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Part 1

BORDER SECURITY TECHNOLOGY INNOVATION ACT OF 2008

JUNE 4, 2008.—Ordered to be printed

Mr. GORDON of Tennessee, from the Committee on Science and Technology, submitted the following

REPORT

[To accompany H.R. 3916]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 3916) to provide for the next generation of border and maritime security technologies, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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69–006

I. AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Border Security Technology Innovation Act of 2008".

SEC. 2. ENSURING RESEARCH ACTIVITIES OF THE DEPARTMENT OF HOMELAND SECURITY INCLUDE APPROPRIATE CONCEPTS OF OPERATION.

The Under Secretary for Science and Technology of the Department of Homeland Security (in this Act referred to as the "Under Secretary") shall ensure that any Federal Government interagency or intra-agency agreement entered into by the Under Secretary to develop and transition new technology explicitly characterizes the requirements, expected use, and concept of operations for that technology, including—

(1) the manpower needed to effectively operate the technology;
(2) the expected training requirements; and
(3) the expected operations and maintenance costs.

SEC. 3. REAUTHORIZATION OF HOMELAND SECURITY SCIENCE AND TECHNOLOGY ADVISORY COMMITTEE.

Section 311(j) of the Homeland Security Act of 2002 (6 U.S.C. 191(j)) is amended by striking "on December 31, 2008" and inserting "on December 31, 2012".

SEC. 4. REPORT ON BASIC RESEARCH NEEDS FOR BORDER/MARITIME SECURITY.

Not later than 3 months after the date of enactment of this Act, the Under Secretary shall enter into an arrangement with the National Research Council for a one-year assessment of the basic science research needs in the border and maritime security domain. The assessment shall include consideration of—

(1) detection, tracking, and identification technologies for cargo and people;
(2) personal protective equipment;
(3) anticounterfeit technologies;
(4) nonradiological advanced screening technologies at ports of entry; and
(5) technologies for real time tactical scene awareness.

SEC. 5. INCORPORATING UNMANNED AERIAL VEHICLES INTO BORDER/MARITIME AIRSPACE.

(a) RESEARCH AND DEVELOPMENT.—The Secretary of Homeland Security and the Director of the Joint Planning and Development Office shall research and develop technologies to permit routine operation of unmanned aerial vehicles, including autonomously piloted drones, within the national airspace for border and maritime security missions without any degradation of existing levels of safety for all national airspace system users.

(b) PILOT PROJECTS.—The Secretary shall coordinate with the Administrator of the Federal Aviation Administration and the Director of the Joint Planning and Development Office to enter into pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe integration of unmanned aircraft systems into the national airspace system as part of research activities of the Joint Planning and Development Office.

SEC. 6. ESTABLISHING A RESEARCH PROGRAM IN TUNNEL DETECTION.

(a) RESEARCH AND DEVELOPMENT.—The Under Secretary shall research and develop technologies to permit detection of near surface voids, such as tunnels, with an emphasis on technologies with real time capability.

(b) COORDINATION.—The Secretary of Homeland Security shall coordinate with other appropriate Federal agencies, including the Department of Defense and the United States Geological Survey, and ensure the integration of activities under subsection (a) with relevant efforts of such other agencies and the Department of Homeland Security's Centers of Excellence Program.

SEC. 7. RESEARCH IN ANTICOUNTERFEIT TECHNOLOGIES.

(a) ESTABLISHMENT OF PROGRAM.—The Under Secretary and the Director of the National Institute of Standards and Technology shall establish a joint research and development program on anticounterfeit technologies and standards. The program may include assessment or development of counterfeit-resistant documentation, counterfeit-resistant or tamper-resistant devices, document validation technologies, and document identification standards.

(b) COORDINATION.—In carrying out the program in subsection (a), the Under Secretary shall coordinate with other Federal agencies engaged in similar activities, including Immigration and Customs Enforcement, the Department of State, the De-

partment of Defense, the United States Coast Guard, and the Department of Justice.

(c) REPORT TO CONGRESS.—Not later than 12 months after the date of enactment of this Act, the Under Secretary and the Director of the National Institute of Standards and Technology shall provide to the Committee on Homeland Security and the Committee on Science and Technology of the House of Representatives, and the Committee on Homeland Security and Government Affairs of the Senate, a report detailing the actions taken by the Under Secretary and the Director under this section.

SEC. 8. STUDY ON GLOBAL POSITIONING SYSTEM TECHNOLOGIES.

(a) IN GENERAL.—The Under Secretary shall conduct a study of the need for next generation global positioning system technology as it relates to border security, including—

(1) conducting an analysis of the frequency of unintended border crossings and the capability of global positioning system technologies to address unintended border crossings by government personnel;

(2) undertaking an examination of the potential end user requirements for global positioning system technologies, including cost limitations, accessibility, and reliability; and

(3) developing recommendations for potential near-term and long-term research, development, testing, and evaluation of border security-focused global positioning technologies.

(b) CONSULTATION.—In conducting the study under subsection (a), the Under Secretary shall consult with U.S. Customs and Border Protection, the National Institute of Standards and Technology, the United States Geological Survey, and appropriate Federal, State, and local law enforcement officials.

(c) REPORT.—Not later than 1 year after the date of enactment of this Act, the Under Secretary shall transmit to Congress a report on the findings of the study conducted under this section.

SEC. 9. STUDY OF MOBILE BIOMETRIC TECHNOLOGIES AT THE BORDER.

(a) IN GENERAL.—The Under Secretary, in coordination with the Commissioner of United States Customs and Border Protection, shall establish a research program on the use of mobile biometric technology at the Nation's borders between the ports of entry, including—

(1) conducting an analysis of existing mobile biometric technologies and the extent to which they can be deployed in Border Patrol agents' vehicles and used at the border, in terms of operability, reliability, cost, and overall benefit to border operations;

(2) undertaking an examination of the potential end-user requirements of mobile biometric technology by the Border Patrol and other relevant end-users;

(3) developing recommendations for addressing capability gaps in mobile biometric technologies; and

(4) examining the feasibility of implementing a pilot program for use of mobile biometric technologies at the border.

(b) CONSULTATION.—In conducting the research program under subsection (a), the Under Secretary shall consult the National Institute of Standards and Technology, other appropriate Federal agencies, and appropriate Federal, State, and local law enforcement officials.

(c) COORDINATION.—The Secretary shall ensure that the research program is coordinated with other biometric identification programs within the Department of Homeland Security.

(d) REPORT.—Not later than 6 months after the date of enactment of this Act, the Under Secretary shall transmit to Congress a report on the findings of the research program conducted under this section.

II. PURPOSE

The goal of H.R. 3916 is to improve long term planning for research and development at the Department of Homeland Security (DHS), especially in the area of border and maritime security technology. The bill authorizes specific border security technology programs, and instructs the Science and Technology Directorate to improve processes for setting research priorities and serving the needs of technology end users.

III. Background and Need for Legislation

The United States has nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and 2.5 million rail cars pass per year. In addition, over 300 United States ports receive around nine million cargo containers each year. The United States Customs and Border Protection (CBP) processes approximately 1.18 million people entering the United States through established ports of entry every day. CBP is also responsible for monitoring areas between legal entry points along the Northern and Southern borders and for intercepting individuals attempting to smuggle contraband or cross the border illegally. In fiscal year 2005, United States Border Patrol agents apprehended 1.19 million people attempting to enter the country illegally. In addition, over 26,000 kilograms of marijuana were seized in Northern border states in 2005 and over 30,000 kilograms of cocaine, heroin, and methamphetamine were seized within 150 miles of the US-Mexico border in 2006. However, the Government Accountability Office (GAO) estimates that one in 10 serious drug and weapon violators and undocumented immigrants pass through airports and land borders undetected.

The Department of Homeland Security (DHS) invests nearly $1.5 billion annually in research and development (R&D) projects at its Science and Technology Directorate (DHS S&T) and Domestic Nuclear Detection Office (DNDO) of which approximately $25 million is directed to border security-specific projects. However, many promising technologies are still not feasible for full implementation along the border because of numerous obstacles including high cost, lack of robustness in harsh conditions, lack of personnel trained to properly use high-tech equipment, and technical problems. DHS S&T has primary responsibility for bringing new technologies to full readiness, with support from other agencies such as the National Institute of Standards and Technology (NIST).

Additionally, many capability gaps identified by end users, including situational awareness and officer safety, require further basic and applied research to meet existing or anticipated challenges. DHS S&T has several mechanisms to receive advice on R&D priorities, including Integrated Product Teams (IPTs) which bring together stakeholders from other components of DHS (such as CBP) in a regular, formal process to determine short term technology needs. Advice on longer term research priorities comes from a number of sources, including the Homeland Security Science and Technology Advisory Committee (HSSTAC), the Homeland Security Institute (HSI), and the National Academies (NAS).

The Border and Maritime Security Division of DHS S&T has ongoing research projects focusing on advanced sensing capabilities, decision-making software tools, non-intrusive search capabilities, and other priorities. Additionally, the United States Coast Guard (USCG) and National Institute of Standards and Technology (NIST) carry out some border and maritime security technology-related R&D projects. USCG R&D includes officer protection, boarding, and suspect apprehension tools. NIST has been conducting research on biometric technologies, including facial recognition technologies and fingerprint analysis, as well as technical tests of the radio frequency identification (RFID) technology being incorporated

into new electronic passports being issued by the State Department to prevent document counterfeiting.

However, border security research accounts for only 3.7 percent of DHS S&T's research budget in fiscal year 2008 (FY 2008) and 4.0 percent in the President's FY 2009 request. Further investment has the potential to significantly improve border security through effective, efficient, and evolving defenses against a wide range of threats including undocumented border crossings, human trafficking, drug smuggling and terrorism.

IV. Hearing Summary

On November 15, 2007 the Committee on Science and Technology held a hearing on "Next Generation Border and Maritime Security Technologies" to evaluate and discuss H.R. 3916, introduced by Ranking Member Ralph Hall, which supports the development of technologies to assist border security agents. The goal of H.R. 3916 is to improve long term planning for research and development at the Department of Homeland Security's Science and Technology Directorate (DHS S&T), especially in the area of border and maritime security technology.

Witnesses for the hearing were: Mr. Robert Hooks, Director of Transition at the Department of Homeland Security Science and Technology Directorate (DHS S&T), Mr. Ervin Kapos, Director of Operations Analysis for DHS S&T and executive director of the Homeland Security Science and Technology Advisory Committee (HSSTAC), Dr. Brian Jackson, Associate Physical Scientist for the Science and Technology Policy Institute at the RAND Corporation, and Mr. Jeff Self, Division Chief of the U.S. Border Patrol.

Mr. Hooks described the current programs in the Border and Maritime Division of DHS S&T and the process by which DHS S&T makes research planning decisions. Mr. Self stated that "to secure each unique mile of the border requires a balance of technology, infrastructure, and personnel that maximizes the government's return on its investment, and is tailored to each specific environment." Dr. Jackson argued that, "we must explicitly consider the risks that adversaries" adaptive behavior poses to the performance of our border security technologies when we craft our research and development plans."

Mr. Kapos discussed how important the Homeland Security's Science and Technology Advisory Committee (HSSTAC) is to the future of border and maritime security technologies. Mr. Kapos stated that HSSTAC provides, "valuable, independent, scientific, and technical planning advice" to DHS S&T and therefore should be authorized through 2012.

V. Committee Actions

On October 22, 2007, Representative Ralph Hall, Ranking Member of the Committee on Science and Technology, introduced H.R. 3916, to provide for the next generation of border and maritime security technologies.

The Subcommittee on Technology and Innovation heard testimony in the 110th Congress relevant to the programs authorized in H.R. 3916 at a hearing held November 15, 2007. During that hearing, the Subcommittee heard testimony from Mr. Robert

Hooks, the Director of Transition for the Department of Homeland Security's Science and Technology Directorate, Mr. Jeff Self, a Division Chief of the United States Border Patrol, and homeland security research and development experts Mr. Ervin Kapos and Dr. Brian Jackson.

The Subcommittee on Technology and Innovation met to consider H.R. 3916 on February 7, 2008 and considered the following amendments to the bill:

1. Mr. Mitchell offered an amendment to add a section requiring the Under Secretary for Science and Technology at the Department of Homeland Security to consult with the National Institute of Standards and Technology, United States Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings, and capability gaps of global positioning system technologies to address such crossings, and to make recommendations for research and development needed to address those capability gaps. The amendment was agreed to by voice vote.

Mr. Hall made a motion that the Subcommittee favorably report the bill, H.R. 3916, as amended, to the full Committee. The motion was agreed to by a voice vote.

The House Committee on Science and Technology met on February 27, 2008 to consider H.R. 3916 as reported from the Subcommittee on Technology and Innovation. The following amendments to H.R. 3916 were offered:

1. Mr. McNerney offered an amendment to include technologies to provide real-time tactical scene awareness technologies in the review provided for under Section 4. The amendment was agreed to by voice vote.

2. Mr. McCaul offered an amendment to add Section 9 requiring the Under Secretary for Science and Technology to study the potential use of mobile-biometric technologies by agents of the United States Border Patrol. The amendment was agreed to by voice vote.

3. Ranking Member Hall offered an amendment in the nature of a substitute that made technical corrections to the bill. The amendment was agreed to by voice vote. Mr. Hall made a motion that the Committee favorably report the bill, H.R. 3916, as amended, to the House of Representatives. The motion was agreed to by a voice vote.

