

The Defense Science Board Permanent Task Force

on

Nuclear Weapons Surety

Report on the Unauthorized Movement of Nuclear Weapons



February 2008

(Revised April 2008)

*Office of the Under Secretary of Defense
For Acquisition, Technology, and Logistics
Washington, D.C. 20301-3140*

This report is a product of the Defense Science Board (DSB).

The DSB is a Federal Advisory Committee established to provide independent advice to the Secretary of Defense. Statements, opinions, conclusions, and recommendations in this report do not necessarily represent the official position of the Department of Defense.

The DSB Permanent Task Force on Nuclear Weapons Surety completed its information gathering in December 2007. In April 2008 a data error was discovered and the report revised accordingly. Specifically, report *Section III: Nuclear Enterprise Focus* was updated to reflect that the Strategic Air Command tanker force was reassigned to the Air Mobility Command (vice Military Airlift Command).

This report is UNCLASSIFIED and releasable to the public.



DEFENSE SCIENCE
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OFFICE OF THE SECRETARY OF DEFENSE
3140 DEFENSE PENTAGON
WASHINGTON, DC 20301-3140

February 8, 2008

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION,
TECHNOLOGY & LOGISTICS)

SUBJECT: Defense Science Board Permanent Task Force on Nuclear Weapons Surety

I am pleased to forward the final report on the Defense Science Board Permanent Task Force on Nuclear Weapons Surety: Report on the Unauthorized Movement of Nuclear Weapons.

The study's participants assessed the systemic causes of this incident and have provided recommendations to strengthen nuclear weapons surety.

A handwritten signature in cursive script that reads "William Schneider Jr.".

William Schneider Jr.
Chairman



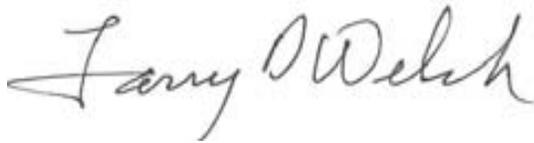
DSB PERMANENT TASK FORCE ON NUCLEAR WEAPONS SURETY

18 Dec 2007

MEMORANDUM TO THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board Permanent Task Force on Nuclear Weapons Surety

Attached is the Task Force report on an independent assessment of the systemic causes of the August 30 unauthorized movement of nuclear warheads from Minot AFB, North Dakota to Barksdale AFB, Louisiana. Based on the information and insights gained from investigating and assessing these systemic causes, the report includes 16 recommendations to strengthen nuclear weapons surety. The report reflects the unanimous findings and recommendations of the participants reflected in Appendix B.

A handwritten signature in cursive script that reads "Larry D. Welch". The signature is written in dark ink and is positioned above the typed name and title.

Larry D. Welch, General, USAF (Ret)
Task Force Chairman



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Section I: Background

Bottom Line

This unauthorized weapons movement incident can be a just-in-time rescue if lasting corrective actions are implemented now. The process and systemic problems that allowed such an incident have developed over more than a decade and have the potential for much more serious consequences. This time, the harm was limited to impact on confidence and careers and the incident is beneficially focusing needed attention on multiple aspects of the nuclear enterprise. It has dramatized the need for uncompromising processes and procedures, clear focus on the unique demands of the enterprise at multiple levels of the national security structure, and an environment that attracts, nurtures, and guides the right numbers of the best and brightest as stewards of this uniquely powerful national security force. It also highlights the need for clearly understood and competently executed responsibilities and accountabilities at all levels in the enterprise. There are currently significant deficiencies in meeting each of those needs. At the same time, the Task Force found concerted efforts underway in the operating forces to return to appropriate standards of competence and focus following the 30 August 2007 incident to include a supplement to the Air Force Instruction addressing specific deficiencies that permitted the unauthorized movement.

The Department of Defense (DoD) has received authoritative and credible reports of declining focus and an eroding nuclear enterprise environment for at least a decade with little in the way of effective and lasting response. Some findings and recommendations from those reports, particularly relevant to conditions surrounding the unauthorized movement incident, are described in Section IV of this report. This incident has provided a fresh opportunity to address these deficiencies. There is little mystery regarding what needs to be done or how to do it. The nuclear enterprise performed at all levels with the needed competence for decades. This report is intended to briefly summarize what needs to be done to restore that performance across the nuclear enterprise.

Tasking

The Defense Science Board (DSB) Task Force on Nuclear Weapons Surety was tasked by the Under Secretary of Defense for Acquisition, Technology and Logistics (USD [AT&L]) and the Commander, U.S. Strategic Command to conduct an independent investigation of the unauthorized transfer of nuclear warheads between Minot Air Force Base, North Dakota, and Barksdale Air Force Base, Louisiana on 30 August 2007. The task is to identify root and systemic causes and provide recommendations to help strengthen DoD nuclear surety programs and practices.

This report addresses the issues most directly related to the strategic nuclear forces. Further work will be done and reported separately early in 2008 by the Task Force to address any relevant tactical nuclear force issues that are different from the strategic forces issues. Beginning in Section II, this report addresses three related sets of surety issues:

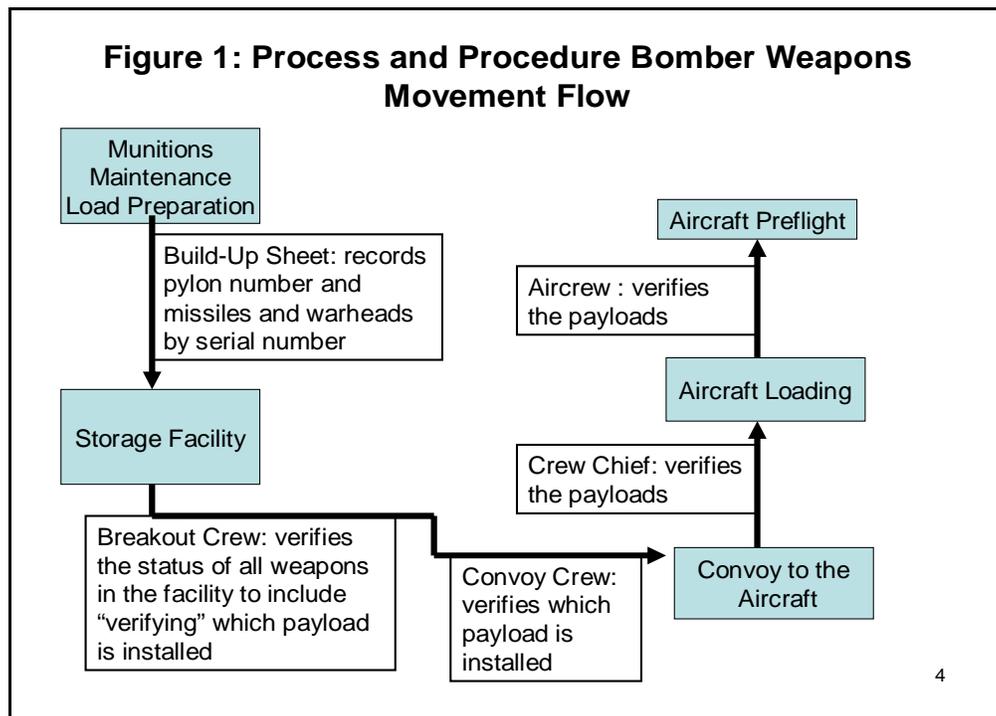
- Procedures and Processes
- Nuclear Enterprise Focus
- Nuclear Enterprise Environment

