061313 RESERVE OFFICERS ASSOCIATION, AIR FORCE ASSOCIATION AND NATIONAL DEFENSE INDUSTRIAL ASSOCIATION CAPITOL HILL BREAKFAST FORUM WITH LINTON BROOKS, SENIOR ADVISER AT THE CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES; AND JOHN HARVEY, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR, CHEMICAL AND BIOLOGICAL DEFENSE PROGRAMS, ON "THE NUCLEAR INFRASTRUCTURE CHALLENGE AND DETERRENCE IMPLICATIONS." (For additional information on NDIA/AFA/ROA seminars contact Peter Huessy at phuessy@afa.org).

[This is a rush, unofficial transcript provided by National Security Reports.]

MR. PETER HUESSY: Thank you. My name is Peter Huessy and on behalf of AFA, NDIA and ROA, I want to thank you for being here in the next in our series of seminars. We're honored to have Ambassador Linton Brooks and John Harvey. And Linton gets a Purple Heart for arriving in Washington, D.C. at 2 a.m. this morning from Los Angeles and making it here this morning. Thank you, Mr. Ambassador.

Just a reminder, tomorrow is Larry Welch. On the 19th is Gil Klinger, who's the Deputy Assistant Secretary of Defense for Space and Intelligence. Then Senator Sessions will be at the Reserve Officers Association of America. And following his remarks on the 20th, we're going to have at 9:30 to 11 the Army War College is going to give us a briefing on Army missile defense issues. And then on the 21st of June, Frank Rose will speak. And just as a preview, before the July 4th recess, on the 26th of June, Admiral Terry Benedict.

I want to make my introductions fairly short here. We're going to hear first from John Harvey, who since July of 2009 has served as Principal Deputy Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs. He advises on plans, policy and oversight of the U.S. nuclear weapons program, programs for combating WMD, chemical weapons, DMIL and treaty management in the work of the Defense Threat Reduction Agency.

Linton Brooks, as you know, is an independent consultant on national security issues, a senior adviser at CSIS, a distinguished research fellow at NDU, and adviser to four of the U.S. Department of Energy national labs. He served, as you know, from July 2002 until January 2007 as Administrator of DOE's National Nuclear Security Administration, where he was responsible for the U.S. nuclear weapons program in DOE's international nuclear nonproliferation programs.

And with that introduction, I want to thank John and Linton for coming here today to talk to us about the Department of NNSA and the labs and the future roadmap for making sure

that our weapons complex is safe, secure, sustainable and contributing to the deterrent of the United States. Will you please welcome John Harvey?

(Applause).

MR. JOHN HARVEY: Let me do a little feint. I basically decided that we were up on the Hill talking to staff and members last week and this week. And there were a couple of things that they were interested in, and I figured I was going to emphasis some of those things in this discussion. But they will touch on your main points.

Peter, thank you so much for hosting these sessions. They are so important for our ability to communicate to both the expert community and the public on some of the details of some of these activities. And you're a hero for all of your efforts on this.

I want to address today the challenge of sustaining, modernizing our nuclear forces and supporting infrastructure in a period of fiscal austerity. I'm going to speak to some of the process and progress we've made over the past year in the auspices of the Nuclear Weapons Council in advancing what we call the "three plus two" vision for the future of the nuclear stockpile, and developing a baseline plan to start down the path to get there. The policies guiding our nuclear forces are clear. Very simply put, the president has stated a long-term goal to eliminate nuclear weapons and to take concrete near-term steps towards that goal. At the same time, he has directed that we ensure that our nuclear forces remain safe, secure and effective until they are no longer required in service to our nation's security.

Like any one of us, our warheads and our delivery platforms are not immune to aging and degradation. In order to sustain a safe, secure and effective, we must from time to time modernize. We are today on the cusp of a modernization cycle for nuclear delivery platforms and the warheads they carry.

The last such cycle occurred during the 1970s, early 1980s. I call it, in a bipartisan way, the Carter-Reagan strategic modernization program, which means that among other things the B-1 and B-2 bombers, the Peacekeeper ICBM, the Trident D5 SLBM, as well as air-, ground-, and sea-launched cruise missiles.

It was noteworthy that many of the nuclear warheads and delivery platforms that we field today, including Minute Man III, the B-52, the B-61 bomb, evolved from modernization cycles that took place decades before that last one. In coming years many systems will need to be replaced or their service lives extended. Nearly every warhead type in our nuclear stockpile will either be life extended or retired over the next two decades.

