

# **The Sam Nunn Security Program's Third Annual Washington DC Field Trip**

May 7-12 of 2006 marked the third annual Sam Nunn Security Program field trip to Washington DC. On Sunday May 7<sup>th</sup>, after arriving at Reagan National and checking into the historic Army Navy Club located two blocks north of the White House, fellows and faculty had an afternoon of free time to visit the various museums on the Mall. Much of the group elected to take a tour of the Air and Space Museum guided by Sam Nunn Fellow and Aerospace Engineering doctoral candidate, Pat Biltgen. Highlights of the tour included: Space Ship One (the first privately developed craft to ascend beyond the atmosphere), the Messerschmitt Me262 "Schalbe" (a German jet that might have restored Nazi air superiority had it not entered the fight late and in such limited numbers), and the 1903 Wright Flyer (the plane that flew at Kitty Hawk.)



**The Wright Flyer**

Monday morning began with a meeting with John Epstein from the Office of Senator Bingaman of New Mexico. Dr. Epstein provides a prime example of an individual who has straddled the world of policy and engineering. He holds a Ph.D. in Engineering Science and Applied Mechanics from the Virginia Polytechnic Institute and law degrees from the University of Idaho and Georgetown, and is responsible for writing many legislative bills on energy policy. After visiting Senator Bingaman's office in the Hart Senate Office Building, it was on to the Cannon House Office Building to receive briefings from Chris Beck and Diane Berry of the House Committee on Homeland Security. The speakers were able to lend insight into the process by which bills travel through House committees, using a recent bill on port security as an example. After this briefing we traveled to the Rayburn Building where the Sam Nunn Security Fellows had lunch with a group of current AAAS (American Association for the Advancement of Science) Fellows. The AAAS fellows shared their experiences working in various locations around Washington from the Pentagon to Congress.

Monday afternoon was spent at the Department of Energy Offices at L'Enfant Plaza. There we received briefings from several employees of the National Nuclear Security Administration [NNSA.] These briefings were arranged by an alum of the Sam Nunn School. We first received a briefing from the head of the Office of Nonproliferation and International Security, who gave an overview of the Defense Nuclear Nonproliferation

Office as well as the section that he headed. We next received a briefing on the Department of Energy's [DoE] role in the US nuclear weapons program including a breakdown of DoE versus Department of Defense [DoD] responsibilities in the nuclear weapons complex, an overview of the Stockpile Stewardship Program, a discussion of the warhead dismantlement program, and of the Reliable Replacement Warhead (RRW) program. The next briefing was on the Second Line of Defense (SLD) program that involves border and port initiatives to make smuggling nuclear or radiological materials into the country more difficult. This was followed by a talk on DoE efforts to gain cooperation on export control measures that was delivered by our GT alum, who now works for the NNSA. The last briefing of the day dealt with the subject of material safeguards agreements and activities designed to prevent the diversion or theft of nuclear material.

Ten of the fellows and faculty members began Tuesday by attending a breakfast function hosted by the American Bar Association that featured Judge Richard Posner speaking on intelligence reform and the effects of the PATRIOT Act on the judiciary. The entire group spent the rest of the day at the State Department receiving briefings that were largely coordinated and arranged by an alum of the Sam Nunn Security Program who now works on conventional arms control treaty enforcement including that of the Conventional Forces in Europe treaty. In the morning, we received a briefing from the Deputy Secretary of State for East Asian and Pacific Affairs, Kathleen Stephens, who spoke extensively about security issues on the Korean peninsula as well as about tensions between the nations in the region. After lunch, an AAAS fellow who works with the Defense Threat Reduction Agency on the chemical and biological defense program spoke about her experiences conducting work that brought her scientific expertise to bear on national security policy issues. The next briefing was conducted by the Assistant Secretary of State for Verification, Compliance, and Implementation, Paula DeSutter, and it addressed efforts to assess the compliance of other nations with various arms control treaties to which the US is party. Assistant Secretary DeSutter spoke of the Iranian case which is so prevalent in the news today, and also about the case of Libya - which is considered a great success story by the bureau. Tuesday's final briefing was conducted by the Science and Technology Advisor to the Secretary of State, George Atkinson, and he spoke of his office's role in the State Department and about initiatives he has implemented including the Jefferson Science Fellows program. Atkinson is on leave from the University of Arizona where he is a Professor of Chemistry and Optical Sciences. Dr. Atkinson represents an example of the cross-over from academia to the world of policy-making.

