

THE LONG SUNDAY

Election Day 2016 - Inauguration Day 2017

NUCLEAR EMP ATTACK SCENARIOS

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NUCLEAR EMP ATTACK SCENARIOS**

INTRODUCTION

"May you live in interesting times" is allegedly an ancient Chinese curse that certainly describes our own troubled era, when the world is on the brink of all manner of catastrophes, including possibly another world war.¹

The "think piece" that follows does *not* predict that a nuclear electromagnetic pulse (EMP) attack is *likely* to occur between the national elections on November 8 and the next presidential inauguration on January 20. But it is a sign of just how deeply troubled and unpredictable are the times in which we now live, when almost every day brings another unpleasant surprise, that any or all of the scenarios this report shall describe are entirely plausible.

This treatise is intended to serve several purposes:

- 1) To introduce EMP to those who may not be familiar with this threat and its role in the military doctrines of Russia, China, North Korea, and Iran as the "ultimate cyber weapon." EMP and cyber warfare are a Revolution in Military Affairs, perhaps the most decisive and consequential in history, that casts a larger and darker shadow over Western Civilization than did Nazi Germany's Blitzkrieg strategy on the eve of World War II.
- 2) To warn that the weak foreign and defense policies of the United States have so eroded U.S. military capabilities and the credibility of U.S. security guarantees that a nuclear EMP attack against U.S. allies--or against the United States itself--could be the next unpleasant surprise, and perhaps soon.
- 3) To administer a kind of shock therapy to my fellow Americans who still have it in their power to change the course of U.S. foreign and defense policies toward safety, and away from catastrophe. Few if any readers of the Center for Security Policy require shock therapy. Alas, it is also symptomatic of our troubles, the source of which is in part a tendency toward unrealistic wishful thinking, that I could not publish this in Foreign Affairs or Foreign Policy, or a short version in the New York Times or Washington Post, and reach a more needful audience.

1939 Redux

Parallels between weak U.S. defense and foreign policies today, and Western weakness that virtually invited aggression by Nazi Germany and the outbreak of World War II in 1939, are so striking that it has become commonplace for defense analysts to say so. Some highlights:

¹ The authenticity of this "ancient Chinese curse" is widely doubted, although there is a supposedly authentic Chinese proverb, "It is better to be a dog in a peaceful time than a man in a chaotic period" according to "May You Not Live In Interesting Times" Nature Medicine 11, 1257, 2005.

- U.S. conventional and nuclear forces have become "hollow" from long underinvestment in their modernization and basic maintenance.²
- The U.S. Army has shrunk to its lowest level of active duty soldiers since before World War II.³
- The U.S. Navy, according to former Defense Secretary Leon Panetta, has the "smallest number of ships since 1915."⁴
- The U.S. Air Force, according to Defense Secretary Panetta, "is the smallest Air Force in its history."⁵
- U.S. strategic nuclear weapons are decades old and obsolete compared to brand new missiles and new generation nuclear weapons being deployed by Russia and China.⁶
- The U.S. has ceded to Russia and China a virtual monopoly in tactical nuclear weapons, retaining only some 180 aged gravity bombs stored in European NATO, while Russia has an estimated 3,000-8,000 tactical nuclear weapons for battlefield and theater use.⁷
- North Korea makes more nuclear weapons every year than the United States, which prohibits itself from making more nuclear weapons or replacing old weapons with new designs.
- European NATO has become so militarily "hollow" that RAND and the U.S. Defense Department estimate Russia could roll over NATO's frontline states in Poland and the Baltics in 60 hours.⁸

In U.S. foreign policy the "appeasement" that fed aggression by Nazi Germany and Imperial Japan and led to World War II is happening today on a grander scale:

- Russia has annexed the Crimea and is waging a proxy war against Ukraine, security guarantees to Ukraine by the U.S. and Britain under the 1994 Budapest Agreement having proven worthless.
- Russia regularly makes nuclear threats and conducts military exercises against NATO and the United States.⁹
- China in open violation of international law is in the process of annexing the South China Sea.¹⁰
- China and Russia, while paying lip service to the denuclearization of the Korean Peninsula, are helping North Korea develop nuclear missiles.¹¹
- North Korea is illegally developing nuclear missiles, regularly makes nuclear threats against the U.S. and its allies, and has orbited two illegal satellites over the United States, which the U.S. has refrained from shooting down.¹²

² Heritage Foundation, *2016 Index of U.S. Military Strength* (2016).

³ Army Times, May 7, 2016.

⁴ Jon Kyl and Joseph Lieberman, "Too Much Crisis, Too Little Defense" American Enterprise Institute, October 30, 2013.

⁵ Ibid.

⁶VADM Robert Monroe, "The Fading U.S. Nuclear Deterrent" Wall Street Journal, July 12, 2015.

⁷ Baker Spring and Michaela Dodge, "The United States Must Not Concede The Russian Position On Tactical Nuclear Weapons" Heritage Foundation, February 8, 2012.

⁸"Defense Official: Russia Could Destroy NATO In 60 Hours Or Less" Weekly Standard, June 8, 2016.

⁹ John Grady, "Arms Expert: Russia Quick To Threaten Nuclear Strikes In Regional Conflict" USNI News, June 28, 2016.

¹⁰ "Beijing Defies Hague Court In South China Sea Dispute" The Australian, July 13, 2016.

¹¹ "Hyper-Proliferation In North Korea" Washington Times, March 3, 2016.

¹² Ambassador Henry Cooper cited in "Expert: North Korea Prepping EMP Attack On U.S." WND, February 3, 2016; "North Korea Poses EMP Threat" American Thinker, May 2, 2016.

--Iran has received \$150 billion in sanctions relief from the U.S. and international community in exchange for a nuclear deal that at best may delay Iran's development of nuclear weapons, while according to some experts Iran already has nuclear-armed missiles.¹³

--The U.S. has alienated Israel and Arab allies in pursuit of the Iran nuclear deal, while Iran threatens those allies directly and indirectly as the world's leading sponsor of international terrorism, and while Iran kills U.S. soldiers and takes hostage U.S. citizens.¹⁴

--European NATO will not even defend its borders from hordes of illegal migrants from the Middle East, or defend its people from their growing criminal and terrorist predations.¹⁵

All of the above looks like weakness, not only to many Western observers, but especially to the militant dictatorships that are Russia, China, North Korea, and Iran.

President Obama's calls for "a world without nuclear weapons" and for a nuclear "no first use" policy and for a nuclear Comprehensive Test Ban Treaty are antithetical to the doctrine of "peace through strength" and looks like weakness.¹⁶ Indeed, in the context of growing and vociferous nuclear threats to the United States from Russia, China, and North Korea, Obama's pleading for nuclear arms control and unilateral gestures looks, especially to the bad guys, like cowardice.¹⁷

U.S., NATO, and United Nations reliance chiefly on economic sanctions to punish Russia, China, North Korea, and Iran for their transgressions also looks like cowardice, especially to these authoritarian and totalitarian dictatorships that are most impressed by military power. Contrary to the common wisdom, economic sanctions are not necessarily a "safe" way of punishing wrongdoing.

Historically, on the rare occasion that economic sanctions have enough teeth to seriously threaten a military dictatorship, the result has not been surrender, but aggression. For example, the U.S. embargo on exporting oil and war materials to punish Imperial Japan for its invasion of China was a significant factor contributing to Tokyo's decision to go to war against the United States in World War II.

Just as Nazi Germany gambled on the Blitzkrieg to launch its conquest of Europe in 1939, and just as Japan gambled on its revolutionary use of carrier-based airpower to conquer the Pacific by attacking Pearl Harbor on December 7, 1941, today's potential adversaries may be tempted by an even more powerful and revolutionary new way of warfare.

¹³ "Experts: Iran Now A Nuclear-Ready State, Missiles Capable of Hitting U.S." Newsmax, February 1, 2015.

¹⁴ "Has America Lost Its Allies In The Middle East?" Telegraph, May 15, 2015; "How Obama Is Selling Out The Middle East To Iran" National Review, June 25, 2015; "Iran Nuclear Deal Makes Middle East Allies Nervous" U.S. News, July 14, 2015.

¹⁵ "Migration Crisis: Hungary PM Says Europe In Grip Of Madness" The Guardian, September 3, 2015; "The Next Immigration Crisis" The Spectator, February 3, 2016; "Europe's Migration Crisis" Council on Foreign Relations, September 23, 2015.

¹⁶ "A Memo To President Obama" Family Security Matters, July 25, 2016; "Obama's Nuclear Policy Leaves U.S. Vulnerable" Newsmax, July 20, 2016.

¹⁷ "The New Dark Ages?" Mackenzie Institute, May 5, 2016.