At the same time, we are imbedded in an increasingly austere fiscal environment. The Budget Control Act, coupled to the fact of life cost growth in key programs, coupled with sequester, coupled with omni-present continuing resolutions, have forced us to tighten our belts. I want to step back and remind ourselves where we were about 18 months ago when the linkage of the modernization challenge with budget realities was coming into much more focus.

NNSA's work program in large part responds to DOD's requirements for nuclear warheads and stockpile support. In the process of building last year's FY '13 to '17 budget, we came to understand that the forbidding bow-wave of life extension program work anticipated later this decade was simply not executable with available resources. And I'm talking now about life extension programs for the W-76, the W-88 fuse update, the B-61 bomb and the emerging W-78, W-88 LEP.

Among other things, the schedule of completion of warhead life extension programs was not well aligned with the initial capability of the delivery systems which would carry those warheads. There were also concerns that recapitalization of certain critical infrastructure, including plutonium infrastructure, would not be ready in time to carry out planned life extension programs. The budget that went forward fully funded modernization activities in FY '13. But based on what we were asking NNSA to do, there were insufficient funds to sustain those activities in the out-years.

Based on plausible funding expectations, we had too much on our plate and we had to make some adjustments. To meet this challenge the two departments, Defense and Energy, collaborated in ways that have been basically transformational, in my view. Last year DOD's cost assessment and program evaluation group, they call them CAPE – we use to call them PA&E, but we now call them CAPE – and NNSA collaborated on a joint review of DOD's near term nuclear weapons requirements and NNSA's funding options to meet those requirements.

NNSA provided unprecedented transparency into both its program and to the budgetary processes that support it. CAPE applied its experience over-seeing DOD acquisition programs, programs to develop rough cost-estimates for NNSA's programs, and to seek to identify possible efficiencies in those programs. Working together in a related effort, the two departments advanced the 25 year baseline plan to align schedules with warhead life extension programs with schedules for the delivery platforms that will carry them, as well as the supporting infrastructure that will carry out those programs.

The two efforts, the baseline plan and the program review, led to a synchronized and balanced approach involving some further adjustments in DOD's modernization activities, and some resource re-allocation within NNSA's five year program. By adjusting program schedules we were able to smooth out the warhead bow-wave and increase prospects for affordable

program execution. This work facilitated the Nuclear Weapons Council certification that NNSA's five year budget, with acceptable risk, had sufficient resources to achieve these modernization objectives on the adjusted schedules.

Further work is underway to confirm that this baseline is affordable and executable over the longer term, longer than the five years – for 25 years. The 25 year baseline plan identifies the path forward toward a long-term stockpile end-state, endorsed by the Nuclear Weapons Council last year, that we have characterized as "three plus two." (Without leveling ?) the NNSA workload, this plan provides opportunities to reduce the number of warhead types as well as the number of reserve warheads required to hedge technical and geopolitical contingencies.

In all, there are four types of ballistic missile warheads, two each for ICBMs and SLBMs. For the life extended activity, the W-76 SLBM warhead life extension is in production today. The 78-W ICBM warhead and the 88 SLBM warhead are aging and they require life extension, with initial production beginning next decade. The W-87 warhead for ICBMs is in pretty good shape right now.

There are three types of air-delivered weapons – two bombers; one, the B-61, has multiple sub-variants – and one cruise missile. The B-61 life extension program is in engineering development. The life extension program for the air-launched cruise missile follow-on or replacement warhead, begins later this decade. The B-83 bomb is in pretty good shape and we won't have to address that for a few more years.

In "three plus two" we would over the long-term consolidate those seven types down to five: three inter-operable ballistic missile warheads and two air-delivered weapons; one bomb and one cruise missile – 7 to 5, "three plus two", five. By interoperable we mean nuclear explosive packages that can be adapted to multiple delivery systems. For example, each of the three interoperable ballistic missile warheads could swing to ICBMs and SLBMs.

We're working right now to determine whether a single nuclear explosive package could be adapted to the re-entry systems for the Minuteman III and for the Trident missile so that they could be used for both ICBM and SLBM delivery. If that is feasible and affordable, several advantages accrue. Specifically, inter-operability would increase the resilience of deterrence by reducing today's heavy reliance on a single SLBM warhead, the W-76, and would enhanced warhead safety, security and use control. It would potentially reduce NNSA costs if one warhead development program could meet the life extension objectives of two existing warheads.

