MEMO
FROM: Sen. Jon Kyl, Sen. Bob Corker
TO: Republican Members
DATE: November 24, 2010
RE: Progress in Defining Nuclear Modernization Requirements

We appreciate your willingness to consider New START in the context of modernization of our nuclear complex and the weapons it supports.

In advance of having an opportunity to discuss the issue more fully next week in Washington, we want to summarize the status of our discussions with the administration.

Summary

Throughout the Obama administration's pursuit of a New START treaty, we have been clear, as has Secretary Gates,[1] that we could not support reductions in U.S. nuclear forces unless there is adequate attention to modernizing those forces and the infrastructure that supports them. The Administration's recent update of the 1251 plan, originally submitted in May in accordance with Section 1251 of the FY2010 NDAA, is an acknowledgment that more resources are needed to accomplish the objectives set forth in the Nuclear Posture Review for the modernization of the U.S. nuclear deterrent. This memo discusses our concerns with the original 1251 plan, changes made and our assessment of those changes and remaining issues.

Background – the Decline of the Nuclear Weapon Stockpile and Infrastructure

Since the end of the Cold War, the U.S. nuclear weapons infrastructure (including laboratories, production facilities and supporting capabilities) has been allowed to deteriorate. The weapons have remained safe, secure and reliable, but they and their caretakers have been in a state of limbo—only when critical problems have arisen has action been taken. The production facilities are Cold War relics, safety and security costs have grown exponentially, and critical skills have been jeopardized through layoffs, hiring freezes, and the retirement of skilled scientists and technicians who earlier were able to fully exercise the full set of nuclear weapons-related skills. In FY2010, the Obama administration invested only $6.4 billion in the National Nuclear Security Administration Weapons Activities funding line, a 20% loss in purchasing power from FY2005 alone.[2] It is no longer possible to continue deferring maintenance of either the facilities or the weapons. As a result, the 2010 Nuclear Posture Review set forth a broad range of modernization and sustainment requirements that would be impossible without additional budget support.

A detailed explanation of these concepts is located in the appendix to this memo; but to help understand the current situation, imagine an automotive expert working in a garage built in 1942. The roof leaks and his tools are becoming outdated. Moreover, he has responsibility for a fleet of eight

[1] Secretary of Defense Robert Gates. "Nuclear Weapons and Deterrence in the 21st Century." Carnegie Endowment for International Peace, October 28, 2008. ("To be blunt, there is absolutely no way we can maintain a credible deterrent and reduce the number of weapons in our stockpile without either resorting to testing our stockpile or pursuing a modernization program.")

[2] *November 2010 Update to the National Defense Authorization Act of FY2010 Section 1251 Report*. November 17, 2010.

racing Ferraris, which have been sitting in storage for about 30 years. The last time any engine was turned on was 1992, but this "steward" is responsible for assuring that, at any given moment, each of the eight finely-tuned cars will respond to the key turn. To do this, he is allowed to assess components of the cars for aging—leaks, cracks, rust, etc. (though he isn't able to look at the components often enough and in sufficient detail because of his maintenance budget).

Even on a shoe-string budget, he is beginning to see signs of age throughout the fleet, and realizes that each and every car will require a complete overhaul (a "life extension" program). To be successful, he needs a new garage, updated tools, and skilled assistants (because truthfully, the expert will be retiring long before the overhauls are complete, assuming his pension fund is still solvent). He will have to replace some of the parts (especially the electronics – some of his fleet of Ferraris still have vacuum tubes), because they just aren't available anymore; but some parts will have to be reused, or manufactured to be as close to the original as possible. Some of the original parts contained materials that are now illegal for safety or environmental reasons. To add to the problem, the owner is asking for air bags, anti-lock brakes and anti-theft technology. Each overhaul will take about a decade, from planning through execution and without a new garage, he will be unable to finish the overhauls on time. And at the end of the day, the mechanic is fairly certain that he will not be allowed to turn the ignition to check his work.

This is the state of our nuclear deterrent today, except, we're dealing not with cars, but with the most sophisticated and dangerous weapons ever devised by man.

Section 1251 Plan and FY2011 Budget – A Response to the Nuclear Posture Review

The initial section 1251 report showed a ten-year budget plan for Weapons Activities totaling $80 billion. But most of that $80 billion is not directed at modernization activities called for in the NPR—it is mostly consumed in "keeping the lights on" at the laboratories and plants, including safety, security, facility upkeep (which is difficult on very old facilities that would have been replaced long ago in the private sector), and routine warhead maintenance.