I

BLACKOUT WAR: A REVOLUTION IN MILITARY AFFAIRS

Nuclear EMP attack is part of the military doctrines, plans and exercises of Russia, China, North Korea, and Iran for a revolutionary new way of warfare that focuses on attacking electric grids and civilian critical infrastructures by cyber, sabotage, and EMP. This new way of warfare is called many things by many nations. In Russia, China, and Iran it is called Sixth Generation Warfare, Non-Contact Warfare, Radioelectronic Warfare, Total Information Warfare, and Cyber Warfare. Some U.S. analysts call it Cybergeddon or Blackout War.¹⁸

Ignorance of the military doctrines of potential adversaries and a failure of strategic imagination is setting America up for an EMP Pearl Harbor that could easily be avoided--if we would only heed that sabotage of electric grids and cyber-attacks are early warning indicators. In fact, in the military doctrines, planning, and exercises of Russia, China, North Korea and Iran, nuclear EMP attack is the ultimate weapon in an all-out cyber operation aimed at defeating nations by blacking-out their electric grids and other critical infrastructures.¹⁹

Russia

For example, Russian General Vladimir Slipchenko in his military textbook *Non-Contact Wars* describes the combined use of cyber viruses and hacking, physical attacks, non-nuclear EMP weapons, and ultimately nuclear EMP attack against electric grids and critical infrastructures as a new way of warfare that is the greatest Revolution in Military Affairs (RMA) in history. Like Nazi Germany's Blitzkrieg ("Lightning War") Strategy that coordinated airpower, armor, and mobile infantry to achieve strategic and technological surprise that nearly defeated the Allies in World War II, the New Blitzkrieg is, literally and figuratively, an electronic "Lightning War" so potentially decisive in its effects that an entire civilization could be overthrown in hours.

According to General Slipchenko, EMP and the new RMA renders obsolete modern armies, navies and air forces. For the first time in history, small nations or even non-state actors can humble the most advanced nations on Earth.

China

China's military doctrine sounds an identical theme. According to People's Liberation Army textbook *World War, the Third World War--Total Information Warfare*, written by Shen Weiguang (allegedly the inventor of Information Warfare), "Therefore, China should focus on measures to counter computer viruses, nuclear electromagnetic pulse...and quickly achieve breakthroughs in those technologies...":

With their massive destructiveness, long-range nuclear weapons have combined with highly sophisticated information technology and information warfare under nuclear

¹⁸ Dr. Peter Vincent Pry, *Blackout Wars* (EMP Task Force On National And Homeland Security, 2016).

¹⁹ Ambassador R. James Woolsey, "Heading Toward An EMP Catastrophe" Statement for the Record before the Senate Homeland Security and Governmental Affairs Committee, July 22, 2015.

deterrence....Information war and traditional war have one thing in common, namely that the country which possesses the critical weapons such as atomic bombs will have "first strike" and "second strike retaliation" capabilities....As soon as its computer networks come under attack and are destroyed, the country will slip into a state of paralysis and the lives of its people will ground to a halt. Therefore, China should focus on measures to counter computer viruses, nuclear electromagnetic pulse...and quickly achieve breakthroughs in those technologies in order to equip China without delay with equivalent deterrence that will enable it to stand up to the military powers in the information age and neutralize and check the deterrence of Western powers, including the United States.

Iran

Iran in a recently translated military textbook endorses the theories of Russian General Slipchenko and the potentially decisive effects of nuclear EMP attack some 20 times. An Iranian political-military journal, in an article entitled “Electronics To Determine Fate Of Future Wars,” states that the key to defeating the United States is EMP attack and that, “If the world's industrial countries fail to devise effective ways to defend themselves against dangerous electronic assaults, then they will disintegrate within a few years.”:

Advanced information technology equipment exists which has a very high degree of efficiency in warfare. Among these we can refer to communication and information gathering satellites, pilotless planes, and the digital system....Once you confuse the enemy communication network you can also disrupt the work of the enemy command and decision-making center. Even worse, today when you disable a country's military high command through disruption of communications you will, in effect, disrupt all the affairs of that country....If the world's industrial countries fail to devise effective ways to defend themselves against dangerous electronic assaults, then they will disintegrate within a few years....American soldiers would not be able to find food to eat nor would they be able to fire a single shot.²⁰

North Korea

North Korea appears to have practiced the military doctrines described above against the United States--including by simulating a nuclear EMP attack against the U.S. mainland.²¹

Following North Korea's third illegal nuclear test in February 2013, North Korean dictator Kim Jong-Un repeatedly threatened to make nuclear missile strikes against the U.S. and its allies. In what was then the worst ever nuclear crisis with North Korea, that lasted months, the U.S. responded by beefing-up National Missile Defenses and flying B-2 bombers in exercises just outside the Demilitarized Zone to deter North Korea.²²

On April 9, 2013, North Korea's KMS-3 satellite orbited over the U.S. from a south polar trajectory, that evades U.S. early warning radars and National Missile Defenses, at the near optimum altitude and location to place an EMP field over all 48 contiguous United States.²³

²⁰Tehran, Nashriyeh-e Siasi Nezami, December 1998 -January 1999.

²¹ "EMP Threat From North Korea, 2013" Family Security Matters, April 27, 2014.

²² "U.S. Warns North Korea With Stealth Bomber Flights" Wall Street Journal, March 29, 2013.

²³ KMS-3 is NORAD's acronym for North Korea's satellite Kwangmyongsong-3 (Lodestar-3 or Guiding Star-3), a name richly symbolic for Korean mythology and the deification of Kim Jong-Un who according to official

On April 16, 2013, the KMS-3 again orbited over the Washington, D.C.-New York City corridor where, if the satellite contained a nuclear warhead, it could project the peak EMP field over the U.S. political and economic capitals and collapse the Eastern Grid, which generates 75 percent of U.S. electricity. On the same day, parties unknown used AK-47s to attack the Metcalf transformer substation that services San Francisco, the Silicon Valley, and is an important part of the Western Grid. Blackout of the Western Grid, or of just San Francisco, would impede U.S. power projection capabilities against North Korea.²⁴

In July 2013, a North Korean freighter (the Chong Chon Gang) transited the Gulf of Mexico with SA-2 missiles in its hold, mounted on their launchers hidden under bags of sugar, discovered only after the freighter tried to return to North Korea through the Panama Canal.²⁵ Although the missiles were not nuclear-armed, they are designed to carry a 10 kiloton warhead, and could execute the Congressional EMP Commission's nightmare scenario of an anonymous EMP attack launched off a freighter. All during this period, the U.S. electric grid and other critical infrastructures experienced various kinds of cyber-attacks, as they do every day and continuously.²⁶

On January 6, 2016, North Korea provoked another nuclear crisis with its fourth illegal nuclear test of what it claimed was an H-Bomb. On February 7th, again amidst threats to make a nuclear missile strike on the United States, Pyongyang orbited another satellite, the KMS-4, on the same polar trajectory as the KMS-3.²⁷

North Korea now has two satellites orbiting over North America on trajectories optimized to evade U.S. Ballistic Missile Early Warning radars and missile defenses and make a surprise EMP attack, if the satellites are nuclear-armed. The satellites could be nuclear-armed and constitute a constant EMP threat, the 21st Century equivalent of "battleship diplomacy."

The Gathering Storm

Just as Nazi Germany practiced the Blitzkrieg in exercises and during the Spanish Civil War (1936-1939), before surprising the Allies in World War II, so terrorists and state actors appear to be practicing now. For example:

--On October 27, 2013, the Knights Templars, a criminal drug cartel, blacked-out Mexico's Michoacan state and its population of 420,000, so they could terrorize the people and paralyze the police. The Knights, cloaked by the blackout, entered towns and villages and publicly executed leaders opposed to the drug trade.²⁸

propaganda was born on Mt. Paeku under a newly appeared bright guiding star, signifying the birth of a great general.

²⁴ Pry, *Blackout Wars*, op. cit.; Rebecca Smith, "Assault On California Power Station Raises Alarm On Potential For Terrorism" Wall Street Journal, February 5, 2014.

²⁵ Pry, *Blackout Wars*, op. cit.; "North Korean Ship Yields Worrisome Cargo" Wall Street Journal, July 17, 2013; "North Korea's Cuban Missile Crisis" 38 North, August 1, 2013.

²⁶ Pry, *Blackout Wars*, op. cit.

²⁷ "North Korea May Have Tested Components Of A Hydrogen Bomb" CNN, January 29, 2016; "North Korea Launches 'Satellite,'" Sparks Fears About Long-Range Missile Program" Washington Post, February 6, 2016.

²⁸ "Attackers In Mexico Blow Up Nine Electrical Plants" Los Angeles Times, October 27, 2013.

--On June 9, 2014, Al Qaeda in the Arabian Peninsula used mortars and rockets to destroy transmission towers, plunging into darkness all of Yemen, a country of 16 cities and 24 million people. It is the first time in history that terrorists put an entire nation into blackout, and an important U.S. ally, whose government was shortly afterwards overthrown by terrorists allied to Iran.²⁹

--In July 2014, according to press reports, a Russian cyber-bug called Dragonfly infected 1,000 electric power-plants in Western Europe and the United States for purposes unknown, possibly to plant logic bombs in power-plant computers to disrupt operations in the future.³⁰

--On January 25, 2015, terrorists blacked-out 80 percent of the electric grid in Pakistan, a nation of 185 million people, and a nuclear weapons state.³¹

--On March 31, 2015, most of Turkey's 75 million people experienced a widespread and disruptive blackout, the NATO ally reportedly victimized by a cyber-attack from Iran.³²

--On December 23, 2015, a Russian cyber-attack blacked-out western Ukraine.³³

On June 20, 2015, the New York Times reported that, according to Obama administration officials in a classified briefing to Congress, a cyber-attack from China that stole sensitive U.S. Government data on millions of federal employees was information warfare "on a scale we've never seen before from a traditional adversary." Yet this and the other ominous threats described above are already forgotten, or relegated to back page news, as policymakers and the public stumble on, seemingly shell-shocked and uncomprehending, to the latest cyber crisis.