VI. Summary of Major Provisions of the Bill

H.R. 3916 strengthens control of our nation's borders through research and development of effective, efficient, and evolving defenses. The bill focuses on key long-term technologies that could substantially improve the security of our nation's borders, such as: Unmanned Aerial Vehicles (UAVs), tunnel detection, anti-counterfeit technologies, Global Positioning System (GPS) technologies, and mobile biometric technologies.

VII. Section by Section Analysis of the Bill (by Section)

Section 1. Short title

The short title of the bill is the "Border Security Technology Innovation Act of 2008."

Section 2. Ensuring research activities of the Department of Homeland Security include appropriate concepts of operation

Section 2 requires that the Science and Technology Directorate clearly define the operational requirements of technologies being developed for Customs and Border Protection (CBP) and other end-users. The language requires DHS S&T to include operational requirements as part of any agreement to undertake product development activities. This section ensures that both DHS S&T and the DHS customer component that will eventually own and operate the equipment developed have agreed to baseline requirements for operational as well as technical objectives.

Section 3. Reauthorization of Homeland Security Science and Technology Advisory Committee

Section 3 extends the activities of the Homeland Security Science and Technology Advisory Committee, which was last extended through December 31, 2008 in the SAFE Ports Act of 2006 (P.L. 109–347). This section would further extend the Advisory Committee through December 31, 2012 to allow the Secretary ongoing advice from some of the Nation's best scientists, engineers, and security specialists.

Section 4. Report on basic research needs for border/maritime security

Section 4 calls for a National Research Council (NRC) study to provide a roadmap for research activities and long term investments in the border/maritime division to enable development of next generation technologies. The document produced by the NRC would give program managers at DHS a longer-term perspective than is provided through the one to three year Integrated Product Team (IPT) management process.

Section 5. Incorporating unmanned aerial vehicles into the border/maritime airspace

Section 5 directs the Secretary of DHS to take an active role in safely incorporating unmanned aerial vehicles (UAVs) into the national airspace. Currently, operation of UAVs in the national airspace requires considerable advance planning and approval from the Federal Aviation Administration. This section requires DHS to seek the ability to routinely and safely operate UAVs for border and maritime security missions. Before this technology can be utilized regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the FAA and the Joint Planning and Development Office (JPDO) to collect necessary safety data. To this end, the section also authorizes DHS to take part in pilot projects to obtain necessary data to make an informed decision about how UAVs can be safely included in the airspace.

Section 6. Establishing a research program in tunnel detection

Section 6 requires DHS S&T to create a formal research program in the area of tunnel detection, and to coordinate with similar Department of Defense activities. In addition, the section calls for priority to be given to technologies that would allow real-time detection of tunnels and immediate action by CBP.

Section 7. Research in anti-counterfeit technologies

Section 7 requires the Under Secretary for DHS S&T and Director of NIST to begin a joint R&D project of anti-counterfeit technologies and standards. Furthermore, the Under Secretary is charged with coordinating research activities with other federal agencies engaged in related research. Finally, the section requires a report to Congress on the research programs undertaken under this section one year after enactment.

Section 8. Study on global positioning system technologies

Section 8 requires the Under Secretary for DHS S&T to consult with NIST, the United States Geological Survey (USGS), and CBP to carry out an analysis of the frequency of unintended border crossings and on capability gaps of global positioning system (GPS) technologies to address such crossings and to make recommendations for research and development needed to improve those capabilities. This section further requires the Under Secretary to work to determine end user requirements for GPS technologies such as cost limitations and operational requirements. Finally, this section requires the Under Secretary to report on the results of the study to Congress one year after enactment.

Section 9. Study of mobile biometric technologies at the border

Section 9 instructs the Under Secretary for DHS S&T, in coordination with the Commissioner of CBP, to establish a research program on the potential use of mobile biometric technology at the Nation's borders between ports of entry and report the results of this program to Congress within six months of enactment of this Act.

VIII. Committee Views

Border security technologies

The Committee finds that research and development (R&D) are critical to the Nation's strategy to defend and secure our borders. Technologies that are designed to meet the needs of end users can substantially increase the effectiveness of Federal, State, and local border security officials. The Committee believes that research and development efforts should focus on technologies and products that will effectively reduce border security threats, efficiently use financial and human resources in development and implementation, and support a rapidly evolving defense to respond to changes in threats in the border and maritime domain.

Section 2. Ensuring research activities of the Department of Homeland Security include appropriate concepts of operation

The Committee believes that the requirements in this section are appropriately included in technology transfer agreements (TTA) between DHS S&T and other components of DHS.

Section 4. Report on basic research needs for border/maritime security

One of the primary gaps in DHS S&T's planning is the lack of a long term research strategy. DHS S&T relies on the identification of immediate technological needs to inform decision-making on basic research programs, but has failed to set specific long term

strategic priorities to guide research and development decisions. This section requests that the National Research Council of the National Academies of Science review the activities of the Border and Maritime division of DHS S&T. The document produced by the NRC would give program managers at DHS a longer-term perspective than is provided through the annual Integrated Product Team process that currently only solicits needs for the immediate one to three year period. The Committee believes a long-range strategy will help DHS S&T prepare for future technological needs of the Department and that similar reports should be commissioned for the other major DHS S&T divisions, such as Explosives or Command, Control, and Interoperability.

Section 6. Establishing a research program in tunnel detection

Various advanced fencing and surveillance technologies are currently being tested as part of the Secure Border Initiative (SBI). However, the Committee is concerned about the potential for smugglers to tunnel past current border security systems. This section asserts Congressional interest in a long-term tunnel detection program.

Section 7. Research in anticounterfeit technologies

Counterfeit documents are a major problem at ports of entry, with individuals attempting to enter the United States using fraudulent passports, identification, or birth certificates. Customs and Border Protection (CBP) intercepts over 200 fake documents daily at the Nation's borders, but technology for creating counterfeit documents is growing more sophisticated and fraud is increasingly difficult to detect. The Federal government has begun to support research activities to develop technology for verifying documents, but current activity in this area is broadly distributed among the Departments of Defense, Treasury, State, and Justice, and Immigrations and Customs Enforcement (ICE). DHS S&T, however, has not been consistently involved despite the clear impact on agencies such at ICE and CBP.

Section 8. Study on global positioning system technologies

Global positioning systems are a key resource for law enforcement and first responders operating in remote areas near the border. These systems provide critical information on terrain and national borders, which can be unmapped or unmarked in these locations. While modern global positioning systems provide increasingly accurate location information, there are capabilities required by users in these unique locations that remain unmet. The Committee expects DHS S&T to work with the National Institute of Standards and Technology (NIST) and the U.S. Geological Survey, agencies with specific expertise in GPS technologies and mapping, to examine end user needs and recommend an R&D strategy to ensure that those needs are met.

Section 9. Study of mobile biometric technologies at the border

This provision calls upon DHS S&T to consider how mobile biometric technology can be implemented at the border between the ports of entry. Currently, biometric scanners and access to databases, such as for fingerprints, are available only at the ports of

entry and at the Border Patrol field stations; no such capability exists in the field in agents' vehicles. The U.S. Coast Guard has undertaken a pilot fingerprint collection program employing mobile biometric technologies at sea; that program has thus far resulted in 114 prosecutions and a 53 percent reduction in illegal immigrant flow. The U.S. Border Patrol could also greatly benefit from such a capability. Making this portable technology available in the field will allow agents to identify unauthorized border crossers with criminal backgrounds on site and in real time. Initiation of biometric checks in the field while waiting for transport vehicles to arrive will also increase the general efficiency of border crosser processing.

IX. Cost Estimate

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science and Technology prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 3916 does not contain new budget authority, credit authority, or changes in revenues or tax expenditures. H.R. 3916 does authorize additional discretionary spending of $7 million, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. Congressional Budget Office Cost Estimate

H.R. 3916—Border Security Technology Innovation Act of 2008

Summary: H.R. 3916 would extend the authorization for the Homeland Security Science and Technology Advisory Committee from December 31, 2008, through December 31, 2012. The bill also would direct the Department of Homeland Security (DHS) to continue its current efforts to develop technologies to enhance the security of U.S. borders and to prepare several studies relating to such efforts.

Assuming appropriation of the necessary amounts, CBO estimates that implementing H.R. 3916 would cost $7 million over the 2009–2012 period. Enacting the bill would not affect direct spending or receipts.

H.R. 3916 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 3916 is shown in the following table. The cost of this legislation falls within budget function 750 (administration of justice).

	By fiscal year in millions of dollars—				
	2009	2010	2011	2012	2013
CHANGES IN SPENDING SUBJECT TO APPROPRIATION					
Estimated Authorization Level	4	1	1	1	0
Estimated Outlays	4	1	1	1	0

Basis of estimate: For this estimate, CBO assumes that the necessary amounts will be appropriated for each fiscal year and that outlays will follow the historical spending rates for those activities.

Under current law, the authorization for the Homeland Security Science and Technology Advisory Committee will expire after December 31, 2008. H.R. 3916 would extend that authorization through December 31, 2012. The committee was established in 2002 and assists DHS in identifying research projects to improve national security. Based on the committee's spending in recent years, CBO estimates that this provision would cost about $1 million annually over the 2009–2012 period, assuming the availability of appropriated funds.

H.R. 3916 also would direct DHS and the National Research Council (NRC) to carry out field studies and prepare reports on various technological issues relating to border and maritime security. Based on information from DHS and NRC, we estimate that those activities would cost about $3 million in fiscal year 2009.

In addition, H.R. 3916 would direct DHS to continue its current research programs relating to enhancing the use of unmanned aerial vehicles along U.S. borders, detecting tunnels near borders, and improving the security of identification documents. The Homeland Security Act of 2002 (Public Law 107–296) authorized the appropriation of the necessary sums for each fiscal year for DHS to carry out research to promote homeland security, and the Congress appropriated about $800 million for fiscal year 2008 for such research and development activities (excluding funds for the Domestic Nuclear Detection Office). H.R. 3916 would direct DHS to focus on certain areas of research, but would not expand the scope of the department's authorized research programs.

Intergovernmental and private-sector impact: H.R. 3916 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

Estimate prepared by: Federal Costs: Mark Grabowicz; Impact on State, Local, and Tribal Governments: Melissa Merrell; Impact on the Private Sector: Jacob Kuipers.

Estimate approved by: Peter H. Fontaine, Assistant Director for Budget Analysis.

XI. Compliance With Public Law 104–4

H.R. 3916 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The oversight findings and recommendations of the Committee on Science and Technology are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

Pursuant to clause (3)(c) of House rule XIII, the goals of H.R. 3916 are to improve the effectiveness of technologies used to secure National land and maritime borders through identification of high-priority needs and to require that the Department of Homeland Security's Science and Technology Directorate explicitly characterizes the concepts of operation of technologies being developed by the De-

partment to ensure their appropriateness for immediate adoption by appropriate Federal, State, and local officials.

XIV. Constitutional Authority Statement

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 3916.

XV. Federal Advisory Committee Statement

H.R. 3916 does not establish or authorize a new advisory committee; however, it does authorize the extension of the Homeland Security Science and Technology Advisory Committee until December 31, 2012. This bill does not alter the application of the Federal Advisory Committee Act to such committee.

XVI. Congressional Accountability Act

The Committee finds that H.R. 3916 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVII. Earmark Identification

H.R. 3916 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9(d), 9(e), or 9(f) of rule XXI.

XVIII. Statement on Preemption of State, Local, or Tribal Law

This bill is not intended to preempt any state, local, or tribal law.

XIX. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

SECTION 311 OF THE HOMELAND SECURITY ACT OF 2002

SEC. 311. HOMELAND SECURITY SCIENCE AND TECHNOLOGY ADVISORY COMMITTEE.

(a) * * *

* * * * * * *

(j) Termination.—The Department of Homeland Security Science and Technology Advisory Committee shall terminate [on December 31, 2008] *on December 31, 2012*.

* * * * * * *

XX. Committee Recommendations

On February 27, 2008, the Committee on Science and Technology favorably reported the "Border Security Technology Innovation Act of 2008" by a voice vote, and recommended its passage by the House of Representatives.

XXI. PROCEEDINGS OF THE MARKUP BY THE SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION ON H.R. 3916, TO PROVIDE FOR THE NEXT GENERATION OF BORDER AND MARITIME SECURITY TECHNOLOGIES

THURSDAY, FEBRUARY 7, 2008

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION,
COMMITTEE ON SCIENCE,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:15 a.m., in Room 2318 of the Rayburn House Office Building, Hon. David Wu [Chairman of the Subcommittee] presiding.

Chairman WU. Good morning. The Subcommittee on Technology and Innovation will now come to order. Pursuant to notice, the Subcommittee on Technology and Innovation meets to consider the following measures: H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007.* It appears to me that we are no longer in 2007. Is that going to be an administrative amendment? Terrific—as read, 2007; H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* and H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

We will now proceed with the markup, beginning with opening statements, and the Chairman recognizes himself.

First of all, I would like to welcome everyone to the first Science and Technology Committee markup of 2008. We had a very productive first session in 2007, and I am looking forward to working with my colleagues to pass more good legislation this year. Today we will be considering three bills, each of which deals with protecting and enhancing our nation's critical infrastructure our environment. H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, the gentleman from Arizona, and with Subcommittee Ranking Member Gingrey as an original co-sponsor, reauthorizes the United States Fire Administration. USFA is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection services, and fire-suppression and prevention research and technology. I am pleased we are considering H.R. 4847 today, a bill worked on hard by both Republicans and Democrats, and will authorize USFA to continue its role as a leader and resource for the Nation's fire serv-

ice, and help enable firefighters to meet the dynamic and growing mission of the fire service in the 21st century.