On Wednesday we left Washington DC to travel to McLean, Virginia to visit the Central Intelligence Agency. This tour and slate of briefings was arranged by our own Officer-in-Residence and Visiting Faculty member, Dr. Richard Houska. In the morning, we received a tour of the museums and other portions CIA campus accessible to visitors such as ourselves. The CIA houses a large collection of displays showing the history of the Agency, and we were fortunate to receive a guided tour from the curator. We first traveled through a corridor that showed artifacts of Cold War intelligence gathering such as small single-hand use cameras, caltrops for preventing pursuit, and, quite literally, a

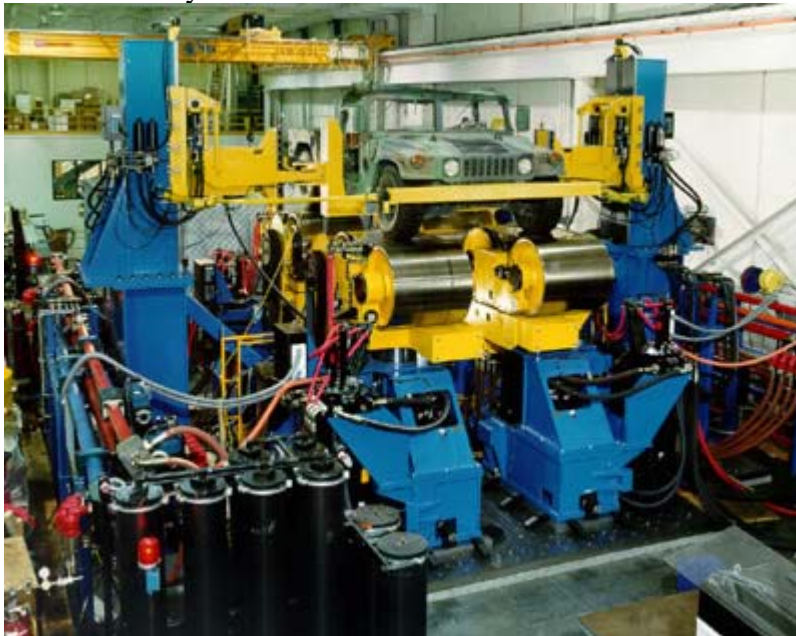
cloak and daggers. There are displays for the National Clandestine Service [the operational branch], the Directorate of Intelligence [the analytical arm of the agency], and the Science and Technology Directorate. The S&T Directorate display included a man-made fish and mechanical dragon flies that could be used as platforms to gather intelligence while appearing to be creatures of the natural world. The space that made up the entirety of the original CIA museum (only a portion of the holdings today) now houses a substantial collection of OSS memorabilia and artifacts. The Office of Strategic Services (OSS) was the World War II precursor to the Central Intelligence Agency. The OSS museum highlights both the contributions of the General Donovan, who founded the agency, and Virginia Hall, a female agent who despite having lost a leg before the war was able to work first in the elite British Special Operations Executive and later in the OSS. She served with distinction behind enemy lines in occupied France.



**Seal of the CIA in the building's main entryway**

Wednesday afternoon we received a series of briefings from CIA personnel. The first of these was an engaging presentation by a Weapons Analyst from the Directorate of Intelligence who received an Intelligence Medal of Merit for his work investigating the crash of TWA flight 800 that went down off the coast of Long Island, New York in July of 1996. Coming less than a month after the bombing of Khobar Towers in Saudi Arabia that killed 20 (19 of whom were US servicemen) and wounded almost 400 people, the crash of flight 800 was widely suspected of being an act of terrorism. Our briefer led us through the progress of the investigation that ultimately concluded that it was not a missile that brought down the flight but an explosion in the forward fuel tank. He and his co-workers developed a simulation that showed why many, including the briefer himself, initially concluded that the crash was the result of a missile attack despite ultimately finding otherwise. The next briefer discussed the work that goes into writing short time-frame intelligence analysis for the daily briefings. This individual had worked for a number of years as one of the analysts who shared the task of doing final edits on and delivering the President's Daily Brief. He also spoke of the process by which memoirs and other books written by former CIA agents are vetted by the Agency. A third briefer was with the Office of Technical Services, and he gave an overview of the types of things his department works on including technologies to simplify surveillance and to produce more useful disguises. The final briefing of the day was by the National Intelligence Officer for Science and Technology, Lawrence Gershwin, who spoke about his past and gave his views on the role of S&T in the world of intelligence.