We as a nation are not "connecting the dots" through a profound failure of strategic imagination. Like the Allies before the Blitzkrieg of World War II, we are blind to the unprecedented existential threat that is about to befall our civilization--figuratively and literally, from the sky, like lightning.

²⁹ "Terrorist Attack Left All Of Yemen In Dark Last Week" Forbes, June 19, 2014.

³⁰ "Energy Firms Hacked By 'Cyber-Espionage' Group Dragonfly" BBC, July 1, 2014; "Dragonfly Russian Hackers Target 1,000 Western Energy Firms" thehackernews.com, July 1, 2014.

³¹ "Terror Attack Plunges 140 Million Into Darkness" WND, January 26, 2015; "Pakistan Plunges Into Darkness As Attack Leaves 140 Million Without Power" RT News, January 25, 2015.

³² "Massive Blackout Brings Turkey To A Standstill: Iran Cyber Attack?" Breitbart, March 31, 2015; "Turkey's 10-Hour Blackout Shows Threat To World Power Grids" Bloomberg, April 1, 2015.

³³ "Russian Hackers Shut Down Ukraine's Power Grid" Newsweek, January 14, 2016; R. James Woolsey and Peter Vincent Pry, "Will Infrastructure Sabotage Be The Next Pearl Harbor?" National Review, January 9, 2016.

II

EMP ATTACK: BASIC FACTS AND PRINCIPLES

Electromagnetic pulse (EMP) attack is technically and operationally the easiest, least risky, and most effective use of a nuclear weapon available to a nuclear-armed state or non-state actor.

What Is EMP?

Any nuclear weapon, even a primitive first-generation weapon like the A-bombs that destroyed Hiroshima and Nagasaki, will produce gamma rays and fireballs that generate the high-frequency (E1 EMP), medium-frequency (E2 EMP), and low-frequency (E3 EMP) electromagnetic pulses. EMP attack delivers a three-fold punch to electronics small and large, ranging from personal computers to national electric grids and everything in-between:

- Nuclear EMP attack entails detonating the weapon at such high altitude that no blast, thermal, fallout or effects other than EMP are experienced on the ground.
- EMP is like "super-lightning" in that it delivers a shock much more powerful than lightning against, not a point, but against electronics over a vast area.
- A single nuclear weapon can potentially make an EMP attack against a target the size of North America.
- E1 EMP is much faster (lasting nanoseconds) and much more powerful than lightning, cannot be stopped by devices designed for lightning protection, can damage and destroy small electronics and control systems necessary for the operation of everything from automobiles to airplanes, including electric grids, communications, and all other critical infrastructures.
- E2 EMP is as fast (lasting milliseconds) and as powerful as lightning and can be stopped by lightning protection, but many commercial enterprises and homes lack lightning protection.
- E3 EMP is much slower (lasting seconds) but has much more net energy than lightning, is potentially more powerful than the electromagnetic fields that could be generated by a solar super-storm, that can melt transformers designed to carry hundreds of thousands of volts.
- Because EMP propagates in three "waves" their damaging effects will be dynamic and mutually reinforcing, the E1 EMP damaging and destroying systems (including possibly lightning protection) that opens the door for wider and deeper damage by E2 and E3 EMP.

Any nuclear weapon detonated at an altitude of 30 kilometers or higher will generate a potentially catastrophic EMP. A nuclear detonation at 30 kilometers altitude will generate an EMP field with a radius on the ground of about 600 kilometers. Detonated at 400 kilometers altitude, the radius of the EMP field will be about 2,200 kilometers.³⁴

EMP Attack Is Easy

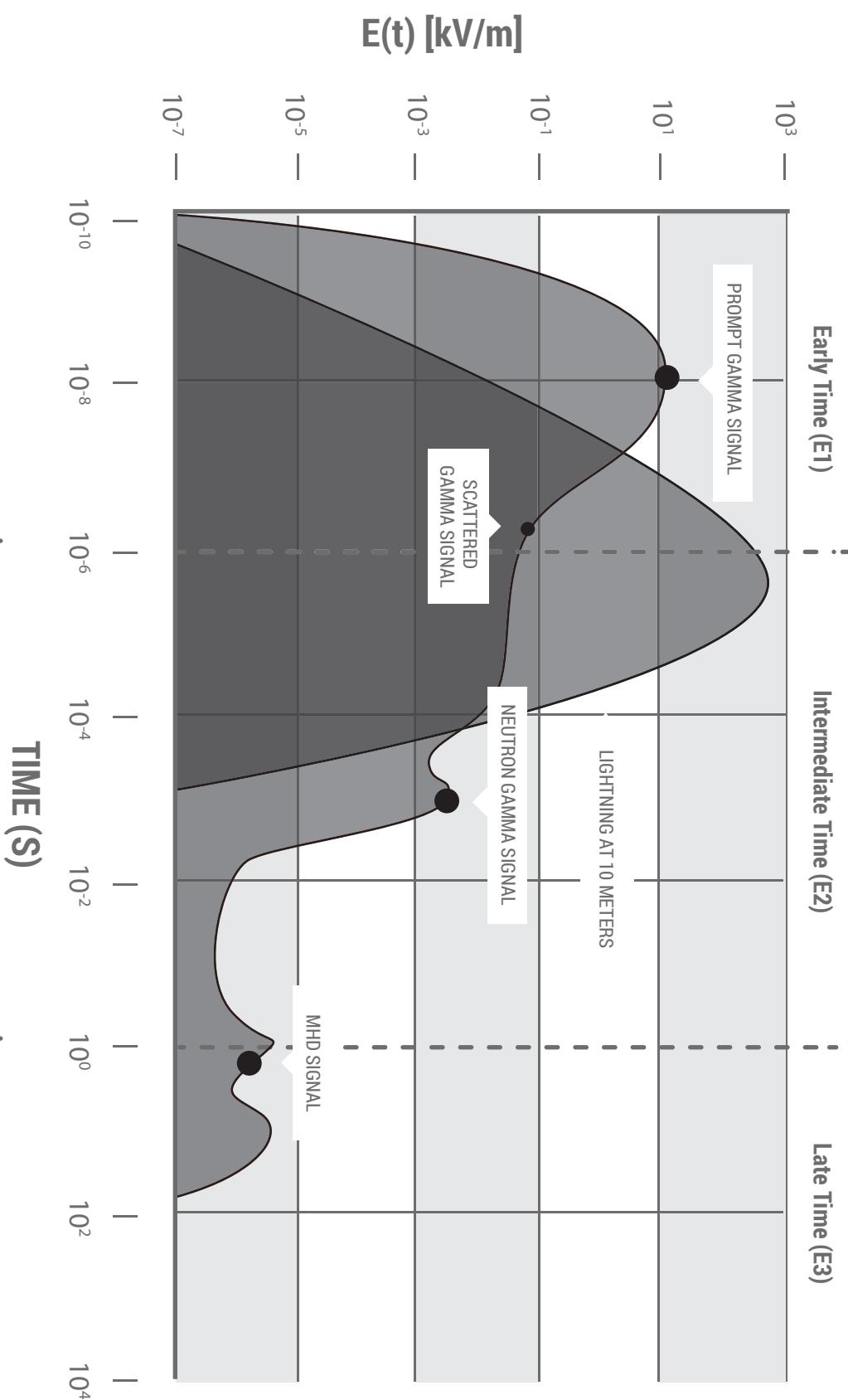
Accuracy is not necessary for an EMP attack because the target altitude (30-400 kilometers) is so wide, and the radius and the coverage of the EMP field is so vast.

³⁴ For the best background on nuclear EMP attack and effects see: Congressional EMP Commission, *Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack: Executive Report* (2004); *Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack: National Critical Infrastructures* (2008); Dr. Peter Vincent Pry et. al., *Electric Armageddon* (2013).

HEMP

E1, E2, & E3 DESCRIBED

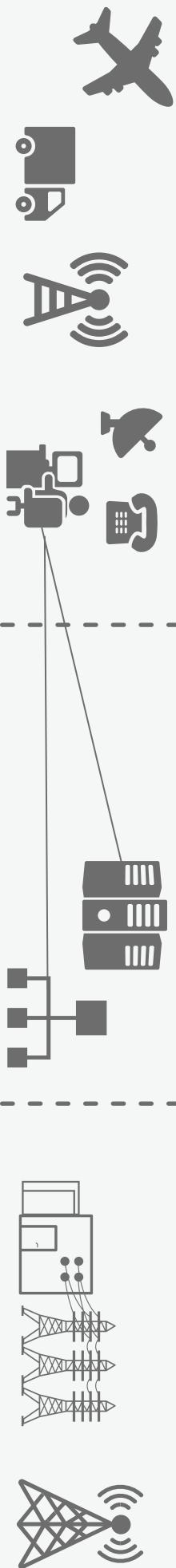
SOURCE: EMP COMMISSION BRIEFING



INDIVIDUAL SYSTEMS/NETWORKS

DISTRIBUTED NETWORKS

LONG POWER & COMMUNICATIONS LINES



EMP attack does not require a re-entry vehicle, heat shield, shock absorbers and other paraphernalia associated with a nuclear missile warhead designed for blasting a city. These are unnecessary for an EMP attack, which detonates the warhead above the atmosphere, in outer space.