Nuclear Weapons Movement Background

The task of moving cruise missiles between Minot AFB and Barksdale AFB was part of a cruise missile reposturing program. In support of that program, warheads are removed from the advanced cruise missiles at Minot AFB and the nuclear-inert missiles are then transported to Barksdale AFB. Some of the missiles are moved via ferry on B-52 aircraft. This ferry mode is referred to as tactical ferry. The standard configuration for cruise missiles is six cruise missiles mounted on a pylon. Two six-missile pylons are carried on the B-52, one under each wing.

Two such pylons of nuclear-inert missiles were to be transported from Minot AFB to Barksdale AFB on a Barksdale B-52H on 30 August 2007.

The procedures for movement of a nuclear weapon or nuclear capable cruise missile from access to the storage facility to completed loading on the ferry aircraft is illustrated in Figure 1 below. This illustration depicts the Task Force's understanding of the procedures in effect at the time based on a review of existing directives and checklists and discussions with leadership in the bomber wings. It does not necessarily depict the processes that were in routine use by individual teams.



The first step in the procedure for moving the weapons from the storage facility is for the breakout crew to open the storage facility and to verify the status of all the weapons in the storage facility before any other activities occur in the facility. Verifying the status requires verifying which payload is installed and checking the safety status of each missile. Current guidance permits storing nuclear training, test, or inert devices in the same storage facility with nuclear weapons. Since there is no externally apparent difference between cruise missiles with these various payloads, to preclude confusion with such intermingling, pylons of missiles with

nuclear training, test, or inert devices are required to be physically identified by readily visible means.

After the initial verification task is completed, the convoy crew (tow team) verifies which payload is installed and connects the tow vehicle to the munitions trailer carrying the pylon of six missiles. On arrival at the aircraft, the crew chief accepts the load after verifying the payloads. The load crew then completes the loading process and checks the status of each missile after completing the load. Before accepting the load, the aircrew is to check each weapon on each pylon to verify the payload in each of the missiles and the safety status of each missile.

The Incident

A comprehensive description of the incident is provided in the classified Air Combat Command report: *The Unauthorized Transport of Nuclear Weapons*. The following is a brief unclassified synopsis.

The movement plan identified two pylons of nuclear-inert missiles to be transported by tactical ferry on 30 August 2007. Subsequently, personnel of the Minot Munitions Maintenance Squadron changed the plan to prepare and transport a pylon of missiles closer to expiration dates for limited life components in lieu of one of the planned pylons of missiles. That change was reflected on the movement plan but not in the documents produced from the internal work coordination process at Minot. The documents produced from this process are used in daily operation and they continued to list the originally scheduled two pylons of weapons. As a consequence, one of the originally scheduled pylons of cruise missiles had not been prepared for tactical ferry. When the breakout crew accessed the storage facility, they did not properly verify the status of the weapons in the facility as required by established procedure and they failed to note that the missiles on one of the pylons on their internal work document still contained nuclear warheads.

Although procedure requires three subsequent verifications (by three different groups) of the payload installed in the cruise missiles, those procedures were not followed. The weapons were then flown to Barksdale and downloaded from the aircraft. The convoy crew at Barksdale, following the proper procedure, determined that the missiles on one of the pylons contained nuclear warheads.



Section II: Procedures and Processes

Discussion

The Task Force found that, over time, procedures at the B-52 bases were compromised by processes that simplified work without adequate review and consideration of the risks. For example, the initial verification of the status of the weapons in the storage facility should take about 45 minutes. This verification is to be completed before any other action takes place. But, over time, to speed the process, breakout and convoy crews had established a process of concurrent activity. In this case, the breakout and convoy crew were connecting the trailer to the tow vehicle while the initial status verification was underway.

As stated above, there is a requirement to identify pylons of nuclear-inert missiles with readily visible markings. Past practice involved placement of placards on multiple sides of the pylon and orange cones around the pylon. However, the Task Force could find no written directive that specifically described the required identifying means. Over time, the practice at Minot was reduced to an 8 x 10 piece of paper placed somewhere on the pylon.

In the past, there was a requirement for a formal change of custody physically verified by serial numbers, recorded, and signed on a formal document when weapons moved from breakout crew to convoy crew to crew chief to aircrew. That practice was discontinued for bomber weapons although it is still the practice for Intercontinental Ballistic Missile (ICBM) warheads. The reason given for the difference is that ICBM warheads routinely move off the air base to missile sites while bomber weapons are moved only on base for exercises. In any case, the still existing verification procedures were not followed either when the breakout crew conducted the initial verification and then turned the weapons over to the convoy crew or when the convoy crew passed the weapons to the crew chief or when the crew chief passed the weapons to the aircrew. While this breach of procedure might be attributed to the belief that, in this incident, nuclear weapons were not involved, subsequent discussions with other breakout crews, convoy crews, load crews, and aircrews indicated significant confusion over procedural requirements for movement of nuclear-capable cruise missiles. For instance, the breakout crew and aircrew checklists require that the crew “verify which payload is installed.” Some did not interpret “verify” as requiring a physical check. In any case, whatever the nature of “verification,” there is nothing in directives or checklists that would suggest that the requirement is different for the various payloads thought to be in the cruise missile – live warhead, inert device, test device, or training device. That is, there is one checklist for handling nuclear-capable cruise missiles that should apply regardless of the payload installed.

There was not a clear understanding regarding who has explicit responsibility and accountability for any movement of special weapons outside the nuclear weapons storage area. The Task Force found significant confusion about delegation of responsibility and authority for movement of nuclear weapons.

