERAL WILLIAMS: I appreciate your comment because one of the lessons that we're learning from a major piece of construction we did in a very difficult climate very quickly is a lot about the interiors, and that staff now is in Bill

Miner's shop, so we'll be able to take some of those observations. A lot about carpet, right on target, and in fact, a lot of good information there. So we're just beginning to look at this, so it's an excellent point.

Genevieve Humphrey has already gathered a tremendous amount of information. I have her report, and it speaks directly to that issue.

Are there -- yes?

MR. KNOOP: First of all, I'd just compliment the presenters on an excellent presentation, and I'd like to point out some of the strengths and important issues that they've brought up.

First of all, the presentation talked about a holistic approach, and we weren't hearing just about how you clean the air, but the materials you put to make the air cleaning easier, and I think -- and actually, I really enjoyed the point brought up by my colleague here about the construction process because that's the next battle to fight to make this program even better.

We talked about issues about making it healthier for people, but we really should go back to your first mission statement, is that we're

trying to make people safer. They're out there at harm's risk; they're not on vacation. These are hard jobs, stressful jobs. Creating better environments, healthy environments, for this sanctuary, which is their office environment, is extremely important so that they can be more effective in seeing to our interests worldwide, as a world player, the United States of America.

Indoor air quality gets into chem/bio issues, and again, safer -- we're creating safer environments for those people. So, I think this is a very important point. We're also -- as OBO becomes an industry leader in promoting change for the long run.

I would also like to support a point that you brought up. You talked about running systems 24/7, and I worked on several Federal facilities myself, and two courthouses, one in Philadelphia and one in Alexandria. Both suffered from mold and deterioration of millwork; we had to replace a tremendous amount of millwork in these facilities due to systems that were not running seven days a week.

You talk about ecological concerns; think about the waste of throwing away all that millwork

that we cut down from trees only after ten years of life. It's -- not only is -- there is a true financial benefit, there is a true human element to that, the human safety. There are lots of examples of how important that is, and this is our money going out there. We should be spending it on the excellence of the people who are out there doing their job, not repairing a facility for the second time over a not well-thought out energy savings, which I can't tell you how important that element is.

And we're seeing that again and again; I hear reports from GSA personnel saying, "Yeah, we saw that also in Kansas" or wherever, so I would like to also say that that's a very important point, and there's a tremendous savings opportunity there, and a tremendous improvement opportunity there.

GENERAL WILLIAMS: Thank you, Greg. Are there any other questions or comments about the presentation? I would just like to pick up and sort of summarize on two points. Greg mentioned change; obviously, all of these can be topics of themselves. We have talked a little bit about it, but obviously, we cannot get to this second curve without imposing change. So, yes, they are imbedded, and all of this

from the strategic and corporate standpoint will be changed, and that's what the team has been put together to look at because it's going to be moving a little cheese, and stepping a little toe here and there in order to get where we need to get because it's going to be a different way we do business, and it will have cross-cutting implications.

The other operative two words, the holistic approach. We try to do this on all of the new approaches that we take. If you notice, when we start tackling the whole issue of air handlers, chillers, and the like that we were talking about last time. We tried to take a holistic approach, so this indoor air quality issue will not just be site-specific. When we really make the turn, we are going to try to tackle it holistically. And I think Darryl pointed out some good points relative to health because that's really the bottom line when it gets down to air quality, indoor air quality, and people that we serve become quite concerned about that.

Now, that leads me into something else, and this is just a question I'll throw out. If somebody's ready now to deal with it, okay; if not, it can be something that we can pick up maybe later

today. Who do you see taking the lead on the indoor air quality? This may -- is it industry? Is the thinking in industry, or is in non-profits? Who's out there bringing the best ideas to the table?

MR. KNOOP: I think industry will bring the solutions to the table, but it's the customer who must demand the change. And so you, as OBO, as the customer requiring a certain performance standard, will drive -- because you have the money. You're the one spending the money, and you have a program, as you illustrated earlier today, that has had tremendous growth, that's outputting a lot of buildings, and that's a lot of dollars being spent in industry. If industry -- if you put the requirement out there as a customer, I think that the industry will respond.

And I think I pointed to this example last time I was here, Kaiser Permanente has a big building program, three billion dollars a year, and they require change in their carpet purchasing. Wanted a zero-vinyl carpet for medical facilities. It was not an easy product to meet, or make. They challenged the industry to go out there and meet that standard, and had basically a bid-off, and industry responded with a zero-vinyl product made by

Collins & Aikman, and they became part of their standard purchasing.

So when the customer goes out there, one especially as influential as OBO, as the Federal Government overall, first of all, it gains attention. Second of all, it shows longevity as well because of the power of this program, and thirdly, it will -- it promotes the change. So OBO shows the leadership, and the creative response should come from industry. That would be my summary.

GENERAL WILLIAMS: Thank you. Yes, Joe?

MR. TOUSSAINT: Can I put another twist on this?

GENERAL WILLIAMS: Sure.

MR. TOUSSAINT: I found Bill's comment about the construction phase particularly intriguing, and something that we really haven't addressed. It's just around the corner. Where would be the leaders in that? Because now we're talking process. I'm seeing a lot of this as process, which, when you look at what we're doing, we're doing it halfway around the world, remote locations, US contractors, short time periods, local labor forces, and we're asking them to behave in a

different way. And that's going to translate into cost, but it's also going to translate into a learning. I mean, we did this, we went through this years ago with safety, and we've turned the corner on that, but I see this as the next corner to turn, and where do we look for leaders in this, whether they're owners or companies or what?

MR. FLEMMING: I'll try to answer; I'm not exactly sure, but I would look to commission people like the AGC or CII to do a study on things like that. The examples I gave you, which -- drying out a building, were examples were personal experiences I had because as we make the buildings tighter, which you guys are striving for, you're trapping a lot more inside the building, and concrete-framed buildings are a big problem when you make them tight. You can't get the moisture out of the building quick enough.

We just had to do trial and error to find out how to dry a building out faster, which, you mentioned, you want to do your buildings faster. We were doing a laboratory building for a university, had to do it in 18 months. We had to dry the concrete out fairly quickly because you can run into big mold issues. So, we had to develop those

ourselves. We didn't find an industry anywhere that somebody had written a paper or developed any of those standards, and I think it would be incumbent on all of us to try to go to some of the industry associations and try to get them to participate in that. And CII, or perhaps AGC, might be the best to start with.

GENERAL WILLIAMS: Um-hmm. Thank you.

MR. GLAVIS: May I interject, sir?

GENERAL WILLIAMS: Um-hmm.

MR. GLAVIS: It's marvelous that you asked that question, and one of the things we have going for us is that we have instituted is the construction filters, and getting the air conditioning systems turned up early because quite frankly there are certain parts of our building that we have to, shall we say, energize while the rest of it is still being constructed.

And having this, shall we say, infrastructure in place for that part of the building that has to be energized, allows us to utilize that same capability for the rest of the building. This is totally different than a normal construction process, and yes, we do have the concrete, shall we say, encasements and

encapsulation, but the nice part about our design is, we are constantly drying that out from the day we start our systems, and that might help solve some of our problems. Thank you.

GENERAL WILLIAMS: Um-hmm. Yes, Suman?

MS. SORG: Just to Joe's question, MIT is doing a lot of work in this area. I mean, they have a bunch of projects going on in terms of building materials and the effect of building materials on health. I don't know if you want to look at that, their website's --

GENERAL WILLIAMS: Um-hmm. Well, if you've got a lead or a link, let the staff know, and we'll follow up.

Well, listen, this has been a wonderful discussion, as, I must say, all of our topics end up being, and we could spend more time, obviously because this has such linkage to the human side that I think one of the panel members mentioned, and it won't be a hard sell. We have to get it right, and we have to hit that second curve because it's going to be a left turn for some, but with the assistance of AGC and our participating associations and the like, if we could all turn at the same time, so it might be some utility to have some industry leader

study. So it'll make it quite easy for us to get there when we put the requirement there.

So, we'll talk with our AGC friends, and I know they're represented here today, and we'll be able to see where we can go. You know, as these ideas come about, we don't leave them, so you know you're going to hear about this again as we move forward.

Okay, with that, let's move to the next -- thank you, George. Thank you, Darryl and David. We'll move now the next subject, which is, again, one that we sometimes shy away from because -- just because it's natural to not discuss staffing and the quality of staffing and everything like that. We all like to say we have the best and brightest, and we have plenty of those, but we know that there are some things happening in the workforce. I remember when I was in Kenya about five years ago, there was a magazine that wanted to interview me, and they didn't want to talk about the building that we had built in Kenya. They wanted to talk about the dwindling in the workforce. Obviously, they have a major problem with talent there, but was wondering whether or not this had any similar parallels in the United States.

So, we have taken on -- this is kind of a revisit, we did this about a year ago, a year and a half ago, the challenges that we face, particularly in the Government, and more specifically in the State Department, to get the kind of quality people we need because I think many of you have heard me say this over and over. I don't think it's in the numbers; I think skill sets. And if we can't re-cultivate -- I was talking with someone about the maintenance staff -- if you can't re-cultivate what we have, then we have to find another skill set, regardless of how painful it is. Otherwise, we won't be able to continue to do what we need to do.

So, I turn this over to our champions, Jonathan and Carmen and then, of course, Regan and Bill's going to speak to it as well from an industry perspective.

MR. BLYTH: Thank you, General. I really appreciate the opportunity to revisit an issue which I know is of a deep importance to you. I know it seems kind of strange having the Chief of Staff also work in Human Resources, but I think it really crosswalks with the importance of this issues, especially because an organization rises and falls on the people that work there.

As many of you know, according to the Bureau of Labor Statistics, 50% of the Federal Government and 70% of the Federal Senior Managers will be eligible to retire within the next two years. The Office of Personnel Management estimates that the peak of the Federal Retirement wave will occur starting in 2008 through 2010, and as we are all aware, 2008 is right upon us.

In addition, in the next ten years, 60% of the general service and 90% of the Senior Executive Service will be eligible to retire. The next generation of workers that are following the people who have led this country over the last 40 years are smaller, and have less of the engineering skills that we here at OBO depend so much upon. There will be intense competition with regards to the public, the private, and the non-profit sectors for the future of the American workforce.

As many of you know, here at the State Department and all Federal service, there are numerous rules and regulations that stretch from veterans' preference, all the way down to the way we actually operate in creating certs and applying for positions, as well as the fact that individuals who apply and are accepted into positions here at the

Department of State all must go through diplomatic security.

I'll give you two examples. One, at this moment in time, we have at the Department and at OBO, at the Department of State, we have 23, about 23 people in security clearance, of which almost half of them have reached over 150 days in security, some of them exceeding over 200, and some even over 300 days.

In addition, the last time I spoke, I was in deep search for a new Human Resources Director at OBO. The key person who runs the division. Even fast-tracking that, following the rules and the regulations established by Title V, as well as the Department of State, it took me eight months to bring in a qualified Federal employee from another agency to become our Director of Human Resources.

In February, we looked at OBO holistically and determined that OBO was facing the same major challenges that most Federal agencies. Further, OBO is facing these challenges after going from building one embassy per year in 2001, to this year opening 16, basically accomplishing this task with the same number of staff that we had in 2001.

I know this is of importance to you, sir,

and that's we had a meeting yesterday with the Principal Deputy Assistant Secretary and the head of HRCSP basically to talk about where we've gone over the last several months, and where we see we can improve in working with the Human Resources.

This chart, above here, which I showed you in February, outlines the problem. GS-11s through 13s, which we consider here, are middle management, and GS-14s through 15, which we consider upper management, shows that 52% are over the age of 50 at OBO, and 27% are over the age of 60 in the middle management. And in upper management, 69% are over 50, and 26% are over 60. Now, I will remind everybody that retirement is a personal decision that is based on a variety of different factors, so that when we extract information, we cannot really speak definitely about whether an individual will retire at a certain period of time in their career, but we can basically get an understanding and look at the overall numbers to look at the trend that an agency or a bureau is facing.

Since we last met -- next slide -- since we last met in February to discuss this topic, 100 new employees have joined OBO, of which 40 of them are civil service employees, and 60 are PSCs. PSC

stands for a Personal Service Contractor; it is a unique thing that is provided to us in the law at OBO that allows us to bring on individuals who work on yearly contracts, to work by and large with the civil service to accomplish our projects. And I will note that in walking through the building, there is no distinction between a PSC and a civil servant; we don't know the difference in most cases, but the fact is that they make up a great majority of our staff.

However, though this is a good number that we had 100 join us over the last several months, we go to the next slide, it shows that we had over 80 individuals that departed OBO, 30 in the civil service and 50 PSC, for an overall gain of 20 employees, which overall is good.

But now, if you look at the next slide, where you see the breakdown of the 40 civil service who have joined us over the last several months. We see that 28 have less than five years, 6 with less than five to ten years, and clearly, this is a good result because we figure that most people will serve in a Federal service for at least 20 years or longer.

What have we done over the last several

months since we last met? Well, as I mentioned before, we hired a new Human Resources Director, and basically, under her guidance, we have also increased the staff in our HR department to over 10 individuals. But going back and looking over the notes from last meeting, one of the things that I'm pleased that we were able to do, and it was brought up by our IPM member, Mr. Wallace, was that we were able to hire a staffer dedicated to doing recruitment. I concluded several months ago, when I first asked to do this role, that we needed someone specifically who would go out for OBO and find the next talent for our Bureau. And what we've been able to do is hire Joe Campbell, and Joe Campbell has now traveled almost throughout the country, met with university professors, met with students, met with businesses, and has tried to find our next talent.

The other issue that I've asked Joe to do is start to look at OBO not holistically, but look at it into it small, compact units. One of the first things that I asked him to do was, do a study on Facility Managers. General, as you are aware, we have 55 capital projects completed, under contract. We have 36, if I remember, that we are working on,

and clearly what we are going to have in the very near future is over 100 new technically advanced structures. As it has been told to me, the days of the wrench are being replaced by the days of the computer, and an investment of several billion dollars by the American taxpayers needs to be insured.

And the Facility Manager, who -- we have at OBO 168 of them, is the person on the ground, day-to-day, maintaining the properties within the U.S. standards of safe operating condition, and directing the maintenance and repair of the real property assets. I began to be concerned about our facility management staff several months ago, so I asked Joe Campbell, our recruiter, to look at Facility Managers, to provide a report, which we have here in draft, which he is going to be talking about, to provide a read on where we are, what we can do to recruit future Facility Managers, and able to ensure that we make sure that our buildings are maintained for the 50-year length that we are building them to survive.

This information comes from this white paper; that will be presented to you in the next few weeks once we get it all completed, and I'm going to

ask Joe Campbell to now talk about some of the preliminary things that he has found.

MR. CAMPBELL: Good morning. Thanks for having me.

GENERAL WILLIAMS: Good morning, Joe.

MR. CAMPBELL: Good morning. One of the most recent questions that has come to light because the Facility Managers play such an important role in operations and maintenances of our embassies -- OBO FAC had recently prepared a report outlining the difficulties that they had recruiting for the Facility Manager positions. In addition to that recent document, OBO FAC stated that because FMs need certain experience and education, these individuals tend to be second-career employees, and because of this, they retire sooner, leading to a larger-than-normal attrition rate.

If you'll go to the next slide. What I did was a breakdown of Facility Managers and the gender statistics. If we could go back one, please, sorry.

We have a total of 168 Facility Managers with us. Of that 168, we have 166 males; only two are females. The Facility Managers, we also wanted to look at the length of service, along with the military status, if they were prior veterans. Out

of that 168, 81 were veterans, 87 were not. With the age statistic, we looked at the length of service along with the current ages. So, from 30 to 39 years, there were six. From 40 to 49 years, there were 61, and from 50 to 59, there were 75, along with 60-plus years, there were 26 individuals.

The Federal length of service versus the ages, we also looked at their current status of the length of their total Federal service. Out of those individuals zero to ten, there were 84 individuals. 11 to 20, there were 56; and 21 to 30, there were 18. From 31 to 42 years of service, there were 10.

At the ages of between 30 and 39 years of age, we also looked versus the length of service. From zero to ten, we had six individuals, and from 11 to 20 on up to 31 to 42, there weren't any.

From 40 to 49 years of age, we looked at -- from zero to ten, there were 36 individuals serving with us, and from 11 to 20 there were 20, and 21 to 30 there were 5, and from 31 to 42 years of age there were zero.

From the ages of 50 to 59 years of age, we had zero to ten, I think there were 25 individuals. From 11 to 20, there were approximately 33; and from 21 to 30, there were 10. 31 to 42 years of service

at that age group, there were five individuals.

When we went over to the 60 and above years of age, where it really gets tricky here, we had 11 individuals at zero to ten years of service. At 11 to 20, we had eight, and from 21 to 30, there were three individuals, and from 31 to 42 there were four.