EMP attack can be executed by a wide variety of delivery vehicles, anything that can loft a nuclear weapon to 30 kilometers or higher. Possible delivery vehicles against the United States include a satellite, a long-range missile, a medium- or short-range missile launched off a freighter, some kinds of cruise missiles and anti-ship missiles (like Russia's Club-K exported to Iran), a jet fighter or some kinds of jet airliner doing a zoom climb, even a meteorological balloon.

EMP Fields and Effectiveness

The size of the EMP field on the ground is determined by the altitude of detonation, EMP propagating from the point of detonation to the horizon. The higher the altitude of detonation, the bigger the EMP field on the ground.

EMP field strengths on the ground are stronger when the weapon is detonated at lower altitudes, where the effects are more concentrated within a smaller radius, and weaker when the weapon is detonated at higher altitudes, where the effects are within a larger radius and cover a bigger area. EMP effects are dangerous at all altitudes. Varying the altitude of the EMP attack can be used to adjust the size of the EMP field to better fit the target. Since the radius of the EMP field is not highly sensitive to altitude, relative to any delivery system (even the Houthis or Taliban could use commercial off-the-shelf technology to rig a fusing system that will detonate within less than one kilometer of the desired altitude) again accurate delivery is not an issue.

EMP fields are strongest at the center, where the peak field is located, and reduce in strength toward the margins. As a general rule, EMP field strength at the outer edge of the field will be about one-quarter of the peak field strength. Even for a primitive first-generation nuclear weapon, the entire field is dangerous, not just the peak field.

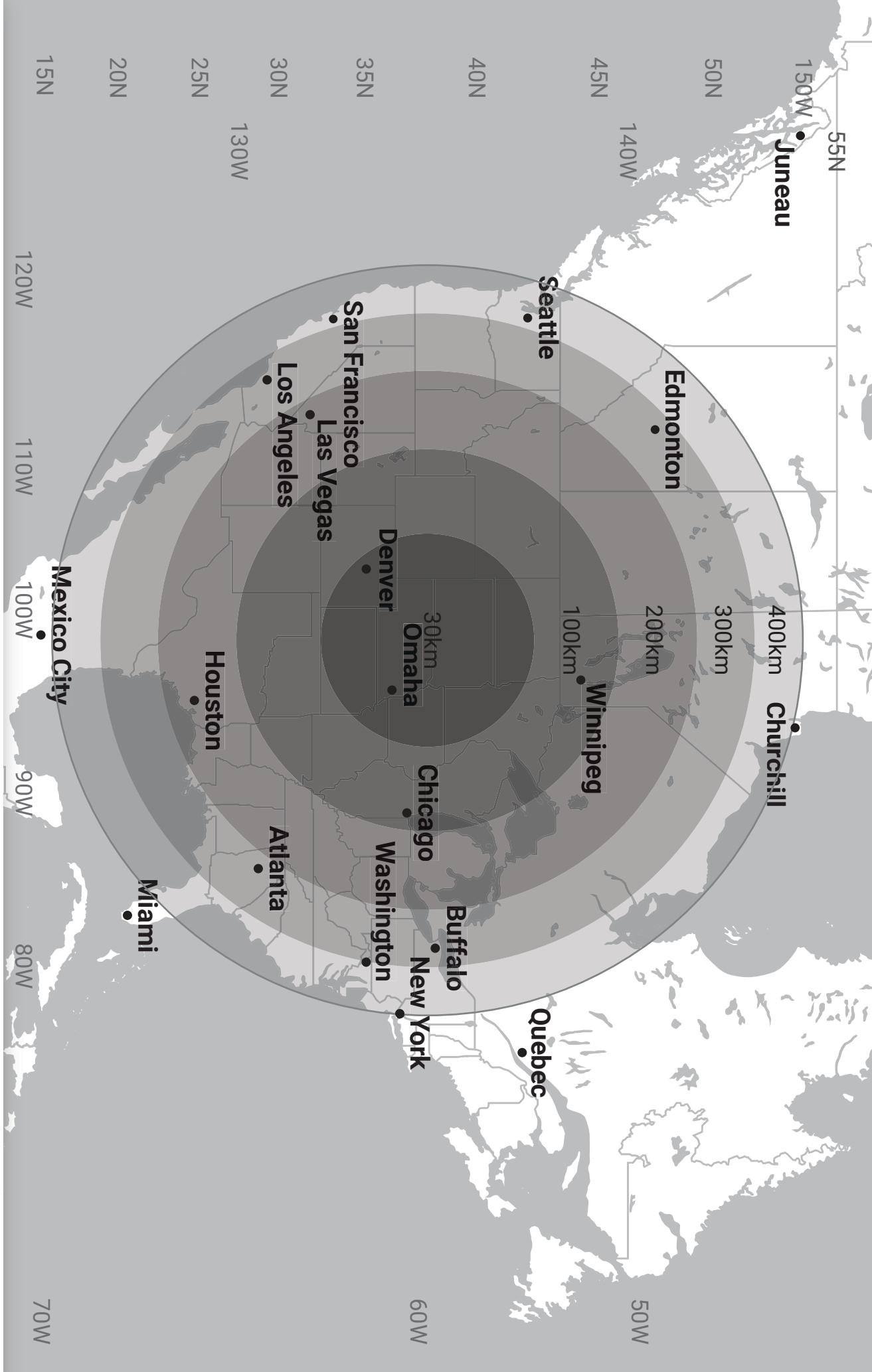
Damage to the electric grid and other critical infrastructures will not be limited to the EMP field. Cascading failures will propagate far beyond the EMP field through an unprotected electric grid blacking-out critical infrastructures, assuming the EMP field is smaller than the electric grid being attacked.

For example, a 10 kiloton weapon detonated at 30 kilometers over the U.S. Eastern Grid would generate an EMP field about 600 kilometers in radius, much smaller than the Eastern Grid. But the national electric grid being aged, over-taxed with demand, always operating on the verge of failure, capable of blackouts that put 50 million people into the dark because of cascading failures from a tree branch (like the Great Northeast Blackout of 2003), the entire Eastern Grid would certainly be plunged into a protracted blackout from such an EMP attack. The U.S. cannot survive without the Eastern Grid which generates 75 percent of the nation's electricity and supports most of the national population.

NUCLEAR HEMP AREA COVERAGE

NUCLEAR EMP ATTACK SCENARIOS

EMP field coverage increases with increasing height-of-burst. A balloon or jet aircraft could loft a nuclear warhead to an altitude of 30 kilometers which, targeted over New York City, would also cover Washington, D.C., New York State, New Jersey, Pennsylvania, Virginia, Maryland, Delaware, and most of New England.



**ELECTROMAGNETIC PULSE (EMP) FIELD RADIUS
ON EARTH'S SURFACE FROM NUCLEAR WEAPON
DETONATED AT GIVEN HEIGHT OF BURST(HOB)**
(Kilometers)

HOB	EMP Radius	HOB	EMP Radius	HOB	EMP Radius
30	602*	160	1,391	290	1,873
40	696	170	1,434	300	1,905
50	778	180	1,476	310	1,937
60	852	190	1,516	320	1,968
70	920	200	1,556	330	1,998
80	984	210	1,594	340	2,028
90	1,044	220	1,632	350	2,058
100	1,100	230	1,668	360	2,087
110	1,153	240	1,704	370	2,116
120	1,205	250	1,739	380	2,144
130	1,254	260	1,774	390	2,172
140	1,301	270	1,807	400	2,200**
150	1,347	280	1,841		

Calculated from Radius = $110 (\sqrt{HOB})$ in kilometers

* Radius exceeds distance from New York to Washington

** Radius covers all of continental United States

Any Nuke Will Do

For nuclear weapons of normal design, a high-yield weapon will generate a more powerful EMP field than a low-yield weapon, but the difference in field strength is not nearly as great as the difference in yield. For example, a 1,000 kiloton nuclear weapon will not generate an EMP field 100 times greater than a 10 kiloton nuclear weapon. Indeed, a 10 kiloton weapon will generate an E3 EMP field nearly as powerful as the 1,000 kiloton weapon, but over a smaller area.

Even a primitive first-generation nuclear weapon such as terrorists might build, like the first nuclear weapon ever built, the 10 kiloton bomb that destroyed Hiroshima, detonated at 30 kilometers altitude, will generate an EMP field that at the weakest, on the margins, will be several thousand volts per meter. This is enough to put at risk all unprotected civilian and military systems within the field.