Procedures and Processes -- Findings and Recommendations

Findings:

- Over time, nuclear weapons movement procedures for bomber weapons have been compromised for expedient work processes. This evolution has occurred without adequate review and approval above the wing level.

- There is confusion over applicability of nuclear weapons handling procedures for nuclear weapons systems that do not contain nuclear warheads.
- The practice of storing nuclear munitions/missiles in the same facility with nuclear-training, nuclear-test, and nuclear-inert devices can lead to confusion and unnecessary access to nuclear weapons.
- The various levels of inspection activities have failed to detect these changes in process which compromised established procedure. The Nuclear Operational Readiness Inspection process requires only limited mission performance, sometimes generating as few as one aircraft.

Recommendations:

- ***The Secretary of the Air Force should direct that Air Force directives be revised to provide clear direction to:***
 - ***Re-establish that the Wing Commander is the approval authority for any movement of nuclear weapons or nuclear-capable cruise missiles on the installation outside the nuclear weapons storage area.***
 - ***Re-establish formal change of custody requirements for any movement of nuclear-capable cruise missiles outside the weapons storage area to include serial number verification and custody change documentation using a formal document signed at each change of custody.***
 - ***Direct that nuclear weapons not be stored in the same facility with non-nuclear munitions/missiles to include nuclear-capable cruise missiles with payloads other than nuclear warheads.***
 - ***Require that Nuclear Operational Readiness Inspections include comprehensive evaluations of all tasks required to generate the full rapid response nuclear bomber force commitment for the inspected unit and supporting activities outside the unit to include tanker support.***

Implementing these recommendations and the more comprehensive recommendations in the Air Combat Command report is an essential step toward correcting deficiencies in processes and procedures but cannot, by themselves, ensure that an incident of this or greater magnitude will not occur again. Additional attention is needed to ensure that the surety of nuclear weapons receives appropriate attention at multiple levels and to provide confidence in the needed understanding and competence at multiple levels of the nuclear enterprise. Attention, understanding and competence, at multiple levels, will require restoring authority, responsibility, accountability, focus at appropriate levels, and valuing the activities at all levels.

Section III: Nuclear Enterprise Focus

Declining Focus

Since the end of the Cold War, there has been a marked decline in the level and intensity of focus on the nuclear enterprise and the nuclear mission. The decline in focus took place gradually as changes were made to policies, procedures and processes. However, when comparing the current level of focus to that of 1990, the aggregate change is dramatic. The Task Force and several of the senior DoD people interviewed believe that the decline in focus has been more pronounced than realized and too extreme to be acceptable. The decline is characterized by embedding nuclear mission forces in non-nuclear organizations, markedly reduced levels of leadership whose daily focus is the nuclear enterprise, and a general devaluation of the nuclear mission and those who perform the mission. There are at least eight underlying changes that played a role in this decline. The issue is not whether these were necessary or desirable. There are good reasons for most of the changes listed and some of them are clearly positive. The issue is the cumulative effect on attention to the nuclear enterprise. The changes are:

- End of the Cold War and demise of the Soviet Union,
- Reduction in the size of the nuclear forces,
- Dispersal of responsibility for nuclear matters throughout the enterprise: OSD, Joint Staff, Strategic Command, Air Force,
- Disestablishment of the Air Force Strategic Air Command,
- Assignment of multiple non-nuclear missions to U.S. Strategic Command and strategic forces at all levels,
- Recurring drives to reduce headquarters and headquarters manning, and the competition for people,
- Lack of any significant nuclear force modernization programs in the acquisition system, and
- Demands of multiple military contingencies.

Enterprise Dispersal

With the disestablishment of Air Force Strategic Air Command (SAC) in June 1992, the four operational elements of the Air Force strategic forces – ICBMs, bombers, strategic reconnaissance systems, and the tanker force -- were dispersed to three separate major operational air commands.

The ICBM mission was transferred first to Air Combat Command and then to Air Force Space Command. The logic of the move to Air Force Space Command was based on a perceived similarity in personnel skills required for space operations and ICBM operations. The Task Force found that the ICBM forces remained tightly focused on their mission, with 20th Air Force and the ICBM wings committed solely to the strategic nuclear mission focused on sustaining a high state of readiness. However, the missile wing designations were changed from Strategic Missile Wing to Space Wing which has been interpreted by some in the ICBM force as de-emphasizing the nuclear mission.

The bomber force and the strategic reconnaissance force were assigned to Air Combat Command (ACC) which had been predominantly a tactical fighter and tactical reconnaissance command.

The SAC tanker force was reassigned to the newly established Air Mobility Command and given expanded responsibilities.

The end result is that the strategic nuclear mission was dispersed among three major operational commands none of which had strategic nuclear forces or operations as a central focus or body of expertise.

In past years, the Air Force found it wise to move the tactical airlift force from Tactical Air Command, the predecessor of ACC, to the then Military Airlift Command and to move the special operations forces to a newly formed Air Force Special Operations Command. In each case, the underlying reason was the difficulty in providing the needed focus on the demands of these unique missions in a predominantly fighter command. Given this historical experience, there was concern over retaining focus on strategic bomber and strategic reconnaissance forces within ACC. To help ensure a continuing focus, these forces were assigned to 8th Air Force (AF) which has, since early in World War II, been regarded as a strategic bomber command. However, 8th AF subsequently has been assigned multiple additional non-nuclear missions, its headquarters has been significantly reduced in manning, many authorized nuclear-related positions have not been filled (13 of 31 positions unfilled in the Air Force component to U.S. Strategic Command), and the training, operations, and maintenance functions have been moved from 8th AF to headquarters Air Combat Command in a skip-echelon concept to consolidate and reduce overall headquarters manning. Hence, 8th Air Force had no day-to-day responsibility for B-52 operations, training or maintenance.

Continuing Complex Demands

Beginning with the implementation of the Strategic Arms Reduction Treaty (START) agreement and accelerated by the end of the Cold War, the Department of Defense has focused on reducing nuclear forces and nuclear weapons with the goal of moving from over 9,000 deployed strategic nuclear warheads in the late 1980s to no more than 2,200 in 2012. However, the complexity of the nuclear enterprise has not been reduced proportionately to those numbers. Figure 2 below shows the numbers of different types of nuclear systems as one indicator of that persistent complexity.