So, based upon those statistics, we're really in a position as far as recruitment, we may be for the long term for all the new facilities that are being brought up, we understand that we may be in a tough position to recruit for those individuals. Jonathan and I had prepared this document for the sole purpose of ensuring that we could recruit and find these individuals because most of them have, again, a second career, they're second-career employees, as well as this is a difficult position to fill because of their backgrounds.

One of the things that I recommended was the use of the Facility Managers, or subject matter experts, for active recruitment to engage in face-to-face recruiting. We also could target military personnel that have facility management experience and time abroad, advertise through military

transition centers. We've really been successful using the Navy Seabees as one of the great sources for Facility Managers.

OBO recruitment to attend the international facility management association, IFMA, and again, possibly using the WAEs to start a training program within the Department of State for the new Facility Managers. We would also look to promote the startup -- a Facility Manager's course through local universities with the help from SFI.

We currently target over 58 universities and colleges throughout the country. Again, it's difficult to recruit, to actually go to a university and recruit for a Facility Manager, mainly because of the experience that's required for a Facility Manager. And again, we must promote the overseas building operations as one of the premier workplaces, and we also must continue to generate the awareness of OBO and our role abroad, that it provides safe, secure, and functional facilities for the thousands of men and women who represent the United States and the promotion of diplomacy. And it's saying that from this report, it's just -- it was really -- I guess you could say a stressful report, gathering information through FAC -- I met

with FAC, I met with several individuals that led up to this report, and Jonathan, again, really helped with that process. I'll give it back to you at this time.

MR. BLYTH: Well, sir, I think that you would find that those numbers are interesting, and my feeling is that until you actually know what the problem is, you can't find a solution, and clearly with Facility Managers being so important for the maintenance and operation of our facilities, we now have a course that we can take a path forward in trying to locate the future Facility Managers. What we clearly see in those numbers is that we have a ever-increasing age of our Facility Managers, and we basically do not have younger Facility Managers who -- and with the fact that our buildings are so more technologically advanced, we need individuals who have advanced skills to run these buildings. And so, what we are going to do is now take this white paper, and we are going to begin to move forward, and through our recruitment efforts OBO is, work with the managers, in fact, to make sure that we do have a strong workforce in our facilities department. And so our Facility Managers are the best that they can be to maintain these buildings.

GENERAL WILLIAMS: Okay, thank you. Thank you both. Before we hear from Regan and Bill, just a couple of questions I would have. I know I've not seen the final report, and you, the panel and the public, are hearing this even before I have an opportunity to digest it, but we might as well begin to deal with a couple of the issues that I saw highlighted here.

We're not going to get there unless we can ladder and bring new people in. There's no way to have a requirement written in a job description that clearly cuts out of the emerging part of the available workforce because part of our problem might be that we have the requirements that -- where it automatically leads you to someone that has 20 years of experience. So, that might be a start point.

I just believe that we have to find a way to bring the juniors in and get them in the system, and find a space for them in this business, and then have the seniors, which would be that bubble you have there, to coach them and bring them on board because you get practical experience by having the opportunity. You become a Major and Lieutenant Colonel by having been a Lieutenant, but you got to

be a Lieutenant first and learn how to do that.

So, I think we're just going to have to look very hard and find a way to bring in young, bright people. Now, I don't know how anybody else feels about that, but that's just sort of my first take on it because looking at the chart shows that we've kind of got a problem. We've got a gender problem; two women, or something of that nature, that's unsat. We've got to figure out some other way; there must be more than two women interested in being a facilities manager and can travel overseas in spite of how much difficulty we want to suggest that Ouagadougou would be. You may find a person interested in going over, okay?

Okay. Just -- that's not for the panel; that's for the staff. Okay.

(Laughter.)

GENERAL WILLIAMS: Any questions, or -- yes, Bill?

He wants you to a mic, Bill.

MR. MINER: As an old male Government employee, you can see I'd make an ideal Facility Manager --

(Laughter.)

GENERAL WILLIAMS: Look into it, Bill, when

you finish your tour here --

(Laughter.)

MR. MINER: But one thing that I mentioned to the team as we met was, as we shift gears from building production to operation and maintenance, there could be, should be opportunities for our planning, design, and construction staff --

GENERAL WILLIAMS: Sure.

MR. MINER: -- to do temporary assignments, furloughs, to perhaps bridge the gap until we can find new, young talent.

GENERAL WILLIAMS: Excellent point. Excellent point. That's the creativity that we need to be looking at.

Yes, Robin?

MS. OLSEN: General, I just wanted to say you have a great resource in a former member of the panel in Ed Denton, the Vice-Chancellor of Facilities at UC-Berkley, and he's also an architect. He might be able to guide -- there may be some group, some university group, perhaps, for Facility Managers, and that would be an excellent resource. Another one would be a member of AOD, Bob Kress, from Princeton. You've met him before.

GENERAL WILLIAMS: Yes, um-hmm.

MS. OLSEN: So we can look into that, if you'd like.

GENERAL WILLIAMS: Okay, very good. Thanks for those suggestions. Okay. Yeah, that's very good. Okay --

MR. STINGLY: General, Pat Stingly from DS. I wrote to Harry Thomas about this about two weeks ago. I think one of the biggest problems we have is that people don't apply for jobs the way the Government expects them to anymore. When I -- I've been in the private side, as well as in the Government. When I was on the private side, I'd put a resume on Monster, and employers would pull from a pool. To work for the Government, I have to submit time and time and time and time again, and frankly, a lot of the good people just get other jobs first. If we want to compete with private industry, we have to compete like private industry.

GENERAL WILLIAMS: Correct.

MR. STINGLY: And OMB A-76, we all know that as the thing that outsources our jobs, but it also says to seek public and private partnerships, find out how they do stuff in private industry, and try to emulate that. I think we go back to Harry, and we say, "Harry, look. We need to be able to

compete, and we need to be able to hire people from a pool the way that private industry does." And I have the same problem with DS, and anybody who's trying to get talent.

But everybody in this room around us can get the talent, so clearly it can be done. Thank you.

GENERAL WILLIAMS: I know. Thank you. Yes? Okay. I think we'll move now to Regan and Bill Flemming.

MR. FLEMMING: I'll speak first.

GENERAL WILLIAMS: Okay.

MR. FLEMMING: First off, I think the problem is a lot greater than you guys even realize yet. I'll show you some more statistics, and we'll walk out of here with a lot of statistics, but the issue is not only about facilities managers; it's about the cost of design and construction, and with the lack of talent out there, you're going to see that we're all competing for a very small amount of people, and it's going to start to affect cost very greatly. We also need some industry change, particularly in the design and construction industry. The design and construction industry in the past has been what I would call "go steal the

people from your competitors." That doesn't work anymore because people don't want to leave. They're hard to attract, so we need different strategies, and I'll talk to you about what a group of companies are doing around the world to that, to show you some of those examples.

And finally, you know, the industry has to invest in the people, and the problem in the design and construction business, as those in this room will tell you, the margins are so razor-thin, it's difficult to really make the investment that's necessary, but that's the advantage the Government has, is they can make that investment, so you'll see some of those strategies as I move forward.

There are going to be a lot of slides here because I made a presentation to a worldwide group, and I wanted to make sure that everybody had the ability to have these slides, so I'm going to rifle through them. They'll be in the meeting minutes, and if anybody has questions about them, come back to me, okay?

GENERAL WILLIAMS: Okay.

MR. FLEMMING: Next. On this particular slide, you'll see that, I believe, the statistic that Jonathan mentioned was in the short-term, but

you're going to see on the far left that the curve is actually getting much greater and much steeper from the year, say, 2005 to the year 2050, the number of 60-year-old people that there are going to be, and the number of people that are younger, that are going to come into the workforce, are going to get less.

And you can see by the curve on the right side, and I apologize if you can't read that, the yellow bars are men in the workforce; the green are women. You can see we're having a steady decline in the number of people entering the workforce. So, guess what? We're all competing for more people fairly quickly. Next.

This is just a slide that shows that the -- this is not a United States problem; this is a European problem as well. In my particular company, 28% of the people that work in our company are going to retire before the year 2022. That's approximately 25% of our people that are going to retire. We have to replace 16,000 people to stay at the same rate we are. Now, we're just one company. Everyone in this room will have the same problem, and all of these business units have big groups of people between the age of 40, 50, and late 50s.

Next.

This slide, and I apologize, you can't see the yellow bar here, shows what's happening in the engineering field, and we all compete for engineers to do our job. You can see that Masters degrees and Bachelors degrees -- Bachelors are blue and Masters are in red -- are slightly increasing, but if you could see this, and I apologize -- the yellow bar for civil engineers is diving down at a dramatic rate. So, guess what? There's less civil engineers in our business, which is making the overheated construction market even worse. Next.

Oh, there's the bar. Sorry. It is a very scary statistic. You can read where that information comes from. Next.

So, what's causing all these problems? Well, salaries in the high-tech industry are a heck of a lot better than they are in design and construction, I can tell you that. And I'm sure that you have the same problem in the Government sector. For instance, in Argentina, where we have a large construction operation, the oil and gas industry wants to steal all the people because oil and gas, obviously, is driving the markets these days. So, we're competing there.

And, as you start to look at the average length of stay that people stay in a job, people don't stay very long. And we'll get to why that is in a moment, but one-third of the people that come out of college stay less than a year in their job. They get lured away by more money, sexier jobs, so forth. So we have to compete with that. And, in Europe, we did a study on what would happen in Finland. In 2003, people stayed an average of eight years. They're staying a lot less there, also, so again, it's a worldwide problem for talent. Next.

So in our particular company, what we look at is, we've got to find the number of young people in the workforce. We've got to find educated people. They've got to choose the construction industry, which is a problem, and then they've got to choose a particular company, which could be, in our case, this slide, it's Skanska. In your case, it's the Government. So you've got a tough funneling exercise, and we'll talk about how to challenge that in a moment. Next.

So what's wrong with this industry? Well, we have a poor image of the industry. Next slide.

Engineers coming out of MIT, 10% of them choose the building and civil construction industry

as civil engineering. That's pretty bad when you look at the number of people being trained in universities, nobody wants to go in this business, and I'm sure it's the same in facilities management, if not worse. Next.

A study that was done by -- of high school students ranked the construction industry dead last, 248 out of 250, as an industry to go into. We cannot survive in our economy if we can't get the largest economic engine, which is construction, to fix that problem right there. And we need to work with high school students to get this image changed, or we're all going to be in trouble going forward. Next.

Here's a quote from a former executive at Perini: "We are the worst marketers of this industry." We just do a terrible job of marketing what we're trying to do. We may market to each other to try to get business, but we don't market this as a career. Next.

This is a slide -- we went to a job fair. There were 120 companies advertising for 80 students at Purdue University.

(Laughter.)

MR. FLEMMING: Geez. Pretty good odds

there, huh? Next.

So, what are some snapshots of what people are actually doing to solve this problem, at least in the construction industry? You can't read all of these, but these are some European companies. There's a Spanish company that has a significant internship program, offering internships and trying to train people early in their college career, to educate them what the business is about, and I would assume that you could do something similar. Balfour Beatty, which is an English company, has a job rotation system where they give people a different flavor fairly quickly, as opposed to one career path, to try to get them to see the breadth of this industry. Next.

Turner, which is a subsidiary of a German company, has made a significant investment in the minority training program to train minorities and women to try to come into this business, to move up those numbers that we saw are so low, and educate people. Next.

Bouig, which is a French company, has a significant investment in a stock option plan, and makes sure that each Senior Executive touches as many young people as they can to let them know how

important they are to the company, and Peab, which is a Swedish company, has moved into the high school sector to try to make sure that the workforce that's actually going to build the buildings gets trained effectively, which is another huge problem we have, is people out there trying to actually build these buildings. Next.

And here's a few other ones. Keywood has a stock ownership plan, and ACE has a mentoring program to try to get to the lower level. So there are some things being done out there to try to get younger people in. Next.

So, the number of people entering the workforce has to be thought of. We then need to go into the education and make sure people are educated correctly. Then, they've got to choose the construction industry, and then they've got to choose what company they want to work for. So, we've got to start at the top in making sure people really understand this problem, and that we start to attack it, and not just steal people, as I've said before.

Michael?

Here's an interesting slide about -- what we've found about people wanting to come into it.

In the '80s, we had high performers, and then we had, in the '90s, a startup, and now in 2000, what young people want is quality of life. They don't want to work 50 and 60 hours anymore. They don't want to go to tough assignments; they want the easy way out. So, we've got to find ways to deal with that, you know? It's just out there. The kids these days want a simple way out. Next.

Here's a slide about what younger people want: flexibility, they want responsibility, they want a lot of money.

(Laughter.)

MR. FLEMMING: Everybody's laughing, but I'm sure you can relate to these things, so when we're attracting kids, we have to figure out how we deal with all of those issues. And one way to deal with that is just trying to sell this industry better. Go the next slide, Michael, please.

Here's another interesting statistic about high school students, that they want a good salary, they want a quality of life, they want to gain experience real quickly. Geez, for me, when I was coming out of college, it was going to be 10 years until you got to any senior management responsibility. Now, it's two to three years, and

they want to run a 50 or 100 million dollar project. That's a scary thought in this business. Next.

(Laughter.)

MR. FLEMMING: So, this is a map that we've put together of how we attack this problem with university students, and we started to put it into blocks where you concentrate on the strengths of the industry and leverage that, versus just try to attack it with money or simple issues, and it's difficult to read that, but if you give somebody a good starting salary, you give them a good training program, you show them good career growth, and you rotate them through, they're going to take the adventurous route. And you want to leverage that versus leverage the low-priority issues, which are, you know, how hard you're going to have to work. And again, you can read this in the notes. Next, Michael.

So that's just a snapshot of some things that we've found, and what I've researched in some companies and how they're attacking, you know, the issue out there in the workforce.

GENERAL WILLIAMS: That's very good. Let's hear Regan, and then we'll hear some questions.

MR. McDONALD: Thank you, sir. Good

morning, everyone. My comments really go back to one of the comments that Joe made on looking for affiliations that will benefit OBO, and the one that I'm going to speak on today is IFMA, or the International Facility Management Association. And that's an organization that has a lot of momentum right now, and the organization that I represent, SAME, has actually just this year forged a strategic partnership with that organization at the national level, and so I do know a little bit about that.

Clearly, there are other organizations out there that you should look at, but knowing the most about them, I'm going to go into detail on some of the things that they provide today. They do have a local Capitol Region chapter that I think you could benefit from. In addition to that, there are people in the local area, right here, as close as Fairfax, that operate with that organization. Although their Headquarters is in Houston, the local people operate at the national level, and I've contacted them, and I'm going to provide this information paper to you today in hard copy, and later in soft copy.

But beyond what I do today, I'd like to let you know that these people are very willing, and I will facilitate getting them together with you to

see if there is a synergy there, and if it's something that you want to get off the ground as far as creating a strategic plan.

But IFMA really is a -- offers a lot of benefits: A professional network, a community of practice, training, certification programs, really an opportunity for focused recruiting for Facility Managers, and I think that the "I" in "IFMA" is something that this organization in particular may benefit from internationally because there is a presence in a number of countries that may produce benefits as well.

One of the local principals in IFMA actually participated recently with Retired Admiral David Nash on core competencies for Federal facilities asset management through 2020, which was a National Research Council initiative, and I'll give you the information where that report is published. A great source of information, and very fresh.

The certifications that I mentioned are really the standard for facilities management. There's an entry-level FMP, or Facility Management Professional, certification, as well as the more commonly known CFM, or Certified Facility Manager.

Both of those are administered by IFMA, and they should be encouraged and really touted by OBO for FMs, I believe.

The strategic partnership that I mentioned resulted in the first-ever jointly hosted training and education workshop last September. I'll provide the link to you, that you can go back and look at the agenda and the slides from that event that was held right here in the DC area in September. Some good topics, clearly.

You also touched on universities, and it's good to hear that you recruit from 58 different universities. They're clearly targeted for facility management. There are four that IFMA recognizes as certificate programs that they stand behind: Two are in California, one is in Berkeley, and the gentleman that you mentioned no doubt is affiliated with that program. One is the University of Washington, and as luck would have it, the fourth is none other than George Mason University, right here in our backyard. They've actually inherited a facility management certificate program that's about 15 years old that started at George Washington University, and has been at GMU for about the past eight years. Clearly, that is something that OBO

should encourage, fund to the extent possible and legal, and reward folks for getting through that program.

Some other innovative things that I've thought of before, having worked in an academic setting in some points in my career: Consider, in a strategic way, partnering with a university where you could benefit from stronger relationships with faculty to develop networks to find key people, potentially by sponsoring research that might answer some of your more difficult questions. If there was an appropriate topic that you could fund and pass on to a university, I think you'd find that you have a link there that would endure over a number of years.

You mentioned that you recruit from service organizations for transitioning NCOs and officers, and that's great. No doubt, the recommendations that I have, you're already on the trail, but I would tell you that I've also reached back to my colleagues in the Corps of Engineers, where I came from before retiring, and clearly the Corps shares your challenges of recruiting. The DC Metro area, for your folks that work in the home office, you are competing with BRAC like never before in this location; you're well aware of that. But the Corps,

as you do, that I've learned, does augment their staffs with service contracts, as well as individual augmentee personal services contracts, so it's good to hear that you're already on that path as well. That appears to be the only logical way ahead to compete and meet the tasks at hand day by day.