We will also be considering H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.* As you may remember, this past May, we heard from the Environmental Protection Agency, the U.S. Department of Transportation, as well as local governments and industry. They agreed that we have a great opportunity in this country to manage and protect our water resources through the use of innovative technologies and also serve as transportation infrastructure and as means for managing and filtering storm water runoff.

The EPA witness, Assistant Administrator for Water, Ben Grumbles, is already making a great effort to promote the expanded use of such infrastructure around the U.S., but he and the other witnesses found a number of barriers, which this bill works to overcome through research and education programs at the U.S. Department of Transportation.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border security officers have an incredibly difficult job. It is part law enforcement, part first responder, part diplomat, and part detective. It is clear that these agents need the help of new technology to do their jobs better and to make our borders more secure. Technology can act as additional eyes and ears for Border Patrol agents.

This bill has special importance for me, as these technologies help reinforce security efforts at ports in addition to land borders. The Port of Portland processed more than fourteen million tons of cargo in 2007, and our international airport also screened in a number of people coming in from overseas. I know that the hard-working officers managing security at the Port of Portland could use the assistance of these innovative technologies.

These three bills share an important common theme: the use of research and technology to solve some of our nation's most pressing problems. I am eager to join my colleagues on both sides of the aisle in advancing these important objectives.

[The prepared statement of Chairman Wu follows:]

PREPARED STATEMENT OF CHAIRMAN DAVID WU

First of all, I'd like to welcome everyone to the first Science and Technology Committee markup of 2008. We had a very productive first session, and I'm looking forward to working with my colleagues to pass good legislation this year. Today we will be considering three bills, each of which deals with protecting and enhancing our nation's critical infrastructure and environment.

H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, and with Subcommittee Ranking Member Gingrey as an original co-sponsor, reauthorizes the U.S. Fire Administration. The U.S. Fire Administration is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection services, and fire suppression and prevention research and technology.

I am pleased we are considering H.R. 4847 today, a bipartisan piece of legislation that will authorize USFA to continue its role as a leader and resource for the Nation's firefighters, and help firefighters save lives and meet the dynamic mission of the fire service in the 21st century.

We will also be considering H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.* This past May this subcommittee held a hearing that included witnesses from the Environmental Protection Agency, the

U.S. Department of Transportation, and representatives of local government and industry. The witnesses agreed that we have a great opportunity to manage and protect our nation's water resources by using of innovative techniques and technologies that simultaneously serve as transportation infrastructure and as means for managing and filtering storm water.

The EPA witness, Assistant Administrator for Water Ben Grumbles, is already making great efforts to promote the expanded use of green infrastructure around the U.S. But he and the other witnesses described a number of barriers, which this bill works to overcome through research and education efforts at the U.S. Department of Transportation.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border security officers have an incredibly difficult job. It is part law enforcement, part first responder, part diplomat, and part detective. It is clear that these agents need the help of new technology to do their jobs better and to make our borders more secure. Technology can act as additional eyes and ears for Border Patrol agents.

This bill has special importance for me, as these technologies help reinforce security efforts at ports in addition to land borders. The Port of Portland processed more than fourteen million tons of cargo in 2007, and I know that the hardworking officers managing security there could use the assistance these innovative technologies would provide.

These three bills share an important common theme—the use of research and technology to solve some of our nation's most pressing problems. I'm eager to join my colleagues on both sides of the aisle in advancing this important legislation.

Chairman WU. And now, I recognize the Ranking Member of the Subcommittee, Dr. Gingrey, the gentleman from Georgia, to present his opening remarks.

Mr. GINGREY. Chairman Wu, I thank you for holding this subcommittee markup on the three pieces of legislation that address a wide range of issues under the jurisdiction of the Technology and Innovation Subcommittee. We have the privilege today to be conducting the Science Committee's first official business of the year, and the 2nd session of 110th Congress.

Today, we consider H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and finally, H.R. 3916, a border-security technology bill.

As we consider each piece of legislation, we will reaffirm that the Technology and Innovation Subcommittee plays an important role in a number of issues urgently facing our country. Today, we will be examining issues facing first responders in local communities on a daily basis, the impact that our transportation infrastructure has on the contamination of our water supplies, and developing the next-generation technologies for the Federal Government to keep our borders secure.

Mr. Chairman, I want to also thank you for the way the Subcommittee has conducted the process by which each piece of legislation is being considered today. Each of the bills being marked up today has gone through a—what we all refer to and know as regular order. The Subcommittee held an individual hearing on each bill, last year in 2007, and that provided Members with the opportunity to ask questions of these experts, in order for us to be better informed as we crafted each bill to, hopefully, perfection or near-perfection.

Furthermore, Mr. Chairman, I want to thank you. I want to thank you for allowing us to work in a bipartisan manner on each piece of legislation. As these three bills demonstrate, we can accomplish more for the American people when Republicans and Demo-

crats work together. Mr. Chairman, I applaud you and your staff for working with me and my Republican staff on the Committee to balance all perspectives to make these bills sound policy.

So Mr. Chairman, I hope this markup is an indication of how we can expect the Technology and Innovation Subcommittee to continue to operate throughout the year 2008. I look forward to working with you on these issues that we will discuss and debate today, as well as other matters that will come before the Subcommittee for the rest of this year.

And with that, Mr. Chairman, I yield back the balance of my time.

[The prepared statement of Mr. Gingrey follows:]

PREPARED STATEMENT OF REPRESENTATIVE PHIL GINGREY

Chairman Wu, I want to thank you for holding this subcommittee mark-up on three pieces of legislation that address a wide range of issues under the jurisdiction of the Technology and Innovation Subcommittee. We have the privilege today to be conducting the Science Committee's first official business of this year and the 2nd Session of the 110th Congress.

Today, we consider H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and H.R. 3916, a border security technology bill.

As we consider each piece of legislation, we will reaffirm that the Technology and Innovation Subcommittee plays an important role in a number of issues currently facing our country. Today, we will be examining issues facing first responders in local communities on a daily basis; the impact that our transportation infrastructure has on the contamination of our water supplies; and developing next generation technologies for the Federal Government to keep our borders secure.

Mr. Chairman, I want to also thank you for the way the Subcommittee has conducted the process by which each piece of legislation is being considered today. Each of the bills being marked up today has gone through regular order. The Subcommittee held an individual hearing on each bill in 2007, providing Members the opportunity to ask questions of the experts in order for us to be better informed as we crafted each bill. Furthermore Mr. Chairman, I also want to thank you for allowing us to work in a bipartisan manner on each piece of legislation. As these three bills demonstrate, we can accomplish more for the American people when Republicans and Democrats work together. Mr. Chairman, I applaud you and your staff for working with me and the Republican staff on the Committee to balance all perspectives to make these bills into sound policy. Mr. Chairman, I hope that this markup is an indication of how we can expect the Technology and Innovation Subcommittee to continue to operate throughout 2008. I look forward to working with you on these issues that we will discuss and debate today, as well as other matters that will come before the Subcommittee for the rest of the year.

With that Mr. Chairman, I yield back the balance of my time.

Chairman WU. Thank you very much, Dr. Gingrey, and without objection, Members may place statements in the record at this point.

We will now move to consider H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

I yield Mr. Hall five minutes to describe his bill.

Mr. HALL. Chairman Wu, I thank you for holding this markup and for your co-sponsorship of H.R. 3916. It has been a pleasure working with you and with Chairman Gordon and the other Members in the Committee to move this bill forward.

I would also like to thank Mr. McCaul for the substantial contribution he made to the Committee. He is in another hearing at this time, and I thought he would be here by now, but last week, in his State of the Union Address, President Bush emphasized the great importance of securing our nation's borders. I think, and of course we all believe, this is a crucial issue for this committee to

address. I am very pleased to see H.R. 3916 making steady progress.

Border security is a concern of all Members of Congress. We have nearly 7,500 miles of land bordered with Canada and Mexico, over which half a billion people, and over two million rail cars pass each year. In addition, we have over 300 ports that see over nine million cargo containers each year. We have a number of reasons for wanting strict control over this traffic. For instance, according to Department of Justice statistics, over 30,000 kilograms of cocaine, heroin, and meth were received within 150 miles of the U.S.-Mexico border in the year 2006. I know many Members of this committee have worked tirelessly to end the scourge of meth in our nation, yet success at restricting access to meth ingredients here in the States has led drug dealers to import more across our borders. Stopping the flow of narcotics across our borders remains a key to our effort to curb illegal drug use.

The threat of terrorism also compels us to reexamine our borders, whether we are talking about foreign groups trying to infiltrate our country, or home-grown terrorists seeking weapons and supplies, our borders remain a critical element of our defense.

Finally, in fiscal year 2005, U.S. border patrol agents apprehended 1.19 million people attempting to enter the country illegally. While I understand the concerns many Members have regarding comprehensive immigration reform, we should not allow that issue to stymie progress detouring terrorists, drug smugglers, and human traffickers.

H.R. 3916 is a positive step toward reducing our vulnerabilities at the borders. Section 1 requires S&T to include the cost and operational objective in any near-term application development. This section is meant to ensure the baseline requirement for operational as well as technical objectives. Section 2 and 3 set up instruments to provide DHS with expert guidance from preeminent scientists, first responders and emergency mangers on an ongoing basis.

Section 4 directs the Secretary of DHS to take an active role in safely incorporating unmanned aerial vehicles into the national airspace. Before this promising technology can be utilized regularly, the safety and effectiveness of sense-and-avoid technologies has to be demonstrated. DHS has an excellent opportunity to work collaboratively with the FAA to collect this necessary data.

The tunnel detection program described in Section 5 aims at a persistent smuggling problem. Organized crime has the time and resources to avoid most border surveillance by simply digging right past them. However, detecting tunnels is remarkably difficult over broad expanses, and protecting them is difficult over these expanses of land and water. Finding solutions will require added technology. This section creates a sustained program at DHS S&T to meet this need.

And finally, Section 6 creates a sustained program to defeat counterfeiting. DHS S&T, however, does not have a devoted office or program in this area, and despite the clear impact on agencies such as ICE and CBB, the technologies that this program will focus on will ensure that travel, import, and identification documents are safe and secure.

I believe this committee is ideally positioned to strengthen control of our nation's borders through legislation supporting effective, efficient, and evolving defenses. H.R. 3916 begins this effort. The sections in this bill reflect a single, underlying theme that science and technology directorate at DHS needs to establish long-term goals and objectives for border security and broaden science and technology communities involvement. I look forward to bringing this bill to the Full Committee later this month, and I thank you for your support. I yield back my time, sir.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Chairman Wu, thank you for holding this markup and for your co-sponsorship of H.R. 3916. It has been a pleasure working with you, Chairman Gordon, and the other Members of the Committee to move this bill forward. I'd also like to thank Mr. McCaul for the substantial contribution he made to the bill.

Last week, in his State of the Union address, President Bush emphasized the great importance of securing our nation's borders. I believe this is a crucial issue for this committee to address and am very pleased to see H.R. 3916 making steady progress.

Border security is a concern of all Members of Congress. We have nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and over two million rail cars pass per year. In addition we have over 300 ports that see over nine million cargo containers each year.

We have a number of reasons for wanting strict control over this traffic. For instance, according to Department of Justice statistics, over 30,000 kilograms of cocaine, heroine, and meth were seized within 150 miles of the U.S./Mexico border in 2006. I know many Members of this committee have worked tirelessly to end the scourge of meth in our nation. Yet, success at restricting access to meth ingredients here in the States has led drug dealers to import more across our borders. Stopping the flow of narcotics across our border remains key to our efforts to curb illegal drug use.

The threat of terrorism also compels us to re-examine our borders. Whether we're talking about foreign groups trying to infiltrate our country or home-grown terrorists seeking weapons and supplies, our borders remain a critical element of our defenses.

Finally, in fiscal year 2005, U.S. Border Patrol agents apprehended 1.19 million people attempting to enter the country illegally. While I understand the concerns many Members have regarding comprehensive immigration reform, we should not allow that issue to stymie progress deterring terrorists, drug smugglers, and human traffickers.

H.R. 3916 is a positive step towards reducing our vulnerabilities at the border. Section 1 requires S&T to include cost and operational objectives in any near-term application development. This section is meant to ensure there are baseline requirements for operational as well as technical objectives. Sections 2 and 3 set up instruments to provide DHS with expert guidance from preeminent scientists, first-responders, and emergency managers on an ongoing basis.

Section 4 directs the Secretary of DHS to take an active role in safely incorporating unmanned aerial vehicles into the national airspace. Before this promising technology can be utilized regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the FAA to collect this necessary data.

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Finally Section 6 creates a sustained program to defeat counterfeiting. DHS S&T, however, does not have a devoted office or program in this area despite the clear impact on agencies such at ICE and CBP. The technologies that this program will focus on will ensure that travel, import, and identification documents are safe and secure.

I believe this committee is ideally positioned to strengthen control of our nation's borders through legislation supporting effective, efficient, and evolving defenses.