Inter-operability would maintain nuclear design and development skills by challenging designers and engineers at our national labs in ways that refurbished LEPs on existing warheads

do not. It would, as I said earlier, reduce the number of warhead types and reduce the total stockpile size because fewer reserve warheads would be required to hedge contingencies. Establishing that an inter-operable warhead is feasible and affordable, and then developing and fielding it, is an essential first step down the path to "three plus two." The initial studies on feasibility and affordability are scheduled for completion by the summer of 2015.

I want to turn now to the B-61, because that's had quite a bit of attention of late. A full-scope life extension program for the B-61 bomb is an important component of "three plus two." The B-61 non-strategic bombs deployed with NATO's dual-capable aircraft provide the cornerstone of our extended deterrence commitment to our allies. The strategic variant of the B-61 bomb, carried by the B-2 bomber, is an essential component of air-delivered strategic deterrence.

The B-61 is the oldest warhead design in the U.S. nuclear stockpile, with components dating from the 1960s. You've heard it before: vacuum tube radars, obsolete electronics, and other limited life components such as neutron generators and power supplies, are all reaching the end of their service life. If we are to maintain a fully capable air-delivered component of our triad, a life extension program is essential and we anticipate initial production would begin in the latter part of this decade.

A single warhead, termed the B-6112, would replace four strategic and three non-strategic types of the B-61 and further reduce the number of warheads and warhead types in the U.S. arsenal. Some have raised concerns with this life extension program. We don't need it. Even if we did, we can't afford it.

A recent New York Times editorial raised a number of objections that opponents cite. Some suggest that cost savings of several billion dollars could be achieved by the so-called triple/alt option. Let me explain what triple/alt is. Triple/act would replace three aging bomb components: the radar, the neutron generators and the power supplies, but defer other needed, but not so urgent fixes, until later next decade.

We considered the triple/alt in our life extension program for the B-61 study, the study, but we rejected it for a number of reasons. It does not meet key military requirements, is primary, in terms of yield, in terms of safety, in terms of use control, in terms of compatibility with aircrafts such as the F-35 and the B-2. It does not address other known aging issues associated with 40 year old components. It would not achieve consolidation of warhead types from four down to one. It eliminates the opportunity to reduce stockpile size and would not save us as much money as some have argued.

On this last point, we are acutely aware of the high cost of the B-61-12 life extension program, and increased management attention is being devoted to controlling costs. Our best

estimate is between $7 to $8 billion for the full-scope life extension program. Some have cited the triple/alt cost to be about $1.5 billion, but that estimate was current at the same time that cost estimates for the full-scope life extension program were about $4 billion. We should expect at least a factor of two cost escalation, say to about $3 billion or so, if we were to only do the triple/alt.

But the big factor arguing against the triple/alt is the cost of the follow-on life extension program next decade to finish the job. A large contribution to our life extension program costs are the operations at the DOE's Pantex plant, which takes the weapon apart, replaces the aging components, and then re-assembles it. In the long run, it pays to do this operation only once.

In light of a continuing high in NNSA workload during the 2020s, it is not clear yet whether a second LEP effort could be phased in during this period. On balance, with all factors taken into account, the current approach on the B-61 is prudent. Moreover, NNSA will save costs by leveraging work on the B-61, for example the radar development, and apply that effort to other life extension programs. Indeed, the B-61 could conceivably be adapted for the ALCM replacement warhead for the long-range standoff missile that I was talking about earlier.

In summary, not all that we desire in modernization can be afforded, and what we do get we may not get on original timelines. The conclusion is common to both departments. Over the past year we've worked on the details of viable modernization with focus on solid cost-effective implementation of high priority programs that address the long-term state of the nuclear enterprise, such as reflected in the president's FY '14 request.

I want to just take a couple of minutes in concluding my remarks to discuss a little bit about the efforts underway by the Congressional Advisory Panel addressing the governance of the NNSA, because I know a lot of people are interested in that. And let me just make a couple of points. DOD generates the requirements for nuclear warheads. But basically, the two departments – the relationship is unique in government. DOD generates requirements for nuclear warheads. DOE, with a separate funding line and oversight from Appropriations subcommittees separate from those that oversee DOD, conducts the research, development and acquisition programs that address those requirements.