The OBO competes with the Corps as well as industry for those adventure-seeking people to fill the jobs that you have, and I think the disadvantage that OBO should think about is the fact that there is a financial incentive out there in the private sector, clearly, to work overseas. But if you wanted to be a Federal employee and deploy overseas, and you go to USAJOBS, what you're going to find today are great opportunities offered by other agencies to work in places like Iraq and Afghanistan. If you're up for working anyway in Iraq, why not? But they offer about a 70% bump on the GS scale for being in a hazardous duty zone, so you've got to realize that your folks are looking at those as well, and that is a tough bill.

But those are some ideas that I have, and again, and I'll pass this over to you, and in closing, I'll make a remark that -- it was observed out in the hallway with some of my colleagues on the

panel today that we have 10 questions and nine panel members, and just the way the math works out, someone will always get two questions to answer every IAP session, so if there's ever a thought in the future to add a 10th panel member, maybe IFMA or a like-minded association would be a good add to your panel, especially as the balance tips from construction to facility management in the future. Thanks.

GENERAL WILLIAMS: Good try.

(Laughter.)

GENERAL WILLIAMS: We can always make that four questions. But I got you -- I can kid him. We used to wear the same uniform, so -- okay, are there questions? Comments? Yes.

MR. WALLACE: Good to see you, sir.

GENERAL WILLIAMS: Thank you. Delighted to have you.

MR. WALLACE: Thank you. I was wondering -- I hear a lot about the percentages of people who are eligible to retire. Has the Government or OBO ever taken the time to actually poll those people who are eligible to see when they're going to retire, and what do they do? So that way, you can track who's going to be leaving

and when, and you can come up with an appropriate succession plan.

Another -- you know, Joe's out there recruiting, but how do you know what to recruit for? Another thought that I had was, one of the discussions we had with Bill was retirement benefits, and how now you're able to move around. Has OPM ever talked about offering anniversary bonuses for staying within the same organization? Because it seems to me that civil servants are offered incentives to leave by going to other agencies because they get to raise up a GS level. They're actually offered a promotion. Well, what that's doing is you're paying for a person with the same talent to leave, but then you've also got to pay for the training of a new person.

So, my question there would be, does OPM -- or OBO have anything in place to keep people there? I think that outreach programs to kids is something within our industry. Working in the recruiting industry myself, I know what it's like, and I feel the pain of a lot of the construction and engineering firms in here because we're trying to look for the same people, too, to help you guys. But there's just not kids out there. I'm Generation

X; I'm one of those people on the slide that wants to work 40 hours a week, but how are you get those people to go into engineering? And one of the things I've actually discussed with the Executive Director from SAME was an engineering campaign throughout the country. I mean, we're losing our work to other countries. If we can get across to the kids growing up now that heroes aren't only protecting America, but they're building America, that could do a lot of benefit for our country as well.

GENERAL WILLIAMS: Thank you very much. Are there any other questions, comments? Yes, Clare.

MS. ARCHER: There are a couple of tools that we've been using like Bill. We're trying really hard to get mostly young people in, and we find that they come in and grow with our company, and our attrition rate isn't maybe as high as you're seeing. But a couple of things that this generation is looking for that is so different than we're all used to are, one, they want to be trained, and coming up with a comprehensive approach to training and crafting that is an enormous benefit and a huge recruiting tool. And it's something you can do that

offsets not being able to compete in the salary arena at the same rate that maybe we can in the private sector.

And also, career mapping. This whole issue of, "I need to be a manager next year, not in 10 years" is incredible, and is slightly ridiculous to a lot of us, but it's real. We've been talking to some of our project engineers, kind of our one-to-five year range guys and girls, and they don't really want to go work on a 50 or run a 50 or 100 million dollar job or work on it right now because they're not going to be in charge. They want to do a nice 10 million dollar job where they're the man or the woman on it, and I don't know -- you know, as your retirement rate increases, and you have a lot more opportunities for people to be in charge, and that happens sooner, that's a powerful recruiting tool for a lot of kids coming out of school.

And actually sitting down with them on an annual basis and mapping out a career, which kind of puts the onus for us more on the middle management and senior management, it's exhausting to do that every year, but the kids demand it, and they want to know where they're going to be next, how fast it's going to be, and how much money they're going to

make. It's just real.

One of the things that I think is helping our industry, that we'll probably be talking more about, is -- and actually we are talking about this afternoon is BIM, and the new kind of technologies that are emerging in an industry that's, you know, sometimes a little dull compared to others. But it's got a -- for lack of a better word, a sort of sex appeal to it that's really attractive to young kids that are more technologically savvy, and as the usage increases in our industry, I think we need to do a better job of PR-ing it to get those young, savvy kids to be interested.

And the final thing is that quality of life issue, which is also unbelievable to most of us, but people want flex schedules now. It's just kind of reality, and we're doing it. I'm sure you are at Skanska too, but -- yeah, work at home, you know, some flexible work hours. It's just sort of -- just a reality of our workforce right now, and to be able to craft a package that sort of, you know, addresses these issues, kind of outside of the whole monetary issue, may be an effective tool, and that's not a tool in your toolkit.

So those are just thoughts that we're sort

of addressing right now because it's expensive to get new kids on board. And Regan and I were talking -- they communicate a lot. They know what the other guy's making, and they know who's getting a signing bonus, they know who gets a truck after two years, and you have to do other things to hook them.

So that's some of the things we're doing.

GENERAL WILLIAMS: Right. Excellent. Yes, Greg?

MR. KNOOP: Well, we've certainly a cast a line into the water a pulled up a bigger fish than we thought. This is a nationwide problem. It's an industry-wide problem. Several of us are business owners, and it touches us every day.

I think the strength of what you've talked about is to go -- we've got to get to the educating people. I think your point on training, offering a training throughout their career, and career mapping, is clearly an important issue. It also takes a high level of interaction between the leadership and the youngest employees. You have to really make them believers in the mission.

You know, I think it would be different if economic times were different. Right now,

there's -- people are still reacting to where's it's sort of a boom economy issue. When I came out, I was in a recession. Whatever the boss said to do, I'd do because I want to keep my job, and there's not that level of risk right now for the employment base, and so that was a motivator also to self-train and do more.

Now, we have to get in there as leaders. As a company owner, I'm sure other panel members do the same; I know John does the same, you really have to get in and invest in your employees, and that's really -- you invest in your employees, and that's a major thing.

The other thing is to get early into the industry. We've seen a gentrification of the education system at the collegiate level, and frankly, we're bypassing a lot of people might be major contributors to this industry. We have to find a way as an industry, as a people, to touch those people and get them into the workforce and make them positive contributors. Otherwise, we're going to see, and we're already seeing, technical jobs walking overseas and going to other areas, and our workforce is aware of it.

So, I don't know if we're going to settle

the question here. I compliment you on putting such a difficult question on the board right now.

GENERAL WILLIAMS: Thank you, Greg.

MR. HICKS: Can I just add one thing, sir?

GENERAL WILLIAMS: Yes.

MR. HICKS: You know, I'm sitting here asking myself, "What I have personally done to help with this situation," and the answer is, "Not much." I went to Michigan State University, which has a very good engineering program, building and construction management program. I go back there regularly. Have I ever bothered to stop in at Michigan State and, you know, work with the administrator to put up some notices that a guy from the State Department is going to be there, an alumni pitching, you know, to the landscape architecture, planning -- I've not done that. And I think if we tasked external affairs with putting together a great presentation, I mean, we've got a lot of sizzle. If somebody had shown up and pitched these embassies to me at the age of 20, 21, you know, I would have joined this man's army.

But I think if we can get something like that, I think all of us as individuals, beyond the abstract level, what we do with this dilemma, I'd be

happy to stay an extra day when I'm in Michigan, on my own time, you know, doing something like that. So if we work with Michael and see if we can get some standard presentation that we can all take with us on the road when we go back home --

GENERAL WILLIAMS: Excellent. Yes. Suman?

MS. SORG: General Williams, I've polled my own staff as to why they came to work for my company, when they had many, many choices in Washington with big companies and branch offices of even bigger companies, and the one answer I get from every young person is your website. It's really a big investment in your website, and they get an idea of the creative bend of the company, and the risk-taking it wants to do, or just -- you know, I think these kids really count on that, and it's -- so we've actually hired a new consultant from New York who's looking at our website with that in mind, not just, you know, attracting clients, but attracting talent.

GENERAL WILLIAMS: The website. That's -- it's amazing what young people want, yeah. Yes?

MS. GOSHOW: I would like to say something, General.

GENERAL WILLIAMS: Yes?

MS. GOSHOW: I think quality of life is important to the younger generation, but making a difference and transformational diplomacy makes a difference worldwide internationally. You have the right platform. You have the idea for people to get behind, and I think this younger generation will get behind that. I don't think enough people know about that part of the State Department, and maybe that's a PR initiative that needs to be worked on, and the word needs to get out about that because that's a huge, huge issue. Thank you.

GENERAL WILLIAMS: That's good, Nancy. Yes, Greg?

MR. KNOOP: You almost have to raise -- I actually am very frank with the people I interview. I tell them, this is a tough industry. It takes people who are serious-minded, and it takes time and experience to develop in this industry. And I think a frank -- speaking to people frankly and appealing to the level that it takes a higher level of -- appeal to their own sense of excellence, that we're not looking just for the comfortable life. This is work. This is a workplace. These are jobs, and this is a job that takes higher-level people. It takes excellent people. It takes people who strive

for -- to do well. It is not just a clock-punching type of industry.

I know that that's a tough message to hear, but it is a message I've found is received and understood by the employees I have, and if they have a level of belief in the thing that they're doing, then it changes the job that they have to an almost heroic level. You mentioned sort of the service, and people want to be heroes. People want to do something of that level, and I think that it really behooves us to reach out and change the image. I think you talked about we're not the best advertisers of our own industry. Change the image of our industry. We are building heroes who contribute to this country, and to the diplomatic mission of the State Department.

GENERAL WILLIAMS: Okay. Thanks, Greg. Yes, John?

MR. WOODS: I don't want to repeat a lot of things, but what Clare said and what Bill said, we're learning that money is not the driving force for kids to go to work. They want to know what they're going to do, and they want to know where they're going to work, and they want to know who they're going to work with.

So, one of the other downsides of Generation X is, "I only want to work 40 hours a week," balancing this life and work. We do find that the flex time, letting people work at home, we're actively recruiting part-time employees, particularly women, who have engineering degrees, but want to stay home with their kids, or who want to go back home every day. I have one who started out 10 years ago working 18 hours a week. Her last child is going off the Naval Academy this fall; she's already up to 32. She will be working 40.

One of the difficult things we have in the private sector with hiring part-time employees, and I don't know that the Government even has the capability of doing it is, I don't have any part-time clients.

(Laughter.)

MR. WOODS: So, one other issues that -- when Bill was talking about MIT, we have a difficult time of convincing young people that engineering, science, and math are exciting careers, and that they are not as hard as they believe. When you see people on Wall Street in investment banking, apparently not working very hard but taking home a heck of a lot of money, it's hard to get someone to

take a civil engineering program at Virginia Tech or Maryland when they think something else is easier.

GENERAL WILLIAMS: Excellent. Yes, I'll take one over here first, and then I'll come back. Yes?

MR. WILLMAN: Thank you, General. I'd just like to let the people who've come here today know the status on our recent hires of Facility Managers because I've had the pleasure of meeting them both when they come to Springfield, and then also out in Managua in Panama, other places when they're actually in the field. First of all, they all have a four-year engineering degree. That's now a requirement. It's essential that -- the technology of the building demands that type of educational background.

Further, they all have at least 10 years of experience of managing facilities, so they haven't just been a design engineer; they actually have hands-on experience. We also have a training manager that tracks the training initiatives as they go through their career, and in fact, there is a plan now to have an exclusive OBO facility management training program at the Foreign Service Institute, so that instead of just learning what a

GSO does, they'll learn really what a Facility Manager does. So, we're doing that, and also, again, as they rise up through their Foreign Service specialty, they have to have these certifications on the way up.

So, I think I am more impressed who I've had coming in recently, the last two years, and I know they have a high degree of satisfaction once they get out to the field and see what they can do.

GENERAL WILLIAMS: Good. Thank you. Yes?

MR. NORMAN: Hello. I'm Ravi Norman, a partner and CFO at Thor Construction, and I'm a first-timer here, so this has been some great discourse.

We've done two things in the construction industry because I think we recognize that the shortage of skilled labor is an issue that's across industry. But we've done two particular pieces to try to go after who aren't necessarily attached to the labor force, and it's really two segments that we've looked at.

On one side, we've created a web-based network that attaches all of our projects with the county, with accredited vocational training organizations, with community-based and faith-based

organizations, and with the participant population that we're trying to go after, which in this case is people who have been in the prison system, and maybe have recidivism rates that are really high, and trying to bring them into the labor force, into the workplace of construction.

We've also looked at welfare-to-work programs, and partnered with them as well to try and bring both women, which is a tough piece in our industry, women and people of color into our opportunities through accredited pre-apprenticeship programs. And we've been able to get traction in that way.

The other thing that we've done is, we've partnered up with a vocational training organization to try to deliver construction education in a different way. So, we try to do content transfer solutions through things such as the iPod, or the Nintendo DS, which is something we're doing right now, which is actually looking at passing curriculum through those type of technologies because we feel like not only do those technologies have operating systems that tend to function like the brain works, but they're also contemporary and cool. And if you want to get young people, you have to be doing

something that's relevant to being contemporary and cool, and those type of systems, if you can build curriculum appropriately, and so -- since we're doing it in the construction industry, I know it can be done in a variety of pieces like facility management, and delivering it through these systems that a lot of the youth are utilizing.

GENERAL WILLIAMS: That's an excellent point. You're looking at skilled labor from -- that's where you're focusing.

MR. NORMAN: Yes.

GENERAL WILLIAMS: Um-hmm. Good. Thank you.

MR. NORMAN: Thank you.

GENERAL WILLIAMS: Are there other questions, concerns? Comments? Yes, Ida?

MS. BROOKER: I find this conversation and this topic rather interesting. Being from the construction industry, we talked about this same subject back in the late '80s and '90s, and at that time, it was called Workforce 2000 because we knew there was going to be a shortage.

87% of women know what they're going to do, or think they know what they're going to do, by the time they hit high school. That is a problem, and

the problem being is that construction, Foreign Service, and those kinds of careers are not on the radar screen.

So the only thing that we could see to do was to start in the vocational days at the junior high schools in our area, to go in and do presentations on some of the alternative careers. Now, this is not, of course, a short-term solution to the problem here, but it is a long-term opportunity of opening the doorways and the thought processes to those students, and we didn't -- while I do represent women construction owners and executives, it was not just a female issue. It is an issue for all students of that age group, to open their perspective on what is available for their future besides just degrees in this, that, or the other thing. It's looking more beyond degrees, but into careers, and opening their eyes as to the long-term goal isn't just the degree. The long-term goal is, what do I really want to do with my life when I grow up, and then looking at how to go about getting there.

So many of those students were just looking at just getting a degree, and then we'll see what happens. But the problem with that is that so many

doors are closed to them because they didn't pursue the degrees that would get them to where they really wanted to go, and I think that as associations and as companies in this industry, especially the private sector, I think, has recognized this, and I don't know what is being done on the Government side of the equation, but there certainly seems to be a whole lot of opportunity to open the door for Government participation as well because the Federal Government is a very diverse network of career opportunities, and the only ones I see doing any outreach are the military branches. And we see those commercials all the time, but I don't know that there's a lot of other opportunity, and like they were saying, is that the private sector does do a lot in those areas, and I think that the Federal Government has an opportunity and a responsibility to open those doors as well.

GENERAL WILLIAMS: Thank you, Ida. Okay. I think -- I know this is -- we knew this when we put this on, that this was going to be a big topic because we've talked about it before with this panel, and we haven't solved any piece of the problem today, but I think we have reminded ourselves and raised the level of awareness that

there is a problem. I think that is the biggest issue to get through, and clearly we have recognized it here. We've been on it, if you will, for the last two or three years in a big way. We don't have the exact path that we want employees; that's why we're trying to inquire and get smarter about it, but you've been very helpful this morning because I think the most visible problem we have is in the Corps side of our problem, the engineers, architects, et cetera. It was focused on engineers, but being that low of a preference in terms of education, and knowing that we're going to need quality people, is disturbing. But nevertheless, it is a fact, and we have to deal with it.

A lot of discussion about change. We have to change the way we see things, and any idea that's coming to the table, we can't pooh-pooh it. Because let me tell you, we don't have a better mousetrap, so if someone is bringing something to the table, we really need to try to take a look at it and see what we can do about it.