Figure 2: Change in Nuclear Force Composition

1990	2007
<u>Air Force Systems</u>	<u>Air Force Systems</u>
3 bomber aircraft types	2 bomber aircraft types
2 cruise missile types	2 cruise missile types
3 ICBM types	1 ICBM type
7 strategic warheads	5 strategic warheads
3 dual-capable fighters	2 dual-capable fighters
2 tactical weapons	1 tactical weapon
<u>Navy Systems</u>	<u>Navy Systems</u>
2 submarine types	2 submarine types
2 SLBMs	1 SLBM
1 cruise missile	1 cruise missile
2 strategic warheads	2 strategic warheads
1 tactical weapon	1 tactical weapon

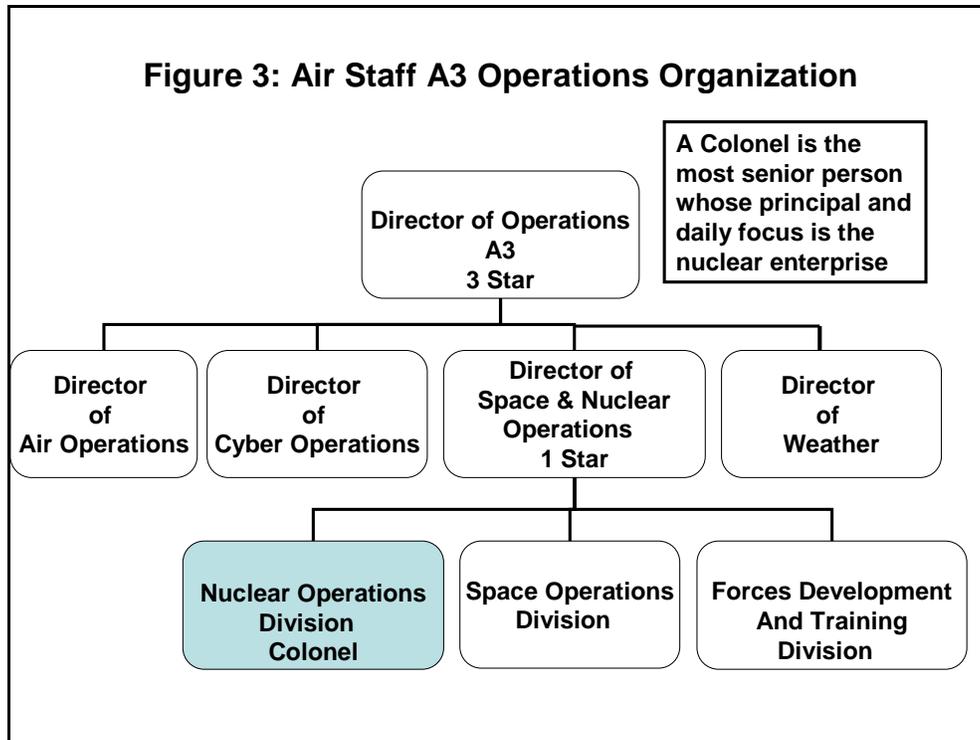
While the size of the overall nuclear force and numbers of deployed weapons have been greatly reduced and the numbers of different types of nuclear systems have been reduced somewhat, this does not translate to a reduction in complexity. Instead, the nuclear mission is, in some respects, more complicated today. The New Triad requires integration of nuclear, advanced conventional, non-kinetic, defense, and infrastructure issues into a single strategic deterrence concept. The Nuclear Posture Review (NPR) also levies complex demands on the nuclear enterprise. The reduction in the size of the nuclear forces requires that the remaining force be no less competent.

The Level of Focus

In contrast to the need, the level of accountable individuals whose principal focus and daily business is the nuclear enterprise has been reduced from senior flag officer or senior civilian at the end of the Cold War to Colonels/Captains or mid-level civil servants today.

There has been little change in focus at the operating levels in the Navy and in the ICBM force up through the numbered air force (20th Air Force). Otherwise the decline is characteristic across the DoD. In each case, in each headquarters, the change in focus could be justifiable. Still, when this occurs across virtually all of the relevant headquarters, the aggregate result is a precipitous decrease in attention to the nuclear enterprise.

Figure 3, showing the Air Staff A-3 (Operations) organization, is an example of the current placement of dedicated nuclear focus in current DoD organizations. The level of nuclear enterprise focus in other organizations is similar and is shown in Table 1.



There has been little change in the Navy operational and technical organization and focus managing the nuclear enterprise. While the attack submarines no longer routinely carry nuclear weapons, the submarine forces retain their nuclear legacy and nuclear focus. The principal focus on systems and procedures continues to be in the Strategic Systems Programs (SSP) organization commanded by a Rear Admiral – virtually unchanged from the Cold War organization. However, the decline in the level of focus within the Navy Staff is similar to that seen in the Air Staff.

Table 1 summarizes the change in level of focus across a broader set of organizations to illustrate the major downgrading of the level of attention accorded the nuclear enterprise.

Table 1: Change in Level of Primary Focus

Organization	1990	2007
Secretary of Defense	Assistant to the Secretary of Defense (ATSD) for Atomic Energy – direct report for safety & security (Senate-confirmed appointee)	Deputy ATSD Nuclear Matters (SES) w/ multi-mission ATSD reporting to USD/AT&L
OSD/Policy	Deputy Assistant Secretary for Nuclear Forces and Arms Control (SES)	Director, Strike Policy Integration (GS-15)
Navy Staff	Director, Strategy and Policy N51 (O-7)	Head, Global Strike & Nuclear Policy (GS-15)
Joint Staff	Deputy Director, Operations (O-8)	Chief, Strategic Operations Division (O-6)

Air Staff	Deputy Director, Forces (O-8)	Chief, Nuclear Operations Division (O-6)
Combatant Command	Commander, U.S. Strategic Air Command* (4 Star)	Chief, Division (O-6)
Major Air Command	Commander, Air Force Strategic Air Command* (4 Star)	Chief, Strategic Operations Division,(O-6)
Numbered Air Force Bomber Commands	Commander, 8 th Air Force (3 Star) Commander, 15 th Air Force (3 Star)	Commander, 8 th Air Force (multi-hatted, multi-mission) (3 Star)

* Commander and Staff dual-hatted as Air Force MajCom and Combatant Command

The reduction of the level of focus on the nuclear mission in U.S. Strategic Command is a natural result of the growth in global missions assigned to that command with a consequent dilution of the nuclear mission. The additional missions were those that were consistently neglected between contingency operations.

- Space;
- Global strike and integration;
- Intelligence, surveillance and reconnaissance;
- Network warfare;
- Information operations;
- Integrated missile defense; and
- Combating weapons of mass destruction.