The legacy of this current relationship evolved from the Manhattan Project in the 1940s when clear civilian control of this new and awesome technology, having both military and peaceful applications, was mandated. That legacy has had certain benefits, even today. But it has also introduced inherited deficiencies in the way programs are now pursued.

The FY '13 National Defense Authorization Act establishes a Congressional Advisory Panel that will examine needs and related issues in seeking to strengthen governance in oversight of the nuclear weapons enterprise. And DOD looks forward to working with both

NNSA and the panel to ensure that the national security needs are most effectively met. And I'm going to (do some real-time ?) editing, Linton, because I didn't know whether you were going to be here. So sorry I went a little bit over, but over to you.

(Applause).

MR. LINTON BROOKS: John spent a number of years working for me, and so he sort of defaults to this. He was really going to show up and do what he said. What I want to do is talk a little bit about another aspect of this whole problem, which is the facilities in the Department of Energy.

John has talked a little bit about the approach that we're using. We need to make sure at the outset everybody understand John is a government official. I just show up at breakfasts and talk. And so John speaks with (more authority than I speak ?).

So let me talk a little bit about how we got here on facilities. One of the things you need to understand about anything associated with nuclear weapons is the time scale is decades. And you can grump about that all you want, but the time scale is decades. You heard John talking about thinking now about the workload in the latter part of the next decade. And you have to because pretty much everything associated with the development and refurbishment of nuclear weapons is a fairly lengthy process.

Now during the Cold War – let me take you back to the Cold War for just a minute. Think about the Cold War. First of all, we were always fielding new weapons for military reasons, which meant we never had to face the question of what do you do with weapons that came in 40 years ago, because we were turning them over faster than that. Secondly, we were designing those weapons basically using something that was between a craft and empirical science, and therefore dependent very heavily on the ability to check some of the conclusions through nuclear explosive testing.

And then the Cold War went away, and nuclear testing went away. And I think it's fair to say that those developments, the end of the Cold War, surprised everybody. The end of nuclear testing certainly surprised the nuclear weapons development community, which had not done very much thinking.

And so, in the early '90s we came to a two part strategy, that if we weren't going to be replacing weapons because of military requirements, we would have to extend their life. And so we came to the life extension strategy. And secondly, if we weren't going to be using nuclear testing, we had to move from an empirical to a first principle science.

And so during the '90s we spent a lot of time and energy and money on the stockpile stewardship program, usually called the science-based stockpile stewardship program. And we built a number of tools and we built a number of computing resources so that we could have confidence, without nuclear testing, in our ability to ascertain the health of the stockpile. And I want to make it very clear, because sometimes we get confused about what stockpile stewardship does and doesn't do.

Stockpile stewardship does not say there will never be a problem with a nuclear weapon. What it says is, if there's a problem with a nuclear weapon we will know about it and we will understand it without the need of nuclear testing. And that is what we spent most of our effort on. Meanwhile, we were looking at a series of facility issues, deciding yeah, we have to do something about them but the money needs to go to stockpile stewardship, and so we were underfunding and under-capitalizing the weapons complex.

Starting at the beginning of the last administration, we started speaking of the need for major facilities. And the two that have been of the greatest visibility recently are the uranium processing facility, which does exactly what its name sounds like, in Tennessee; and a plutonium-related laboratory called the Chemical and Metallurgical and Radiological Replacement Facility. And since that's a mouthful, we call it the CMRR. And it's a lab. Keep that in mind, it's not a production facility.

There's now substantial differences between NNSA and DOD – there are many substantial differences. But one of them is that facilities like this are, compared to the overall budget of the weapons program, enormous. Recently we've been looking at $7 billion in the NNSA portion of the weapons program. It is difficult to give any dollar value on UPF and CMRR with a straight face, because we're having some trouble on cost estimation there. But, the numbers are in the billions.

So you're looking at facilities which approach your total annual budget. Now DOD has nothing like this. DOD has huge programs, but it doesn't have any single program, let alone any single construction project, that approaches its whole annual budget. This means that these major facilities distort and complicate the budget. This leads to a natural tendency to try and hold their cost down. And there's a very rich history on high-hazard, one of a kind nuclear facilities, that suggests that that turns out not to be a successful strategy.