H.R. 3916 begins this effort. The sections in this bill reflect a single underlying theme: the Science and Technology Directorate at DHS needs to establish long-term goals and objectives for border security and broaden science and technology community involvement.

I look forward to bringing this bill to the Full Committee later this month and thank you for your support.

Chairman WU. Thank you very much, Mr. Hall, and as mentioned earlier, I think this is an important bill. I think it is a good bill, and I urge my colleagues to support it.

Does anyone else wish to be recognized?

I ask unanimous consent that the bill be considered as read and open to amendment at any point and that Members proceed with the amendments in the order of the roster. Without objection, so ordered.

The first amendment on the roster is an amendment offered by the gentleman from Arizona, Mr. Mitchell. Are you ready to proceed with your amendment?

Mr. MITCHELL. Thank you, Mr. Chairman. I have an amendment at the desk.

Chairman WU. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 3916, offered by Mr. Mitchell of Arizona.

Chairman WU. I ask unanimous consent to dispense with the reading, and without objection, so ordered. I recognize the gentleman from Arizona for five minutes to explain his amendment.

Mr. MITCHELL. Thank you, Mr. Chairman. I am proud to co-sponsor Mr. Hall's legislation, H.R. 3916, which will help provide our border guards with technologically advanced equipment to monitor the borders.

Border security is an issue that truly hits home. Illegal immigration affects Arizona more than any other state. More than half of illegal crossings over the U.S.-Mexico border happen in Arizona. These illegal crossings threaten our national security, and we must do better.

When the Federal Government fails to live up to its responsibility, Arizona pays a hefty price. We bear the brunt of violent drug and human-smuggling crimes, and our local law enforcement and emergency rooms are overburdened. I believe we must provide the resources our border patrol needs to keep us safe, and that is why I am offering this amendment to help ensure that our border patrol has appropriate global-positioning systems or GPS technology to protect the border. Much of the border in Arizona stretches over miles of rural landscape with no natural barriers. GPS technology cannot only help keep border patrol in the field at the precise location of the border, but can also help provide a clear picture of the surrounding landscape, including hills and valleys, where drug smugglers and human traffickers may be hiding. GPS technology offers and gives our border patrol a critical advantage over criminals trying to enter the U.S. illegally.

My amendment would require the Department of Homeland Security Science and Technology directorate to work with the National Institute of Standards and Technology and the United States Geological Survey to carry out a study on the research-and-technology development needs in GPS technology for border security. The NIST and USGS bring important expertise in GPS technology,

testing and mapping the table, and will provide important support to the S&T directorate. This study will determine what tools our border guards need, as well as recommend what research, development, testing, and evaluation measures need to be taken to develop next-generation technologies. This amendment would also require collaboration with U.S. Customs and Border Protection to determine what steps need to be taken to provide border guards with the appropriate GPS technology, including an assessment of cost, training, and reliability needs. This study will be reported back to Congress a year after its legislation is enacted. Once we get this report in our hands, we will be able to give it to State and local governments in areas near the U.S. border, who also use GPS technologies in law enforcement.

Our border guards must have the technological tools to secure our borders, and I believe this amendment addresses an important challenge facing our border guards. I encourage you to support this important amendment, and to support the underlying legislation, and I yield back the balance of my time.

[The prepared statement of Mr. Mitchell follows:]

PREPARED STATEMENT OF REPRESENTATIVE HARRY E. MITCHELL

Mr. Chairman, I have an amendment at the desk.

I am proud to co-sponsor Chairman Hall's legislation, H.R. 3916, which will help provide our border guards with technologically advanced equipment to monitor the borders.

Border security is an issue that truly hits home. Illegal immigration affects Arizona more than any other state—more than half of illegal crossings over the U.S.-Mexico border happen in Arizona.

These illegal crossings threaten our national security. We must do better.

When the Federal Government fails to live up to its responsibility, Arizona pays a hefty price. We bear the brunt of violent drug and human smuggling crimes, and our local law enforcement and emergency rooms are overburdened.

I believe we must provide the resources our Border Patrol needs to keep us safe, and that is why I am offering this amendment to help ensure that our Border Patrol has appropriate global positioning system, or GPS, technology to protect the border.

Much of the border in Arizona stretches over miles of rural landscape with no natural barrier. GPS technology can not only help keep Border Patrol in the field aware of the precise location of the border, but can also help provide a clear picture of the surrounding landscape, including hills and valleys where drug smugglers and human traffickers may be hiding.

GPS technology offers can give our Border Patrol a critical advantage over criminals trying to enter the U.S. illegally.

My amendment would require the Department of Homeland Security's Science and Technology Directorate to work with the National Institute of Standards and Technology and the United States Geological Survey to carry out a study on the research and technology development needs in GPS technology for border security. NIST and USGS bring important expertise in GPS technology testing and mapping to the table, and will provide important support to the S&T Directorate. This study will determine what tools our border guards need as well as recommend what research, development, testing, and evaluation measures need to be taken to develop next generation technologies.

This amendment would also require collaboration with U.S. Customs and Border Protection to determine what steps need to be taken to provide border guards with the appropriate GPS technology, including an assessment of cost, training, and reliability needs.

This study will be reported back to Congress a year after this legislation is enacted. Once we get this report in our hands, we will be able to give to State and local governments in areas near the U.S. border who also use GPS technologies in law enforcement.

Our border guards must have the technological tools to secure our borders, and I believe this amendment addresses an important challenge facing our border guards.

I encourage you to support this important amendment and to support the underlying legislation.

I yield back.

Chairman WU. Is there any further discussion of the amendment?

Mr. HALL. Mr. Chairman?

Chairman WU. The gentleman from Texas?

Mr. HALL. I just want to make a statement or two about this.

I think most Members here agree that very rarely does the author of an amendment or a bill want to see his bill amended, but as my colleagues know, the legislative process offers a lot of opportunities to improve on introduced legislation. Hopefully, these improvements are reached through an open-minded focus on good policy, like Mr. Mitchell has pursued. And so I would like to thank Mr. Mitchell for bringing his amendment to my attention and to our attention and taking the time to explain his purpose of study and listen to the suggestions for improvements. He has worked very well with us.

My initial reservations have been addressed on this, and I firmly believe this amendment will provide useful information to Congress and the Department of Homeland Security on what tools can help border agents perform their duties. That is very important. I support the amendment, and again, I want to thank Mr. Mitchell, not only for his amendment, but for his good attitude of cooperation and working together. I appreciate that and look forward to finishing out this session with him. And I yield back my time.

Chairman WU. I thank the gentleman from Texas, and we are unanimous in our support of the gentleman from Arizona's amendment.

Is there any further discussion of this amendment?

If not, the vote occurs on the amendment. All in favor, say aye. Those opposed, say no. The ayes have it, and the amendment is agreed to.

Are there any other amendments? Hearing none, the vote is on the bill H.R. 3916, to provide for the next generation of border and maritime security technologies, as amended. All those in favor will say aye. All those opposed will say no. In the opinion of the Chair, the ayes have it.

I now recognize Mr. Hall to offer a motion.

Mr. HALL. Mr. Chairman, I move that the Subcommittee favorably report H.R. 3916, as amended, to the Full Committee, and furthermore, I move that staff be instructed to prepare the Subcommittee legislative report and make necessary technical and conforming changes to the bill, as amended, in accordance with the recommendations of the Subcommittee. I yield back my time.

Chairman WU. I thank the gentleman. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye; opposed, no. The ayes have it, and the bill is favorably reported.

Without objection, the motion to reconsider is laid upon the table. Subcommittee Members may submit additional or Minority views on the measure.

I want to thank Members of the Committee and the Subcommittee for their attendance, and with our typical, across-the-

aisle-workmanship is not the right term, but our work across the aisle, and our head-spinning efficiency. We have again moved multiple pieces of legislation and conclude this subcommittee markup. Thank you all very much.

[Whereupon, at 11:05 a.m., the Subcommittee was adjourned.]

Appendix

H.R. 3916, Section-by-Section Analysis, Amendment Roster

I

110TH CONGRESS
1ST SESSION

H. R. 3916

To provide for the next generation of border and maritime security technologies.

IN THE HOUSE OF REPRESENTATIVES

OCTOBER 22, 2007

Mr. HALL of Texas (for himself, Mr. BARTLETT of Maryland, Mr. BILBRAY, Mr. BROUN of Georgia, Mr. BURGESS, Mr. CONAWAY, Mr. FEENEY, Mr. GINGREY, Mr. GORDON of Tennessee, Mr. INGLIS of South Carolina, Mr. SAM JOHNSON of Texas, Mr. MCCAUL of Texas, Mrs. MYRICK, Mr. NEUGEBAUER, Mr. SENSENBRENNER, Mr. SESSIONS, Mr. SMITH of Nebraska, Mr. WU, Mrs. BIGGERT, and Mr. LAMPSON) introduced the following bill; which was referred to the Committee on Homeland Security, and in addition to the Committee on Science and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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A BILL

To provide for the next generation of border and maritime security technologies.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

SECTION 1. ENSURING RESEARCH ACTIVITIES OF THE DEPARTMENT OF HOMELAND SECURITY INCLUDE APPROPRIATE CONCEPTS OF OPERATION.

The Under Secretary for Science and Technology of the Department of Homeland Security (in this Act referred to as the "Under Secretary") shall ensure that any Federal Government interagency or intra-agency agreement to develop and transition new technology explicitly characterizes the requirements, expected use, and concept of operations for that technology, including—

(1) the manpower needed to effectively operate the technology;

(2) the expected training requirements; and

(3) the expected operations and maintenance costs.

SEC. 2. REAUTHORIZATION OF HOMELAND SECURITY SCIENCE AND TECHNOLOGY ADVISORY COMMITTEE.

Section 311(j) of the Homeland Security Act of 2002 (6 U.S.C. 191(j)) is amended by striking "on December 31, 2008" and inserting "on December 31, 2012".

SEC. 3. REPORT ON BASIC RESEARCH NEEDS FOR BORDER/MARITIME SECURITY.

Not later than 3 months after the date of enactment of this Act, the Under Secretary shall enter into an ar-

rangement with the National Research Council for an assessment of the basic science research needs in the border and maritime security domain. The assessment shall include consideration of—

(1) detection, tracking, and identification technologies;

(2) personal protective equipment;

(3) anticounterfeit technologies; and

(4) advanced screening technologies at ports of entry.

SEC. 4. INCORPORATING UNMANNED AERIAL VEHICLES INTO BORDER/MARITIME AIRSPACE.

(a) RESEARCH AND DEVELOPMENT.—The Secretary of Homeland Security and the Director of the Joint Planning and Development Office shall research and develop technologies to permit routine operation of unmanned aerial vehicles within the national airspace for border and maritime security missions without any degradation of existing levels of safety for all national airspace system users.

(b) PILOT PROJECTS.—The Secretary shall coordinate with the Administrator of the Federal Aviation Administration to enter into pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe

integration of unmanned aircraft systems into the national airspace system.

SEC. 5. ESTABLISHING A RESEARCH PROGRAM IN TUNNEL DETECTION.

(a) RESEARCH AND DEVELOPMENT.—The Under Secretary shall research and develop technologies to permit detection of near surface voids, such as tunnels, with an emphasis on technologies with real time capability.

(b) COORDINATION.—The Secretary of Homeland Security shall coordinate with other appropriate Federal agencies, including the Department of Defense, and ensure the integration of activities under subsection (a) with relevant efforts of such other agencies and the Department of Homeland Security's Centers of Excellence Program.

SEC. 6. RESEARCH IN ANTICOUNTERFEIT TECHNOLOGIES.

(a) ESTABLISHMENT OF PROGRAM.—The Under Secretary and the Director of the National Institute of Standards and Technology shall establish a joint research and development program on anticounterfeit technologies and standards. The program may include development of counterfeit-resistant documentation, counterfeit-resistant devices, document validation technologies, and document identification standards.

1 (b) COORDINATION.—In carrying out the program in
2 subsection (a), the Under Secretary or his designee shall
3 coordinate with other Federal agencies engaged in similar
4 activities, including Immigration and Customs Enforce-
5 ment, the Department of State, the Department of De-
6 fense, and the Department of Justice.

7 (c) REPORT TO CONGRESS.—Not later than 12
8 months after the date of enactment of this Act, the Under
9 Secretary and the Director of the National Institute of
10 Standards and Technology shall provide to the Committee
11 on Homeland Security and the Committee on Science and
12 Technology of the House of Representatives, and the Com-
13 mittee on Homeland Security and Government Affairs of
14 the Senate, a report detailing the actions taken by the
15 Under Secretary and the Director under this section.

○

SECTION-BY-SECTION ANALYSIS OF
H.R. 3916, TO PROVIDE FOR THE NEXT GENERATION OF BORDER AND MARITIME SECURITY TECHNOLOGIES

Section 1 is a requirement for the Science and Technology Directorate (DHS S&T) to clearly define the operational requirements of technologies they are developing for Customs and Border Patrol and other end-users. These one- to three-year product development projects are part of the Transition portfolio at DHS S&T and comprise the bulk of research and development spending (~70 percent). The language calls for DHS S&T to include operational requirements as part of any agreement, including technology transfer agreements (TTA), to undertake product development activities. Current activities in this area include improved protective equipment for Border Patrol officers, new detection and identification techniques for use on the border, and inspection techniques that improve safety and efficiency of commerce at ports of entry.