The whole notion of image, I couldn't agree more. This is a problem, how we're presented, et cetera, et cetera. We have to recognize that what we think is excitable to a young prospect is not

what they think. So, we're going to have to somehow figure out -- what was the words you used over there, my friend? Cool and something?

MR. NORMAN: Contemporary.

GENERAL WILLIAMS: Okay. Contemporary and cool. You know, my grandkid keeps me up on that; I just didn't check with him this morning, so when I go back, I'll tell him that, "Gee, someone broke the code on it for me."

So, but you know, all kidding aside, we've got to get there. We just might be saying it wrong. And then, of course, investment in education and all the flexibility that affects gender and all. You know, the six-figure job might not be the thing to talk about. You know, staying home and having more time to go see their favorite movie might be better than making more money today. So, we just have to recognize that, and work against it.

So, thanks a lot for your input, and we'll break now for lunch, and as usual, the staff will make certain that the non-panel members get to the appropriate place for a little snack. We do want you all back this afternoon because we have some very interesting topics. We're going to revisit Value Engineering. You have the program before you,

so please find a way to be with us. Thank you.

(Whereupon, the luncheon break was taken.)

A F T E R N O O N  S E S S I O N

GENERAL WILLIAMS: Okay, let's get started. Okay, we're going to kick things off this afternoon with a revisit of Value Engineering, and we'll have Kathy Bethany, my friend for seven years --

MS. BETHANY: Yes, sir.

GENERAL WILLIAMS: Okay. And of course, Greg and John will be assisting her. Okay, Kathy.

MS. BETHANY: Thank you, sir. I want to welcome everybody back from lunch. I think this is the second time I've been the kickoff after lunch, so I hope everybody's energized. I will try to get through these quickly because I know we have several topics, but the topic today is "Value Engineering Program: What's New?" So I'm going to do a very quick overview because I know last time we did talk a little bit about what the Value Engineering program is, and then give a little bit of what's new from last time, and a little bit of our results of how we've been doing recently.

So this next slide talks about our program requirements. Again, every project that's over a million dollars has a VE study or a waiver in place at or before the 35% design. Some definitions that are going to be kind of critical to what we're

talking about: Savings are calculated based on the cost estimate that was in place at the time the documents -- at the time of the VE study. So in some cases, probably a majority of our cases, the VE study is being at done at the time when a project might be over budget, so some of these savings that you'll see are bringing projects back into budget.

Proposed savings that are the ones that are estimated by the independent VE team. Accepted savings are per an implementation memo that we get from the project team prior to constructions start, and then implemented -- one thing that is new, we're starting to track implemented versus accepted. That's verified during a VE site assessment trip that's taking place near the end of -- completion of construction.

So, you saw this last time. How does VE benefit OBO? It gives us the biggest bang for all of our bucks; that's life cycle, O&M, and initial cost savings.

So what's new? Well, first off, this might be the last time you'll hear me talking about Value Engineering, although it will still be under me as the Cost Management Division Director. Reza Darvishian over here is going to be taking over as

the VE manager at OBO. Angela Collins, who has been with me a couple of years, will still be working, and Laurie Dennis, who is here, has been helping out in the transition period. She has the background also as a certified value specialist.

Another what's new: VE is in Cost Management, and it has been moved to Planning, so as per one of the Williams 20, it is within Planning, and we are doing the Value Engineering studies earlier in the project life cycle. We have also implemented VE implementation assessment trips. During this transition period, they haven't been as regular as they were right before, but they'll be coming back up again as far as going out and verifying what was actually implemented.

Some ongoing things that aren't on the slide are some tracking of VE results, which I'll get into in a minute, and as always, we look for continued improvement, so I'm really hoping to get some information from the panel as to what we can do better to continue to grow our Value Engineering program. And another ongoing thing is, the Value Engineering program does fit in with other Lessons Learned and process improvements; you know, VE recommendations are entered into our standard change

request, and they do get implemented into the Standard Embassy Design as appropriate.

So the next slide, this has been updated. It shows return on investment, and one of the reasons why we do the Value Engineering studies during planning, if you see the dark blue line, those are design/build projects that we did VE studies on, and this goes from 2000 to 2007. There were 46 studies, and the return on investment on average for those projects in planning, VE studies that were done during planning, return on investment was 118 to 1. So that's a pretty good investment for our VE dollar. When it was in design development, a little bit further down, it was 21 dollars per 1. That's still a very good return on investment; I wish I could get that, you know, for my own personal investments, but you know, obviously, we would like to get as much bang for the buck as we can.

Now, these return on investments are the cost of the VE study, bringing in the independent team; when I was full-time on it, it was my full-time salary, obviously. It would be Reza and Angela's full-time salary. It's all compared to the cost of the study as to how much savings, life cycle

savings, have been implemented.

I know that we also need to look at improving quality, and some of those are intangibles, and functionality, but the easy one to track, obviously, is the savings of cost.

This next slide is a summary slide that I do use a lot in talking about the Value Engineering program. It has the definition of Value Engineering on it; it also shows the results. In the column to the right, from 2000 to 2007, is the one I want to focus on because, again, General, you're here seven years, and you know, it's interesting to see that we've done 160 studies. The program cost, if you add in my salary and others, is about nine million, but we saved 518 million, and that's accepted, implemented savings. So far, a savings of 57 to 1. We accepted 2,030 recommendations, so it has been a very useful program for us, but I do caution, don't take the 518 million and think that is money that we had back. Some of it is cost avoidance; some of it was bringing projects back into budget when we were trying to figure out the best way of doing our program.

Next slide is this year. Excuse me, the FY 2007 results. We did 11 studies, 91 accepted VE

recommendations to date because we're still missing a few of the implementation memos because the projects were done late in the fiscal year, and they haven't made it through the system yet. Our goal for a proposed savings by the VE team, this is a measure back to the VE team, making sure they give us some good quality recommendations, is 10%. We got 15%; that was a good thing. The accepted VE recommendations, a goal which is also an industry average is about 4%, and we got just over 5.8, almost 6%, and the return on investment this year so far is 44 to 1.

Now, this includes all of the costs, but it doesn't include -- some of the savings are zero still because we haven't gotten all of the -- so it should only go up as we get the other recommendations in.

So, the next slide, and I apologize, you probably can't read this, but I wanted to show some of the things that we do for tracking purposes. Every VE recommendation is tracked in a database so that we can see if they're trends over the program and get it implemented into the SED. This is one way of tracking the recommendations; we have the Uniformat (ph.) code on every VE recommendation, so

that we can drill down to how many VE recommendations are in exterior closure. And in this case, we've had 244 recommendations on exterior closure. That says to me, we need to look at that and improve that in the SED, if we keep getting similar recommendations over and over. And so, that was 65 million in savings.

It also looks at electrical, and you can drill down even further if you want to start seeing what kinds of recommendations. I know the Electrical Engineering Department has come to me and said, "We want to see every VE recommendation on transformers, or anything on generators," and they'll -- we'll pull that kind of information so that they can look at those details and make improvements as they go forward.

Now, I have to say this is not the entire list because if you were to do the math, you would say, "Wait a minute, this doesn't add up to what you had before." But this is a snapshot of some of the recommendations.

The next slide is building -- going down to the exterior building enclosure. Some of the examples, and I just wanted to show a couple of examples of some of the VE recommendations coming

through: The Berlin NOB, there was a proposal to use native stone. I know we talked about earlier on interior finishes, using locally available materials; in this case, a VE recommendation was to use native stone rather than imported stone, and it saved about two million dollars on that.

Djibouti, the proposal using paint, and I know when I read it, I circled it, and I said, "What do you mean, paint?" It's a special epoxy-type paint. It's not one that you have to continually replace. In lieu of stucco, that was going to save us some money as well in life cycle savings.

The next slide, some mechanical -- and I know we were talking about indoor air quality earlier. These are accepted savings, and I should stress that I'm showing you accepted savings: Things that have been vetted through the offices and through the various disciplines that they accepted, "Yes, this is a better recommendation than possibly what was coming in." Using a heat-recovery chiller, instead -- you know, to have a life cycle savings.

Mumbai using air-cooled chillers, and I know that was near and dear to your heart. It was using one of those VE recommendations on the Mumbai study that allowed air-cooled chillers.

The next one is the electrical co-generation. This one was an interesting one; you know, accepted savings of a million first cost, but it's probably going to save over 21 million life cycle when you start adding in the cost of not using co-generation.

The leading voltage regulators, site improvements, similar types of things. Using yard hydrants; it's only 93,000, and a lot of people will say to me, "Oh, I don't want to make this recommendation; it's too small." Well, I'm always saying, "No, it's not too small if it saves -- makes it a better functioning facility and improves the quality. Even if it's only 5,000 dollars, or even if it costs us some money, we want to see that just to keep track of it because it all adds up in the end."

Replacing an interior roadway with asphalt instead of concrete, you know, that saved quite a bit of money, too. For verification, we -- again, I was mentioning that we have been starting to conduct some site assessment trips to validate the implementation and gather Lessons Learned. It's been kind of interesting because we had visited 15 sites for 22 different VE studies; of that, there

were 712 proposed -- these were proposed by the VE team -- alternatives. Per the acceptance memos from the teams, they had only accepted 184, but when we went to the field, we actually found that 290 recommendations had been implemented.

So, things have been implemented by contractors later on, or field staff saying, "Hey, wait a minute, this makes some since," and so we were able to validate what had actually been implemented.

One of the sites we had gone to was Managua, and I know, sir, you had this up a little while ago. This was during construction, as you can tell. He had the finished picture, so it's -- that's what it looked like at the time of the VE assessment trip, and the next slide shows that in this particular case, the team proposed 479,000, but we actually implemented more than what was proposed because that sometimes happens as well.

So, two of the VE recommendations on the Managua site that I wanted to highlight show the incorporation of -- these also made it into the SED, such as combining and reducing air handling units and eliminating some power factor correction equipment, depending on things.

So, my last slide is, again, our goal is a functional facility that is worth its cost, and that's one of the things that we keep trying to stress with the OBO Value Engineering Program.

GENERAL WILLIAMS: Um-hmm. Thank you, Kathy. And we'll have your two industry cohorts chime in, and then we'll have some discussion. Greg?

MR. KNOOP: Okay. General Williams, panel member, and colleagues of the industry, first of all, Happy Holidays. It's an honor to participate today. We see ourselves in this industry as a support component to the SED and the embassy design and build program which, of course, is a support program to our diplomatic outreach and missions around the world.

At the last meeting, I reported on several issues and trends that were industry-wide, and how they may apply to the OBO program, but today we're going to look at OBO's program from the industry side and report on what our findings were, and we went to several Value Engineering groups to do so. And I can tell you that the general opinion was that you have a very successful program, a very high-quality program.

If you look at the first slide, you have a well-managed program. There's a high level of support from the leadership and from project management, and we've seen an increase in the dialogue between those bodies. I see some people, Bill Miner, for instance, we were just talking. A high level of participation is going on between the project management teams. They're taking an interest because of the success story that Kathy's reporting in metrics. There's a greater interest in what the Value Engineering team brings to the process.

We have multiple, diverse teams that are able to contract industry experts from all over the industry, and OBO is willing to bring in high-quality people to do those studies. We've seen the program mature, and the good news is that we're seeing a lot less repeats of things. The SED program, the embassy program, is learning, and it's developing, and we're pleased to be a part of changes in that program.

We're going to talk a little bit later on there are a lot of future possibilities or ways to take such a progressive program and make it even more effective as the subject matters progress and

change.

One of the great positive improvements we saw is that a majority of your studies are moving earlier in the process, and we feel that this gives us greater leverage to effect change in the projects, effect true value as it's delivered to the Government and to the United States, and it also creates less conflicts to the bidders. I don't think the bidders like to see all of these later-thought-up changes while they're in the middle of ordering materials and getting out to sites, so getting us early in the process helps us solidify the value potentials that we can deliver to projects, and I think the Government and the people of the United States realize that improvement.

The OBO team, as I was reporting before, we have a lot more interaction between OBO management, a lot more interest in dialogue, especially in the exit presentations, which means that they're going to be more likely to make smart implementation decisions in the process. There's no bad questions; all questions are good. Next slide.

We're seeing increased focus on non-construction issues, the long-term planning. What are we buying properties for? Are we just buying it

for the first implementation? What's the long-term plan?

Operations and maintenance: This is a huge subject. We'll cover this in a little bit. And, of course, the LEED program. All of these going to not just the construction, but the -- how the building's used over time. We've also had some studies about process issues, and we did a study for a Consular's section where we did similar to the Yale Medical studies on process, we took all the processes, and we did the metrics, and if you change one thing, if you change the cashier station, how much more output do you have? What is the -- how many -- much more time in each station do people have to do? So, Value Engineering has the potential to look at process and the way people use facilities, and the programming of those facilities as well. Next.

Positive changes to the SED; John, you wanted to talk a little bit about this.

MR. WOODS: As Greg said, many of the things that have been suggested, and Kathy showed the list of things, but there have been some improvements to the SED. The atrium was obviously a quality of life thing, nice architectural feature that was put in. The cost of that, with some

changes, has been reduced, but still maintains the quality for your workforce. Changes to the shops and warehouses, giving the contractor the option in some places to use pre-engineered metal buildings, combining shops and warehouses so that the high-roof areas can be better utilized in a single building. There've been some other general requirements, and then looking at the feasibility in the bridging documents, recent things -- we've seen the -- both OBO and the VE teams breaking away and coming up with, I hate to use the cliché, "Thinking out of the box," but coming up with some new ideas, and these are being received.

The overall thing that's coming is, I think, the buildings, despite the inflationary costs that are going along, we're beginning to see that the costs are not going up quite as fast as the value that's being received.

MR. KNOOP: Well, one thing we saw in support of that is, on one study that we were doing, a team took the kit of parts of the SED, and site-specifically modified those kits of parts for a site-specific design. It was still an SED, but it was not a template. As an obligation to the process, we did a test to see how the SED performed

against it, and actually, the resulting design done by the design firm was 10% more efficient, 10% more valuable because it was 10% less than the actual template. So, creativity was confirmed as a reward to the improved value to U.S. diplomatic facilities.

The assessment trips: Well, we all have to learn from the process. Otherwise, the process doesn't develop, and as Kathy was reporting before, several of us have been given the opportunity to go on these trips. I've talked to several of those people who have participated in them. They were extremely informative. They told us whether the U.S. Government received value for changes that were implemented or not. They told us the quality of the reports, and how they are being received as they carry forward so that we can improve the quality of VE work that we're doing, and getting feedback from the construction side out there in the field tells you a little bit more about the real feasibility of some of these VE studies, and allows us not just to simply write thing as a nice academic abstract, but really something that's practical and usable and truly feasible. That's what you're paying for, that's what the interest is in this program, is true savings. And those trips have been invaluable to

having us improve in that area.

Our VE teams -- next slide -- are staffed with experienced professionals. We have a rapid-moving, sequestered process. Not all groups do that; some groups have us, the VE team, sit with the Government team, and everybody's crowded in the room. But since we're a third-party review group, the sequestered process is extremely important, allows us to really open up the box and explore ideas. That doesn't mean that the Government keeps complete hands-off; we have very nice visits from the Government team, who gives us guidance and helps us make those studies more effective and more useful to you, and to the American people.

And we have seen a greater interaction of the design team as a result of pushing the process earlier, where there's not a conflict with the design/build process, but it's actually with the feasibility and design process. The designers return to our exit briefing, and they've had a huge input at that point, in interacting with us, supporting ideas that -- perhaps we're settling an argument that was older in the process, and they've done a great job -- that's been a very informative process as well. And we've covered that, really --

we're just seeing greater participation, and really what we're seeing also is better quality in the design program, and we feel that we've been a participant in that, and validation of good quality design.

There are some future changes that we think that the program is ready for. We've usually talked about this building or that building, but I think that -- and often, we've been assigned projects -- one of the things that we're going to be looking for is a pre-workshop planning meeting to allow us to focus our efforts, not just simply on, "Here's a building, go for it," but actually, "Here's a building. Here's the stresses on that project. What do you want us to explore?" John, do you want to talk a little bit about that?

MR. WOODS: Yeah. I don't actually find it much different than I think the AE teams that are brought in to a design project. They sit down and go over the scope of work, and massage that thing with the program manager. This would be, really, sort of piggy-backing on top of that, so that the VE team leader has the right people on his team. Maybe a requirement that it's been vetted so much that this particular project doesn't need my ability as a

structural engineer.

So, it gives the team leader to hone down and come up with a better process, and I think when you do that, you'll improve the quality of the data that comes out of the study.

GENERAL WILLIAMS: Okay, thank you.

MR. KNOOP: Next. Life cycle cost is the huge issue here, and it's one that I don't think is going to go away, but it's going to become more and more a focus of these Value Engineering studies, and it's simple to say that the more that we focus on life cycle costs early in the process, in the design, your investment in design and your investment in construction will create a huge investment in the years to come, as the project and as the building -- throughout the building's life, and I think life cycle cost is one of the biggest subjects that we will have in our studies. Next slide.