So we're in a system which inherently causes costs to be under-estimated. Now I don't want to cop-out for my former home. And for me, when I was there, we had our share of mistakes. But there is a systemic pressure that I'm talking about.

Well, why does it matter? Let's take the easy case first, which is the uranium processing facility. There is no plausible future in which we are not going to need to do things with the

uranium components of nuclear weapons. If you believe in abolition, we are going to have to take them apart. If you believe in life extension, we are going to have to take them apart and refurbish them.

And the facilities that do that are about half a century old and they are feared by many to be working towards an aging that will make them unsafe. And so the idea of uranium processing facilities is to reset that. And the risk is very simple. The risk is not that we're sure that we'll suddenly find it's no longer safe to operate, but we're not sure that we won't. So you spend that money.

Do you have any options? Conceptually, you might be able to do this incrementally. You know, do kind of a modular approach – remember that word because you're going to hear it a little later. But we have not so far looked at it, but the need and the problem are fairly clear.

For plutonium the situation is somewhat more confusing because while the Cold War was ending our ability to make plutonium pits was ending. It wasn't ending because of the Cold War, it was ending because of some problems at that facility in Rocky Flatts that made them. But the result of it was a decision to get out of that facility.

So if we were here 10 or 12 years ago, we wouldn't be saying what do we need for plutonium? Well, we need a modern place to build pits, a modern pit facility. But that will take a long time, so we need some interim capability before everybody who builds things at Rocky Flatts dies and we have to re-create craft and knowledge from a long time ago. And sort of the logical voice to do that turns out to be an area in Los Alamos.

And third, there's a reason God didn't make any natural plutonium. Plutonium is a fiendishly complex material that even now is not fully understood. Unless you're in the bomb business, nobody cares about that very much. So we need a good set of scientific facilities. And that was in the original concept, CMRR.

At the time, we thought that because plutonium is radioactive, because it decays, that the decay would cause metallurgical damage and therefore pits would have to be remanufactured. We were in disagreement about how long it would take. Numbers like 40 years, numbers like 60 years, were the range. But if you think about that and you think about any reasonable size stockpile, that means you've got to be able to make a fairly large number of pits, because you've got to – suppose that you've had a 40 year pit lifetime in a stockpile of 4,000 pits. You've got to be able to sustain 100 new pits, 100 remanufactured pits a year. And you've got to actually do more in the beginning because we haven't made any pits for a long time.

So all that turns out to be scientifically wrong, because we've discovered that for a variety of reasons, which I think I can explain technically but I have no intention of trying, the lifetime of the plutonium components is much longer than we thought. And so gradually we came to realize we don't need to remanufacture the whole stockpile. A modern pit facility, like all nuclear facilities, is large, expensive and politically contentious. And so we came to a strategy of saying we're not going to have that. We're going to take this interim capability at Los Alamos, which is mostly intended to prove the principle, and we will be able to expand that to produce between 50 and 80 pits a year.

Now, what has it demonstrated? It has demonstrated in short spurts, the former, the ability to manufacture 20 pits a year. It pretty consistently can do 10. Almost nobody doubts that it can be expanded to 30. Whether you can get to 50 or 80 we'll talk about in just a second.

So, here's this new plutonium facility we're going to build for science. And why not build it right next door to where you're doing this temporary manufacturing? And what will you get out of that?

Well first, we haven't built it yet. We can build it with a vault and we can get some space in the manufacturing facility and move it into the vault. That will free up space in the manufacturing facility.

Secondly, I told you how complex plutonium is, that means that in manufacturing something that has to have a very high reliability, you do a lot of measurements, a lot of measurements. Having a laboratory right there will facilitate the production process. So that's why when people say to you, the CMRR replacement is related to our ability to produce pits, they're right. But when they say, we make pits there, they're wrong, okay?

And then, we came to the realization, as John mentioned, that we could not in fact make all this fit in the budget. And so I observed that everybody tells you, you've got to make hard decisions. You know, you can't just stretch things out. You've got to set priorities. But when somebody like my successor does that, the enthusiasm for the process is sometimes hard to discern.

(Laughter).

But what we decided to do was push that facility way into the future, at least five years into the future. And within the technical community, we believe, for the science reason the facility has to be built sometime, because of the necessity of preserving our science. But we then, faced with this deferral, had to look at a different approach to the strategy.