Only about $10 billion of that ten year number was for new weapons activity, about half of it coming from DOD and half from "savings" assumed from low inflation projections. We doubt such savings can be realized and the DOD funding is not enough to cover everything that needs to be done. It provides for a small increase to stockpile surveillance for warhead evaluation, funding for the W76 life extension program and the B61 and W78 life extension studies, and partial funding for badly-needed design, engineering and a modest investment for construction of new plutonium and uranium processing facilities—the Chemistry and Metallurgy Research Replacement (CMRR) nuclear facility and the Uranium Processing Facility (UPF).[3] These new facilities will replace Manhattan Project-era buildings that are a substantial maintenance burden and are becoming increasingly challenging to maintain in a safe and operable condition.

Recognizing that more money was needed up front, the administration's FY2011 budget request of $7.0 billion for Weapons Activities improved the FY2010 budget by $624 million. The

[3] The CMRR and UPF funding was based on estimated facility costs of $2 billion and $3.5 billion, respectively, with a 2022 completion date for both facilities.

$624 million was included as a budget "anomaly" in the two month C.R. we passed before the October recess, but will have to be maintained in the longer-term C.R. or Omnibus we will pass in December.

The initial 1251 plan left a lot of questions about how all the work articulated in the NPR would be funded. Numerous experts expressed concerns about obvious shortfalls in funding and about restrictions placed on designers that will constrain their ability to work through stockpile issues. The funding levels for CMRR and UPF were of significant concern, as was the funding for Life Extension Programs—especially to incorporate improved safety, security and reliability in these warheads. And of great concern to the directors of the national weapons laboratories, much of the promised budget increase for modernization was not pledged until FY16, by which point the Administration's commitment (if it is still in office) may have waned.[4] As a result, we requested an update to the 1251 plan that would answer the questions we raised and that would show a stronger commitment to modernization.

Updated 1251 Plan

After reviewing our questions, and with further review of the requirements imposed by the NPR, the Administration agreed that updated budgets were required.[5] Thus, on November 17, 2010, an updated 1251 report was provided to the Senate, including an early FY12 budget projection with White House approval.[6] The 1251 update, and the briefing provided as part of the update, satisfied many, but not all, of the initial questions we had earlier expressed.

The 1251 plan update increases the FY2012 budget request by an additional $600 million, increases the FY2012 five-year plan by $4.1 billion, and adds to the total FY11 ten-year plan between $5.4 and $6.2 billion. We are told that the new increases will not be taken from the DOD budget line. This update brings the ten-year plan (from FY11) to between $85.4 and $86.2 billion. Again, approximately $70 billion of the original pledge of $80 billion was needed just to maintain current operations of the nuclear weapons complex, without covering the expense of the needed modernization of the stockpile or infrastructure. This update also includes revised cost estimates for CMRR and UPF; those estimates now range from $3.7 to $5.8 billion for CMRR and $4.2 to $6.5 billion for UPF.

The new $4.1 billion for the five years of the FY2012 FYNSP is divided as follows:

- $340 million for design and engineering and modest construction activity for CMRR and UPF (see below for more detail);
- $1.7 billion (approximately) for other facility construction and maintenance requirements, including the High Explosive Pressing Facility at Pantex and test facilities at Sandia National Laboratories;

[4] "I am concerned that in the Administration's Section 1251 report, much of the planned funding increase for Weapons Activities do not come to fruition until the second half of the ten year period." Dr. Michael R. Anastasio, Director Los Alamos National Laboratory, Testimony to the Senate Armed Services Committee, July 15, 2010

[5] Vice President Joseph R. Biden, Jr., Letter to Senator John Kerry, Chairman, Committee on Foreign Relations, September 15, 2010.

[6] *November 2010 Update to the National Defense Authorization Act of FY2010 Section 1251 Report*. November 17, 2010.

- $1.0 billion (approximately) for stockpile work, with added funding for life extension programs, stockpile surveillance and other design and research activities, though some of this funding ($255 million for the W76) is only needed because one life extension program will take longer due to the capacity bottleneck in the complex;

- $1.1 billion for contractor pension obligations spread through Weapons Activities accounts (which, while needed, does not support modernization).

Remaining Concerns

Despite this new increase, there remain a few substantial concerns about the adequacy of the proposed budget. For one, the Administration is attempting to address the enormous increases in the cost estimates for CMRR and UPF by delaying the full operation of those facilities by one to two years. This would stretch the final completion of CMRR to 2023 and UPF to 2024, although the Administration states that some operational capability would be established (as required) in 2020. If extended, hundreds of millions of dollars would be needed annually to maintain Manhattan Project-era facilities at LANL & Y-12. **Additional funding could be applied to accelerate the construction of these facilities to ensure on schedule completion and prevent wasted investments in maintaining and securing facilities that are being replaced anyway.**

Furthermore, the Administration is ignoring the benefits of ensuring funding commitments for these facilities early in the budget process. Responsible advance funding mechanisms exist, such as a FY12 request for three-year rolling funding (recommended by some NNSA budget specialists[7]), or alternatively, an Administration commitment to seek advanced funding in FY13 following the completion of the 90% design cost estimate. **Further Administration effort to advance funding is the best path to successful completion of these facilities**.