These are global missions requiring global attention and USSTRATCOM remains the logical combatant command for these global missions. However, this proliferation of mission demands was a factor in the reduced level of attention to the nuclear enterprise as it fell to below the level required to provide the needed oversight and support to the nuclear mission. Even so, there are no B-52 assets assigned to or under the operational control of USSTRATCOM. Hence the command that some assumed had daily operational interest in strategic nuclear bomber operations has no daily authority or accountability for these forces.

There are always priority choices within the larger mission set and the strategic nuclear deterrent mission must be first priority even if it requires fewer resources than some of the added missions. The issue, here, is not to debate what the weapons are for or their applicability to the 21st century deterrence task. The issue is that we have the weapons and their military and political nature demands intense attention to their proper care.

The reduction in focus is also reflected in the B-52 nuclear mission. During interviews with B-52 aircrews and weapons handling crews, the typical estimate of the share of their time spent on the nuclear mission varied from 5% to 20%. Heavy focus of a segment of the strategic nuclear bomber force on conventional operations for an extended period is not new. What is new is focusing the entire B-52 force predominantly on the conventional mission as the accepted permanent or semi-permanent state of affairs.

Further evidence of the mindset is found in the formal training courses. The formal training course at Barksdale that provides transition training for all new B-52 crews includes no flight training for the nuclear mission. The same is true of the B-52 Weapons Instructor Course. Instead, these courses include a single simulator mission dedicated to the nuclear mission. The instructor aircrews are not nuclear qualified. Hence, the focus is almost completely on conventional weapons operations. After graduation from transition training, the new aircrew, for example, can deploy to Guam for 120 days in a conventional-only role before becoming qualified in the nuclear role. This reinforces the perception that nuclear qualification is not a critical element of B-52 mission qualification and the first priority is to be involved in conventional weapons B-52 operations.

A number of decisions about wing-level operations can only be seen as an effort to minimize the cost of the nuclear mission with inadequate consideration for the nuclear commitment. The most obvious example is moving deployed cruise missiles from the base where most of the nuclear-capable B-52 bombers are located. Hence, focus on the nuclear mission will be further complicated by the need for temporary deployments between bases for hands-on nuclear weapons training and exercises, and by the need to deploy aircraft between bases for the B-52 rapid response commitment.

The net result is that the de facto primary mission of the bomber force has become overwhelmingly conventional operations focused. Again, there are credible reasons for this. Most important among them is that the strategic bomber force has conventional capabilities that are increasingly important to a wide variety of non-nuclear contingency operations. This is not a new phenomenon. Strategic nuclear bombers have been widely used in non-nuclear contingencies for decades. The issue today is not the use of strategic nuclear forces in non-nuclear contingencies. The issue is the balance and the attitude.

While broad statements about attitudes are always risky, there was a set of attitudes detected by the Task Force that was succinctly described by an experienced B-52 aircraft commander, saying: "The nuclear mission is all about procedures; the conventional mission is about operational results." It seemed readily apparent that, over time, handling bomber weapons and nuclear activities have come to be considered an exercise activity rather than a serious operational activity. That is, the exercise is to break out some weapons, load them on a B-52, download the weapons and return them to storage. In contrast, during the Cold War, while people in the strategic nuclear bomber business understood that their primary mission was strategic deterrence and if they were successful they would never have to deliver a weapon, every part of the activity was based on the need to be sure that they could deliver a nuclear weapon if deterrence failed. In other words, the attitude was highly operational. This difference is not surprising given that the majority of personnel handling bomber nuclear weapons, from breakout crew to aircrew, have never experienced nuclear alert. This change in attitude has had a major impact on the overall environment and culture in the bomber force.

To restore a balance in mission focus and influence attitudes, the Task Force considered the wisdom of assigning all Air Force nuclear forces to a single numbered air force. While there are some attractive features of such a solution, it would require a major restructuring among multiple commands and would almost certainly have other unintended consequences. Instead of providing focus, it could be counterproductive in that it could delay, rather than facilitate, correcting the current deficiencies. Instead, the Task Force recommendations focus on restoring full attention to the rapid response nuclear deterrent bomber commitment. To do that, the operational elements of

the nuclear enterprise from squadron to combatant command must have a need to focus on the operational mission. The only reasonably certain way the Task Force could find to do that is to make each level responsible and accountable for the strategic bomber force as their daily work. That will require giving operational control of some part of the B-52 force to the Air Force component to USSTRATCOM (Task Force 204) which will also demand daily operational attention in USSTRATCOM headquarters.

Nuclear Enterprise Focus -- Findings and Recommendations

Findings:

- While the size of the nuclear force and the deployed nuclear weapons stockpile has been greatly decreased, the complexity of the mission remains demanding. Despite these complex demands, the level of focus on the nuclear enterprise has been drastically reduced.
- The nuclear enterprise within OSD has been dispersed and downgraded with the responsibilities of the principal office within USD (AT&L) expanded to include chemical and biological weapons, and the nuclear enterprise within USD (Policy) subordinated to ASD/SOLIC which has a wide-ranging portfolio.
- With no strategic nuclear bomber forces under the operational control of the combatant command or its Air Force component and the skip echelon approach that removed 8th Air Force responsibility for B-52 operations, training, and maintenance, there was no headquarters above the wing that focused on the strategic nuclear mission.
- The level of focus within major headquarters from Joint Staff to Air Force major command was drastically reduced with little apparent consideration or understanding of the impact of such reduction across virtually all such headquarters.
 - The daily focus on the nuclear mission within the Joint Staff has been reduced to an O-6 Strategic Operations Division chief.
 - The nuclear mission within the USSTRATCOM has been dispersed across 24 offices within the headquarters. The most senior officer whose daily focus is on the nuclear enterprise is an O-5 in an O-6 billet.
 - The positions maintaining daily focus on the nuclear mission within Air Force and the Navy Staffs has been reduced to that of O-6 (Colonel/Captain).
 - The nuclear mission within the Air Force has been dispersed from a single-focused strategic command to three operational commands that have had little or no focus on the nuclear mission. With that dispersal, the level of daily focus on the strategic nuclear bomber mission was reduced from senior flag-level to O-6 level.
- The conventional roles of the B-52 force so dominate the nuclear role that there is minimum daily attention to the nuclear role outside the restricted area where nuclear weapons are stored and maintained. Moving nuclear weapons from where the majority of B-52 strategic bombers are based is likely to further complicate focus on the nuclear mission and further devalue the nuclear mission.
- The B-52 initial training and advanced weapons school both largely ignore the nuclear mission. There are no flying sorties devoted to the nuclear mission in either course.