Worldwide, most civilian electronic systems, and most military general purpose forces--including those of the United States--are not hardened against EMP. According to the Congressional EMP Commission *Executive Report* (2004):

"The end of the Cold War relaxed the discipline for achieving EMP survivability within the Department of Defense, and gave rise to the perception that an erosion of EMP survivability of military forces was an acceptable risk. EMP simulation and test facilities have been mothballed or dismantled, and research concerning EMP phenomena, hardening design, testing, and maintenance has been substantially decreased. However, the emerging threat environment, characterized by a wide spectrum of actors that include near-peers, established nuclear powers, rogue nations, sub-national groups, and terrorist organizations that either now have access to nuclear weapons and ballistic missiles or may have such access over the next 15 years have combined to place the risk of EMP attack and adverse consequences on the US to a level that is not acceptable."

Military planners correctly assume, and civilian emergency managers and engineers should assume, that electronic systems not protected against EMP are vulnerable.

Super-EMP Weapons

"Super-EMP" weapons, as they are termed by Russia, are nuclear weapons specially designed to generate an extraordinarily powerful E1 EMP field. Super-EMP warheads are designed to produce gamma rays, which generate the E1 EMP effect, not a big explosion, and typically have very low explosive yields, only 1-10 kilotons. According to Russian open sources, a Super-EMP weapon can generate a peak E1 EMP field of 200,000 volts per meter, which would be 50,000 volts/meter at the margins. Even EMP hardened U.S. strategic forces and C3I are potentially vulnerable to such a threat.³⁵

The Congressional EMP Commission warns that Russia, China, and probably North Korea have Super-EMP warheads. Moreover, according to the EMP Commission *Executive Report* (2004):

³⁵ *Russia: Nuclear Response To America Is Possible Using Super-EMP Factor* CEP20061108358006, Aleksey Vaschenko, "A Nuclear Response To America Is Possible," Zavtra, November 1, 2006.

"Certain types of low-yield nuclear weapons can be employed to generate potentially catastrophic EMP effects over wide geographic areas, and designs for variants of such weapons may have been illicitly trafficked for a quarter-century."

The U.S. has no Super-EMP weapons in its nuclear deterrent.

Questions and Answers to Common Myths and Misconceptions

Why would a military planner use EMP attack when its exact effects on any specific target, like a particular EHV transformer or an individual computer, are highly unpredictable?

Although it is very difficult to predict exactly which electronic systems would be upset, damaged, or destroyed by an EMP attack, with certainty massive disruption and damage will be inflicted on unprotected electronics within the EMP field and, because of cascading failures, far beyond. EMP is analogous to carpet bombing or an artillery barrage that causes massive random damage that is specifically difficult to predict, but reliably catastrophic in its macro-effects.

Cyber-attacks and physical sabotage against electric grids would rely far more heavily than EMP on highly unpredictable cascading failures resulting from random damage to cause a protracted blackout. Yet cyber threats and sabotage despite their randomness of effect, unlike EMP, are deservedly top priorities for the U.S. Department of Homeland Security and the electric power industry.

EMP should be a top priority threat for DHS and industry too, but currently is not.

Are the effects of EMP attack merely theoretical? No. The empirical basis for the threat of an EMP attack to electric grids and other critical infrastructures is far deeper and broader than the data for cyber-attacks or sabotage. The notion that a cyber-attack or sabotage can plunge the U.S. into a protracted blackout--while very real threats that warrant deep concern--are far more theoretical constructs than EMP attack.

We know for certain that EMP will cause widespread damage of electronics and protracted blackout of unprotected electric grids and other critical infrastructures from such hard data as:

- The U.S. STARFISH PRIME high-altitude nuclear test in 1962 over Johnston Island that generated an EMP field over the Hawaiian Islands, over 1,300 kilometers away, causing widespread damage to electronic systems.³⁶
- Six Russian EMP tests 1961-1962 over Kazakhstan that with a single weapon destroyed electric grids over an area larger than Western Europe, proving this capability six times.³⁷
- 30 years (1962-1992) of U.S. underground nuclear testing that included collecting data on EMP effects.

³⁶ Phil Plait, "The 50th Anniversary of Starfish Prime: The Nuke That Shook The World" Discover, July 9, 2012.

³⁷ Jerry Emanuelson, "Soviet Test 184: The 1962 Soviet Nuclear EMP Tests Over Kazakhstan" Future Science, Undated; Vladimir M. Loborev, "Up to Date State of the NEMP Problems and Topical Research Directions" Electromagnetic Environments and Consequences: Proceedings of the European International Symposium on Electromagnetic Environments, EUROEM Conference, Bordeaux, France, 1994; V. N. Mikhailov, *The Nuclear Tests of the USSR*, Vol. 2, Institute of Strategic Stability, Rosatom.

--Over 50 years of testing by EMP simulators, still ongoing, including by the Congressional EMP Commission (2001-2008) that proved modern electronics are over 1 million times more vulnerable to EMP than the electronics of 1962.³⁸

Moreover, hard data proving the threat from nuclear EMP is available from natural EMP generated by geomagnetic storms, accidental damage caused by electromagnetic transients, and non-nuclear radiofrequency weapons (RF weapons). All of these produce field strengths much less powerful than nuclear EMP, and in the case of accidental electromagnetic transients and radiofrequency weapons, much more localized. There are many thousands of such cases.

Many documented examples of successful attacks using RF weapons, and accidents involving electromagnetic transients, are described in the Department of Defense *Pocket Guide for Security Procedures and Protocols for Mitigating Radio Frequency Threats* (Technical Support Working Group, Directed Energy Technical Office, Dahlgren Naval Surface Warfare Center). A few examples:

- "Radio Frequency Weapons were used in separate incidents against the U.S. Embassy in Moscow to falsely set off alarms and to induce a fire in a sensitive area."
- "In Kzlyar, Dagestan, Russia, Chechen rebel commander Salman Raduyev disabled police radio communications using RF transmitters during a raid."
- "In June 1999 in Bellingham, Washington, RF energy from a radar induced a SCADA malfunction that caused a gas pipeline to rupture and explode."
- "In 1999, a Robinson R-44 news helicopter nearly crashed when it flew by a high-frequency broadcast antenna."
- North Korea used a Radio Frequency Weapon, purchased from Russia, to attack airliners and impose an "electromagnetic blockade" on air traffic to Seoul, South Korea's capital. The repeated attacks by RFW also disrupted communications and the operation of automobiles in several South Korean cities in December 2010; March 9, 2011; and April-May 2012.³⁹

Instead of nuclear EMP attack, why not rely on cyber-attack and physical sabotage to blackout the electric grid and other critical infrastructures? As explained above, compared to EMP attack, cyber-attack and sabotage are unproven and problematical as means to effect a protracted nationwide blackout, especially against a nation like the United States that has 3,000 different electric utilities using a wide array of different hardware and software. Such technological diversity poses a significant and perhaps insurmountable challenge to cyber-attack and sabotage, but not to EMP attack. Anything that is not hardened against EMP is potentially vulnerable.

To be sure, cyber-attack and sabotage are serious threats even to the U.S. national electric grid. Admiral Michael Rogers, Chief of U.S. Cyber Command and Director of the National Security Agency, on November 20, 2014, warned the House Permanent Select Committee on Intelligence that sophisticated great powers like China and Russia have the capability to blackout the entire

³⁸ "Electromagnetic Pulse: Threat to Critical Infrastructures" Hearing before the Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies, House Committee on Homeland Security, Washington, D.C.: May 8, 2014.

³⁹ "Massive GPS Jamming Attack By North Korea" GPSWORLD.COM, May 8, 2012.

U.S. national electric grid for months or years by means of cyber-attack, according to press reports. A sensitive study by the U.S. Federal Energy Regulatory Commission, according to press reports, warns that the national grid could be in blackout for 18 months from an attack on just 9 of 2,000 EHV transformer substations by sabotage using rifles or explosives.⁴⁰

However, these threat assessments of cyber and sabotage are largely theoretical, based on computer modeling, not on demonstrated capabilities and a vast body of empirical evidence as is the case with EMP. Some cyber experts like Thomas Rid (*Cyber War Will Not Take Place* Oxford University Press, 2013), Bruce Schneier, Peter Singer, and Ronald Delbert (*Black Code: Inside The Battle For Cyberspace*) argue that, in Schneier's words, "The threat of cyber war has been hugely hyped." Cyber experts such as these doubt cyber-attacks can blackout the national grid.⁴¹

Sabotage by terrorists have caused nationwide or large-scale blackouts of the grid in Mexico (2013), Yemen (2014), and Pakistan (2015)--but these were temporary, not protracted, blackouts. And the electric grids in these nations are rudimentary and managed by a single utility.

Western Ukraine was blacked-out on December 23, 2015 by a Russian cyber-attack. Turkey may have been blacked-out by a cyber-attack from Iran in 2015. These are the only known cases of cyber blackout. The grids in Western Ukraine and Turkey are managed by a single utility. The blackouts were temporary, not protracted.

During the Gaza War between Israel and Hamas in 2014, a major cyber campaign using computer bugs and hacking was launched against Israel and its electric grid by Hamas, the Syrian Electronic Army, Iran, and by sympathetic hackers worldwide. The Gaza War was a cyber world war against Israel. Hamas also attempted to blackout the Israeli electric grid by missile strikes and sabotage. According to the Institute for National Security Studies at Tel Aviv University, in "The Iranian Cyber Offensive During Operation Protective Edge" all of these combined cyber and sabotage efforts failed to blackout Israel's well-protected grid.

