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Electromagnetic Pulse Weapons: Congress Must Understand the Risk

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In 2004, the congressionally mandated Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack released an unclassified executive report on its broader study of the U.S.'s vulnerability to EMP weapons strikes.¹ In 2008, the commission released a follow-up report that detailed the vulnerabilities of the critical infrastructures of the U.S. to EMP strikes.² Taken together, these two reports make it clear that an EMP attack could inflict severe damage on the U.S. As the initial report stated, "EMP is one of a small number of threats that can hold our society at risk of catastrophic consequences."

Congress should not let the Obama Administration ignore the commission's findings. Instead, it should mandate an updated assessment of which countries may be pursuing EMP weapons and associated delivery systems and platforms. Further, Congress should demand that the Administration develop, test, and ultimately field defenses against EMP attacks, including improved ballistic missile defenses capable of countering short-range ballistic missiles that can carry EMP warheads.

What Is EMP? EMP is triggered by the detonation of a nuclear weapon at a high altitude over the earth. As a result of this detonation, an electromagnetic field radiates down to the earth, creating electrical currents.

These fields cause widespread damage to electrical systems—the lifeblood of a modern society like the U.S. In turn, the damaged electronic systems can cause a cascade of failures throughout the broader

infrastructure, including banking systems, energy systems, transportation systems, food production and delivery systems, water systems, emergency services, and—perhaps most damaging—cyberspace.

Effectively, the U.S. would be thrown back to the pre-industrial age following a widespread EMP attack.

What Congress Should Do. The lack of public awareness regarding the disturbing implications of an EMP attack may prompt the Obama Administration to set aside proposals for addressing this problem. Congress should not let this happen. Specifically, Congress should take the following three steps:

Step #1: Require the Director of National Intelligence (DNI) to Produce a National Intelligence Estimate (NIE) Describing Which Countries Are Capable of Launching an EMP Strike. The NIE should review not only the weapons systems themselves but the delivery systems and platforms capable of carrying the weapons. Additionally, Congress should obtain from the NIE the intelligence community's assessment of how EMP-capable countries are incorporating those weapons into their broader military strategies.

The latter assessment would permit the President and his advisors to determine how the U.S. could respond to EMP threats as they arise. Such planning

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is an essential part of providing an effective defense against these threats.

Step #2: Press the Obama Administration to Prepare to Protect the Nation's Cyber Infrastructure Against the Effects of EMP. Congress should direct the Department of Defense and the Department of Homeland Security to manage this effort, which should incorporate the recommendations of the commissions. For instance, the commission has determined that preparedness measures must account for the fact that the cyber infrastructure is quite dependent on the power grid. Thus, contingency planning must explore ways to keep the cyber system functioning without primary power.

Further, it recommends identifying the most critical elements of the cyber system that must survive an EMP attack. Finally, the commission recommends that preparedness planning account for the interdependency between the nation's cyber infrastructure and other elements of the broader infrastructure. Overall, the key to preparing to counter the effects of EMP is to put barriers in place to prevent cascading failures in the nation's infrastructure.

Step #3: Require the Navy to Develop a Test Program for Sea-Based Interceptors with the Capability to Intercept and Destroy Ballistic Missiles Carrying EMP Weapons Prior to Detonation. It is clear that ballistic missiles offer an ideal delivery system for an EMP weapon. For instance, an enemy of America could launch a short-range missile carrying an EMP weapon from a cargo ship off the U.S. coast. Clearly, the terminal-phase ballistic missile defense systems currently in the field or entering the field, such as the Patriot system and the Terminal High Altitude Area Defense system, will not reliably intercept such ballistic missiles prior to the detonation of an EMP warhead. The Standard Missile-3 Block IA (SM-3 Block IA), as a midcourse defense system, may be able to do so.

What the U.S. really needs to address this threat, however, is a version of the SM-3 that will intercept these kinds of missiles in the boost or ascent phase of flight. The Independent Working Group has recommended developing and fielding what it calls an "East Coast Missile Defense" to address this emerging threat.³

Accordingly, Congress should require the Navy to demonstrate the capability to produce new versions of the SM-3 interceptor that are capable of destroying a short-range missile in the boost or ascent phase of flight, prior to its reaching the preferred detonation points for an EMP warhead. This will require that Congress also provide the Navy with the funds necessary to undertake this test program.

If it chooses to do so, Congress could also direct the Air Force to undertake a companion program that would permit operational use of the Airborne Laser system to defend against an attack from a short-range missile.

A Very Real Threat. The concept of an EMP strike may be seen by the public as abstract, but the devastating consequences would be very real for the victims. Congress should not let the Obama Administration ignore this menace.

Defensive options for addressing future EMP attacks are not beyond America's capacity. Pursuing these options starts with updating intelligence on EMP capabilities and emerging threats; it ends with putting specific defensive systems in place, such as a modified version of the Navy's sea-based ballistic missile defense interceptors capable of intercepting and destroying short-range ballistic missile EMP delivery systems.

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1. "Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack," Volume 1: Executive Report, 2004, at http://www.empcommission.org/docs/empc_exec_rpt.pdf (February 25, 2010).
2. "Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack: Critical National Infrastructures," April 2008, at http://www.empcommission.org/docs/A2473-EMP_Commission-7MB.pdf (February 25, 2010).
3. Independent Working Group, "Missile Defense, the Space Relationship, and the Twenty-First Century," 2009 Report, p. 130, at <http://www.ifpa.org/pdf/IWG2009.pdf> (February 25, 2010).