- Over time, handling bomber nuclear weapons has come to be regarded as an exercise activity rather than a serious operational activity.

Recommendations:

- ***The Secretary of Defense should:***
 - *Establish an Assistant Secretary of Defense for the Nuclear Enterprise, reporting directly to the Secretary, to assist the Secretary in ensuring continued attention to nuclear policy, acquisition, technology, surety, and command and control. This is not intended to replace the acquisition functions of USD (AT&L) or the functions of the other undersecretaries.*
 - *Direct that the Air Force dedicate the full rapid response commitment to the nuclear mission on a continuous basis, rotating the commitment among the B-52 squadrons. During the rotation to the nuclear commitment, the unit would be OPCON to Task Force 204 (the Air Force nuclear bomber component to USSTRATCOM) and would focus on training for the nuclear deterrent mission.*
- *The Commander, U.S. Strategic Command should establish a flag-level office within J-3 or J-5 whose daily focus is the nuclear enterprise and the conventional missions of strategic nuclear assets. All headquarters nuclear policy, operations, training, surety, and C2 responsibilities should be assigned to this office.*
- *The Secretary of the Air Force should direct the consolidation of existing Air Force technical organizations into a single technical organization (using Navy SSP as a model) reporting directly to the Air Force Chief of Staff, led by a Major General that has full responsibility and accountability within the Air Force for, and only for, nuclear systems and procedures.*
- ***The Air Force Chief of Staff should:***
 - *Ensure that Task Force 204 has the needed authorizations and is fully manned to meet the full rapid response nuclear commitment.*
 - *Ensure that nuclear career fields, enlisted and officer remain viable and adequately manned to provide a continuing “no defects” culture within the nuclear enterprise.*
 - *Establish an office within A-3/A5 in the Air Staff headed by a flag officer whose daily business is the nuclear enterprise.*
- *The Chief of Naval Operations should establish an office within N3/N5 headed by a flag officer whose daily business is the nuclear enterprise.*
- ***The Commander, Air Combat Command should:***
 - *Ensure that 8th AF has the full resources, authority, and accountability for daily B-52 operations – nuclear and conventional.*
 - *Direct that the B-52 initial training course at Barksdale and the B-52 Weapons School course include flight training in the nuclear mission.*

Section IV: Nuclear Enterprise Environment

Discussion

The Task Force repeatedly heard the perception in the force that the nuclear forces and the nuclear deterrent mission are increasingly devalued. Consequently, the Task Force reviewed earlier reports from the Defense Science Board, the Joint Advisory Committee on Nuclear Weapons Surety (the forerunner to the DSB Permanent Task Force on Nuclear Weapons Surety), and various other organizations and commissions over the past 15 years that have addressed the level of support and oversight accorded the nuclear enterprise. This was a small part of a much larger set of reports from a wide range of authoritative sources, to include the Air Force, which reported similar concerns. These reports provide information and insights on the impact of devaluing the nuclear mission and therefore the nuclear enterprise. The reports reflect a concern that, over this period, there has been a steady long-term trend minimizing the perceived importance of the nuclear deterrent to national security. Some examples of the language in these reports follow:

Joint Advisory Committee Report on the Nuclear Readiness of the Department of Defense, 1995

- Strategic bombers – Overall the operational units continue to exhibit pride and high competence in the nuclear bomber mission. However, the organization and focus on bomber force readiness for the strategic nuclear mission have changed radically in the past six years – removed from daily alert (Sept 1991); SAC disestablished and bombers transferred to ACC (June 1992); Nuclear ORIs halted in early 1990's (reinstated in March 1996). The current ORI structure does not explicitly include nuclear, thus conveying an important message to the wing about the priority of the mission.
- While there remains a rich pool of nuclear bomber experience in the units and higher headquarters, this residual pool will be short lived unless consciously and carefully renewed at all levels. The JAC does not presume to judge what the readiness requirements should be for heavy bombers. The JAC did observe that it is not clear that there is a match between readiness and practice. Diluting Major Command attention to the bomber nuclear mission will inevitably be reflected in the attitudes of unit commanders and aircrews as turnover continues to replace commanders and aircrews whose experience is rooted in the nuclear mission.
- Nuclear Expertise – There is reason for concern about the long-term quantity and quality of nuclear weapon expertise within the DoD as the size of the DoD nuclear community shrinks and the interest level declines.
- Senior Management – more expertise needed in OSD and JCS and involvement in planning, programming and oversight for nuclear weapons support. OSD ATSD's attention to nuclear matters is stretched by competing responsibilities with other weapons of mass destruction.
- The Navy and Air Force provide smart buyer, technical expertise for nuclear weapons systems. But, DoD does not have the structure in place and the expertise at all the levels required to be a smart customer of the DOE supplier of nuclear warheads and support. The JAC recommends that the mission of the Defense Nuclear Agency be sharply

refocused to help provide critical staff nuclear expertise to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff.

Defense Science Board Task Force on Nuclear Deterrence, 1998

- It is imperative that the general decline in the value accorded nuclear expertise be reversed now. Without a sharp reversal in the decline, there will be little incentive for the best and brightest to enter this key field.
- The level of attention and expertise varies widely across DoD. At the OSD level and in the Navy and Air Force, the acquisition oversight function continues with a high degree of expertise. In contrast the policy functions are fragmented with responsibilities divided between various offices in USD (Policy) and USD (A&T) and with reduced senior-level attention in the Services. There is need for technical expertise at multiple levels. Over the past several years, there has been an effort to fashion the needed support in the Defense Special Weapons Agency (DSWA). However, DSWA was not given the charter and control of resources needed to fill this role. There is continuing uncertainty about the future of nuclear expertise available to senior DoD leaders as this function is being assigned to the newly organized and more diverse Defense Threat Reduction Agency (DTRA). DTRA appears to have the charter in this area but will need strong support to meet the need.
- USSTRATCOM has stepped into the vacuum to perform some functions neglected during the general drawdown of nuclear forces and reduced interest in nuclear matters. But again, they have done so on a piecemeal basis, without a corresponding clear charter. A more comprehensive charter would provide better assurance of comprehensive coverage of the needs. Nuclear expertise in the remaining operational units assigned nuclear readiness tasks continues at a high level. The situation in the Service staffs is less positive though the Air Force has initiated important steps to restore focus on this need and the Navy SSP continues to provide focused attention to nuclear systems.
- The need for attention to the nuclear deterrent, is clearly stated in the May 1997 Report to Congress from the Secretary of Defense.
 - Sustainment (of the nuclear deterrent) is most likely to be successfully accomplished...if a set of interrelated conditions are achieved:
 - The capability is clearly and consistently given priority by the Department's senior leaders
 - All of the physical components that make up the capability are regarded as limited-life
 - Career paths exist for both military and civilian personnel that attract and retain sufficient numbers of personnel with appropriate qualifications
 - The program involves a complete end-to-end capability (development-deployment-operations)
 - The magnitude of the activity is sufficient to support achievement of the preceding conditions