However, Israel's electric grid is not yet protected against EMP attack.

A prudent military planner prosecuting a Blackout War against the United States or its allies would not likely gamble victory or defeat on cyber and sabotage operations alone, if he has the capability to make an EMP attack. EMP is the "big stick" and "ace in the hole" and is rightly regarded by Russia, China, North Korea, and Iran as "the ultimate cyber weapon."

Even those cyber warriors and commandos who may insist cyber and sabotage operations are just as great a threat to electric grids as EMP cannot deny that the historically proven efficacy of combined-arms operations argues for including EMP attack. Military history and common sense

⁴⁰ Admiral Rogers testified a cyber blackout "is not a question of if, but when?" see: "The U.S. Government Thinks China Could Take Down The Power Grid" CNN, November 21, 2014; on the FERC report citing nationwide blackout by sabotage see: "U.S. Risks National Blackout From Small-Scale Attack" Wall Street Journal, March 12, 2014; Rebecca Smith, "How America Could Go Dark" Wall Street Journal, July 14, 2016.

⁴¹ Peter W. Singer and Allan Friedman, *Cybersecurity and Cyberwarfare*, Oxford University Press, 2014.

suggests that a threefold attack--using cyber, sabotage, and EMP--will be better than an attack using just one of these.

Indeed, Lanchester's Square Law, a long-established war-gaming tool familiar to military theorists of all nations, can be used as a heuristic device to demonstrate the above point mathematically. Lanchester's Square Law--proven by calculations, war-gaming, and actual warfare since before World War I--is that the advantages of increasing firepower are not merely additive, but multiplicative. So if the value of cyber-attack = 1 and the value of sabotage = 1, then their net firepower value is not merely 2 but the square of two = 4. Doubling firepower results in a fourfold advantage.

Thus, if the value of cyber-attack = 1 and the value of sabotage = 1 and the value of EMP attack = 1, then their net firepower is 3 squared = 9. Even if one assumes EMP attack is no better than cyber or sabotage, its inclusion more than doubles the effectiveness of a combined arms attack.

More realistically, since EMP brings far more firepower to bear than cyber or sabotage, the equation should look more like cyber = 1, sabotage = 1, EMP = 3, for net firepower of 5 squared = 25. In this case, inclusion of EMP attack would increase attack effectiveness by more than sixfold.

Why won't the threat of U.S. nuclear retaliation assuredly deter a nuclear EMP attack, just as the USSR was deterred from nuclear aggression throughout the Cold War? Deterrence depends on knowing who launched the EMP attack so they can be punished by retaliation. But an EMP attack can be delivered anonymously. Launched off a freighter, a submarine, by jet, or by satellite (hundreds of satellites are in low Earth orbit), the perpetrator of an EMP attack might never be identified.

EMP attack can destroy radars, satellites and their downlinks and other national technical means necessary to identify the attacker. Bomb debris from a weapon detonated at high-altitude for EMP attack is not collectible, unlike debris from a nuclear weapon detonated in a city, so forensic analysis cannot identify the perpetrator. EMP attack leaves no fingerprints.

EMP attack, especially from a Super-EMP weapon, can paralyze strategic forces and C3I (Command, Control, Communications and Intelligence), making retaliation impossible. In the aftermath of a nuclear EMP attack that threatens the survival of millions of Americans, it seems likely that any president would order the U.S. military to give highest priority to helping the Department of Homeland Security rescue the nation, instead of prosecuting a war.

Instead of EMP attack, why not just blast a city? A nation or terrorist group having only one or a few nuclear weapons would not necessarily calculate that, instead of making an EMP attack, it is technically and operationally less risky and likely to produce a bigger payoff by blasting a city.

Missile delivery of a nuclear warhead to blast a city requires an accurate guidance system, a reentry vehicle to penetrate the atmosphere and protect the physics package from the shock and heat of re-entry, and a fusing system capable of surviving re-entry and detonating the warhead at

low-altitude or on impact. All of these requirements add significant technological and operational risk, compared to an EMP attack.

Moreover, blasting a North American city by missile would require penetrating U.S. National Missile Defenses--no mean feat for one or a few primitive nuclear missiles, the very kind of threat NMD is designed to intercept. For an EMP attack, the warhead can be rigged to "salvage fuse" so it will detonate if intercepted, thereby still successfully delivering an EMP.

Smuggling a nuclear weapon into a city by ship or truck would be riskier than an EMP attack. As soon as the weapon enters U.S. waters or territory, risks escalate dramatically that the operation may be detected by the coast guard or police or by sensors now deployed in harbors and metropolitan areas to detect nuclear threats.

What if the bomb smuggling operation is penetrated by the CIA or FBI, and they are waiting to seize the weapon as soon as it crosses into U.S. territory? What if a member of the smuggling team decides to betray the operation and sell the bomb to the CIA or FBI? What if something breaks on the bomb when it is stowed in the hold of a ship, or when off loaded from a freighter at sea, motor boated through choppy surf to shore, hauled up a beach, driven over bumpy roads by truck? Would the smuggling team, necessarily a small group, have the expertise necessary to make repairs, or would they be stuck inside U.S. territory with an inert nuclear bomb?

The worst possible outcome for a rogue state or terrorists would be for the U.S. to capture their nuclear weapon. Trying to smuggle a bomb into a U.S. city maximizes that risk.

And if the bad guys succeed in blasting a U.S. city, what have they accomplished but their own doom? A 10 kiloton weapon detonated in a city might kill and injure 300,000 through blast, thermal, and radiation effects, but the nation will not be destroyed, and the demand for revenge will be immediate and overwhelming.⁴² Blasting a city is the ideal scenario for forensic analysis of bomb debris, and virtually guarantees that the U.S. can identify the culprit for annihilation.

In contrast, what could be accomplished by nuclear EMP attack?

An EMP attack could be made by satellite or launched from a ship outside U.S. territory. Shipboard there could be plenty of technicians to ensure nothing goes wrong, and plenty of security to ensure the operation is not betrayed.

A high-altitude nuclear EMP attack, because the weapon detonates in outer space, leaves no collectible bomb debris. No fingerprints. EMP attack can be executed anonymously, to escape retaliation.

The consequences of an EMP attack would be catastrophic and debilitating upon the United States, crippling U.S. military power projection capabilities and endangering national existence. According to the Congressional EMP Commission *Executive Report* (2004):

⁴² Alex Wellerstein's NUKEMAP model calculates a 10 kiloton weapon ground-burst in New York City, on Manhattan, would kill 103,000 and injure 213,430.

"EMP is one of a small number of threats that can hold our society at risk of catastrophic consequences....It has the capability to produce significant damage to critical infrastructures and thus to the very fabric of U.S. society, as well as to the ability of the United States and Western nations to project influence and military power....The recovery of any one of the key national infrastructures is dependent on the recovery of others. The longer the outage, the more problematic and uncertain the recovery will be. It is possible for the functional outages to become mutually reinforcing until at some point the degradation of infrastructure could have irreversible effects on the country's ability to support its population."

The Congressional EMP Commission estimates that an EMP attack causing a protracted nationwide blackout lasting one year could kill up to 90 percent of the American people through starvation and societal collapse.⁴³

During the height of the Cold War, close upon the 1962 Cuban missile crisis when nuclear conflict with the USSR was a very real possibility, then Defense Secretary Robert McNamara estimated the Soviet Union could be deterred if U.S. nuclear retaliation could kill 25 percent of the Soviet population and destroy 75 percent of the USSR's industry. McNamara calculated this "Assured Destruction" of the USSR would require delivering 400 "equivalent megatons"--a force equivalent to hundreds or thousands of nuclear weapons.

Yet a nuclear rogue state or terrorists could by EMP attack threaten or deliver upon the United States catastrophic destruction greater than McNamara's "Assured Destruction"--and do so employing just one or a few nuclear weapons. The Congressional EMP Commission warns (*Executive Report 2004*):

"Therefore, terrorists or state actors that possess relatively unsophisticated missiles armed with nuclear weapons may well calculate that, instead of destroying a city or military base, they may obtain the greatest political-military utility from one or a few such weapons by using them--or threatening their use--in an EMP attack. The current vulnerability of U.S. critical infrastructures can both invite and reward attack if not corrected..."

EMP attack is the only realistic scenario where a rogue state or terrorists having one or a few nuclear weapons could prevail by annihilating the U.S., or by credibly threatening Assured Destruction of the United States.

What about the international taboo against nuclear warfare? Russia, China, North Korea, and Iran in their military doctrines and training regard EMP attack as part of all-out cyber warfare or radio-electronic warfare, not necessarily as nuclear warfare. China in military writings and exercises, despite its nuclear No First Use pledge, employs EMP attacks, even though there is no evidence of U.S. nuclear first use.⁴⁴

⁴³Staff Paper, *Congressional EMP Commission Examples From Testimony And Reports That Fatalities Could Be High Numbering Millions And 90 Percent Of Population*, EMP Task Force On National And Homeland Security.

⁴⁴ Dr. Peter Vincent Pry, "Foreign Views of Electromagnetic Pulse (EMP) Attack" Testimony before the U.S. Senate Subcommittee on Terrorism, Technology and Homeland Security, March 9, 2005.