And so, the strategy that we came up with, the so-called new plutonium strategy, depends on gradually increasing the number of pits produced in Los Alamos at the facility called PF-4 to about 30, depending on the stored pits. There are 14,000 plutonium pits sitting at Pantex. Now obviously, not all of those are suitable for reuse, but some are.

You will not the Nuclear Posture Review was explicit that you can reuse pits. And so the idea was that on science we would do work-arounds by doing work on gram-sized quantities of plutonium at Los Alamos, and to a lesser extent at Livermore. And that's how we would also support the manufacturer of plutonium pits.

On manufacture, we'd gradually ramp-up what we could do. Then we would build some modular facilities where CMRR was going to go, or next to where it was going to go. That would let us clear some things out of PF-4 and help with the improvement in the process. And we would depend, if we needed more pits, on reuse of pits in storage.

Now, that's the plan. We can talk about it, whether it's a good plan or a bad plan, but it's a plan. What are the risks?

And I think here we may not have done, the technical community may not have done, as good a job (as being clear ?). This is not a better plan. This plan has risks that the original plan doesn't have. But it doesn't have the risk that we aren't going to do anything because there's no money.

So what are the risks? Well first of all, we have less of an ability to respond to unforeseen requirements. John has talked about the technical hedge. The technical hedge says I want to be able to deal with an unexpected problem in a warhead. And the traditional way we've done it is that if we've got 400 ICBMs and two warheads, we keep at least 400 of each so that if one of those warheads fails we can still over time field the other. You reduce the number of warheads you have to take to do that when you get into this ability to hedge across different classes in missiles.

But the other hedge is what we sometimes call geopolitical hedge, and what I sometimes call Stalin comes back. And that is that we find ourselves, contrary to all the evidence, in a world in which something has changed to where building up becomes necessary. And that was one of the things you get from having a robust pit capability. We make that more difficult by this new strategy, but it's probably an acceptable risk.

There's some technical risks associated with pit reuse. That's especially true with, for those of you who talk nuclear weapons design, there are two kinds of explosives: insensitive high explosive and conventional high explosives, use to start the process in a nuclear weapon. Everybody understands we would be way better off if every weapon in the United States had an

insensitive high explosive. That's a very long process and there are technical risks in doing that with some pits.

And finally, there's a risk in not building this plutonium facility of the loss of scientific knowledge. If you go back to the Strategic Posture Commission in 2009, what they said was the country ought to build both a uranium processing facility and CMRR. But if you could only build one, you ought to build CMRR. And the reason was scientific knowledge.

We made a different decision because we focused much more on what is necessary to support the Department of Defense, where if you can't do uranium you can't do the modernization. But the risk is, nuclear science and scientific knowledge will atrophy. John told you some of the reasons why our strategy will reduce that chance, because it will give people important real-world work to do, but it's still a risk.

And finally, there's funding risk even in the new strategy. I mentioned modules. I didn't use any numbers. But if you go back to my opening comments, these will not be the cost of CMRR or UPF, but they will not be – you know, we will not be doing this out of petty cash. So that's the process that the weapons complex is having to go through. It's a complex process and we're working closely – or they are working closely – with the Department of Defense.

With that, John is going to come back up here and answer all the hard questions, and I'm going to answer all the easy questions. And it's time for questions.

(Applause).

MR. HUESSY: Just ask people to identify themselves and not make a speech.

MR. BROOKS: Okay, I am told I'm to ask you to identify yourself and not make a speech.

MR. JONATHAN MEDALIA: My name is Jonathan Medalia. I will not make a speech. My question is, the facility issue, especially on plutonium, is driven in substantial part by the requirement for 50 to 80 pits per year by late in the 2020s. Could you explain in a little detail why you need 80 a year?

MR. BROOKS: NNSA needs to do what DOD says it needs, John.

(Laughter).

MR. HARVEY: We established that requirement back in 2008 for a capability to produce in the range of 50 to 80 per year. That evolved from a decision to basically not take the path that we originally were taking with the modern pit facility, but to go and be able to exploit the existing infrastructure at Los Alamos to meet our pit operational requirements. The capability at Los Alamos was assessed to be somewhere in the range of 50 to 80 per year that they could

get with the modernization program they anticipated. The Nuclear Weapons Council looked at that number. It's a capacity-based number, and said it's probably good enough. We'll have to accept some risk, but it's probably good enough.