- Some indications of the current state of attention: Some policy declarations/documents have minimum emphasis on nuclear deterrence – Joint Vision 2010, 1997 and 1998 CJCS Posture Statements to Congress, USAF Global Engagement: A Vision for the 21st Century. This lack of emphasis on the nuclear deterrent has been noted in nuclear forces and support activities.
- Service Focus – Air Force. Air Force Headquarters (and ACC Headquarters) attention to nuclear issues suffered a precipitous decline immediately following the end of the Cold War with the emphasis on downsizing and dismantling nuclear forces. The major Air Force nuclear modernization programs were terminated or sharply curtailed. Strategic Air Command was disestablished and its Air Force responsibilities divided among Air Force Space Command for ICBMs, Air Combat Command for bombers and Air Mobility Command for tankers. Responsibility for weapons went to an Air Logistics Center under the newly combined Air Material Command. Hence, Air Force nuclear forces responsibilities were subsumed in commands where the nuclear deterrent was not a major part of the day-to-day focus of the command, In the case of the bombers; this was exacerbated by the increasing focus on the non-nuclear mission of the bomber force. The resulting decline was graphically illustrated when the responsible command stopped nuclear operational readiness inspections for a period of three years. The Air Force Chief of Staff, responding to this problem, established a special directorate to focus attention on nuclear issues. Yet, this directorate is focused on the nuclear deterrent and on counter-proliferation – one is to deal with illegitimate activities, the other is dedication to maintaining a legitimate, valuable contribution to national security.
- The most difficult issue and the one with the most long-term implications is the widespread perception in both the Navy and Air Force that a nuclear forces career is not the highly promising opportunity of the past era.
- The Air Force has been through a serious bathtub of focus on managing, tracking and nurturing nuclear qualification in support forces and staffs. Following some problems surfaced by inspections, the AF Institutional Support Review identified an urgent need for attention to personnel matters for nuclear experienced people.
- The demands on the SSBN force and their focus have changed little since the end of the Cold War other than some reduction in patrol rates.

Defense Science Board Task Force on Nuclear Capabilities, 2006

- Since the end of the Cold War, DoD senior-level attention to nuclear weapons management has been minimal at best. The Assistant to the Secretary of Defense for Atomic Energy's focus was expanded to include chemical and biological that have little in common with nuclear matters except the generic term of weapons of mass destruction (WMD).
- The Air Force has eliminated a major command focused on nuclear capabilities and has changed the headquarters organization dealing with nuclear matters several times in recent years and has no headquarters office or organization with nuclear in the title. Within the Navy the Strategic Systems Programs (SSP) organization has remained intact and effective. But that is largely a matter of a longstanding, tightly integrated and focused organization that has existed with little change in organization and status since 1957.

- Nuclear weapons have always been and continue to be more instruments of national policy than weapons of military operations. Hence, even during the Cold War, nuclear weapons required special organizations and approaches in DoD. These were generally dedicated, nuclear-unique, organizations and programs at the DoD staff level, in the military departments and in the combatant commands. Since the end of the Cold War, with the escalation of other national security challenges, nuclear matters have slipped even further toward the edge of DoD's mainstream attention. With perhaps one exception – the Navy Strategic Systems Programs -- the nuclear-dedicated organizations were disestablished, vitiated, or tasked with additional missions that, in various degrees, submerge the nuclear weapons activities. Nuclear weapons need to be addressed within the context of the NPR and the overall strategic posture, to include non-nuclear capabilities. Still, nuclear weapons remain unique in their policy implications, their effects, and the demands of safety and security. Hence, a competent and committed structure for nuclear weapons within the DoD needs to be re-established
- In DoD there are three key needs – creating an Assistant Secretary of Defense for Strategic Weapons (ASD [SW]), strengthening the Nuclear Weapons Council, and strengthening the role of the U.S. Strategic Command.
- The relationship between an “Assistant to the Secretary” of Defense and other DoD authorities has, over time, become cloudy and inconsistent. For this and other reasons, the Task Force believes that the Office of the Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs (ATSD [NCB]) should be changed to a new office/position -- the Assistant Secretary of Defense for Strategic Weapons (ASD [SW]), reporting to the Deputy Secretary of Defense, with authorities that are clear and well understood.
- Within the ASD (SW), a Deputy Assistant Secretary of Defense for Nuclear Weapons (DASD [NW]) would be established and have responsibility for the nuclear aspects of strategic weapons. The DASD (NW) would have the nuclear weapons responsibilities of the current ATSD (NCB) and the nuclear weapons aspects of global strike-related programs. The ASD (SW) would work closely with the USD (AT&L) to better ensure oversight of the status and responsiveness of DoD's contractor/industrial base for nuclear weapons.
- The functions of the Defense Threat Reduction Agency (DTRA) in support of the U.S. strategic posture remain crucial. In this new construct, DTRA would report to the ASD (SW). DTRA would continue to provide strong support directly to combatant commanders.

Bottom Line from Reviewed Reports

While each of these reports appeared to be well received by the relevant senior leadership at the time of each report, very few of the recommendations were implemented with lasting effect and there has been no reversal of the decline in visible senior level attention to the nuclear enterprise.

Nuclear Enterprise Environment – Current Task Force Findings and Recommendations

Findings:

- Public debate about the nuclear deterrent, the long-term future of nuclear weapons, approaches to sustaining the deterrent, and related subjects is inevitable and necessary as the world environment changes. There are legitimate questions about all these issues. Still, this debate cannot be allowed to obscure the most obvious and relevant facts about the nuclear enterprise. We still have a large stockpile of nuclear weapons and will almost certainly have a significant stockpile for a very long time. Those are the only facts needed to understand the need for sustained, intense attention to the nuclear enterprise and to robust nuclear weapons surety.
- While this assessment was motivated by a specific incident of unusual magnitude, there are a large number of reports commissioned by the DoD on existing or developing concerns with the nuclear enterprise that have produced few lasting course corrections.