Even some analysts in Germany and Japan, among the most anti-nuclear nations, because EMP destroys electronics instead of blasting cities, is regarded by them as acceptable use of a nuclear weapon.⁴⁵

EMP attack would be perfect for implementing Russia's strategy of "de-escalation"--that appears to have been adopted by China and North Korea--where a conflict with the U.S. and its allies would be won by limited nuclear use, their version of "shock and awe" to cow the U.S. into submission.⁴⁶ An EMP attack would be the most militarily effective use of one or a few nuclear weapons, while also being the most acceptable nuclear option in world opinion, the option most likely to be construed in the U.S. and internationally as "restrained" and a "warning shot."

In the West, generations of leaders and citizens have been educated that use of nuclear weapons is "unthinkable" and the ultimate horror. Not so in Russia, China, and North Korea where their nuclear capabilities are publicly paraded, missile launches and exercises are televised as a show of strength, an important part of national pride. Whereas the U.S. nuclear deterrent is kept low-profile, almost invisible, and its utility and legitimacy much debated, Russia and China run TV documentaries describing how they would win a nuclear war with the United States.⁴⁷

The "international taboo" on nuclear warfare is one-sided and far more likely to have a psychologically paralyzing effect on the U.S., NATO and their allies than on Russia, China, North Korea, or Iran. An EMP attack or demonstration made to "de-escalate" a crisis or conflict is very likely to raise a chorus of voices in the West against nuclear escalation and send Western leaders in a panicked search for the first "off ramp."

Some analysts think the world is on the threshold of a "new nuclear age" where Cold War rules and assumptions about deterrence no longer apply and the likelihood of nuclear use is greatly increasing.⁴⁸ The first nation to use nuclear weapons today--even a rogue state like North Korea or Iran--will immediately become the most feared and most credible nuclear power in the world, a formidable force to be reckoned with, and perhaps the dominant actor in a new world order.

⁴⁵ See for example Sun Tzu-yun in Jadi June 1, 2000 FBIS JPP 20000901000004 and Wolfgang Haas in "Infowarfare and the Military Strategy of the Bundeswehr," Telepolis November 3, 1998 FBIS EUP 20000413000200.

⁴⁶ Dr. Mark Schneider, *The Nuclear Forces And Doctrine Of The Russian Federation* Nation Institute Press for United States Nuclear Strategy Forum, 2006.

⁴⁷ "LIGNET: Why China Televised 'Nuclear War' Against The U.S." Newsmax, November 21, 2013.

⁴⁸ Paul Bracken, *The Second Nuclear Age*, Macmillan 2013.

III

THE LONG SUNDAY

Imperial Japan attacked the U.S. Pacific Fleet at Pearl Harbor on December 7, 1941, because their military planners correctly assumed the U.S. Navy and Army would be at their least vigilant, most vulnerable psychologically and in military posture to surprise attack, on a Sunday. The EMP scenarios that follow hypothesize that the attacks take place between the presidential elections on November 8, 2016 and inauguration of the new president on January 20, 2017-- which period this paper describes as "the long Sunday."

Enemies planning to attack the United States or its allies could find few better times than the period between Election Day and Inauguration Day, when the nation is transitioning to a new Commander-in-Chief and new administration and is most divided politically from top to bottom. The dates for Election Day and Inauguration Day and the long period for transitioning from one presidential administration to the next are traditions rooted in the agrarian past, long before the nuclear missile age and before anyone could conceive that EMP and cyber surprise attacks could happen at the speed of light.

In 1845, Congress set national Election Day as "the first Tuesday after the first Monday in November" even though Sunday was the most common day of leisure, because voting on the Holy Sabbath was unacceptable. In the largely agrarian society that was the United States in 1845, the most common conveyance was the horse-drawn carriage, so voters might need an entire Monday to reach the polls for casting ballots on Tuesday. Wednesday was typically a market day in most places, so many farmers had reason to be in town by Tuesday anyway.

Inauguration Day originally fell on March 4, four months after Election Day, as everything, including transitioning to a new presidential administration, moved at the pace of horse and buggy. In 1933, the 20th Amendment moved Inauguration Day to January 20, reflecting the faster pace of life introduced by the automobile and radio.

Hostile military planners would have a treasure trove of reasons for launching a surprise attack against the U.S. or its allies during "the long Sunday"-- lasting 74 days--between Election Day on November 8, 2016 and Inauguration Day on January 20, 2017:

- For the first time in 8 years, the United States will be undergoing transition to a new Commander-in-Chief and new presidential administration, while for 74 days the outgoing president and administration remain in office as "lame ducks."
- Disruption of national leadership, a top military goal, will be occurring naturally because of the transition to a new president and new administration.
- A surprise attack on the U.S. or its allies will very likely cause a leadership crisis, perhaps even throw into chaos the National Command Authority, because the incoming president and new administration (even if from the same party) will not want "lame ducks" making profound decisions about war, peace, and national security that they will have to live with.
- Because American politics has become a zero-sum game of winners and losers, after one of the most divisive elections in U.S. history, Americans will probably be even more deeply divided,

and may not rally behind the new Commander-in-Chief to defend a U.S. ally or even the U.S. homeland. Indeed, half the country is likely to blame the "lame duck" president or the new president for an attack on the United States, regardless of who is elected.

--Thanksgiving, Christmas, New Year's Day holidays and typically 5 days of inaugural celebrations leading up to Inauguration Day occur within "the long Sunday." Official Washington from top to bottom, including in Congress, the Department of Defense, and the Intelligence Community, is mostly on holiday and many are physically absent. Among those who remain many or most are psychologically absent and at their least vigilant.

--President Obama and his administration are a known quantity, infamous for irresolution and passivity in the face of aggression, as in Russia's annexation of Crimea and war on Ukraine, China's undeclared annexation of the South China sea, North Korea's nuclear threats against the U.S. and its allies, Iran's illegal missile tests, and Syria's illegal use of chemical weapons. The temptation to strike a "lame duck" President Obama, when he and his administration are weakest, before they leave office, may be irresistible.

--Plans to strengthen U.S. conventional forces, modernize nuclear forces, and protect national critical infrastructures from EMP and cyber threats have been proposed, but not yet implemented. Better to strike when U.S. strength and preparedness are at their nadir.

EMP Scenarios

The scenarios that follow postulate an enemy combined-arms operation employing cyber, sabotage, and nuclear EMP attack against U.S. allies and the United States itself. Details of cyber and sabotage operations are not described, but are assumed occurring within the territories of the victim nation or nations, within the limits circumscribed by the EMP field.

Scenarios that follow are not exhaustive. Many other possibilities are plausible. Nor are all scenarios equally plausible. Some are more likely than others. The scenarios are meant to introduce the reader to how a military planner might think about using EMP attack to advance vital geopolitical interests, to illustrate the broad range of possibilities, and warn about what may be impending soon in our increasingly chaotic, crisis prone, and dangerous world.

IV

THE MIDDLE EAST

Iran is generally regarded as the most likely nuclear aggressor in the Middle East. The scenarios below assume Iran already has nuclear weapons--which is the view of many U.S. and Israeli experts.

For example, an article co-authored by several senior Reagan Administration national security officials warns:

"Regardless of intelligence uncertainties and unknowns about Iran's nuclear weapons and missile programs, we know enough now to make a prudent judgment that Iran should be regarded by national security decision makers as a nuclear missile state capable of posing an existential threat to the United States and its allies....The fact of Iran's ICBM capability and their proximity to nuclear weapons necessitates that Iran be regarded as a nuclear missile state--right now."⁴⁹

Authors of the assessment that Iran already has nuclear-armed missiles include Dr. William Graham (President Reagan's Science Advisor, director of NASA, Chairman of the Congressional EMP Commission), Fritz Ermath (former Chairman of the National Intelligence Council), and Ambassador Henry Cooper (former Director of the Strategic Defense Initiative). Ambassador R. James Woolsey (former Director of the CIA and Central Intelligence) endorses the article and has published similar views.

In an interview, retired General Paul Vallely said Iran already has nuclear weapons, and that "decades of intelligence" shows Russia, China and North Korea helped:

"Iran already has a nuclear weapon, making the nuclear deal 'a moot point,' retired U.S. Army Gen. Paul Vallely told Newsmax TV...Decades of intelligence reports show that Teheran has 'gotten support from Russia, from North Korea and from China,' Vallely told...host J.D. Hayworth. 'It's a cabal that's been set up to support the Iranian nuclear program. They have the launch systems. They have the guidance-control system. They have the detonation system. They have the warhead. And guess what? Russia and North Korea's tested everything for them. All they have to do is put it together like a tinker toy--and that's why they have the nuclear capability now,' Vallely said."⁵⁰

For a more detailed analysis of the evidence that Iran already has nuclear weapons see my article "Iran--The Worst Deal" (Family Security Matters, October 3, 2015) that says in summary:

"Obama's nuclear deal with Iran is the worst deal possible because Iran probably already has the bomb. All 10 nuclear weapon states developed A-Bombs in 3-12 years, while Iran has been crashing on the bomb for 30 years. Nuclear testing to develop A-Bombs and even more

⁴⁹ "EXPERTS: Iran Now A Nuclear-Ready State, Missiles Capable of Hitting U.S." Newsmax, February 1, 2015.