Section 2 extends the S&T Advisory Committee, which was last extended through December 31st, 2008 in the *SAFE Ports Act of 2006*. Currently S&T is appointing new members and expects to hold a meeting this fall. The Committee has not met since November 2005. This section would further extend the Advisory Committee through December 31, 2012 to allow the Secretary ongoing advice from some of our nation's best scientists, engineers, and security specialists.

Section 3 calls for a NRC study to provide a roadmap for research activities in the border/maritime division. This section seeks to provide the Research portfolio director with additional material to help make long-term investments in science and technology that will enable the next generation of border and maritime security technologies. DHS S&T aims to support this type of long-term research at roughly 20 percent of their budget.

Section 4 reminds DHS of their role as a potential operator of Unmanned Aerial Vehicles (UAVs) in the national airspace and directs them to continue their work in the Joint Planning and Development Office accordingly. Currently, operation of UAVs in national airspace requires considerable advance planning and approval from the Federal Aviation Administration. This section requires DHS to seek the ability to routinely and safely operate UAVs for border and maritime security missions. To this end, the section also authorizes DHS to take part in pilot projects to obtain whatever data is necessary to make an informed decision about how UAVs can be safely included in the airspace.

Section 5 requires DHS to create a formal research program in the area of tunnel detection, and to coordinate with similar DOD activities. In addition, the section calls for priority to be given to technologies that would allow real-time detection of tunnels and would allow for immediate action by CBP.

Section 6 requires the Under Secretary and Director of NIST to begin a joint R&D project of anti-counterfeit technologies and standards. Furthermore, DHS and NIST are charged with coordinating research activities with other federal agencies engaged in related research. Finally the section requires a report to Congress on the research programs undertaken under this section one year after enactment.

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
SUBCOMMITTEE MARKUP
February 7, 2008

AMENDMENT ROSTER

H.R. 3916, to provide for the next generation of border and maritime security technologies.

No.	Sponsor	Description	Results
1.	Mr. Mitchell	Adds section 7 to require the Under Secretary for Science and Technology at the Department of Homeland Security to consult with the National Institute of Standards and Technology, U.S. Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings and on capability gaps in global positioning system technologies and to make recommendations for research and development needed to address those capability gaps. Requires the Under Secretary to work to determine end user requirements for GPS technologies such as cost limitations and operational requirements. Requires the Under Secretary to report on the results of the study to Congress.	Accepted by voice vote.

AMENDMENT TO H.R. 3916

OFFERED BY MR. MITCHELL OF ARIZONA

At the end of the bill, add the following new section:

1 **SEC. 7. STUDY ON GLOBAL POSITIONING SYSTEM TECH-**
2 **NOLOGIES.**
3 (a) IN GENERAL.—The Under Secretary shall con-
4 duct a study of the need for next generation global posi-
5 tioning system technology as it relates to border security,
6 including—
7 (1) conducting an analysis of the frequency of
8 unintended border crossings and the capability of
9 global positioning system technologies to address un-
10 intended border crossings by government personnel;
11 (2) undertaking an examination of the potential
12 end user requirements for global positioning system
13 technologies, including cost limitations, accessibility,
14 and reliability; and
15 (3) developing recommendations for potential
16 near-term and long-term research, development, test-
17 ing, and evaluation of border security-focused global
18 positioning technologies.
19 (b) CONSULTATION.—In conducting the study under
20 subsection (a), the Under Secretary shall consult with

1 U.S. Customs and Border Protection, the National Insti-
2 tute of Standards and Technology, the United States Geo-
3 logical Survey, and appropriate Federal, State, and local
4 law enforcement officials.

5 (c) REPORT.— Not later than 1 year after the date
6 of enactment of this Act, the Under Secretary shall trans-
7 mit to Congress a report on the findings of the study con-
8 ducted under this section.

XXII. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 3916, TO PROVIDE FOR THE NEXT GENERATION OF BORDER AND MARITIME SECURITY TECHNOLOGIES

WEDNESDAY, FEBRUARY 27, 2008

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE,
Washington, DC.

The Committee met, pursuant to call, at 10:06 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chairman of the Committee] presiding.

Chairman GORDON. The Committee will come to order pursuant to notice the Committee on Science and Technology meets to consider the following measures: H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

I would like to welcome everyone to this morning's markup, the first Full Committee markup of 2008. Today we will consider the three bills reported out of the Technology and Innovation Subcommittee with unanimous support. These three bills deal with public safety, improving the environment and border security, addressing some of the Nation's most pressing issues.

H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, and co-sponsored by the Subcommittee Ranking Member Gingrey, reauthorizes the U.S. Fire Administration.

The U.S. Fire Administration is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection, and R&D on fire suppression and prevention research and technology.

This important bill will help ensure the continued success of the USFA in its mission to protect lives and property from fire.

We will also consider H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* introduced by Chairman Wu.

This bipartisan bill supports the development and use of green technology to protect our nation's water supply through innovative technologies and materials that can be integrated into transportation infrastructure such as roads and parking lots. By filtering stormwater and slowing runoff, green infrastructure mitigates pollution while saving money and energy.

The bill builds upon the good work going on now in the Department of Transportation to promote green infrastructure widespread use.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve technology used to protect the Nation's borders and ports of entry.

Border Patrol agents are responsible for securing nearly 7,000 miles of land borders to the north and south, as well as 95,000 miles of shoreline. Technology can play a vital role in extending observational capabilities, helping Border Patrol agents locate suspects, and monitor the border more efficiently.

Mr. Hall's bill authorizes important programs to enhance the Border Patrol's ability to carry out its mission by supporting short- and long-term research priorities. It also ensures that new technologies will be useful to Border Patrol agents by mandating that DHS work to meet cost and training needs to end-users when developing these technologies.

I want to commend the T&I Subcommittee for bringing these issues to the Committee's attention. All three of these bills were developed via a regular order process of identifying the problem, holding a hearing, and then developing legislation.

I strongly support each of these bills and look forward to working with my colleagues on the Committee to advance this important legislation.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Full Committee Mark-Up:

- H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;*
- H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;*
- H.R. 3916, *To provide for the next generation of border and maritime security technologies*

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Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border Patrol agents are responsible for securing nearly seven thousand miles of land borders to the North and South, as well as ninety-five thousand miles of shoreline. While our current corps of Border Patrol agents is doing a commendable job, their job is daunting. Technology can play a vital role in extending observational capabilities, helping Border Patrol agents locate suspects and monitor the border more effectively.

Mr. Hall's bill authorizes important programs to enhance the Border Patrol's ability to carry out its mission by supporting short- and long-term research priorities. It also ensures that new technologies will be useful to Border Patrol agents by mandating that DHS work to meet cost and training needs of end-users when developing these technologies.

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I strongly support each of these bills, and look forward to working with my colleagues on the Committee to advance this important legislation.

Chairman GORDON. I now recognize Mr. Hall to present his opening remarks.

Mr. HALL. I thank you, Chairman Gordon. I am looking forward to a productive start for the Committee in this second session of the 110th Congress.

Today the Full Committee is considering three bills previously considered by the Technology and Innovation Subcommittee. As you have said to begin with, we will be considering the reauthorization for the United States Fire Administration. USFA provides critical support to our nation's firefighters through training, through research and development, and logistical support. This is an extremely important agency in this committee's jurisdiction, and I would like to thank Mr. Mitchell and Dr. Gingrey for their hard work over the past few months on this matter.

Now, we will be considering Mr. Wu's Green Transportation Infrastructure Bill, which provides funding for the Department of Transportation's University Transportation Centers to examine and hopefully implement technologies that significantly reduce nonpoint source water pollution from our roadways and other paved surfaces.

Finally, H.R. 3916, a bill near and dear to me, focuses on the technology needs for the Border Patrol and the U.S. Coast Guard. I started writing this bill last year in response to a real need to develop and employ next generation technologies to help secure our border. I am pleased that many Members of the Committee on both sides of the aisle have co-sponsored this bill, and I would like to thank all of you for supporting my bill. I thank you, Chairman Gordon, specifically for your support and guidance.

These are all significant pieces of legislation that the Committee can be proud of advancing. I look forward to working with Chairman Gordon to ensure that these bills continue to progress through their other committee referrals and onto the House Floor.

I yield back.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Thank you, Chairman Gordon. I'm looking forward to a productive start for the Committee in this second session of the 110th Congress. Today the Full Committee is considering three bills previously considered by the Technology and Innovation Subcommittee. To begin we'll be considering the reauthorization for the United States Fire Administration (USFA). USFA provides critical support to our nation's firefighters through training, research and development, and logistical support. This is an extremely important agency in this committee's jurisdiction and I'd like to thank Mr. Mitchell and Dr. Gingrey for their hard work over the past few months on this matter.

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of the aisle have co-sponsored the bill and I'd like to thank all of you for supporting my bill.

These are all significant pieces of legislation that the Committee can be proud of advancing. I look forward to working with Chairman Gordon to ensure that these bills continue to progress through their other Committee referrals and onto the House Floor.

Chairman GORDON. Thank you, Mr. Hall. You can be assured that we will all be working together to see these bills go to the Floor and then find a way to the Senate.

We will now consider H.R. 3916, *To provide for the next generation of border and maritime security technologies.* I yield to Ranking Member Mr. Hall five minutes to describe his bill.

Mr. HALL. Chairman Gordon, thank you for holding this markup and for your co-sponsorship of H.R. 3916. It has been a pleasure working with Members of the Committee to move this bill forward, and I would also like to thank Mr. McCaul for the substantial contributions he has made to the bill.

In his State of the Union address, President Bush emphasized the great importance of securing our nation's borders, and I believe this is a crucial issue for this committee to address, and I am very pleased to see H.R. 3916 making steady progress.

We wrote this bill to ensure that we are meeting the research and technology needs of the over 630,000 brave men and women protecting our borders on the Coast Guard and the Border Patrol. We have nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and over two million rail cars pass per year.

In addition, we have over 300 ports that see over nine million cargo containers each year. We have a number of reasons for wanting strict control over this traffic. Drug trafficking, for example, remains a major border protection problem. According to Department of Justice statistics, over 30,000 kilograms of cocaine, heroin, and meth were seized within 150 miles of the U.S.-Mexico border in 2006.

I know many Members of this committee have worked tirelessly to end the scourge of meth in this nation, yet success at restricting access to meth ingredients here in the states has led drug dealers to import more across our borders. Stopping the flow of narcotics across our borders remains key to our efforts to curb illegal drug use that infects our cities and our small towns.

The threat of terrorism also compels us to reexamine our borders. Whether we are talking about foreign groups trying to infiltrate our country or homegrown terrorists seeking weapons and supplies, our borders remain a crucial element of our defense. Finally, in fiscal year 2007, U.S. Border Patrol agents apprehended 880,000 people attempting to enter the country illegally. While I understand the concerns many Members have regarding comprehensive immigration reform, we should not allow that issue to stymie progress, deterring terrorists, deterring drug smugglers, and deterring human traffickers.

I introduced H.R. 3916 to reduce the vulnerabilities at the border. The first three sections of the bill ensure that taxpayer dollars are wisely spent by requiring that the Border Patrol can use the technologies created for them and are regularly updated to meet their needs.

Section 4 addresses the important issue of safety, of safely incorporating unmanned aerial vehicles into the national airspace. Before this promising technology can be used regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the Federal Aviation Administration to collect this necessary data.

The tunnel detection program described in Section 5 aims at identifying and stopping smugglers trying to tunnel under other border defenses. Section 6 aims at defeating counterfeiting. The technology that this program will focus on will ensure that travel import and identification documents are safe and secure.

Finally, Section 7 urges the Department of Homeland Security to conduct a study on the potential for GPS technology to aid Border Patrol agents in the field.

These provisions will help local, State, and national agents control our borders. This bill will also ensure that we carefully plan and coordinate border technologies so that we protect the American taxpayer.

I urge my colleagues to join me and support H.R. 3916 today. I believe this committee is really and ideally positioned to strengthen control of our nation's borders through this legislation supporting effective, efficient, and evolving border defenses.

I also believe that this bill will be merged into any future and final immigration act that this Congress should pass before we sign this 110th session of Congress. We are really building toward a secure America.

I thank the Chair, and I yield back.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Chairman Gordon, thank you for holding this markup and for your co-sponsorship of H.R. 3916. It has been a pleasure working with Members of the Committee to move this bill forward. I'd also like to thank Mr. McCaul for the substantial contributions he has made to the bill.

In his State of the Union address, President Bush emphasized the great importance of securing our nation's borders. I believe this is a crucial issue for this committee to address and am very pleased to see H.R. 3916 making steady progress. I wrote this bill to ensure that we are meeting the research and technology needs of the over 630,000 brave men and women protecting our borders in the Coast Guard and Border Patrol. We have nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and over two million rail cars pass per year. In addition we have over 300 ports that see over nine million cargo containers each year.

We have a number of reasons for wanting strict control over this traffic. Drug trafficking, for example, remains a major border protection problem. According to Department of Justice statistics, over 30,000 kilograms of cocaine, heroine, and meth were seized within 150 miles of the U.S./Mexico border in 2006. I know many Members of this committee have worked tirelessly to end the scourge of meth in our nation. Yet, success at restricting access to meth ingredients here in the States has led drug dealers to import more across our borders. Stopping the flow of narcotics across our border remains key to our efforts to curb illegal drug use that infects our cities and small towns.

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Section 4 addresses the important issue of safely incorporating unmanned aerial vehicles into the national airspace. Before this promising technology can be used regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the Federal Aviation Administration (FAA) to collect this necessary data.