Given the need to live with our currently aging stockpile until an adequate production capability is established (after 2020), accurate assessment of the state of the current stockpile is paramount. The 1251 plan update shows a doubling of surveillance funding from FY09 to FY11—which is commendable—but it is our understanding that the NNSA is reviewing an updated surveillance plan that could lead to greater budget requirements. **NNSA should affirm that this review been completed and the budget request will reflect updated requirements.**

Finally, the 1251 update made clear that NNSA will not restore a production capability adequate to maintain our current stockpile levels (declassified as 5,113 weapons total), and instead allow up to 1,500 warheads to be retired or held with no maintenance unless funding increases are sought and obtained. Failing to maintain hedge weapons will increase the risk that the U.S. cannot respond to a problem in our aging stockpile. **The Administration should not engage in further cuts to our deployed or non-deployed stockpile without first determining if such cuts are in our national security interest and then obtaining corresponding reductions in other nations' nuclear weapons stockpiles, such as Russia's large stockpile of weapons not limited by New START (e.g., its tactical nuclear weapons).**

[7] 9/27/10 meeting between staff for Sen. Kyl and Sen. Corker and NNSA briefers, including NNSA Deputy Administrator Niedzielski-Eichner.

Modernization of U.S. strategic delivery systems

The 1251 update deals not only with our nuclear weapons, bu the delivery systems that are part of our TRIAD. The update indicates somewhat clearer intent by the Administration to pursue a follow-on heavy bomber (though not specifically nuclear) and air-launched cruise missile (ALCM), though development costs beyond FY 2015 are yet to be determined. While the update notes that estimated costs for a follow-on bomber for FY 2011 through FY 2015 are $1.7 billion, there are still no costs or funding commitments beyond FY 2015. It is the same for the ALCM: $800 million is programmed over the FYDP, but no cost estimates are included beyond FY 2015. **We should have a better idea of these estimated costs over the full ten-years of the 1251 plan, and know whether the Administration intends to make this new heavy bomber and ALCM nuclear capable.**

Decision-making for an ICBM follow-on is unlikely before FY 2015, at the completion of an ongoing analysis of alternatives. The update notes: "While a decision on an ICBM follow-on is not needed for several years, preparatory analysis is needed and is in fact now underway. This work will consider a range of deployment options, with the objective of defining a cost-effective approach for an ICBM follow-on *that supports continued reductions in U.S. nuclear weapons* while promoting stable deterrence." (emphasis added) We think it important to understand what the Administration intends when it suggests that a decision regarding a follow-on ICBM must be guided, in part, by whether it "*supports continued reductions*" in U.S. nuclear weapons – especially since we seriously doubt it's in our interests to pursue reductions beyond the New START treaty. One logical inference from this criterion is that a follow-on ICBM is no longer needed because the U.S. is moving to drastically lower numbers of nuclear weapons. **We continue to press for a letter from the DOD confirming its commitment to follow-on nuclear-capable delivery systems.**

Conclusion

Until these issues are resolved, it will be difficult to adequately assess the updated 1251 plan, despite the welcome increases in proposed spending. And as has always been clear, assurances from the appropriate authorizers and appropriators must be obtained to ensure that the enacted budget reflects the President's request.

APPENDIX

Briefly, some of the stockpile programs most affected by the lack of Administration support for modernization include:

- **Replacing Manhattan Project-era Facilities**: Since the closure of the Rocky Flat Plant in 1989, the U.S. has had only a limited capability to produce the core component of our stockpile weapons: the plutonium pit. To establish a pit production capability, a 60 year-old research laboratory must be replaced by the Chemistry and Metallurgy Research Replacement (CMRR) nuclear facility at Los Alamos. Likewise, producing uranium components at the 70 year-old facility at Y-12 in Oak Ridge is an increasing risk that requires construction of a new Uranium Processing Facility (UPF). Completion of these new facilities will be essential in meeting life extension program requirements starting in 2020.