MR. BROOKS: So you can't tie it to a specific – you can't tie it to a specific deployment schedule or something. It's a judgment that is a combined judgment on yeah, you can probably do this, and yeah in the most reasonable world this will be enough.

MR. MEDALIA: But there's a big difference in the facilities, between 50 and 80. Is it 80 or is it 50 to 80?

MR. HARVEY: We understood that the capability to deliver, based on the anticipated modernization at Los Alamos which would include the CMRR or equivalent, coupled with the PF-4 production, appropriately reconfigured, could deliver in that range. So it was a range. I mean, it's always been cited as single shift range. By going to double shifts you could probably get the higher end of that range.

MR. BROOKS: But no person now living can tell you for sure the answer to that question. I mean, you know, beware of spurious precision.

(Laughter).

Fifty to 80 is probably as precise as the facts will allow people to be, although people will say other things.

MR. TODD JACOBSON: Todd Jacobson, Nuclear Weapons and Materials Monitor. I wanted to ask you – and this is probably more for John – with the "three plus two" strategy, that includes obviously the inter-operable warhead, everyone seems fairly optimistic that that's going to work out. But there are off ramps in the program the Navy wants you to look at, just kind of a straight SLBM. And the Congress wants you to look at a straight ICBM. What happens to the "three plus two" strategy if the inter-operable warhead doesn't prove to be feasible? How much does that upset the applecart (if it's delayed up ?)?

MR. HARVEY: "Three plus two" is an end-state vision. We don't know yet if we can get there. It will depend upon whether this life extension program, as we call it, the W-78-88, is feasible and affordable – if we assess that. And then we go off and develop and field it and we'd get some experience with it. And that will tell us whether we can make – we won't know that for years – but that will tell us whether we can now move down that path to introduce inter-operability into other parts of the triad. I think that's – you know, I think we don't know the answer yet. If we find out we can't afford it or if it's not feasible for whatever reason, we'll have to walk down another path. This is an end-state that we felt was something that we

should be shooting for. We're going to use that as a target, as we think, as we move forward with this modernization cycle. And we think it's a prudent target to point for because if we are successful in achieving it, it will have several benefits.

MR. BROOKS: And if we're not successful, then you are forced into two choices. One is the current choice, which is maintain enough warheads so that if one fails you can cover with a different one, which runs contrary to the broad trends under all of the last four administrations to reduce the total stockpile. Or, to simply say I'm confident enough that there won't be any reliability problems that I won't have a hedge, which places a – I mean, I'm a big fan of stockpile stewardship but that places a very high burden on getting stockpile stewardship right. So, you know, this is clearly the right thing to do. But if it turns out not to be technically feasible, then we'll do something else, which will be less desirable.

MR. BOB DEGRASSE: Bob DeGrasse. In an earlier lifetime we struggled mightily to get the bipartisan commission off the ground. And we had to get money from an old RW line that the Navy had to get the money to get that started. I know you talked a little bit about the NNSA Panel, John, but do you have any thoughts for us about whether or not they're going to actually get started and when? And can you talk about the logistics? I know this is not a big picture issue, but is there anything you could say?

MR. HARVEY: Madeleine Creedon and I met with Norm Augustine and Rich Meese earlier this week. We talked about we, the Department of Defense, are going to provide FFRD support to the commission, to the panel. Right now the panel, Rich and Norm, are at sea because they have no support. So the first thing we need to do is get them some support. Then they need to engage their members. And then we're off.

And I look at this evolving over the next several months. I don't anticipate a meeting in the next two weeks.

MR. BROOKS: And this is remarkably similar to Perry-Schlesinger where Secretary Schlesinger and Secretary Perry were meeting with people well before they had the travel money to pull their panel together just to talk, let alone actually do anything. So this is, you know, in a time of fiscal austerity everything goes a little slower than you'd like. And this process never has gone that fast.

MR. BAKER SPRING: Baker Spring with the Heritage Foundation. I want to focus on PF-4 for a second because it seems that there's serious concerns that are being raised about that facility by the Defense Nuclear Facility Safety Board. Do you have any vision for addressing those concerns with regard to that facility?

MR. HARVEY: Let me start off. We have Jack and Shaun Filman (ph), who I just met today, from the Defense Board. They can speak to it. I don't know the specifics of what you're talking about other than Jack mentioned something to me as we were walking in the door that I'm not prepared to address. Linton, if you have anything – maybe we should ask Jack to respond?