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These provisions will help local, State, and national agents control our borders. This bill will also ensure that we carefully plan and coordinate border technologies so that we protect the American taxpayer. I urge my colleagues to join me and support H.R. 3916 today. I believe this committee is ideally positioned to strengthen control of our nation's borders through this legislation supporting effective, efficient, and evolving border defenses.

Chairman GORDON. First, Mr. Hall, let me say that I very strongly support this bill. You have done a lot of work on it, but also it provides a commonsense approach. I was just showing Mr. Hall the headlines of one of our publications that has come out here this morning. It says the first 28 miles of virtual border fence fail to meet expectations, GAO says.

In other words, we have got about $1.2 billion either spent or in contracts, and let me tell you what the GAO Director says, and this is what he is going to say today. "Border Patrol agents had a minimum role in developing the virtual fence and now say it does not fully address their needs." The hallmark of Mr. Hall's bill is that they go to the end-users and say, what do you need, and how can we make this work?

Again, you are just, you are a year late, Mr. Hall, but we are glad you got it here, and hopefully this will help bring some more efficiency to this very important program.

Ms. Johnson is recognized.

Ms. JOHNSON. Thank you very much, Mr. Chairman.

This legislation is very important for Texas, which has so many miles of land border with Mexico, and Dallas is also the location of a major inland port facility. The Dallas region is home to five interstates, good rail service, foreign trade zone acreage, and motor facilities, and two reliever airports that could be expanded in the future. This infrastructure is susceptible to security breech.

This committee has held hearings on border security and is aware that significant gaps exist in our technology to detect individuals illegally crossing our borders into the United States. We have heard that the current technology also gives false alarms as well. The statistics on illegal border activity are alarming. In fiscal year 2005, U.S. Border Patrol agents apprehended 1.19 million people attempting to enter the country illegally. In 2006, over 30,000 kilograms of cocaine, heroin, and methamphetamines were ceased within 150 miles of the U.S., Mexico border.

The Committee on Science and Technology has taken a leadership role by passing H.R. 3916. The legislation directs the Sec-

retary of Homeland Security and Director of Joint Planning and Development Office to research and develop technologies to prevent, to permit routine operation of unmanned aerial vehicles for border and maritime security missions.

It also specifies that the technologies be developed without degradation of existing safety levels for national airspace system users. The legislation requires research on technologies to permit detection of near surface tunnels, which is particularly useful in the southwestern United States and directs the National Institute of Standards and Technology to establish a joint research and development program on anti-counterfeit technologies and standards.

Mr. Chairman, I want to commend the Ranking Member Hall for this bill that will direct the research to strengthen our border securities. Very, very important to Texas. Thank you, and I yield back the balance of my time.

[The prepared statement of Ms. Johnson follows:]

PREPARED STATEMENT OF REPRESENTATIVE EDDIE BERNICE JOHNSON

Thank you, Mr. Chairman.

This legislation is important for Texas, which has so many miles of land border with Mexico. Dallas is also the location of a major inland port facility.

The Dallas region is home to five interstates, good rail service, foreign trade zone acreage, inter-modal facilities and two reliever airports that could be expanded in the future. This infrastructure is susceptible to security breach.

This committee has held hearings on border security and is aware that significant gaps exist in our technology to detect individuals illegally crossing our borders into the United States.

We have heard that the current technology also gives "false alarms" as well.

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In 2006, over 30,000 kilograms of cocaine, heroine, and methamphetamine were seized within 150 miles of the U.S./Mexico border.

The Committee on Science and Technology is taking a leadership role by passing H.R. 3916.

The legislation directs the Secretary of Homeland Security and the Director of the Joint Planning and Development Office to research and develop technologies to permit routine operation of unmanned aerial vehicles for border and maritime security missions.

It also specifies that the technologies be developed without degradation of existing safety levels for national airspace system users.

The legislation requires research on technologies to permit detection of near-surface tunnels, which is particularly useful for the Southwestern United States.

It also directs the National Institute of Standards and Technology (NIST) to establish a joint research and development program on anti-counterfeit technologies and standards.

Mr. Chairman, I want to commend Ranking Member Hall for this bill that will direct research to strengthen our border security.

Thank you, and I yield back the balance of my time.

Chairman GORDON. Does anyone else wish to be recognized?

Mr. McNerney.

Mr. MCNERNEY. Thank you, Mr. Chairman. I certainly want to commend Ranking Member Hall for this bill and for what this will do for our national security.

The tunneling aspect I think is a very important part of this. That is, they have developed tunnels that can transport large amounts of material across the border, and there are other sections that are also very important.

So I commend your work, and I urge everyone to support the bill.

Chairman GORDON. Did anyone else wish to be recognized to say good things about Mr. Hall?

It is all well deserved, and let me thank the Members for coming back after this last vote so we can get this good bill done.

If there are no other comments then, I ask unanimous consent that this bill is considered as read and open to amendment at any point and that the Members proceed with the amendments in the order of the roster.

Without objection, so ordered.

The first amendment on the roster is Mr. Hall's amendment, offered in the nature of a substitute. Mr. Hall, are you ready to proceed with your amendment?

Mr. HALL. I am, sir.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment number 036, amendment in the nature of a substitute to H.R. 3916, offered by Mr. Hall of Texas.

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

I also ask unanimous consent that the amendment in the nature of a substitute be treated as original text for purposes of amendment under the five-minute rule.

Without objection, so ordered.

I recognize the gentleman from Texas, Mr. Hall, for five minutes to explain his substitute amendment.

Mr. HALL. Mr. Chairman, the manager's amendment I have introduced today closely matches the measure reported out by the Subcommittee but makes a number of needed clarifications to the original.

First, the amendment makes clear that the Technology Transfer Agreement requirements apply only to projects at the Science and Technology directorate and do not apply government-wide.

During my discussions with interested parties over the last few months, I discovered that the original language gave the impression to some that these requirements extended throughout the Federal Government. The changes in this amendment make clear that the Technology Transfer Agreements are those between the Under Secretary and another agency such as Customs and Border Protection.

Next, the amendment specifies a one-year time period for the National Research Council's study on the basic research needs of the border and maritime division of the Science and Technology directorate. This will allow the preeminent scientists and engineers at the National Academies to give input into the research priorities of the directorate after being appropriately briefed on the technological needs and problems faced by DHS.

Furthermore, the section on unmanned aerial vehicles now specifically includes research on autonomously piloted drones and collaboration with the Joint Planning and Development Office. These drones are designed to fly without direct human involvement, using on-board computers to steer, land, and perform a pre-programmed mission independently. The research performed under this section will prepare for the safe inclusion of unmanned aerial vehicles in our nation's airspace.

Finally, and at the suggestion of my colleagues on the Majority, the amendment ensures that the U.S. Geological Survey and U.S. Coast Guard are appropriately consulted for the tunnel detection and anti-counterfeit programs, and of great import to our budgetary and economic fears, as in Ms. Richardson's amendment a little bit ago, this legislation should not have any cost associated with it because it authorizes studies and creates no new programs.

And I yield back, and I thank you, sir.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman, the manager's amendment I have introduced today closely matches the measure reported out by the Subcommittee, but makes a number of needed clarifications to the original. First, the amendment makes clear that the technology transfer agreement requirements apply only to projects at the Science and Technology Directorate and do not apply government-wide. During my discussions with interested parties over the last few months, I discovered that the original language gave some the impression that these requirements extended throughout the Federal Government. The changes in this amendment make clear that the technology transfer agreements are those between the Under Secretary and another agency, such as Customs and Border Protection.

Next, the amendment specifies a one year time period for the National Research Council study on the basic research needs of the Border and Maritime Division of the Science and Technology Directorate. This analysis will allow the preeminent scientists and engineers at the National Academies to give input into the research priorities of the Directorate after being appropriately briefed on the technological needs and problems faced by DHS.

Furthermore, the section on unmanned aerial vehicles now specifically includes research on autonomously piloted drones and collaboration with the Joint Planning and Development Office. These drones are designed to fly without direct human involvement using on-board computers to steer, land, and perform a preprogrammed mission independently. The research performed under this section will prepare for the safe inclusion of unmanned aerial vehicles in our nation's airspace.

Finally, and at the suggestion of my colleagues on the Majority, the amendment ensures that the U.S. Geological Survey and U.S. Coast Guard are appropriately consulted for the tunnel detection and anti-counterfeit programs.

Chairman GORDON. Is there further discussion on the amendment?

If not, the second amendment on the roster is offered by the gentleman from California, Mr. McNerney.

Mr. MCNERNEY. Thank you, Mr. Chairman. I have an amendment at the desk.

Chairman GORDON. The second amendment on the roster is offered by the gentleman from California, Mr. McNerney. Are you ready to proceed?

Mr. MCNERNEY. Yes, I am, Mr. Chairman.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment number 012, amendment offered by Mr. McNerney of California, to the amendment in the nature of a substitute offered by Mr. Hall of Texas.

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

The gentleman is recognized for five minutes to explain the amendment.

Mr. MCNERNEY. Thank you, Mr. Chairman. I would also like to thank, again, Ranking Member Hall for introducing this fine bill. It is a good bill and will improve our country's security, and I am

proud to vote for it. I would ask all my colleagues here to support the amendment.

My amendment is a modest but important addition which requires the National Research Council to analyze scientific research needs across a variety of disciplines, specifically make sure that the NRC's assessment includes an analysis of technologies that provide real time and actionable data to the Border Patrol and other agencies that protect our country.

I was fortunate a few weeks ago to travel in my home state to visit the Border Patrol and Immigration and Customs Enforcement agents. I was impressed by their commitment and dedication, by their professionalism, and also came away with a greater sense of the dangers and challenges they face on a day-to-day basis. After my visit, I believe that the improving of technologies for real time tactical sense awareness will help the Department of Homeland Security better respond to potential threats and illegal activities on our borders.

These agents and National Guard assigned securing our border need all the tools we can provide and must have confidence in the effectiveness and accuracy of the information provided. Continuing to develop this capability which includes but is not limited to those technologies already enumerated in this bill serves a clear national interest. Better real time technologies will make our country safer and more secure, reduce illegal border crossings, and allow law enforcement officers to respond to developing situations more safely.

Chairman Gordon, I would thank you and Ranking Member Hall again and yield the balance of my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

I support the amendment offered by Mr. McNerney and thank him for his co-sponsorship of the bill. I look forward to working with him and the other Members of the Committee further.

Chairman GORDON. Any further discussion?

If not, then all in favor say, aye. Opposed, no. The ayes have it. The Amendment is agreed to.

Is there any other amendments?

Mr. MCCAUL. Yes, I am, Mr. Chairman. I have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment number 306, amendment offered by Mr. McCaul of Texas, to the amendment in the nature of a substitute offered by Mr. Hall of Texas.

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

And I recognize the gentleman for five minutes to explain his amendment.

Mr. MCCAUL. Thank you for the opportunity. Let me first say how I commend both of you, Mr. Chairman and Ranking Member Ralph Hall, for your excellent leadership and bipartisan way as usual on this committee. To put forward a bill that will really bring some technology resources to the border to provide better security at the border.

It is an important issue for Mr. Hall and I obviously being from Texas, but it is important for all Americans to have a more secure border, and I think this is probably one of the first and only border bills I have seen get through the House. Hopefully it will pass well on the House Floor. So thank you so much.

I support the Committee's efforts to provide increased border security through the use of next generation technologies. Border technologies represent a key area for Department's research and development efforts.

My proposal calls on the Under Secretary to establish a research program to consider mobile biometric technology that can be implemented at the border between the ports of entry. Currently biometric scanners and access to databases such as for fingerprints are available only at the ports of entry and at the Border Patrol field stations. Thousands of suspects for crimes ranging from assault to homicide have been arrested as a result of this advanced technology.

But there is a disconnect between the capabilities at the ports of entry and those within the many miles between the ports. Agents in the field do not have biometric capability in their vehicles. The Coast Guard has undertaken a pilot fingerprint collection program, employing mobile biometric technologies at sea. That program has resulted in 114 prosecutions and a 53 percent reduction to migrant flow.

Border Patrol could also greatly benefit from such a capability. Making this portable technology available in the field will allow agents to identify unauthorized border-crossers with criminal backgrounds on-site in real time. Initiation of biometric checks in the field while waiting for transport vehicles to arrive will also increase the general efficiency of border-crosser processing.

I thank the Committee for consideration of this amendment, and I, again, commend the Chairman and Ranking Member for the overall bill. I yield back.

[The prepared statement of Mr. McCaul follows:]

PREPARED STATEMENT OF REPRESENTATIVE MICHAEL T. MCCAUL

Mr. Chairman, thank you for the opportunity to offer this amendment. I support the Committee's efforts to provide for increased border security through the use of next generation technologies. Border technologies represent a key area for the Department's research and development efforts.

My proposal calls on the Under Secretary to establish a research program to consider how mobile biometric technology can be implemented at the border between the ports of entry. Currently, biometric scanners and accesses to databases, such as for fingerprints, are available only at the ports of entry and at the Border Patrol field stations. Thousands of suspects, for crimes ranging from assault to homicide, have been arrested as a result of this advanced technology.