Recommendations:

- *The national security leadership should declare, unequivocally and frequently, that a reliable, safe, secure, and credible nuclear deterrent is essential to national security, and is a continuing high national priority.*
- *The Secretary of Defense should establish a mechanism to ensure that the lessons from this incident produce institutional and environmental change for lasting attention at the right levels to the nuclear enterprise.*



Appendix A: Terms of Reference



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

OCT 12 2007

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference – Defense Science Board (DSB) Permanent Task Force
on Nuclear Weapons Surety – Command and Control Issues

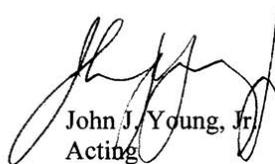
The DSB Permanent Task Force on Nuclear Weapons Surety is to conduct an independent and objective review of nuclear surety practices.

Your assessment should identify root and systemic causes and provide recommendations to help strengthen DoD nuclear surety programs and practices. The Task Force shall cover all areas of concern or risk in an effort to prevent failures in nuclear surety processes.

The Study will be sponsored by me as the Acting Under Secretary of Defense for Acquisition, Technology and Logistics and the Acting Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs who is authorized to act upon the advice and recommendations of the Board.

General Larry Welch, USAF (Ret), will serve as the Task Force chairman. David B. McDarby, Defense Threat Reduction Agency, will serve as the primary Designated Federal Official.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DoD Directive 5105.4, the "DoD Federal Advisory Committee Management program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of title 18, United States Code, section 208, nor will it cause any member to be placed in the position of action as a procurement official.


John J. Young, Jr.
Acting





Appendix B: Task Force Membership

Task Force Members

General Larry D. Welch, USAF (Ret.), *Institute for Defense Analyses*

Dr. Harold M. Agnew, *Independent Consultant*

Vice Admiral Lyle G. Bien, USN (Ret), *Independent Consultant*

Dr. John C. Crawford, *Independent Consultant*

Dr. John S. Foster, Jr, *Northrop Grumman Corporation*

Dr. Sydell P. Gold, *Independent Consultant*

General James P. McCarthy, USAF (Ret.), *USAF Academy*

Admiral Richard W. Mies, USN (Ret.), *Science Applications International Corporation*

Major General Thomas H. Neary, USAF (Ret.), *Science Applications International Corporation*

Dr. Robert L. Selden, *Independent Consultant*

Rear Admiral Robert H. Wertheim, *USN (Ret.), Independent Consultant*

Task Force Advisors

Major General Kenneth L. Hagemann, *USAF (Ret.), Independent Consultant*

Mr. Jan R. Smith, *Institute for Defense Analyses*

Executive Secretary

Mr. David B. McDarby, *Defense Threat Reduction Agency*

DSB Secretariat Representative

Mr. Brian Hughes, *OUSD (AT&L)/DSB*

Task Force Support

Ms. Brenda Poole, *SAIC*



Appendix C: Meetings

- Principal Deputy, Office of the Deputy ATSD for Nuclear Matters, OSD AT&L
- Director, Strike Policy & Integration, SO/LIC OSD Policy
- Chief, Emergency Response Branch and Nuclear Surety Advisor, Joint Staff
- Director, Space & Nuclear Operations (AF/A3O-S) Air Staff
- Chief, Nuclear Surety Branch (AF/A3O-SNS) Air Staff
- Chief, Munitions and Missile Maintenance Division (AF/A4MW) Air Staff
- Security Forces Directorate, Nuclear/Physical Security Branch (AF/A7SO), Air Staff
- Deputy, Nuclear Weapons Surety & Policy, Navy Strategic Systems Programs (SSP) Manager, Transit Protection System, Navy SSP
- Chief, Nuclear Operations Branch, U.S. Nuclear Command & Control System Support Staff (NSS)
- Commander, 20th Air Force
- 20th Air Force organizations – A3, A4, A7
- Commander, 90th Space Wing
- 90th Space Wing organizations – Operations, Maintenance, Safety, Security Forces
- Commander, Navy Strategic Weapons Facility (SWFPAC)
- Commander, Marine Security Forces at SWFPAC
- U.S. Coast Guard at SWFPAC (mission affiliation with submarine transit)
- Commander, 8th Air Force
- Task Force 204 representatives
- Commander, 2nd Bomb Wing
- 2nd Bomb Wing organizations – Operations, Maintenance, Medical, Security Forces
- Interviews with 2nd Bomb Wing personnel – aircrews, load crews, wing weapons maintenance crews, prep crews, planners, munitions accountability
- Commander, Air Combat Command (ACC)
- Director of Air and Space Operations, Headquarters ACC
- Commander, USSTRATCOM
- USSTRATCOM organizations – Joint Functional Component Command – Global Strike and Integration, J5 Plans and Policy Directorate, J87 Global Strike Division, J31 Space Branch, J38 Nuclear Operations C2 Branch, STRATCOM IG
- Commander, 5th Bomb Wing
- Commander, 91st Space Wing
- 5th Bomb Wing Organizations – Weapons Load, Security, Munitions, Maintenance, Handling
- Interviews with 5th Bomb Wing personnel: Load Teams, Munitions Maintenance Crews, Flight Crews



Appendix D: Acronyms and Initializations

ACC	Air Combat Command
AFB	Air Force Base
ASD (SW)	Assistant Secretary of Defense for Strategic Weapons
ASD/SOLIC	Assistant Secretary of Defense for Special Operations & Low Intensity Conflict
ATSD	Assistant to the Secretary of Defense
ATSD (NCB)	Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs
CJCS	Chairman of the Joint Chiefs of Staff
DASD (NW)	Deputy Assistant Secretary of Defense for Nuclear Weapons
DoD	Department of Defense
DOE	Department of Energy
DSB	Defense Science Board
DSWA	Defense Special Weapons Agency
DTRA	Defense Threat Reduction Agency
ICBM	Intercontinental Ballistic Missile
JAC	Joint Advisory Committee on Nuclear Weapons Surety
JCS	Joint Chiefs of Staff
NPR	Nuclear Posture Review
OPCON	Operation Control
ORI	Operational Readiness Inspection
OSD	Office of the Secretary of Defense
OSD ATSD	Office of the Secretary of Defense Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs
SAC	Strategic Air Command
SES	Senior Executive Service
SSBN	Ship, Submersible, Ballistic, Nuclear (Ballistic Missile Submarine)
SSP	Navy Strategic Systems Programs
START	Strategic Arms Reduction Treaty
TOR	Terms of Reference
U.S.	United States
USAF	United States Air Force
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
USSTRATCOM	United States Strategic Command
WMD	Weapons of Mass Destruction