MR. WOODS: Okay. Future possibilities with VE, and all of you can read them, but the two that I know of specifically are -- the FEBR windows provides an interesting thing because right now you're buying the windows from a contractor and supplying them to the design/build teams. I happen

to know the design/builder absolutely loves that because there's no -- it takes away some of the lead time, knows what it's going to cost. However, there are projects now where we're beginning to see that it might be worthwhile to have a different type of window on one face, based on the setbacks. There are also some interesting things with potential different sizes.

It's impossible, without having a team sit down and explore both the schedule timing, the pre-purchase, versus having the flexibility of using something that doesn't cost as much on the project.

The other thing that all of us are dealing with because some of it goes back to personnel, are the general conditions, the bidding, and the insurance. It reminds me a little bit of when we talk about the Federal budget, that a certain percentage of it is entitlements, and it's very difficult to do anything with that. The general conditions bidding and insurance is now becoming a significant percentage of each project.

MR. KNOOP: Another area where I think -- and these studies should be staffed by people who are specific experts in these areas. For instance, an FEBR study might include a window manufacturer as

one of the members of the team. We need to know from the factory floor to the installation, what are the different value components to that specific subject? Also, maintenance and operation and facilities management; we need to get a facilities management officer on board on some of these studies, specifically looking at what happens when all this stuff gets out in the field. What is that $10,000 part that they removed from the HVAC system after 60 days after they opened the embassy, and replaced it six months later? Those guys will tell you what the life of this building is, and can be an extremely good resource for exploring value.

Other issues might be chem/bio, lighting, some procurement issues. Those are all rich subject matters, not building-specific, but they affect the overall building program.

Building a database, and I think that's what Kathy is really starting to do, is looking at how the program is maturing, looking at Lessons Learned from the trips, recordation of all the various types of savings. Building a good database is extremely important in understanding how effective a program is, and Kathy is already beginning to do that.

Other programs look at savings and cost avoidance. Program coverage, and Kathy's talked a little bit about how effective the program has been, projected savings. But also, qualitative measurements are very important, and I think we're starting to push into that subject matter, as we are a support group towards quality.

Design excellence, we want to be a support to great architects like the one down the table from me, and we want to make sure that you're getting a good return on your investment, and recording is another way to be able to look at that.

So in conclusion, you have a successful program that's maturing. You have done many cutting-edge items, such as these trips. They've been very effective, and you're showing us real progressive management of the program. The VE has been used as a positive tool towards affecting the SED program. We see the SED changing, and we see the SED changing with elements we've suggested in study after study, which -- whether that be the only impetus, we know that it is a successful contributor. It compares very well with other VE programs, and we've looked at the Corps, and we've looked at the Navy, and you guys have got a very

strong program with an enormous return on your investment, and I think that there are strong future developments ahead of your program, and with that, I will just say it's a pleasure to be a contributor to this panel, and I hope that has given you a good report.

GENERAL WILLIAMS: Good. Well, I appreciate that very much. This particular treatment was to -- we've felt we were okay on the VE side. We have presented this once or twice before, but we really wanted to have sort of a quasi-assessment of it, so we could continue to go down this path. Five years ago, we didn't have VE where it is now. It's in Planning. Kathy has done a terrific job of leading it and getting it sorted out and getting it hooked up well with the industry, so if there's a burning thought to be added, okay. Otherwise, we've got our report cards, so I'm prepared to just leave that one and move on in a different direction. Okay. Thank you very much, panel, for your wonderful work.

We move now to our number four for the day, and that's -- and thank you, Kathy. And this will be BIM; we're going to revisit BIM, and we have a whole team led by Brian Schmuecker, and Clare and

Suman are going to participate as well. Okay, Brian?

MR. SCHMUECKER: Thank you, General. Good afternoon. On behalf of the OBO Champions, I'd like to thank the panel in advance for your insights and recommendations. We had some good discussions on the phone, via e-mails, and we look forward to the feedback at the end of our presentation.

While the BIM initiative is managed through the design and engineering building innovations program, BE actively engages our colleagues throughout OBO to look for opportunities in leveraging this inter-operable platform. We see the success of BIM as predicated on the ability to meet the needs of each stakeholder. That is true for OBO, and we suspect this is true for the industry as a whole.

If you recall, in February, we posited that the relationship between BIM and facilities management was tentative, at best. In fact, we described BIM as, "An attractive young technology in search of a mature, stable industry looking for a long-term relationship." As we look back on the progress over the last 10 months, we think it's time to change that analogy. With the rapid rate of

BIM's evolution, it's probably more like speed dating than it is a personal ad. And at the end of today's presentation, I think you'll see why we're attracted to the flexibility of a cost-loaded shred (ph.) tool like DProfiler, the attention to detail features of laser scanning, and the long-term prospects of COBIE.

But first, we're going to revisit the concept of Building Information Modeling. This is becoming the bread and butter of the interoperability platform. This is a picture from CAD Microsystems that shows how inter-operable building data is used to produce specific products needed by the respective stakeholders. As you can see, it's more than just a 3-D tool. As we mentioned in February, a BIM model can host 3-D, 4-D, energy analyses, and co-checking, just to name a few opportunities.

For OBO, this is how we envision adapting and managing BIM. The top line represents the model itself; the bottom line represents the project phase, and the middle box represents the products we need as OBO stakeholders.

As with any technology, there are early adopters; in our case, there were two early efforts

on BIM: One initiated by OBO, and one initiated by one of our design/build contractors. While we felt pretty good about those early efforts, a recent report by McGraw-Hill projects that by the end of '08, the number of owners using BIM on a moderate to significant amount of projects, could easily outpace those who are minimally invested, thus suggesting that we are nearer Malcolm Gladwell's definition of a tipping point.

Since 2005, we have developed several more models. These are early efforts, and they have a certain degree of architectural maturity, but lack some of the engineering data that we see will be essential to BIM's success, and we'd be interested to find out if that's what the industry has seen, as well.

At the first table of our speed-dating analogy is DProfiler. In essence, this is a shred tool that facilitates early planning decisions. It, in some degrees, picks up on what Kathy Bethany talks about, making early decisions and studying early options before you get down the road.

Patrick McLeamy, from HOK, has produced a couple of compelling slides that illustrate the advantages of a planning tool such as DProfiler. In

essence, what Mr. McLeamy is saying is that as you progress through a project, your ability to foment change is inversely proportional with the cost associated with that change.

So, a tool that can provide an interactive response to planning decisions would be an immensely helpful product. If you can move the design decisions to the peak in the blue line, you will have a much better project definition well ahead of the traditional process, and this is what DProfiler facilitates.

Here is a snapshot that conveys the interactive nature of the tool. This is a model of the standard, secure mini-compound. It is a scaled-down version of the Standard Embassy Design. You can push and pull this model, and it reacts by adjusting your billet quantities, since the unit cost data is loaded into it. This ability to see real-time impacts as you construct the model is tremendously helpful and very informative.

With a tool like this, we have found the ability to manage change is greatly enhanced. You can evaluate a number of options and brainstorm alternatives. Our projection, however, is that this may not shorten planning time, but rather, like CAD

did when it was adopted, permit the study of additional iterations within the same timeframe, and we'd be interested to find out if the industry has the same findings.

So at table number two is laser scanning. While this technology has been around for a while, it's only recently been possible to convert that data into a Building Information Model, and this has intrigued us for two reasons: Newly acquired properties, and as-built or existing condition surveys. While DProfiler is a natural for our capital planning program, we see laser scanning as being particularly useful for our non-capital side, where we do our major rehabilitation efforts.

We initiated a pilot study for a newly acquired facility in Guayaquil, Ecuador. This property consists of four and a half hectares, with six buildings on it, and the main building is 4,400 square meters. The effort, the survey effort, required four people with three scanning setups, working 12 hour days for 14 days. During that time, they collected 320 point clouds, this representative sample here, which was then loaded into a CAD file and eventually imported into BIM software.

Once there, the model was finalized and

checked for interferences. The resulting product is very similar to what we illustrated with DProfiler. Now, I must caution that this one doesn't have the cost-loaded data in it that DProfiler does, but otherwise it has the same interactive capabilities. We found it quite interesting that we reached almost the same point with highly different technology.

The final model consolidated the individual components assembled across the entire site. The tree canopies were included so that we could include site lighting and camera coverage requirements, and the tolerances of the entire product across the site is three millimeters.

And our last table is the construction to operation building information exchange, or COBIE, as it is known. This tool is designed to organize and maintain building data for use by Facility Managers during occupancy.

Project handover data typically gets gathered at the end of the job. This is an inefficient way to do it, and since most of the information was generated earlier in the process, the time it takes to retrieve and recreate it is costly. COBIE is designed to help collect the data on the fly.

It is designed to ease retrievability, and as we mentioned in February, industry studies suggest that up to 40% of maintenance time is spent revalidating information. The COBIE data collection is based on standard spreadsheet format, which is widely used and understood by the industry, and does not require a high level of expertise.

Currently, the options for BIM-based facility management software, though, are extremely limited. At the rate of change BIM is fostering in the industry, though, we expect to see some solid products in the next couple of years. To position ourselves for that time, we have adopted the COBIE spreadsheets as the starting point.

This time, we see this data transfer will simply be done by CD, but down the road, we expect this to be a web-based product. We see COBIE as a win-win solution, and in fact, have held training sessions with our in-house staff, as well as our design/build contractors, to ensure there's a thorough understanding of the benefits, the challenges, and to confirm our assumptions. Since we did not find any case studies for COBIE, we parlayed one recently completed project to validate the tool and to refine the requirements before we

incorporated them into our contracts.

So, what have we learned, and where do we go from here? When it comes to technology, there is no "One size fits all" solution, but rather a series of interrelated solutions, and each of these technologies has particular utility to OBO. Following the Director's guidance in '06, we completed business partner surveys, developed these three case studies, and incorporated some base BIM requirements into our program.

For FY '07, we focused on the base BIM model and several readily deliverable reports, to include walkthroughs, renderings, clash detection, quality control reports, and the COBIE spreadsheets.

As you can see, in '07, our primary focus with regard to the BIM model was on the architectural elements, based on the maturity of the software available at the time. Our eyes are wide open, however. There is still a lot to be done on behalf of the industry, the vendors, owners like OBO, and contractors. There needs to be continued progress towards a national BIM standard. For OBO, we need to continue to focus on providing solutions that meet our needs, and not necessarily those things that are merely attractive. We need to

continue to have an aggressive training program, a commitment in infrastructure necessary to make this happen. We need to integrate more engineering disciplines, and lastly, the maturity of the software, by incorporating Lessons Learned and industry best practices.

Our path forward includes these five bullets, and at this time, we find the most challenging and yet most important element is the fourth bullet, and that is to adapt new processes. We appreciate your thoughts on this as well.

So, our trajectory right now looks like this. Architectural models in '07, some basic features, structural models for '08, and adding to our objects libraries, and pushing towards a full BIM model by FY '09. We recognize this may have to be adjusted as we in the industry get used to this new technology.

So, in summary, it's been a busy year, and we feel pretty good about the progress we've made. We've advanced the base BIM concept, which priorly at this time supports the design and construction phases. We've found tools like DProfiler suitable for the capital program, and with 3-D laser scanning helping out on the non-cap side. And for O&M, we

see COBIE as the launching point.

And at this time, I'd like to open the floor to the other OBO Champions, see if they have any final thoughts before we turn it over to the industry Champions. No? Okay.

GENERAL WILLIAMS: Okay, Brian, thank you. We're going to go to the industry side, and then we'll have some chat.

MS. ARCHER: Thanks, General Williams, and industry colleagues. I'm excited that we have the opportunity to talk about BIM again. I know that one of my colleagues, John Brotti (ph.), from Clark did a pretty comprehensive presentation in January that walked through how BIM is being used in our industry, sort of standard practices, so I don't really want to engage in that again. What I wanted to do is talk about how our industry, particularly from the construction side, is addressing and adopting BIM technologies, what AGC is doing to sort of advance that process. Where is BIM going? Sort of outside of traditional coordination and clash detection, and how far away is that from today, and then finally a couple of challenges and issues that we're all going to have as this is implemented.

I think we can all say that BIM is probably

the most interesting and innovative tool that we've seen in our industry in quite some time, maybe since the implementation of CAD. If the agendas of our AGC conferences in the past three years are any indication, that's one of the main things and one of the only things that our membership wants to talk about, and is pretty engaged in right now. I think my company, Gilbane, is probably a good indication of our membership, and three years ago, I would say that any projects utilizing BIM were pretty much negligible, and today we're at the roughly 10 to 15% of our projects, including public and private sector, are using BIM. And most of them are using it in sort of a standard application like John walked through in January, but that's starting to change a little bit too, and I'll talk a little bit about that in a minute.

A colleague of mine from HOK mentioned that Autodesk had a statistic that around 5% of the architects are utilizing BIM fully right now, so I think that gives you a snapshot of where our industry is. We're past the early adopter stage, but we're still kind of climbing up the learning curve as an industry, and our membership is hopeful that owners understand that owner are driving the

process for this right now, just like IAQ, and you mentioned it as well, and one of our concerns is our ability to catch up to your expectations, and for us all to understand what the impact of BIM usage is to schedule and budget on projects.

AGC has really taken a leadership position in BIM implementation in our industry. We've got a couple of initiatives that have been launched in the last couple of years. The bottom to the C3T task force and the 3XPT strategy group are groups that are small working groups that are collaborative efforts, mainly between us, Kurt, and AIA to develop some standards, but the one that I want to talk about a little bit more, that I think is pretty interesting and you might want to engage in, is what's called our BIM Forum, and it's a -- it was created out of our Private Industry Advisory Council to facilitate and accelerate the adoption of BIM in our industry. It's organized around an interactive website and chat rooms and so forth, but if you go to the next slide, hopefully you can read this, but this is the organization of our BIM Forum. I think the interesting thing about is, in addition to this website, it's made up of a bunch of working groups that are not exclusive to AGC membership. They

include -- we have a user sub-forum that's mainly an owners group that's led by Chuck Hardy. I don't know if any of you know him, but he's from the General Services Administration. He leads their design and construction out of, I think, it's Region V in Chicago. He's engaged in it.

We have a legal team that's looking at the legal issues that continue to swirl around ownership of design, and they've been coming up with a contract rider that addresses that. An emerging leader sub-forum that kind of reaches out to the young folks that are coming into our industry, and sort of looking at taking BIM to the next level, and then maybe most important, on the left, is a process mapping task force, which is taking people out of the design and construction task force and talking specifically about, "How do we standardize the information in the models?" and "How do we make an easier transfer of digital information from -- or virtual information from the design team to the construction team?"

And that's something I think that we're all facing right now, and they're making some great strides, and as it's an open forum, it may be something that OBO would want to participate in, and

are welcome to.

BIM moving forward, getting beyond clash detection, or getting beyond what our sort of standard application is right now. A lot of firms are looking at moving BIM into the front end of the project, and the back end kind of like you're doing, or had talked about. For example, we've got an internal tool that's similar to D-Profile. We call it Cost Advisor, and it's basically a sophisticated cost modeling exercise that clients can use during the programming phase to look at options, and if they change certain building systems, how it will impact price. Our cost data is a little different than yours, as we talked, but it's the same kind of concept. Right now, we're working to match that, or connect that, to BIM modeling, so you can at least create sort of a blocking and stacking diagram out of it. But frankly, talking to folks in our arena, we still think that's about two years away. We're sort of in an infancy in it, but it certainly isn't ready for practical application yet.

Conversely, we're finding that marrying BIM with the back end is moving along a little more quickly. A couple of our in-house BIM experts told me there was a software released two weeks ago that,

I guess, came out of ArcoBUS that creates a way for ArcoBus to talk to Revit, so that you can take a living as-built, or create a living as-built, BIM as-built, that's populated with all the data that you need for the ArcoBUS system in facility management. At the end of the project, just be able to load all of that data directly into your Catam (ph.) system. I don't know if WOW would -- if that would work with WOW, but it's something that's happening. We have a client, SC Johnson, that's asking us to do it right now, and we're going to be implementing it on a 50 million dollar job in Wisconsin, but it's a test pilot project, so this is all sort of in its infancy, and it kind of goes back to the "We probably need to learn to walk before we run," but, you know, everybody's definitely trying to take BIM to the next level.

So, the technology is definitely coming, but we're at the front end of it all. We're also using BIM for energy analysis. I think someone was talking about that this morning. NIST has a test bid going right now on how that works, and how we're able to keep the data secure and not lose data as it's transferred between the BIM model and the energy analysis program. I guess that's a concern,

so people are looking into that right now.

And then, my last item, I just wanted to throw in there and maybe because it's cool and contemporary as we were talking about earlier, is one of the leading-edge concepts that a couple of young folks have mentioned to me is, incorporating gaming technologies into BIM. So, it's essentially kind of creating a more sophisticated version of a fly through, where you're either wearing an apparatus that allows you to virtually be inside a site and walk around it, or do it kind of via video game, which, you know, talking to my colleagues, it's hard to sort of envision a practical application of that for all of us, but you know, hey, maybe it's a recruiting tool, and you know, maybe we'll all be talking about how terrific a technology it is.