There is a disconnect, however, between the capabilities at the ports of entry, and those within the many miles between the ports. Agents in the field do not have biometric capability in their vehicles. The Coast Guard has undertaken a pilot fingerprint collection program employing mobile biometric technologies at sea; that program has resulted in 114 prosecutions and a 53 percent reduction in migrant flow. Border Patrol could also greatly benefit from such a capability. Making this portable technology available in the field will allow agents to identify unauthorized border-crossers with criminal backgrounds on-site, in real time. Initiation of biometric checks in the field while waiting for transport vehicles to arrive will also increase the general efficiency of border-crosser processing.

I thank the Committee for consideration of this amendment.

Mr. HALL. Mr. Chairman.

Chairman GORDON. Yes. Mr. Hall is recognized.

Mr. HALL. In support of the amendment I just want to thank Mr. McCaul for offering the amendment. He is the Ranking Member of the Subcommittee on Emerging Threats, Cyber Security, and Science and Technology with the Committee on Homeland Security and is a knowledgeable and valuable partner on this bill. His amendment today has the potential to significantly improve the operations of the Border Patrol, and I certainly urge all my colleagues to support the amendment.

I yield back.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

I'd like to thank Mr. McCaul for offering this amendment. Mr. McCaul is Ranking Member of the Subcommittee on Emerging Threats, Cyber Security, and Science and Technology with the Committee on Homeland Security, and has been a knowledgeable and valuable partner on this bill. His amendment today has the potential to significantly improve the operations of the Border Patrol and I urge all my colleagues to support the amendment.

Chairman GORDON. Thank you, Mr. Chairman. I didn't realize you were the Ranking Member there. That is good. That is another connection hopefully we will be able to——

Mr. MCCAUL. If I could add, I think this bill was referred both to Homeland Security and——

Chairman GORDON. So we are in our mother's arms here.

Mr. MCCAUL. We will shepherd it through that Committee as well.

Chairman GORDON. Good. Thank you.

Any other discussion?

If not, the vote occurs on the amendment. All in favor say, aye. Opposed, no. The amendment, or the ayes have it, and the amendment is agreed to.

The vote is now on the bill H.R. 3916 as amended. All those in favor will say aye. All opposed will say no. In the opinion of the Chair the ayes have it.

Okay. I recognize Mr. Hall to offer a motion.

Mr. HALL. Mr. Chairman, I move that the Committee favorably report H.R. 3916, as amended, to the House with the recommendation that the bill do pass. Furthermore, I move that the staff be instructed to make necessary technical and conforming changes, and that the Chairman take all necessary steps to bring the bill before the House for consideration.

I yield back, and I thank the Chair.

Chairman GORDON. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it. The bill is favorably reported.

Without objection, the motion to reconsider is laid upon the table. Members will have two subsequent calendar days in which to submit supplemental, Minority, or additional views on the measure, ending Monday, March the 3rd, at 9:00 a.m. I move pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

Without objection, so ordered.

Let me thank the Members for coming back from the last vote. This was an important bill, and I appreciate your attendance. I want to thank the staff for the hard work that they have put in and the good work on doing this. I think we did a good day's work today, and I thank everyone.

The meeting is adjourned.

[Whereupon, at 11:32 a.m., the Committee was adjourned.]

Appendix:

SUBCOMMITTEE MARKUP REPORT, H.R. 3916 AS AMENDED,
AMENDMENT ROSTER

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
REPORT FROM SUBCOMMITTEE MARKUP
FEBRUARY 7, 2008

H.R. 3916, TO PROVIDE FOR THE NEXT GENERATION OF BORDER AND MARITIME SECURITY TECHNOLOGIES

I. Purpose

The goal of H.R. 3916 is to improve long-term planning for research and development at the Department of Homeland Security, especially in the area of border and maritime security technology. The bill authorizes specific border security technology programs, and instructs the Science and Technology Directorate to improve processes for setting research priorities and serving the needs of technology end users.

II. Background and Need for Legislation

The United States has nearly 7,500 miles of land border with Canada and Mexico, over which half a billion people and 2.5 million rail cars pass per year. In addition over 300 U.S. ports receive over nine million cargo containers each year.

The U.S. Customs and Border Protection (CBP) processes approximately 1.18 million people entering the United States through established ports of entry every day. CBP is also responsible for monitoring between legal entry points along the Northern and Southern borders and intercepting individuals attempting to smuggle contraband or cross the border illegally. In fiscal year 2005, U.S. Border Patrol agents apprehended 1.19 million people attempting to enter the country illegally. In addition, over 26,000 kilograms of marijuana were seized in northern border states in 2005 while over 30,000 kilograms of cocaine, heroine, and methamphetamine were seized within 150 miles of the U.S./Mexico border in 2006. However, the Government Accountability Office estimates that one in 10 serious drug and weapon violators and illegal immigrants pass through airports and land borders undetected.

The Department of Homeland Security invests nearly $1.5 billion annually in research and development projects at the Science and Technology Directorate (DHS S&T) and the Domestic Nuclear Detection Office (DNDO) of which approximately $25 million is directed to border security-specific projects. However, many promising technologies are still not feasible for full implementation along the border because of numerous obstacles including high cost, lack of robustness in harsh conditions, lack of personnel trained to properly use high-tech equipment, and technical problems. DHS S&T has primary responsibility for bringing new technologies to full readiness, with support from other agencies such as the National Institute of Standards and Technology (NIST).

Additionally, many capability gaps identified by end-users, including situational awareness and officer safety, require further basic and applied research to meet existing or anticipated challenges. DHS S&T has several mechanisms to receive advice on R&D priorities, including Integrated Product Teams (IPTs) which bring together stakeholders from other components of DHS, such as CBP, in a regular, formal process to determine short-term technology needs. Advice on longer-term research priorities comes from a number of sources, including the Homeland Security Science and Technology Advisory Committee (HSSTAC), the Homeland Security Institute (HSI), and the National Academies (NAS).

The Border and Maritime Security Division of the DHS S&T Directorate has ongoing research projects focusing on advanced sensing capabilities, decision-making software tools, non-intrusive search capabilities, and other priorities. Additionally, the U.S. Coast Guard (USCG) and National Institute of Standards and Technology (NIST) carry out some border and maritime security technology research and development (R&D). USCG R&D includes officer protection, boarding, and suspect apprehension tools. NIST has been conducting research on facial recognition technologies and fingerprint analysis, and technical tests of the radio frequency identification (RFID) technology being incorporated into new electronic passports being issued by the State Department to prevent document counterfeiting.

However, border security research accounts for only 3.7 percent of DHS S&T's research budget in fiscal year 2008 (FY 2008) and 4.0 percent in the President's FY 2009 request. Further investment has the potential to significantly improve border

security through effective, efficient, and evolving defenses against a wide range of threats including illegal immigration, human trafficking, drug smuggling and terrorism.

III. Subcommittee Actions

On October 22, 2007, Representative Ralph Hall, Ranking Member of the Committee on Science and Technology, for himself and Mr. Bartlett of Maryland, Mr. Bilbray, Mr. Broun of Georgia, Mr. Burgess, Mr. Conaway, Mr. Feeney, Mr. Gingrey, Mr. Gordon of Tennessee, Mr. Inglis of South Carolina, Mr. Sam Johnson of Texas, Mr. McCaul of Texas, Mrs. Myrick, Mr. Neugebauer, Mr. Sensenbrenner, Mr. Sessions, Mr. Smith of Nebraska, Mr. Wu, Mrs. Biggert, and Mr. Lampson introduced H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

The Subcommittee on Technology and Innovation heard testimony in the 110th Congress relevant to the programs authorized in H.R. 3916 at a hearing held November 15, 2007. During that hearing, the Subcommittee heard testimony from Dr. Robert Hooks, the Director of Transition for the Department of Homeland Security's Science and Technology Directorate, Mr. Jeff Self, a Division Chief of the U.S. Border Patrol, and homeland security research and development experts Mr. Ervin Kapos and Dr. Brian Jackson.

The Subcommittee on Technology and Innovation met to consider H.R. 3916 on February 7, 2007 and considered the following amendments to the bill:

1. On behalf of Mr. Mitchell an amendment to add section 7 requiring the Under Secretary for Science and Technology at the Department of Homeland Security to consult with the National Institute of Standards and Technology, U.S. Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings and on capability gaps of global positioning system technologies to address such crossings and to make recommendations for research and development needed to address those capabilities. The amendment was agreed to by voice vote.

Mr. Hall moved that the Subcommittee favorably report the bill, H.R. 3916, as amended, to the Full Committee. The motion was agreed to by a voice vote.

IV. Summary of Major Provisions of the Bill

H.R. 3916 strengthens control of our nation's borders through research and development of effective, efficient, and evolving defenses. The bill focuses on key long-term technologies that could substantially improve the security of our nation's borders: Unmanned Aerial Vehicles (UAVs), tunnel detection, anti-counterfeit technologies, and Global Positioning System (GPS) technologies.

V. Section-by-Section Analysis of the Bill, as reported by the Subcommittee

Section 1 is a requirement for the Science and Technology Directorate to clearly define the operational requirements of technologies they are developing for Customs and Border Patrol and other end-users. The language calls for DHS S&T to include operational requirements as part of any agreement, including technology transfer agreements (TTA), to undertake product development activities. This section ensures that both DHS S&T and the DHS customer component that will eventually own and operate the equipment developed have agreed to baseline requirements for operational as well as technical objectives.

Section 2 extends the DHS S&T Advisory Committee, which was last extended through December 31st, 2008 in the *SAFE Ports Act of 2006.* This section would further extend the Advisory Committee through December 31, 2012 to allow the Secretary ongoing advice from some of our nation's best scientists, engineers, and security specialists.

Section 3 calls for a National Research Council study to provide a roadmap for research activities in the border/maritime division. This section seeks to provide the Research portfolio director with additional material to help make long-term investments in science and technology that will enable the next generation of border and maritime security technologies. The document produced by the NRC would give program managers at DHS a longer-term perspective than is provided through the one- to three-year IPT process.

Section 4 directs the Secretary of DHS to take an active role in safely incorporating unmanned aerial vehicles (UAVs) into the national airspace. Currently, operation of UAVs in the national airspace requires considerable advance planning and approval from the Federal Aviation Administration. This section requires DHS

to seek the ability to routinely and safely operate UAVs for border and maritime security missions. Before this technology can be utilized regularly, the safety and effectiveness of "sense and avoid" technologies must be demonstrated. DHS has an excellent opportunity to work collaboratively with the FAA and the Joint Planning and Development Office (JPDO) to collect necessary safety data. To this end, the section also authorizes DHS to take part in pilot projects to obtain whatever data is necessary to make an informed decision about how UAVs can be safely included in the airspace.

Section 5 requires DHS S&T to create a formal research program in the area of tunnel detection, and to coordinate with similar Department of Defense activities. In addition, the section calls for priority to be given to technologies that would allow real-time detection of tunnels and would allow for immediate action by CBP.

Section 6 requires the Under Secretary for DHS S&T and Director of NIST to begin a joint R&D project of anti-counterfeit technologies and standards. Furthermore, the Under Secretary is charged with coordinating research activities with other federal agencies engaged in related research. Finally the section requires a report to Congress on the research programs undertaken under this section one year after enactment.

Section 7 requires the Under Secretary for DHS S&T to consult with the NIST, U.S. Geological Survey, and Customs and Border Protection to carry out an analysis of the frequency of unintended border crossings, the capability of global positioning system technologies to address border security needs, and recommendations for research and development needed to address capabilities for GPS technologies. This section further requires the Under Secretary to work to determine end user requirements for GPS technologies such as cost limitations and operational requirements. Finally, this section requires the Under Secretary to report on the results of the study to Congress one year after enactment.

H.R. 3916, AS AMENDED BY THE SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION ON FEBRUARY 7, 2008

1 **SECTION 1. ENSURING RESEARCH ACTIVITIES OF THE DE-**
2 **PARTMENT OF HOMELAND SECURITY IN-**
3 **CLUDE APPROPRIATE CONCEPTS OF OPER-**
4 **ATION.**

5 The Under Secretary for Science and Technology of
6 the Department of Homeland Security (in this Act re-
7 ferred to as the "Under Secretary") shall ensure that any
8 Federal Government interagency or intra-agency agree-
9 ment to develop and transition new technology explicitly
10 characterizes the requirements, expected use, and concept
11 of operations for that technology, including—

12 (1) the manpower needed to effectively operate
13 the technology;

14 (2) the expected training requirements; and

15 (3) the expected operations and maintenance
16 costs.

1 **SEC. 2. REAUTHORIZATION OF HOMELAND SECURITY**
2 **SCIENCE AND TECHNOLOGY ADVISORY COM-**
3 **MITTEE.**

4 Section 311(j) of the Homeland Security Act of 2002
5 (6 U.S.C. 191(j)) is amended by striking "on December
6 31, 2008" and inserting "on December 31, 2012".

7 **SEC. 3. REPORT ON BASIC RESEARCH NEEDS FOR BORDER/**
8 **MARITIME SECURITY.**

9 Not later than 3 months after the date of enactment
10 of this Act, the Under Secretary shall enter into an ar-
11 rangement with the National Research Council for an as-
12 sessment of the basic science research needs in the border
13 and maritime security domain. The assessment shall in-
14 clude consideration of—

15 (1) detection, tracking, and identification tech-
16 nologies;

17 (2) personal protective equipment;

18 (3) anticounterfeit technologies; and

19 (4) advanced screening technologies at ports of
20 entry.