- **Production Capacity:** As Secretary Gates stated, "Currently, the United States is the only declared nuclear power that is neither modernizing its nuclear arsenal nor has the capability to produce a new nuclear warhead."[8] The United States requires a nuclear weapon production capability with sufficient capacity to satisfy the life extension requirement of our aging weapons, as well as to provide a "hedge" against future technical or political problems. Currently, we are limited to producing a handful of plutonium pits a year for one weapon, but are unprepared to produce most of the remaining pieces of that weapon.[9] Modernization of the NNSA laboratories and plants is required to correct this issue, with the stated goal of establishing a "capability-based" [10] production capacity. Without this capacity, there can be no stockpile reductions. In fact, General Chilton argues the stockpile might have to be increased: "I would say because of the lack of a production capacity there's a fear that you might need to increase your deployed numbers because of the changing and uncertain strategic environment in the future."[11]

- **Life Extension Programs**: Under current policy, the laboratories and plants are constrained to extending the life of existing warheads to keep them in the stockpile for much longer than originally expected. Thus, as the weapons age and concerns are observed, the laboratories and plants determine how best to repair the weapons. Aging components are replaced, remanufactured or inspected for reuse in the stockpile. In performing life extension for the W87 and the ongoing W76, our experts have discovered that it is very difficult to reconstitute processes and capabilities that have been allowed to atrophy. Currently, the W76 warhead is in LEP production, the B61 LEP study is underway and the

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[8] Secretary of Defense Robert Gates, Nuclear Weapons and Deterrence in the 21st Century, Carnegie Endowment for International Peace, October 28, 2008..

[9]" Currently, if we found a major system-wide problem in the stockpile requiring pit replacement, we have insufficient capacity for a timely response." Statement of Thomas P. D'Agostino, Administrator, National Nuclear Security Administration U.S. Department of Energy Before the Senate Committee on Armed Services Subcommittee on Strategic Forces - March 12, 2008.

[10]"With Congress' support, we will transform from a Cold War capacity-based infrastructure to a modern capabilities-based nuclear security enterprise." Secretary of Energy Steven Chu, Testimony to the Senate Armed Services Committee, June 17, 2010.

[11] General Kevin P. Chilton Commander, STRATCOM Strategic Weapons in the 21st Century Conference - 31 January 2008

NPR called for an FY2011 start to a W78/W88 LEP study that will research if the two warheads can be life-extended simultaneously.

- **Surveillance**: The average age of our current nuclear weapons is approaching 30 years. To ensure that each warhead remains reliable, each year approximately 11 warheads per type should be returned from the military for dismantlement and evaluation. Components are inspected and tested to ensure reliable operation. This program aids in the annual assessment of the stockpile performed by the laboratories and is the lead mechanism for identifying potential stockpile issues. Due to inadequate funding, surveillance requirements have not been met for many years, raising concerns about confidence in the stockpile.

- **Deferring Maintenance, Creating Chokepoints**: In addition to the CMRR and UPF construction projects to replace aging facilities, a significant number of buildings in our laboratories and plants have been accumulating a backlog of maintenance. This deferred maintenance creates a substantial number of facilities that could (and occasionally do) become a choke point in the progress of a life extension program. Maintenance can only be deferred for so long, until, eventually, something breaks; and when it does break, it is usually much more expensive to replace than routine maintenance would have cost. Reducing deferred maintenance is a demonstration that we are moving from a nuclear weapons complex in decline, to a revitalized and robust capability.

- **Critical Skills**: Perhaps the most significant attribute of a strong deterrent is the scientific and technical capability that is present in our laboratories and military complex. Maintaining those skills, especially as most nuclear-test experienced weapon designers are past retirement age, is a growing challenge within the NNSA laboratories and plants.

- **Hedging**: Without a robust production capability, the U.S. maintains a large non-deployed stockpile as a technical hedge against stockpile concerns and a political hedge that allows rapid upload should another nation become increasingly adversarial. With the technical hedge, if one weapon type were discovered to have an urgent issue requiring replacement, alternate components in the force structure theoretically could be used to compensate for that loss of capability. For example, W78 warheads on Minuteman III might be replaced by W87 warheads maintained in storage, and vice-versa.

- **Delivery Systems**: Nuclear weapon delivery systems require replacement within the next thirty years. These systems include:

    - The B-52H bomber, first deployed in 1961 and scheduled to be sustained through 2035;

    - The B-2 penetrating bomber, deployed in 1993 is currently being updated for long-term sustainment;

    - The Air-Launched Cruise Missile (ALCM), deployed in 1981 and scheduled to be sustained through 2030;

    - The Minuteman III ICBM, deployed in 1970, undergoing life extension and scheduled for replacement by 2030;

    - And the ballistic missile submarines and missiles. Ohio-class SSBNs were first deployed in 1981 and commence retirement in 2027. The Trident II Submarine Launched Ballistic Missile (SLBM), deployed in 1990, will be sustained through at least 2042, following a life extension.