But at any rate, that's sort of where things are going. Moving quickly to challenges, I wanted to talk about a couple of just global challenges, and then two that have -- some of our members have mentioned to me, specifically related to the OBO program.

I think one of the biggest challenges we're all facing is the legal challenge of BIM, and

there's no case law really right now relative to BIM as a contract document, or liability issues, so it's all a little gray for everyone, and I know the industry is trying to move BIM from being a tool to eventually being a contract document. I think there's certainly a long way to go from that perspective. AGC is producing a draft contract rider right now that is hoping to be finalized in 2008, and it sort of at least takes the first step in outlining who the participants who should be, how data should be exchanged, and kind of try to move towards looking at whoever the party is that's best able to manage the risk, should be the one to manage the risk.

So, one of the biggest issues in that rider is ownership of the documents, and that's still being ironed out right now, so I suspect first or second quarter we should be able to see something come out, and it will probably be of interest to you.

Process mapping is the other issues I already talked about that is a big issue, and you might want to talk about it too. How do we get on the same page as far as what information needs to be incorporated, and how it's incorporated into BIM.

And then, relative to OBO, one of the issues that came up was relative to SBU documents, and I guess there are new guidelines that require them to be considered as classified, so how will that work in a BIM environment if a floor plan is an SBU document, you know? I think there may be some challenge there. That might be something you start to think about.

And last but not least, from both the design and construction side, there's discussion about this being a time-consuming process, building the BIM model, and your program is an accelerated program, and time is of the essence, so there are some schedule challenges relative to implementing this more fully, and just a hope that the owners will be sort of cognizant of that as more and more requirements are expressed from the OBO.

GENERAL WILLIAMS: Okay, thank you, Clare. Okay, Suman?

MS. SORG: Yes, okay. You know, a couple of weeks ago, the New York Times published the "100 Best Ideas for '07," and one of the ideas was generated by UPS, which discovered that if their trucks did not make any left turns, they would save millions of dollars on gas. And so they developed a

computer program which helps them make a third less left turns on their truck routes by changing their starting point, or changing their route as to how they get there. And so, I'm always in my business looking for -- avoiding left turns, but they're always there, and one of the things that we're seeing is that -- and I agree with everything that's being said, that we are in the infancy of the BIM model. We also don't have -- there's a big lag between the architects and the engineers, and all that is going on, but one of the things that happened to me on the BIM is, you renew your insurance every year in January, and I filled out my insurance form, and one of the questions there was, "Do you use BIM?" And I said, "Oh, yes," thinking that would be a big savings in insurance.

(Laughter.)

MS. SORG: But that's not the case, so my insurance premium went up. So I called the guy, my agent, I said, "What's going on? I thought that was going to reduce errors, it was going to make me -- sort of making changes easier, and it was going to save errors, and why are you raising my insurance?" And basically, there's so much unknown like who owns the drawings, who can change your drawings, how will

you fight the liability if somebody does -- and so my insurance went up based on that.

But we're, you know, excited about it. But then I also looked at the money that we are spending on -- in my firm, which is, you know, a medium-sized firm, on BIM, and the time, and it's adding up, and this year we estimate 3% of annual revenue going into developing the system, paying for training, but we're not seeing the fees going up. Time is one thing, but fee from the builder, design/builder is not coming in on this. So, there's unfortunately a stress on small business and -- in architecture, no matter how big you are, you are small, and you know, I think that's really got to be paid attention to. So, that's a left turn we hadn't anticipated, and I hope that there's something that can be done, but --

GENERAL WILLIAMS: Thank you. Questions for the BIM team. Now, you know we were here about 11 months ago. It was early in the year. We did a pretty good workup of BIM, but because of some of the good issues that have been raised today, good points, actually, we now sort of see a path for us, a little blurred, but we still see a path which we didn't have eight or nine months ago in terms of where we might want to go. And then, of course,

having the opportunity to benefit from your comments concerning some warning signs because the truth of the matter is, there are some legal issues with this, and I think everyone knows, who operates in this business, that at some point in time, documents are requested, and you have to produce them, and that gets to the SBU side, and how they're protected and so on. And it has an IT implication and all of that, so there are some issues that are not sorted yet, but we feel that we'll let the legal side of it sort that out, and we'll try to take advantage of these forums and everything else, and continue to grow.

Our path is not an accelerated one. It's to kind of get us at some landing spot in FY '09, and I think that's going to take us that time to work through all of this. But we're serious, we've been after it now, as Brian said, a year-plus, and it's a part of our culture going forward. So, we will continue to work at it. Are there some comments? Greg?

MR. KNOOP: The question is, what is OBO's plan? Are you intending, in the future, to have the feasibility level design that gets handed out in the bridging documents and the SED completely on a BIM,

so that the design/build team really has the hard tool to begin with, versus some starting -- the starting from scratch is really what most of us are finding is where we take a pounding on fees. We really -- it creates a lot of loss for us.

MR. SCHMUECKER: Ultimately, it's probably going to go one of two ways. Our vision is one of two ways: It will be a BIM model we initiate, we hand over to the design/build contractors for use during the design and construction phases, who then turn it back over to us for use during operations and maintenance, physically or -- viability.

The other one we see is it might be web-based, that everybody goes to, and it becomes a lot more -- complications on the legal side, of who owns what piece of that, so that it's really even more interactive than it has the potential to be from a handoff standpoint.

So, to answer your question, yes, we do see that as the end of the road, or as far as we can see at this point. We're not in a position to do that yet, obviously, but absolutely, that's the whole reason we would want to get into this capability of having this inter-operability.

MR. KNOOP: But the intention is that the

bridging documents that you'd be handing over to the design/build teams would at least have a lot of the initial work done, to give them a running start --

MR. SCHMUECKER: Absolutely. It'd have the object libraries already set up. A lot of the stuff that is currently in the test would already be linked to the specifications going to the other criteria in the contract, even linked to the codes.

MR. TOUSSAINT: Let me be old-fashioned for a second, and I'll jump back in the box. I'm hearing a term that's making me very nervous; it's a term I haven't heard for some years, it's called "bridging documents." I'm going back to the RFP, and I'm hearing Value Engineering and the interesting discussion we had. At one time, we did Mission Impossible; we had Value Engineering occur during the design stage of the design/build contract, which was very unorthodox, but we did it. Then, we moved Value Engineering into Planning so we'd stay out of that arena. We do the front-end Value Engineering, then we give a clean RFP, a.k.a. bridging document, a clean RFP to the design/build contractor, who would be responsible for the design and construction of the facility, according to the terms and conditions of that RFP.

I've heard terms like "design team" working at the Value Engineering stage. That means to me that I've got a design team working during Planning, and I've got a design -- I don't know who owns the design. So, this legal stuff, this is where we're going, we're saving 10% by the Value Engineering effort on the design, at the Value Engineering effort at the planning stage. I want to get to a contract that gives to a design builder who will warrant the design; then, we can talk with that design/builder over who owns that. But I want to make sure that we at least get in here some of the dynamics and discussion about how this process is working, and I think we're doing this on the fly now, but it sounds to me like we create some work at the beginning, we do some planning work which generates, you know, Value Engineering ideas. As far as I'm concerned, you can validate the Value Engineering after contract award with the initial 100% design presentation. You don't have to go to the site now. You can see what the actual contract has produced, and if you want to, after the fact, go to see whether that was delivered, that's interesting, but the design occurs actually after the contract design build award occurred, right?

MR. SCHMUECKER: Okay, I'll try to put you at least a little, Joe.

MR. TOUSSAINT: Help me out of this.

MR. SCHMUECKER: Okay, fair enough. I jumped ahead to the idea of bridging documents being what we currently put in JE-3 of the contract, okay, which is a series of site-specific plans, specifications, division one, and so one. A lot of that information does end up getting synthesized by the design/build contractors into the solution, but what we're delivering right now is a series of individual files with independent information that, I think, we have the opportunity to link together to assist them during the design and construction phases.

So, if I led you down the primrose path where bridging was something different than that, I didn't intend to.

MR. TOUSSAINT: I don't know if it was primrose, but it was a briar patch.

(Laughter.)

GENERAL WILLIAMS: Yes, go ahead, Bill.

MR. FLEMMING: Just a few comments. First, this definitely fits in -- I congratulate you on creating another controversial topic that will take

a long time --

(Laughter.)

MR. FLEMMING: The next thing is, this definitely fits into -- what was this gentleman's "Cool and" --

GENERAL WILLIAMS: Contemporary.

MR. FLEMMING: -- contemporary --

MR. NORMAN: I'm infamous now, by the way.

(Laughter.)

MR. FLEMMING: -- one of the things I've noticed about this particular topic is, people sometimes lose sight of what we're trying to do by, whether you call it a BIM model, or I like the term "virtual design and construction," VDC, which is another terminology, but it's basically the same thing, but we often lose sight of what we're trying to do here. We're trying to have an integrated approach to design, planning, and construction, and I hear design firms talk about, "I'll do a BIM model," and oftentimes it's nothing more than a 3-D model. It doesn't link the schedule, the cost, and the manufacturing together, and all I was going to suggest you may want to do is make sure you have a strategic plan on what you're trying to accomplish here because unless you link the manufacturing into

this process, you are not going to save cost. And the cost is in squeezing the delivery time of the whole product down. And one thing that I would suggest you look at, that I see used quite a bit in Europe, and we're doing it on some healthcare facilities, is radio-frequency tags on all major pieces of equipment that go into the facility, so that you can track when they're manufactured, where they're at in the delivery process, have they been installed? You can pull up with a tablet computer for the facilities group later what the product is. It links information flow together, and I see a lot of people run off on this, "Let's have a 3-D design, and let's put some estimating quantities in it," and they don't think about linking all of that together. So that may be a suggestion that I might make that you'd want to think about.

GENERAL WILLIAMS: Well, Bill, I might say this, that when we launched this, and the few people in the room when we did, we were taking that strategic, holistic approach so that we wouldn't leave any piece behind because we know that we can always go down just the design side and end up somewhere, but we were interested in making certain that once we got all this pulled together, that we

essentially had that integrated result. So, we're with you, and so -- and there's still work to do, you know? We just got ourselves focused and headed someplace, and you make a good point. But that's not different from where we started. Yeah.

MR. WOODS: One of the things, and I'm going to go back to what Joe was saying. I'm the old guy, and I learned the terms that you use sometimes are dangerous. I made the mistake of talking to the person at GSA who is implementing it, and I said, "We, as small firms, really would like to know what platform you're going to use." He immediately, correctly, responded, "We don't care what platform you use." And that's right because we each buy different software.

I know -- I think this is all being done through the Federal Facilities Council, but we would like very much, as the small firms, for the Federal Government to adopt a single standard. The Corps, unfortunately, to the chagrin to the many of us, went out and had Bentley sell them a number of licenses for a million bucks. That may be the standard. It may not. We are very much accustomed to, when we receive the RFP, that the deliverable is to be in AutoCAD 2005. That, from a small firm

standpoint, that's what we would like to see, whether we work for OBO, GSA, the Corps. That way, we only train our people around what the majority of our clients are going to call for.

GENERAL WILLIAMS: Okay. Very good. Yes, Nancy?

MS. GOSHOW: We are fully into BIM, and the big thing for us is the scheduling. Our clients don't have enough time to wait until we get the model fully into construction documents, so on several jobs we've gone through DD, then had to switch back to AutoCAD from Revit because there just wasn't enough time to make it all work. And correct me, other architects on the panel, there's another thing in BIM called Worksets in Revit. I don't know if you know this, and it's great for one or two people working on a project that if you have a major project, let's say a 50, 60, 70 million dollar project like we have, we may need eight or ten people working on that project at the same time. Revit does not permit us to do that.

So, it's not set up for big teams that need to work very quickly, and that's the wall that we're running up against, so we get so far through DDs, then we have to abandon it.

And the other thing we found, and again, correct me if I'm wrong here because I'm asking the question as well as relating to you, all of the construction details are still done in AutoCAD in 2-D. So, it's a 3-D model for you to see how the model for you to see how the building is put together, and that's great, but you're still coming out with 2-D construction documents, and until that is changed, I mean, we could give you a sketch-up model that goes really fast, and we could do it inside and out, and you could see that, and that could be part of what you see, so everyone can see the building 3-D, it helps a great deal, but you're still going to come out with 2-D drawings.

The other thing is the MEP part of BIM, Revit, particularly, is just not up to speed yet. The structural is very far along, the architecture is fairly far along, but the MEP is very far behind, and that's the big coordination bollocks for architects and engineers, is coordinating that MEP work. So while we want to think three-dimensionally and work three-dimensionally, we still have to coordinate in a two-dimensional way because the major coordination is in an area where Revit is not there yet. There may be other programs that are

better, but that's my experience. I'm throwing that out there for other comments.

GENERAL WILLIAMS: Yes, here, and over here. Go ahead, Greg.

MR. KNOOP: The industry is going to have to shake this issue out because also, we're starting to take on -- our end of the information model building is only part of it. The contractor puts in -- needs to put in other information, in order to make that model parametrically complete. So who's responsible for that?

I see the future of a lot of work being put on the A&E team to set up the perfect model, and handing it over to a builder to go ahead, and no disrespect intended, but we have the people who are used to working on those platforms and formats, and it seems logical that we'd be doing a lot of the input. Well, there's a cost to that, and will the fees, and will the industry provide the fees, and the changes in the fee structure, to recognize that?

And legally, going back to the FAR, and the insurance industry, how do we keep clean from a responsibility standpoint?

GENERAL WILLIAMS: Let's go here, and then we're going to cut then, and move to something else

because this is a big subject, and we haven't talked about it the last time. We just want to touch it one more time to let you know we were moving in that direction, but there's a lot of unanswered issues, and you're touching them now, the operational side of it, which has to be considered in this whole process.

MR. SCHMUECKER: Yeah, just a couple of closing thoughts. We don't shirk from recognition that there's a lot yet that needs to be solved. In fact, the McGraw-Hill study said that there's a lot to be done. The MEP is lagging, but they also said they want the owners to drive it. The studies which concluded contractors and AEs, others involved in the profession, said they want the owners to define the requirements. And so, we think we're doing that. We are pushing it.

One thing I did not point out on one of the slides was in addition to the BIM requirements, we're still requiring what we required in '06, in the recognition that this is a rough road to go. Sketch-up will get us a lot faster on 3-D, but I don't think in three years we want to be doing that anymore, so yeah, we got to get started, and we got to start with the basics and get some good ground

rules in place.

GENERAL WILLIAMS: Okay. Thank you all. And we're going to move now to the final subject, which is commissioning and closeout. Rob McKinnie will lead that off for us, and Nancy and Clare will participate.

MR. McKINNIE: Good afternoon, everyone. We're moving on to the fifth topic, which is project commissioning and closeout. And if we move on to this next slide -- I'd like to first of all thank the two ladies that work with me, Nancy and Clare. There was a tremendous amount of energy, and thank you very much for the brainstorming and the sharing of information. And hopefully at the end of this session, we will have something to take home to work with until the next IAP session.

I'm very happy to be a part of OBO and the 53 projects that were recently completed. As the Director of Construction and Commissioning, that's a major -- it's been a major challenge for us, and today's topic is talking about some of the challenges that are facing us, so that's what we're moving forward to look at. While we've completed these projects, we sill keep in mind that we've got some things that we need to work on, and one of the

things that we've been working on is the commissioning process. Over the last year, we've changed our name, and we've moved into the commissioning mode more forcefully, and this will allow us to present a product to our customers that is much more successfully operable -- they can operate it and maintain it much more successfully. So, to take it to the next level, we will share some of the ideas that we're involved in.

If you go to the next slide, the security slide will share with you information and some of our concerns. We've got contractors that are installing certain systems in the building, and the infrastructure, the conduit of the runs (ph.), the boxes, and the like, at the same time, where the follow-on teams will make the connections to the security systems -- that is, the technical security systems. And in addition to that, we have teams of security personnel that are installing the systems in specialized areas of the building, so keep in mind these challenges as we talk about commissionings.

All of this is part of the final phase, or the commissioning phase, for us, of the systems of the building. We at OBO, that is, the construction

and commissioning portions of it, have the responsibility -- we have the lead for installing and supervising technical security systems, whereas our colleagues in Diplomatic Security are responsible for inspecting these systems; that's performing the final inspection. If you heard the Director's initial slide, or earlier comments on accreditation, very near the end of the project, that's when the diplomatic security team comes out and inspects the system for accreditation. They're confirming what we had designed is being installed, and it is installed as intended, and will function as designed.

Very near the end of the project, some of the challenges that we face are the fact that the Diplomatic Security requirements will change. The second part of that, the Diplomatic Security requirements, they're often new ones coming along. If we get new requirements, or change the requirements at the end of the project, we're forced to either look for solutions to the problems, or we're forced to approach the Diplomatic Security personnel for a waiver, which is not often very quick to happen, and very often, it's costly. So, those are some of the things that we are faced with

when it comes to accrediting the building and reaching that final security inspection.