21 **SEC. 4. INCORPORATING UNMANNED AERIAL VEHICLES**
22 **INTO BORDER/MARITIME AIRSPACE.**

23 (a) RESEARCH AND DEVELOPMENT.—The Secretary
24 of Homeland Security and the Director of the Joint Plan-
25 ning and Development Office shall research and develop
26 technologies to permit routine operation of unmanned aer-

1 ial vehicles within the national airspace for border and
2 maritime security missions without any degradation of ex-
3 isting levels of safety for all national airspace system
4 users.

5 (b) PILOT PROJECTS.—The Secretary shall coordi-
6 nate with the Administrator of the Federal Aviation Ad-
7 ministration to enter into pilot projects in sparsely popu-
8 lated, low-density Class G air traffic airspace to conduct
9 experiments and collect data in order to accelerate the safe
10 integration of unmanned aircraft systems into the national
11 airspace system.

12 **SEC. 5. ESTABLISHING A RESEARCH PROGRAM IN TUNNEL**
13 **DETECTION.**

14 (a) RESEARCH AND DEVELOPMENT.—The Under
15 Secretary shall research and develop technologies to per-
16 mit detection of near surface voids, such as tunnels, with
17 an emphasis on technologies with real time capability.

18 (b) COORDINATION.—The Secretary of Homeland Se-
19 curity shall coordinate with other appropriate Federal
20 agencies, including the Department of Defense, and en-
21 sure the integration of activities under subsection (a) with
22 relevant efforts of such other agencies and the Depart-
23 ment of Homeland Security's Centers of Excellence Pro-
24 gram.

1 **SEC. 6. RESEARCH IN ANTICOUNTERFEIT TECHNOLOGIES.**

2 (a) ESTABLISHMENT OF PROGRAM.—The Under Sec-
3 retary and the Director of the National Institute of Stand-
4 ards and Technology shall establish a joint research and
5 development program on anticounterfeit technologies and
6 standards. The program may include development of coun-
7 terfeit-resistant documentation, counterfeit-resistant de-
8 vices, document validation technologies, and document
9 identification standards.

10 (b) COORDINATION.—In carrying out the program in
11 subsection (a), the Under Secretary or his designee shall
12 coordinate with other Federal agencies engaged in similar
13 activities, including Immigration and Customs Enforce-
14 ment, the Department of State, the Department of De-
15 fense, and the Department of Justice.

16 (c) REPORT TO CONGRESS.—Not later than 12
17 months after the date of enactment of this Act, the Under
18 Secretary and the Director of the National Institute of
19 Standards and Technology shall provide to the Committee
20 on Homeland Security and the Committee on Science and
21 Technology of the House of Representatives, and the Com-
22 mittee on Homeland Security and Government Affairs of
23 the Senate, a report detailing the actions taken by the
24 Under Secretary and the Director under this section.

1 **SEC. 7. STUDY ON GLOBAL POSITIONING SYSTEM TECH-**
2 **NOLOGIES.**

3 (a) IN GENERAL.—The Under Secretary shall con-
4 duct a study of the need for next generation global posi-
5 tioning system technology as it relates to border security,
6 including—

7 (1) conducting an analysis of the frequency of
8 unintended border crossings and the capability of
9 global positioning system technologies to address un-
10 intended border crossings by government personnel;

11 (2) undertaking an examination of the potential
12 end user requirements for global positioning system
13 technologies, including cost limitations, accessibility,
14 and reliability; and

15 (3) developing recommendations for potential
16 near-term and long-term research, development, test-
17 ing, and evaluation of border security-focused global
18 positioning technologies.

19 (b) CONSULTATION.—In conducting the study under
20 subsection (a), the Under Secretary shall consult with
21 U.S. Customs and Border Protection, the National Insti-
22 tute of Standards and Technology, the United States Geo-
23 logical Survey, and appropriate Federal, State, and local
24 law enforcement officials.

25 (c) REPORT.— Not later than 1 year after the date
26 of enactment of this Act, the Under Secretary shall trans-

1 mit to Congress a report on the findings of the study con-
2 ducted under this section.

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
FEBRUARY 27, 2007

AMENDMENT ROSTER

H.R. 3916, to provide for the next generation of border and maritime security technologies

No.	Sponsor	Description	Results
1	Mr. Hall	Amendment in the Nature of a Substitute makes changes to the bill to clarify the intent and ensure proper coordination and management. The amendment clarifies that the technology transfer agreement requirements apply only to projects at the Science and Technology Directorate and do not apply government wide. The amendment specifies a one year time period for the National Research Council study on the basic research needs of the Border and Maritime division. The section on unmanned aerial vehicles is altered to specifically include research on autonomously piloted drones and collaboration with the Joint Planning and Development Office. The amendment ensures that the U.S. Geological Survey and U.S. Coast Guard are appropriately consulted for the tunnel detection and anti-counterfeit programs.	Agreed to by unanimous consent.
2	Mr. McNerney	Amends Section 4 by adding an assessment of real time tactical scene awareness technologies into the list of technologies to be considered as part of the National Research Council's report on basic research needs in the field of border security.	Agreed to by voice vote.
3	Mr. McCaul	Adds a new section which requires the Under Secretary of Science and Technology to study how mobile biometric technology can be used at the border between the ports of entry. Requires the Under Secretary, in coordination with U.S Customs and Border Protection and the National Institute of Standards and Technology, to research the benefits and constraints of implementing a mobile biometric pilot program for the Border Patrol, and to recommend ways to close capability gaps in this area.	Agreed to by voice vote.

AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 3916 OFFERED BY MR. HALL OF TEXAS

Strike all after the enacting clause and insert the following:

1 **SEC. 1. SHORT TITLE.**

2 This Act may be cited as the "Border Security Tech-
3 nology Innovation Act of 2008".

4 **SEC. 2. ENSURING RESEARCH ACTIVITIES OF THE DEPART-**
5 **MENT OF HOMELAND SECURITY INCLUDE AP-**
6 **PROPRIATE CONCEPTS OF OPERATION.**

7 The Under Secretary for Science and Technology of
8 the Department of Homeland Security (in this Act re-
9 ferred to as the "Under Secretary") shall ensure that any
10 Federal Government interagency or intra-agency agree-
11 ment entered into by the Under Secretary to develop and
12 transition new technology explicitly characterizes the re-
13 quirements, expected use, and concept of operations for
14 that technology, including—

15 (1) the manpower needed to effectively operate
16 the technology;

17 (2) the expected training requirements; and

1 (3) the expected operations and maintenance
2 costs.

3 **SEC. 3. REAUTHORIZATION OF HOMELAND SECURITY**
4 **SCIENCE AND TECHNOLOGY ADVISORY COM-**
5 **MITTEE.**

6 Section 311(j) of the Homeland Security Act of 2002
7 (6 U.S.C. 191(j)) is amended by striking "on December
8 31, 2008" and inserting "on December 31, 2012".

9 **SEC. 4. REPORT ON BASIC RESEARCH NEEDS FOR BORDER/**
10 **MARITIME SECURITY.**

11 Not later than 3 months after the date of enactment
12 of this Act, the Under Secretary shall enter into an ar-
13 rangement with the National Research Council for a one-
14 year assessment of the basic science research needs in the
15 border and maritime security domain. The assessment
16 shall include consideration of—
17 (1) detection, tracking, and identification tech-
18 nologies for cargo and people;
19 (2) personal protective equipment;
20 (3) anticounterfeit technologies; and
21 (4) nonradiological advanced screening tech-
22 nologies at ports of entry.

SEC. 5. INCORPORATING UNMANNED AERIAL VEHICLES INTO BORDER/MARITIME AIRSPACE.

(a) RESEARCH AND DEVELOPMENT.—The Secretary of Homeland Security and the Director of the Joint Planning and Development Office shall research and develop technologies to permit routine operation of unmanned aerial vehicles, including autonomously piloted drones, within the national airspace for border and maritime security missions without any degradation of existing levels of safety for all national airspace system users.

(b) PILOT PROJECTS.—The Secretary shall coordinate with the Administrator of the Federal Aviation Administration and the Director of the Joint Planning and Development Office to enter into pilot projects in sparsely populated, low-density Class G air traffic airspace to conduct experiments and collect data in order to accelerate the safe integration of unmanned aircraft systems into the national airspace system as part of research activities of the Joint Planning and Development Office.

SEC. 6. ESTABLISHING A RESEARCH PROGRAM IN TUNNEL DETECTION.

(a) RESEARCH AND DEVELOPMENT.—The Under Secretary shall research and develop technologies to permit detection of near surface voids, such as tunnels, with an emphasis on technologies with real time capability.

1 (b) COORDINATION.—The Secretary of Homeland Se-
2 curity shall coordinate with other appropriate Federal
3 agencies, including the Department of Defense and the
4 United States Geological Survey, and ensure the integra-
5 tion of activities under subsection (a) with relevant efforts
6 of such other agencies and the Department of Homeland
7 Security's Centers of Excellence Program.

8 **SEC. 7. RESEARCH IN ANTICOUNTERFEIT TECHNOLOGIES.**

9 (a) ESTABLISHMENT OF PROGRAM.—The Under Sec-
10 retary and the Director of the National Institute of Stand-
11 ards and Technology shall establish a joint research and
12 development program on anticounterfeit technologies and
13 standards. The program may include assessment or devel-
14 opment of counterfeit-resistant documentation, counter-
15 feit-resistant or tamper-resistant devices, document vali-
16 dation technologies, and document identification stand-
17 ards.

18 (b) COORDINATION.—In carrying out the program in
19 subsection (a), the Under Secretary shall coordinate with
20 other Federal agencies engaged in similar activities, in-
21 cluding Immigration and Customs Enforcement, the De-
22 partment of State, the Department of Defense, the United
23 States Coast Guard, and the Department of Justice.

24 (c) REPORT TO CONGRESS.—Not later than 12
25 months after the date of enactment of this Act, the Under

1 Secretary and the Director of the National Institute of
2 Standards and Technology shall provide to the Committee
3 on Homeland Security and the Committee on Science and
4 Technology of the House of Representatives, and the Com-
5 mittee on Homeland Security and Government Affairs of
6 the Senate, a report detailing the actions taken by the
7 Under Secretary and the Director under this section.

8 **SEC. 8. STUDY ON GLOBAL POSITIONING SYSTEM TECH-**
9 **NOLOGIES.**

10 (a) IN GENERAL.—The Under Secretary shall con-
11 duct a study of the need for next generation global posi-
12 tioning system technology as it relates to border security,
13 including—

14 (1) conducting an analysis of the frequency of
15 unintended border crossings and the capability of
16 global positioning system technologies to address un-
17 intended border crossings by government personnel;

18 (2) undertaking an examination of the potential
19 end user requirements for global positioning system
20 technologies, including cost limitations, accessibility,
21 and reliability; and

22 (3) developing recommendations for potential
23 near-term and long-term research, development, test-
24 ing, and evaluation of border security-focused global
25 positioning technologies.

1 (b) CONSULTATION.—In conducting the study under
2 subsection (a), the Under Secretary shall consult with
3 U.S. Customs and Border Protection, the National Insti-
4 tute of Standards and Technology, the United States Geo-
5 logical Survey, and appropriate Federal, State, and local
6 law enforcement officials.
7 (c) REPORT.— Not later than 1 year after the date
8 of enactment of this Act, the Under Secretary shall trans-
9 mit to Congress a report on the findings of the study con-
10 ducted under this section.

AMENDMENT OFFERED BY MR. MCNERNEY OF CALIFORNIA TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE OFFERED BY MR. HALL OF TEXAS

Page 2, line 20, strike "and".

Page 2, line 22, strike the period and insert "; and".

Page 2, after line 22, insert the following new paragraph:

1 (5) technologies for real time tactical scene
2 awareness.

AMENDMENT TO H.R. 3916
OFFERED BY MR. MCCAUL OF TEXAS

At the end of the bill, insert the following new section:

1 **SEC. 8. BIOMETRIC IDENTIFICATION OF UNAUTHORIZED**
2 **BORDER CROSSERS.**
3 (a) IN GENERAL.—The Under Secretary, in coordi-
4 nation with the Commissioner of United States Customs
5 and Border Protection, shall establish a research program
6 on the use of mobile biometric technology at the Nation's
7 borders between the ports of entry, including—
8 (1) conducting an analysis of existing mobile bi-
9 ometric technologies and the extent to which they
10 can be deployed in Border Patrol agents' vehicles
11 and used at the border, in terms of operability, reli-
12 ability, cost, and overall benefit to border operations;
13 (2) undertaking an examination of the potential
14 end-user requirements of mobile biometric tech-
15 nology by the Border Patrol and other relevant end-
16 users;
17 (3) developing recommendations for closing ca-
18 pability gaps in mobile biometric technologies; and

1 (4) examining the feasibility of implementing a
2 pilot program for use of mobile biometric tech-
3 nologies at the border.
4 (b) CONSULTATION.—In conducting the research pro-
5 gram under subsection (a), the Under Secretary shall con-
6 sult the National Institute of Standards and Technology
7 and appropriate Federal, State, and local law enforcement
8 officials.
9 (c) COORDINATION.—The Secretary shall ensure that
10 the research program is coordinated with other biometric
11 identification programs within the Department of Home-
12 land Security.
13 (e) REPORT.—Not later than 6 months after the date
14 of enactment of this Act, the Under Secretary shall trans-
15 mit to Congress a report on the findings of the research
16 program conducted under this section.

○