Wednesday afternoon we loaded back up onto the bus and traveled to our hotel in Edgewood, Maryland in preparation for two days at Aberdeen Proving Grounds located on the Chesapeake Bay northeast of Baltimore. We spent Thursday touring facilities of the Aberdeen Test Center. Aberdeen is the oldest of the Army's testing centers, which put all Army equipment through its paces before it is delivered to soldiers in the field. The Proving Grounds began operation in 1918. Our first stop was the Munson Test Area, which is a series of test tracks designed to expose vehicles to rough and slippery road surfaces, steep banks and slopes, frame twisting humps, and pools of water. Here we saw a M1-A1 Abrams tank climb a 60 degree grade with ease. We next went to the automotive instrumentation center where they apply sensors to vehicles to measure their performance. The equipment ranged from rudimentary gear to a sophisticated sensor that mounted in a U-shape over a tire and cost \$80,000 per unit. From there, we visited the state-of-the-art Roadway Simulator that allows vehicles to be tested on high-tech treadmills so that the tests can be repeated numerous times under nearly identical conditions. The \$39 million facility is unlike any other, and its capacity is being expanded to allow tractor-trailer combinations of up to 40 tons to be tested. Besides military testing, the cost of the facility has been somewhat defrayed by renting it out to car manufacturers and NASCAR teams. We next were driven through the Warfighter Training Range area and around the Military Operations on Urban Terrain (MOUT) facility. These facilities are used not only for testing, but also for training. They use modified standard-sized shipping containers as structures for MOUT training because they are highly mobile and are adequate to mimic the size and configuration of some of the structures that the military is encountering these days in Iraq and Afghanistan. We next traveled to a firing range used to test and evaluate guns such as those mounted on tanks and automated artillery.



**Roadway Simulator at Aberdeen Test Center**

After lunch at a stately mess hall near the bay, we continued our site visits. We received a guided tour of the vibration test facilities that are used to expose equipment to banging,

jarring, and shaking to ensure they stand up to the challenge. We next visited the Fire Safety Test Enclosure (a.k.a. the FIREBOX), which is a facility that allows the Army to conduct tests that might otherwise have adverse environmental consequences, but to do so safely in an enclosure. All harmful substances are contained and processed. In this manner, the Test Center can shoot at or explode ordinance on depleted uranium armor without environmental degradation. The next stop showed facilities used to test small arms. Here we saw a selection of rifles and machine guns tested and evaluated by the Center. Furthermore, we were shown some of the non-lethal weapons that have been worked on at the Center, including rubber bullets, stun-guns, and dye-marking munitions. Our final stop of the day was to a new facility that will allow the Navy and Marines to test equipment and to train in simulated conditions of rough sea chop created by a mechanical device. This is the smaller of two entirely land-locked naval testing facilities at the Center. The larger facility is used to test underwater munitions, as well as their effect on ships such as a frigate.

On Friday May 12<sup>th</sup>, the final day of our trip, we visited Edgewood Arsenal, which is a part of the greater Aberdeen Proving Ground facilities, though it is on its own peninsula in the Chesapeake Bay. After a short overview briefing at Research, Development, and Engineering Command (RDECOM), we traveled to the Advanced Chemistry Laboratory to receive briefings and a tour of their new (not yet operational) laboratory building. The Advanced Chemistry Laboratory is part of the Edgewood Chemical Biological Center [ECBC.] This lab is the nation's primary non-medical chemical and biological defense facility. Edgewood Arsenal also contains an important medical chem/bio research facility. In 1920, all Chemical Warfare functions were centralized at Edgewood, and its history has been integrally tied to chemical and biological weapons ever since. Notably, Edgewood Arsenal contains the Chemical Transfer Facility, which is the nation's only facility allowed to store chemical weapons for defense research purposes under the Chemical Weapons Convention. The facility is periodically inspected by the Organization for the Prohibition of Chemical Weapons [OPCW] to ensure it is in compliance with America's Chemical Weapons Convention [CWC] treaty obligations. After a briefing by the Lab's director, we were given a tour of the new facility. It was our fortunate timing that the lab was not yet operational, and, therefore, we were able to be granted access. Shortly, the lab will be stocked and operational, and no such tour will be possible.

After lunch at the ACL, we went back over to Aberdeen Proving Ground proper to receive some briefings and site visits at Army Research Laboratory [ARL] facilities. We were given a couple briefings on some of the work being done by the ARL. We received an overview briefing by the Deputy Director of the Weapons and Materials Research Directorate, and a second briefing by a scientist doing auditory research. The Army invests considerably in auditory research because of the unique challenges they face in having to protect the hearing of soldiers under deafening battle conditions while, at the same time, making sure communications are not disrupted. We next visited a series of ARL facilities. We visited a facility that does testing and evaluation of armor, including the armor that is going on Hum-vees for use in Iraq and Afghanistan. We were given insight into the challenges faced in producing such armor. The Army is limited to

commonly available materials like steel because they cannot get light-weight alloys in sufficient quantities. The order of steel for Hum-vee armor alone was enough to have a noticeable effect on the price of steel. Furthermore, a two foot wide cross-section of steel with a pencil thin hole penetrating through it was used to demonstrate how a copper conical section with enough high-explosive behind it could penetrate even thick slabs of armor. In other words, an inexpensive rocket-propelled grenade [RPG] can give insurgents a lot of bang for their buck. Our final stop of the trip was to a facility that is used to measure blasts. At this facility, explosives could be put under a tall vertical arm, and sensors would measure the force of an upward blast.