The next system that we have on that same slide is the FEBR products. In recent -- we've been working over the last four years with the FEBR products in a special group, and fortunately for us, the General came along and introduced us to his concept of Government-procured equipment, and that package that we have is our forced-entry ballistic doors and windows. We've taken those products and we've standardized them. This has made a great difference to our program, and it's also saved us a tremendous amount of time with regard to delivery and overhead cost, and it's also a big help to the maintenance personnel who are actually maintaining these packages.

This has been very helpful us in recent months because the FEBR installers in that group were not within the construction family; they were in the security arena, so they were realigned to our office in the Construction and Commissioning Division. So that's helping us to get it right, which is our goal.

On the next slide, you'll see another system that we're faced with commissioning at the

end, and it's telecommunications. We rely heavily on the Design and Engineering Division, that's Bill Miner's group, to assist us and to provide the final inspection of the telecom infrastructure, and we're very happy to have them. Unfortunately, some of the problems that we face in the telecoms arena is very similar to what happens in the technical security systems arena: They come along near the end of the project, and they tell us that they've got changes or they need to make changes, largely, or they can say that many of the changes are due to technological advancements in the telecom arena. We have to face that problem.

Once we get to the point where we've gotten all of those changes reconciled and sorted through, we go through a follow-on inspection by our sister bureau in the Information Resource Management Group. They go forward then to install the telephone system, and they've got a certain timeframe that they've got to work within to set up installation and certifying the telephone system. That's actually the PBX and the handsets for the non-classified as well as the classified portions of the building. All of this is coming in at the end of the project, during the commissioning phase.

The other problem that we very often find is the telephone system in the host country. I won't get into the details of it, but you can imagine the telephone systems in some of the countries that we have to build in. We're negotiating installation of telephone lines for our facilities.

On the next slide is the building automation system, talking about some of the challenges that we face there. The Director said earlier, building automation systems are particularly sensitive, sensitive in more than one way. In every instance, it's the facility's management staff, the embassy staff, that's going to have to operate and maintain the systems once we transfer it to post. More than likely, the facility staff at post is coming from a low-tech society. In some cases, we've seen them come from maintaining 99 split-pack (ph.) units to having to maintain complex chillers and air handling units the next day. So, the challenges are there for us.

The element's further complicated by the fact that the BAS system has an unclassified component and a classified component to it. They both have to be commissioned, and they both have to

have staff that can operate and maintain them, so that means that the local national staff, perhaps, for the unclass, but definitely a cleared American staff to maintain the classified portion of that.

The one part of the BAS commissioning that people forget about, or don't quite understand, is that the commissioning happens over a period that requires a pre-occupancy, an occupancy, and seasonal testing. We test it prior to occupancy; that's prior to the building that's occupied for certain set points. After its occupancy, within the first 90 days, our contracts have a requirement to test it, and there are seasonal requirements whenever the host country has seasonal changes. We also have requirements for testing the BAS system, so when is the BAS complete? It's complete after you've done the pre-substantial completed testing, the pre-occupancy, it's complete when you've done the occupancy testing, and it's complete when you've done the seasonal testing.

This complicates the commissioning process for us because everybody wants it to be complete and fully functional, and they also want to be trained on it at the time of occupancy.

The other thing that I'd like to bring to

your attention, too, based on the BAS system, is that this is such a complex system that it requires a specialized type of training, and there are very, very few that are capable of programming the BAS system. There are very few people that are in the arena of going overseas and working in overseas environments to work on the BAS systems.

One of the more important things for us in the brainstorming sessions that we talked about was educating the recipients, or educating the people along the way, our intended occupants, of the complexity of the BAS system, and making certain that they understand what is involved in commissioning, and passing it on to post.

The next slide that we look at is the HVAC systems. Over the past few months, we've been challenged by some hiccups in our systems. We think we've got it right. The systems that we've had included a number of things ranging from design issues to manufacturer's defects to limited personnel to operate and maintain them, lack of available materials to bring them online, but we think we've got a path forward for that. And most of you have heard, or probably will hear, that we're moving from water-cooled, for the most part, to air-

cooled chillers thanks to the assistance and the work of our PE family, the Project Execution family members, and Design and Engineering, and in Construction and Commissioning that came together to resolve this problem for us.

The other point I wanted to make is that even with the HVAC system, once it's turned over to the post, there's also that question of being able to operate it and maintain it, so there's a training component that has to be done.

The next slide, fire alarm systems, the challenge there is to be able to make certain that we have commissioned it and turned it over successfully to the clients. Life/safety is an important element that we have for our facilities; in many instances, the projects that we do are in developing countries, where there are inadequate emergency services in the event of a fire, so we rely heavily on our buildings systems, the fire systems there to notify and to inform us of problems within the building. And just as we had problems with the FEBR system, or complications with the FEBR systems, we also have that with the fire alarm systems, but we haven't standardized our fire alarm system, so that has made it a much more workable

solution.

The biggest problem, I think, that we face in the fire alarm at the moment is the lack of certified installers. This is once again a specialized area of the construction industry. Looking for three certified people is not an easy task. They're out there, but we're all competing for the same resources, as we've talked about earlier. So, one person may not be available when we really need him because he's in one spot.

The next slide that we've got there brings the concerns to the table, that of power. Power systems are quite complicated for us, but under the Williams 20 that we've been talking about in a number of our IAP sessions, we've agreed to provide sites that are ready to build. We've talked about that in a number of sessions. That's very important for us, the construction side, if we've got ready-to-build sites. We don't get them, that means that we in the construction arena will have to move forward and assist to try to get permanent power to the facilities. We can do that, but it also takes us away from what we would be normally doing.

You can imagine what the power requirements are in some of the countries that we are actually

building, and the power requirements in Ouagadougou, the power requirements in Yaoundé, where I actually built the NEC, it's not very user-friendly. It's not very appealing to have that attached to your new baby, your new NEC facility.

The next slide on generators, it's another one that we face challenges on. They're not as complex, but they are there. We talked about it a little bit earlier there; the reliability of power makes us think very heavily, or very seriously, about whether or not we've got our generators as prime power or backup power only. The problem that we face there is local service providers, generator technicians. How many generator technicians are available in country to maintain the systems that we put in?

Our next slide, training, which is a good portion of commissioning. The one thing that we need to bring -- it's an integral part of the commissioning process, and it happens very close to the end of the process, but we do actually provide what we call familiarization. There are two different aspects to this. We on the construction side, doing the construction execution phase, provide what's called familiarization. We make

certain that the occupants, or the receivers, are familiar with the systems that are in the building. The other part of this is detailed training, extended training. We don't actually provide that; that's a function of the recipients, function of the embassy staff, to be able to train their staff, fully train their staff, on the systems that are coming online.

Part of that is also a language issue, and part of that skill set. Very often, they don't meet the minimum, or they don't have the base skills to manage the systems, so we work with the post as much as we can, or the recipients. In some cases, the facilities manager and staff have come on early enough that they are able to work and see troubleshooting during the installation of the system, so that's been very helpful to both the Facility Manager and to the staff.

The one thing that we're trying to implement -- we've implemented in the Construction and Commissioning Division is what we call our 11th month inspection. We've got a one-year warranty period after substantial completion, so we send our staff back to the site eight to twelve months, maximum, eleven months, so that we can get -- make

certain that all of the punchlist items, and all of the issues that were out there, have been resolved prior to the expiration of the warranty. That's something that we've already implemented to help us out with that.

The next slide, O&M deliverables, the biggest problem we have there is getting them. By the time you get to the end of the project, and 24 months have gone by, there's very little interest in getting the documents, to turn them over to the owner. Your only desire is to leave, especially if you're in Ouagadougou or Astana, you're ready to go home. You've been there 20 months at 34 degrees below zero; you're ready to go home. Nobody's interested. But we're working towards the O&M deliverables, and we have a process in place now. We've implemented the Initiative Commissioning Agent that will work with us to work with a contractor, the design/builder, to get the deliverables, to get the extra materials as early as we possibly can, to get the spare parts, the recommended spare parts list, to get it as early as we can, to be able to provide that to the Facility Manager, make those procurements, to get the commissioning reports as soon as we can.

Unfortunately, we can't get the commissioning reports before substantial completion because we're testing until the last hour, so bear with us on the commissioning reports. We will get the commissioning reports. As-built drawings, we can't get as-built drawings before substantial completion. O&M manuals, we get them at substantial completion, as many and as much as we can.

But we do have an initiative in place with the Commissioning Agent that's online now to help us obtain this. The Commissioning Agent for us is an independent body that does not work for the AE, that does not work for a designer. That body will be there to work for the U.S. Government independently from the AE and from the contractor, to get the documents as best as we possibly can under the circumstances that we've got.

And at this point, I will turn it over to Clare, who will share some of her experiences with Gilbane for us, and from there, Nancy will share with us her experience and pick up some of the cost issues that we didn't complete at our last IAP session.

MS. ARCHER: Thanks. I just have a couple of comments, real briefly, from a process

perspective. Not having worked with OBO, but having worked with some other public agencies, I think one of the best roadmaps we've seen from our side of the table has actually come out of GSA. Two years ago, they put together a guideline for total building commissioning, and they made a requirement for all of their 2006 prospective projects forward had to incorporate total building commissioning. The definition for that is a little bit -- slightly vague, but it's developed basically during the project planning stage. They define what systems would be included in total building commissioning, depending on whether it's a border station, or a lab, or a courthouse, or just a Federal office building.

During the planning phase, they put together an initial plan. They identify the team that's engaged in commissioning, and that always includes the people that will be running the building, as well as the construction manager and the EE team, et cetera. And that's also the time where they allocate the funds, or ensure that funds are allocated for commissioning, and I just want to throw out just a couple of their baseline cost figures that may be kind of close to what Nancy's

seeing.

They say to carry, I think it's about a half a point for Federal office buildings. If you have a more complex office building like a courthouse, maybe eight-tenths to a point for commissioning, and if you're doing a lab, you're probably well over a point for commissioning. So, you probably would fall into the more complex, but not as complex as a lab, and that's what they're holding as a baseline.

They also decided to advocate going to a third-party commissioning agent, rather than having the designer/builder do it, and that agent will either work -- they'd like the agent to work for the construction manager as agent; that way, it's one less contract for them to administer, but on projects where there isn't a CM, then obviously, they'll administer it themselves.

And then finally, I mean, the design and construction process is probably exactly what you're doing and seeing, but their post-occupancy process is kind of interesting. They also do seasonal testing, but they do a final stage performance review. They do it at 10 months into the 12-month warranty period, and they do that before they

develop their final commissioning report. And then, they do a final satisfaction survey with their tenant agency as part of that process as well, until it's closed out.

And then, one of the other things that they're advocating, which we talked about real briefly, was recommissioning three to five years out, and I think the challenge to that is, at least per GSA, they give the responsibility for recommissioning to the tenant agency, so your tenant would have to pay for that, and I don't know how realistic that really is, but it's their thought process. I don't think any of the 2006 prospectus projects are built yet, so it's really hard to tell if any of that is being implemented, but as a whole, I think that's probably one of the best roadmaps I've seen out there.

MR. McKINNIE: One of things that we're faced with is that we won't see the results of our new initiative for two years, so what we've gone back and done, we've taken some of our projects that were already in construction, and we're taking some of those as pilots, and implementing the commissioning agent there so that we see in the March/April timeframe of next year what our

commissioning looks like, see how well that's going to work.

GENERAL WILLIAMS: Okay. Nancy?

MS. GOSHOW: I'd like to start of off by just finishing up on the costs, and I was looking over my notes, and correct me if I'm repeating it, but the cost of building commissioning for new buildings by the U.S. Department of Energy is 1% of total project cost. GSA and a variety of other agencies say that it's .5% to 1.5% of construction cost, so everyone seems to be agreeing on that range, so that's what you can think of. That's new buildings.

Existing buildings is 3% to 5% of total operating costs for what would be called "retro-commissioning." Another way to look at it is, a commissioned building will have 8-20% lower operating costs than a non-commissioned building. Obviously, you're reducing the energy use, you're decreasing the maintenance cost, you're increasing worker comfort, and then you're increasing productivity. It is a higher upfront cost to do building commissioning, but you're lowering your operating costs, and the other thing we were talking about, which ties in with a lot of other things, is

improved comfort, and with the stress on finding people to work in these buildings, and indoor air quality, this all feeds into everything that we've talked about so far.

I just wanted to mention a few solutions that we brainstormed about, and one of the things that I talked about earlier over lunch was, it would be great to gather the Lessons Learned on building commissioning and project closeout, particularly project closeout, from Rob and his staff, so it would be great if we could get the Lessons Learned Innovation Task Force to work with Rob to set up a database. And what was amazing to me was, when we came back after lunch and heard the VE presentation, the model is there for you to take the VE model of how you've analyzed the return on investment, and just move it over now, and say, "Okay, now we're going to do the same kind of database for project closeout," and just see where you get and what you find.

One of the other things we talked about was moving the building commissioning earlier in the process than where you may have it now. Full building commissioning, as opposed to just building commissioning, where you move building

commissioning, like you did VE, into the Planning part of the project, so that the design/builders, and particularly the builders at the end of the job, are not surprised by the fact that they owe all these additional things that they may never have had to do before. I think the key is, you want to know at every phase, as a builder -- I mean, architects, we're early in the process, but a builder really needs to know what's coming along so you can prepare for that, and some builders may not be as comfortable, or they may not be prepared, and maybe that's why some of these things are coming in late.

As I said, again, tracking the commissioning results, similar to the VE return on investment slide, the slide that Kathy had, and the other thing that we talked about was, there's the new building group, there's Rob's group, and then there's Facility Managers over here. And in the middle, there's like the Grand Canyon, right? And the Grand Canyon is where all the new building stuff kind of falls into the Grand Canyon, and the Facility Managers try to reach down to get it, and there's this gap. And so, we're thinking that maybe the thing to do is to bridge that gap, and to have the new building design project closeout

commissioning group kind of become a safety net underneath those Facility Managers, and it becomes integrated in a way, and that the period of the time that that group works with Facility Managers extends to six months to eight months, maybe even a year, and that at the end of a year, you bring in recommissioning, so that one year after completion, you come back and recommission the building.

By that time, all of the problems with the equipment will have surfaced, and you can have this period of like a year of troubleshooting.

That's, I think -- did I cover everything, Rob?

MR. McKINNIE: I think so, yeah.

GENERAL WILLIAMS: Okay. Well, let me -- we're going to have to talk about commissioning a little bit later on down the way, but I do want to thank you for all of the input and presentations today from both sides, and before we recognize our visitors and do some other things we must do, Suman, would you join me up here, please?

We have had to retire, or let go, some of our members before. We have some of them here today as well, and we have such an occasion today. Suman has been a very loyal and supportive member of our

panel, and we always send our panel away with our best wishes, and this is fortunate that this is the beginning of the holiday period. She's been a strong supporter, a good friend; she's worked with many of our staff, and a known entity.

I like to say when I came here seven years ago, she was a small firm, and she just said she's medium, so things can happen being associated with us, so you may get fat.

(Laughter.)

MS. SORG: Good things happen.

GENERAL WILLIAMS: Good things can happen. Okay. So, what we want to do is send you away with our best wishes, and what this is is a collage of the 53, I think it was 53 here, of new compounds that we have been able to put together, and quite frankly, I've told you the value of this panel, so Suman, you should feel just as proud as we do of this, so congratulations and thank you for your contribution.

MS. SORG: Thank you.

(Applause.)

GENERAL WILLIAMS: And everybody has to get one of these. This is building diplomacy, and it will give sort of a historical perspective of what

the architectural thinking has been around our building in the State Department. And again, find a place for this too, to remember us.

MS. SORG: Thank you.

(Applause.)

MS. SORG: Thank you, General Williams. It's been a real pleasure, and it's been a pleasure representing the American Institute of Architects on this panel. I've learned more than I've contributed, and I'm really excited and appreciative. And working with OBO, I've had a 15-year history of that, and I'm really appreciative of the help that it's given firms like mine, and I hope continued success with this. Thank you.

GENERAL WILLIAMS: Thank you.

(Applause.)

GENERAL WILLIAMS: Okay, now we're going to ask our visitors to be recognized. We want to do that, and starting with Mr. Fowler.

MR. FOWLER: Hello, I'm Perry Fowler, with the Associated General Contractors. General, thank you once again. It was a very good, substantive conversation today. I want to thank Clare for her presentation; I thought it was very good. I think we have some homework now for ourselves, as I've

heard through the conversation today. Again, thank you very much, and it was great to be here.

GENERAL WILLIAMS: Right. Yeah, you got it; if you hang around us, you're going to get homework, or you're going to get an award, so one of them.

(Laughter.)

GENERAL WILLIAMS: Yes, Wallace?