MR. BROOKS: I'm more than happy to have Jack respond.

(Laughter).

MR. : The issue is the 1960s design, 1976 construction. And it's brittle. It was discovered after this facility was built.

The large buildings, to be survivable in serious earthquakes, have to have a bit of (flexibility ?). And it was also discovered after the PrIeta earthquake that ground columns, if they accelerated up into the highway they support, crumbled. So those two vulnerabilities were identified early, but they're not built into PF-4. The result is that there is a probability, albeit it small, that the building could collapse, with a great loss of life and the dispersal of plutonium. How can you fix it?

MR. : Jack, they just did an earthquake strengthening and completed several tens of millions of dollars effort to fix that.

MR. : Right, but it was based on the wrong calculation. It was very good. It did a lot. It did a lot.

But basically the problem is if any of the columns are crushed like the ones on the highway did, the whole roof will go down like a zipper. And right now, they're trying to figure out what to fix. And they found an extremely good contractor who understands the problem, for the first time.

So look for progress over the next three months. And I have no idea of the cost of this, but the cost of doing it on the highways in California should be immeasurable. And there are only 13 columns, so let's hope for the best.

MR. BROOKS: One of the things that probably was not the reason for the deferral of CMRR – if you don't build the CMRR until late next decade, whatever we do in response to the problem Jack has done, will be sub-optimal because once you've built something that large and complex there's only so much you can do to fix basic design understandings. So there is at least conceptually the possibility of refurbishing that facility when we build the CMRR. But that gets into very late in the next decade. And you know, there are very few people who have that good track record predicting conditions 15 years out, and I am definitely not one of them.

MR. RICHARD BEHNY (ph): Hi, Richard Behny with American Company. You know, there's been a lot of talk here about facilities, facilities that should be funded or not funded in the future. I haven't heard anything yet about the human resources aspect associated with that. Clearly as we reduce or as we've lost facilities, we lose people, and we lose knowledge. And we don't have enough people potentially to pick up the growth in the future should we be able to fund the facilities to actually do the work. So I don't really have a question I'd like to ask.

MR. BROOKS: Let me say a couple of things about that. If you go back to the Strategic Posture Commission you will notice that when it spoke of infrastructure it really meant people, because of a belief that we can throw money at buildings and get building, but it takes – to have a scientist with 30 years experience, it takes a certain number of years. Right now, we are still – I in the last month met with early career professionals at two of the national labs. And the quality level, we are not yet seeing a problem.

The problem we are seeing is the problem lots of people are seeing, that the unpredictability of the program, the unpredictability of the funding, makes it difficult to plan. And people smart enough to work at nuclear weapons design are smart enough to say look, I like the science but every years it's a different number for how much we're going to spend. So if we want to fix that problem, I would very much like to fix that problem before it becomes a serious problem, we need as a country to do something that's very hard for us as a country, and come up with a stable agreement on the funding of weapons-related things.

Now John made a point in his remarks which I want to re-emphasize. People like to do real work. You know, you don't – somebody once said, why don't you just tell them to pretend they don't know how this weapon works and rebuild it? Because that's pretend.

People don't like to do pretend. People like to have genuinely difficult technical challenges. Interoperable warheads is a genuinely difficult, technical challenge. Continuing our efforts on understanding science at first principles, there's still one or two things where we don't understand from first principles, is a genuine scientific challenge. So we fix that by being serious.

And I want to – John can't say this because he's in the administration, but I am not. It is important to emphasize both halves of the Prague speech. The half of the Prague speech that said we are going to move to a world free of nuclear weapons, has an enormous constituency repeating it. And these people wonder whether they're going into a growth industry.

The half of the Prague speech that says, for as long as it exists we'll make them safe, secure and reliable, needs to be repeated just as often because that means that there is something to sustain and for them to do. We've seen this as far as you go back and look at

some of the things that the other Schlesinger Panel said about the Air Force, and it was the same thing. Young people want to do meaningful work, and it's important, without losing the clarity of the president's vision, to understand that in the next couple of decades keeping the stockpile safe, secure and reliable is meaningful work.

MR. HUESSY: Thank you, gentlemen.

(Applause).

Please be safe as the cyclone comes to Washington. We'll see you tomorrow with General Welch.