MR. WALLACE: Matt Wallace, with ETI, an active member of SAME, Society of American Military Engineers for three and a half years now. It's an interesting panel, and I've enjoyed sitting on the outside for the first time and actually being able to absorb everything that's going on, so thank you very much for letting me be here.

GENERAL WILLIAMS: And thank you for your service on the panel.

MR. WALLACE: Thank you.

GENERAL WILLIAMS: Yes, sir?

MR. SAMICK: I'm Joe Samick (ph.), with Luster National, and also a member of SAME, was actually invited out by Regan McDonald. We served together for a few years, both at West Point and in Iraq for a little while, and it's great to be a part of this group, and thank you for shared experiences

and input. I appreciate it.

GENERAL WILLIAMS: Delighted to have you. Yes, sir?

MR. CIOTOLI: Good afternoon. Peter Ciotoli with Western Solutions, and I think this is my 5th IAP, and all the topics are very interesting. I learn more each time. Congratulations to you, sir, and OBO on your accomplishments. You should be proud of that.

We have just started our first State Department project at Vilnius, a building expansion and upgrade, so we're very anxious to get that moving. We have obviously a top-secret clearance at the facility level. Our company also has a top-secret clearance at the facility level, so we're looking forward to other projects that suit that clearance requirement.

GENERAL WILLIAMS: Okay, thank you. Yes?

MR. KUBIC: Hello, General. I'm Chuck Kubic, President of the VCC International, and General, looking at this panel, when you mentioned there were 19 over a period of seven years, you and your staff are to be congratulated for putting together that kind of continuity in a town that sometimes can't find it's way from year to year,

so --

(Laughter.)

GENERAL WILLIAMS: Thank you.

MR. KUBIC: So again, congratulations on the continuity of this program, and you can see the results.

GENERAL WILLIAMS: I'm going to try to remember that quote. That's a good one, Chuck.

(Laughter.)

MR. NORTON: Good afternoon. I'm Doug Norton; I'm from Siemens, and the Siemens Government Services Organization. This is my third opportunity to participate as an observer here. We have a long history of working with your organizations, we always enjoy it, and I appreciate the opportunity to join you.

GENERAL WILLIAMS: Thank you for coming. Yes, sir?

MR. DOUGLAS: General, thank you again for keeping this discussion open for our participation. I'm Mike Douglas with Bentley Systems. I found all of the topics today very stimulating, a couple in particular. First, just on the BIM discussion, I get a little over-excited sitting and listening to it all, but in general, I guess my feelings are that

it will serve OBO the best to go looking for standards-based solutions, to the extent that that's available, and where that may not fully support your objectives as you evolve your BIM strategy, to look for the most inter-operable solutions in the market. All of the vendors are moving in a similar direction, and I believe that is towards greater and greater inter-operability.

The second topic was simply the workforce issues. I'll just mention briefly that Bentley, possibly like other similar vendors, does have a program by which we provide our design software to secondary schools at no cost, and we have some very affordable programs for university programs, as well, so anybody that is interested in that, as Jay offered a personal perspective on our individual obligations to address this issue, feel free to contact me. I can put you in touch with the folks at Bentley that manage that program.

GENERAL WILLIAMS: Thank you. Let's see -- yes, ma'am?

MS. BYRD: Good afternoon, General. Thank you for allowing me to participate again. I'm Renee Byrd with Horne International. I really wanted to thank you for raising the issue of indoor air

quality. It's an issue that's a personal interest of mine, and the homework was helpful just in being able to learn and contribute to that issue. And also, I want to say congratulations on the part score. A 97 is -- that's outrageous, difficult to obtain, I know.

GENERAL WILLIAMS: Thank you very much. I appreciate you coming. Yes?

MR. GUTIERREZ: Hello, everyone. I'm Kurt Gutierrez with Orion Management. I'm one of the partners, and I want to say thanks to everybody for allowing me to come onboard for this first panel meeting. But I've got to thank Jay for making the invite. He said, "Kurt, you really ought to go down there." And what we have on our team is technical security. If you need some of those NIST guys, I've got them. We have a top-secret clearance in facility holding, and we've been working with the State Department for a long time doing technical security upgrades, but have yet to start working in earnest with OBO. We've been working with some of the general contractors, and I'm trying to get in, so I think I have an understanding of some of the needs you have going forward, and we're standing by and ready, and appreciate all the information we got

here today.

GENERAL WILLIAMS: Class of '86, right?

MR. GUTIERREZ: Yes, sir. Your son was my classmate.

(Laughter.)

GENERAL WILLIAMS: Okay. Yes?

MS. HITESHUE: Hello, sir. I'm Nancy Hiteshue. I'm with the American Institute of Architects. This is my first time here; I'm new on staff at AIA, and so I appreciate the opportunity to be here and listen to the interesting. So thank you; I look forward to more.

GENERAL WILLIAMS: Good. Okay?

MR. BANKER: Thank for having me, General. Will Banker, with Surge Suppression, Incorporated. I've been here a few times over the years; I appreciate working with OBO and your staff, and also I'd like to thank the panel for taking time to be so open with some pretty interesting topics. And once again, thank you for your time. We manufacture electrical surge protection products, and over the years have been working with OBO directly, and also with the subcontractors. Thank you very much.

GENERAL WILLIAMS: Thank you.

MS. SCHMIDT: General, colleagues, I'm Rose

Marie Schmidt. I'm a Senior Counsel and Vice President at Marriott, International, where I head up the legal services for our architecture and construction division, and Marriott is a very strong supporter and participant in AOD. So, this is my first meeting, and I thank Rob for the invitation. In my first meeting, it was very gratifying, General, to see that you've put together a group of Government and industry experts who can share ideas because it seems to me that industry can take away as much from your team and what the Government is doing as we can offer you, so thank you very much.

GENERAL WILLIAMS: Thank you for coming. Look to see more of you.

MS. SCHMIDT: Thank you.

GENERAL WILLIAMS: Okay. Robin? Oh, okay, back here.

MR. BARTON: General, Mike Barton, Vice President of SSI, also a sustaining member of SAME. Some of you guys are here also. I work along with Will; we do a lot of work together with the Design and Engineering team, and doing a protection system on the electrical equipment in the facilities. We appreciate the opportunity to work together with you, and we've had a great relationship for many

years, and we look forward to the future together.

GENERAL WILLIAMS: Okay, thank you. Robin, welcome back.

MS. OLSEN: Hi, thank you. Robin Olsen, with Associated Owners and Developers. I've enjoyed knowing the General all these years, and meeting everyone on the panels as well as with OBO, and it's enjoyable to be back, and I really appreciate the opportunity, and it's gratifying to see all the hard work and all your results, and they're lucky to have you.

GENERAL WILLIAMS: Thank you. Welcome back, Mary.

MS. ANDERSON: Thank you. Good afternoon. I'm Mary Anderson, I'm Senior Vice President of Schnabel Engineering, and I'm also post President of the northern Virginia SAME post, so I want to thank you for -- once again, your support of SAME, your speaking at SAME, your having SAME represented here, and renewing your membership with us.

(Laughter.)

MS. ANDERSON: That's always good. And I hope that you're getting your e-mails of our announcements because we do have -- Regan, I think you're in on this -- we have confirmed our March

speaker will be a BIM-related topic that you may -- and it will be from a construction contractor's perspective, some of their procedures, so we'll make sure that if you're getting the e-mails, that's great, and if anyone is interested, you can either see me or go to our website. And again, thank you for the program. Great job.

GENERAL WILLIAMS: Okay. Thank you for coming. Okay, let's see. Yes?

MR. STINGLY: General, thank you for letting me come again. I'm Pat Stingly. I'm from the Bureau of Diplomatic Security. I'm what they call an "enterprise architect," which is a computer version of an architect, and also a member of AIA. We belong to them, too.

The BIM discussion is very interesting. I have to do a technical reference model. The technical reference model talks about all of our computers, and I would like one day for us to have an embassy, and have the picture of what's there, have the security cameras, of course, have the network, have the computers, and when you call up the help desk, you'd be able to get your window fixed, to be able to get your computer fixed, or pretty much anything else.

And the BIM discussion is very interesting because I'm beginning to see how we can kind of knit these things together. Thank you, sir.

GENERAL WILLIAMS: Thank you. Bill Brown?

MR. BROWN: Sir, Bill Brown, Executive Vice President of Page Southerland and Page, and a national Board Member of SAME. You're surrounded with SAME members, sir.

GENERAL WILLIAMS: I see that.

MR. BROWN: I want to congratulate you on another excellent program. We want to make a comment on workforce; I sort of held myself back, there. As an architect and an engineer both, I have a deep interest in workforce development. I would, however, offer that at the end of the day, we need to increase the pool. Any way you look at it, we can re-work those that we have, but we've got to increase the pool. Now, when it comes to Facility Managers, just for consideration, I would throw out to consider whether or not we need architects and engineers as a mandatory.

Certainly, I would agree that it's highly desirable, but I think we need to ask ourselves, is it possible to have other professions feed into that requirement, and if so, what are those professions,

and what would we have to do to make them whole, to carry out that responsibility. So I'd just convey that idea to you. Thank you, sir.

GENERAL WILLIAMS: Good idea, Bill. We'll look at that. We'll look at anything.

(Laughter.)

MR. SHIRVINSKI: Good afternoon. My name is Adam Shirvinski, and I'm with DLT Solutions. I appreciate the invite, and being able to attend. I noticed two comments relative to the panel discussion; I thought the panel discussion was wonderful today.

Specifically, one was dealing with commissioning. As an element in your pursuit of LEED, it is a fundamental requirement to do commissioning. You have enhanced commissioning at the DD stage, which is something that you might want to consider, and obviously, tying that into indoor air quality issues is something. So there's some thought around commissioning being the responsible holder of it; I think you can kill two birds with one stone.

Building Information Modeling, I think it's a fantastic discussion. It's fraught with danger, pitfalls, but there's a lot of benefit to it. I

think the ideas that have been passed, and I bring up Gary Haney's (ph.) presentation of many years ago that dealt with tiger teams and a concentric process is the way to go forward. So, again, thank you for the invitation and great discussions.

GENERAL WILLIAMS: Thank you. Yes, ma'am?

MS. AILOR: Diane Ailor with DBI Architects. Thank you for the opportunity to be here, General Williams. This is my third opportunity to attend an IAP session, and what I particularly enjoyed today, as well, was the discussion on BIM. It's really a unique opportunity in one room to hear the perspectives of the contractors, engineering community, various industry organizations, and most importantly, the client, so thanks for the opportunity, and I look forward to future sessions.

GENERAL WILLIAMS: Thank you for being here. Yes, sir?

MR. WALDSCHMIDT: Good afternoon. Thank you, General Williams. It's probably my 10th time; I feel at home here.

(Laughter.)

MR. WALDSCHMIDT: I'm Dieter Waldschmidt with Saelzer Building Security, and I guess Greg

was -- the invitation to participate on one of your teams because we're a manufacturer of -- what we do is building security is FEBR doors and windows for the State Department; we've probably done a hundred.

Besides being a member of the AIA, I'm also a member of SAME --

(Laughter.)

MR. WALDSCHMIDT: -- a former President of SAME, and a fellow of SAME. And thank you very much for the invitation.

GENERAL WILLIAMS: I knew I was feeling comfortable for some reason.

(Laughter.)

MR. BROWN: General, I'd like to thank you and your staff for inviting me. My name is Isaac Brown. I'm with Alpha Technology Group. We are located in Waldorf, Maryland. We're a telecommunications and IT provider. Primarily, we do a lot of work with the military district of Washington and other -- and beyond that, throughout DOD. We are interested in getting involved with OBO, and that's the reason that I'm here. I've enjoyed the meeting, and look forward to hopefully attending more. Thank you.

GENERAL WILLIAMS: Thank you for being

here. Yes, sir? Contemporary and cool.

(Laughter.)

MR. NORMAN: Oh, you just stole my thunder, General. Thanks for the invitation. I'm Ravi Norman from Thor Construction, one of the largest minority-owned general contractors in the country. We have expressed an obvious interest in trying to do business with the OBO, and more than just building buildings, we want to, as we do here domestically, build smaller contractors and build communities. As you can tell by some of my comments earlier, I'm also going to be talking to an attorney about trying to copywrite and trademark "Cool and contemporary."

(Laughter.)

MR. NORMAN: But thank you very much. I really enjoyed the discussions today, from the air quality to the workforce development, to the Value Engineering, and was also excited about the BIM conversation. We spend a lot of time on investing in technological innovations at our company because we think that is a big part of the future of our industry, so thank you for having us.

GENERAL WILLIAMS: I might add that the senior members of his company made a call on me a

few days ago, and it was recommended by a member of Congress, so this is very, very good. So they will be looking at the process and see what's involved and so on, but they're very, very large, so we'll see how that works. Okay. Let's go around now with the panel, starting with you, Nancy.

MS. GOSHOW: Well, thanks again for a great homework opportunity. I enjoyed working with Rob McKinnie the last time on building commissioning, and I enjoyed it very much this time, and I hope I have an opportunity to work on it again. Thank you.

GENERAL WILLIAMS: Okay. Yes, sir?

MR. WOODS: As many of the guests have said, it's -- I take away far more than I bring, so it's been an interesting program, and I look forward to the next one.

GENERAL WILLIAMS: Thank you. Darryl?

MR. HORNE: I was going to say "ditto," but thanks so much, and it was a pleasure working with George on this topic, and hopefully you'll get to talk a lot more about indoor air quality. Thank you.

GENERAL WILLIAMS: Okay. Greg?

MR. KNOOP: General Williams, it is an honor to be a part of this panel. I admire the

ability of all of us to listen and learn from the discussions here, but also the program. We're witnessing a program that listens and learns and improves, and supports diplomacy worldwide for our country. So, thank you very much for letting us participate.

GENERAL WILLIAMS: Thank you for serving. Bill?

MR. FLEMMING: General, thanks for having me back. I'm representing DBIA again. I just wanted to thank the panel; also, I find they're very stimulating and interesting, and it's a nice, diverse group you've put together. So again, I thank you, and thanks for listening to my thoughts.

GENERAL WILLIAMS: Thank you. Clare?

MS. ARCHER: General, thanks for allowing me to participate today. It was exciting to be on two panels, and I have to admit that when I originally got the agenda, I stopped reading when I saw my name the first time, so I didn't realize I was on there a second time until much later, so I guess I need to tell my fellow panel members that someone's going to be on twice, so make sure you read to the bottom of the agenda.

(Laughter.)

MS. ARCHER: But it's been a fabulous conversation, and I appreciate being able to be a part of it. Thanks.

GENERAL WILLIAMS: Good. Thank you. Yes, Suman?

MS. SORG: Thank you, General Williams, again. It was a pleasure serving on this panel. I will definitely miss it. You know, again, the program is just astonishing. I was looking at this book right now and this plaque; three of my own buildings are on it. That -- I don't think women businesses like ours would ever have had that chance. It's really a huge honor, really, to serve, and to be a part of this program, and I hope it continues with the great success that you already have. Thank you.

GENERAL WILLIAMS: Thank you for your service. Regan?

MR. McDONALD: Sir, it's been a pleasure. I enjoyed working with your staff on this question this time, with Jonathan and Joe Campbell. Thanks a lot; I'm almost certain, based on my prior comment, that I will have two questions next time.

(Laughter.)

GENERAL WILLIAMS: Good, good, good. Let

me thank everyone because the weather is not the best, and we're going to try to wrap things up, but I do appreciate everyone being in attendance; your comments make the program. I do want to thank Tim, who's been doing a lot of hard work up there. He does a wonderful job. He's our preference now, when we call his company. As you know, we have very, very accurate minutes and recordings of these sessions, and so we thank you once again. And then of course, we want to thank our EA staff, Michael and Andrea, and is Allette (ph.) here? Okay. To make certain that -- because they have all the hard work between these sessions, to interact with you and keep things going for us.

We want to thank, also, our MSD, Management Support Division, Roberto. You and all of your people -- are they out there?

UNIDENTIFIED SPEAKER: Yeah, they're out there.

GENERAL WILLIAMS: Have them come in, so we can just recognize them, and then we'll be about finished.

(Pause.)

GENERAL WILLIAMS: And if they're shy too long, we'll just -- we'll move along.

(Laughter.)

(Applause.)

GENERAL WILLIAMS: Okay. These are the people that will help you, as you know, to see that you get back to your modes of transportation, and they're always here, very quietly taking care of things, and so we wanted to thank you for that.

And to everyone, have a safe and happy holiday. Until we meet again.

(Whereupon, at 3:30 p.m., the proceeding in the above-entitled matter was closed.)

C E R T I F I C A T E

This is to certify that the attached proceedings in the matter of:

UNITED STATES DEPARTMENT OF STATE

OVERSEAS BUILDING OPERATION

INDUSTRY ADVISORY PANEL

Washington, D.C.

December 13, 2007

were held as herein appears, and that this is the original transcription thereof for the files of the United States Department of State.

_____

Timothy J. Atkinson, Jr.,

Reporter

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