⁵⁰"Gen. Paul Vallely: Iran Already Has Nukes, Making Deal 'Moot'" Newsmax, August 27, 2015.

sophisticated H-Bombs is unnecessary as component testing is sufficient. After getting the A-Bomb, timeline for H-Bomb development is 3-8 years, so Iran has been working long enough for more sophisticated nuclear weapons. Russia and North Korea are helping Iran, potentially accelerating Iran's developmental timeline for nuclear weapons and long-range missiles. Although the IAEA is too timorous to say so, evidence in the IAEA's 2011 report is a 'smoking gun' that Iran does have a nuclear weapons program--and probably nuclear weapons."

Despite the Obama Administration's insistence that Iran does not yet have nuclear weapons, many experts doubt the veracity of President Obama and his politicized intelligence community. Many suspect that Obama's nuclear deal with Iran is a replay of President Bill Clinton's Agreed Framework with North Korea that for 8 years obfuscated that North Korea already had nuclear weapons.⁵¹

Iran in public statements and writings by senior political and military officials has declared as perhaps its most important foreign policy objective the destruction of Israel. Iran is actively trying to achieve the destruction of Israel through supporting international terrorist organizations like Hamas, Hezbollah and many others, and states hostile to Israel, like Syria.

Geostrategically, Iran calculates that the destruction of Israel would make Iran the leader of the Muslim world, as both Shiite and Sunni Muslim factions are united in their universal hatred of Israel, and so position Iran to re-establish and lead a Caliphate dominating the Middle East. Ideologically, the Mullahs leading Iran's theocracy believe as a matter of religious conviction that destruction of Israel is necessary to bring about the Shiite version of Apocalypse where Islam triumphs in the temporal and spiritual universe by the return of the 12th Imam who will rule the world from Jerusalem.

Iran Strikes Israel

In this scenario, Iran centers an EMP attack on Jerusalem to destroy Israel and facilitate the conquest of its territory and the Holy City. Unlike a nuclear air- or ground-burst, which would destroy Jerusalem, an EMP attack will enable capture of the Holy City intact.

A nuclear weapon is detonated at 30 kilometers height-of-burst (HOB) over Jerusalem. Radius of the EMP field extends outward from Jerusalem to a distance of 600 kilometers.

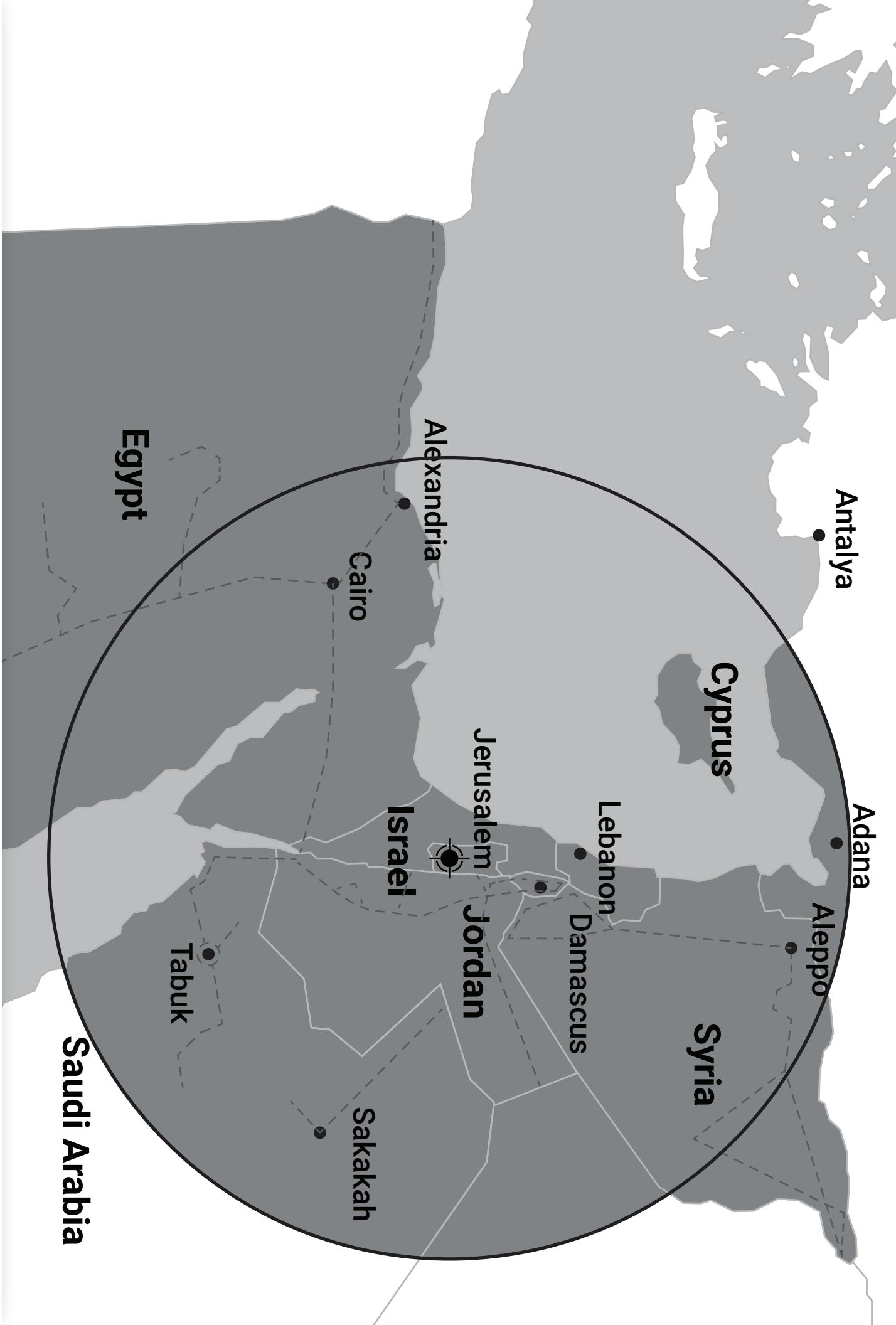
The EMP field covers all of Israel, all of Jordan, and all of Lebanon (Israel is mostly under the peak EMP field where effects are strongest). The EMP field covers the most populous part of Egypt, extending as far as the capitol at Cairo and Alexandria; half of Syria; and northern Saudi Arabia, covering the cities of Tabuk and Sakakah. All of Syria is likely to experience protracted blackouts due to cascading grid failures triggered by the EMP.

Northern Saudi Arabia would be blacked-out due to the EMP, but perhaps not the entire country, because the cities of Tabuk and Sakakah (also called Al Jawf) appear currently to be on a local grid that is unconnected to the national grid. Tabuk hosts one of Saudi Arabia's largest air force bases. Tabuk and Sakakah and the surrounding region under the EMP field with its nearly one million inhabitants and over 16,000 farms is one of the few agricultural lands in the otherwise

⁵¹ "Today North Korea--Tomorrow Iran" Israel National News, March 16, 2016.

IRAN STRIKES ISRAEL

NUCLEAR EMP ATTACK SCENARIOS



desert Kingdom of Saudi Arabia. Blackout of this region and its airbase within range of supporting Israel would be regarded as a bonus "warning shot" by Shiite Iran that regards Sunni Saudi Arabia as a hated apostate and ally of the United States. If Tabuk and Sakakah are ever connected to the national grid, an EMP field here would likely cause cascading failures that would blackout all of Saudi Arabia, an even bigger bonus.

The EMP field covers a small part of Western Iraq, but no cities, and would not likely blackout Iraq--where are located powerful forces (100,000 troops) of the Iranian Revolutionary Guard.⁵² From Iraq, the Iranian Revolutionary Guard could join in the conquest of Israel with its allies in Syria and Lebanon. ISIS might well join forces with the Iranian Revolutionary Guard for the crusade against Israel.

Although Lebanon and Syria would be blacked-out by the EMP attack, Hamas, Hezbollah, other terror groups, and Syrian government forces of dictator Hafez Al Assad, could participate in the conquest of Israel as their military capabilities are much lower-tech and less vulnerable to EMP than the Israel Defense Forces.

Nonetheless, in this scenario Iran regards diminishment of terrorist and Syrian government military capabilities by the EMP attack as a bonus, as these allies are also Sunni and secular rivals to Shiite Iran's bold gambit to dominate the Middle East.

EMP induced blackout of Egypt, Jordan, and partly Saudi Arabia, and paralysis of their military forces, are bigger bonuses. These Sunni enemies of Iran, and allies of the United States, are the most likely and best positioned Arab states that might try rescuing Israel.

Iran Strikes Egypt and Israel

In this alternative scenario, Iran centers an EMP attack over Cairo, to knockout Egypt and Israel, and to avoid diminishing militarily or alienating politically Iran's terrorist and government allies in Syria and Lebanon. Egypt is the most populous and militarily the strongest of the Arab nations--Iran's most serious rival to leadership of the Middle East. Egypt is also Sunni, with a secular anti-Islamist government, an ally of the United States, and friendly to Israel--which makes Egypt almost as hated as Israel by Iran.

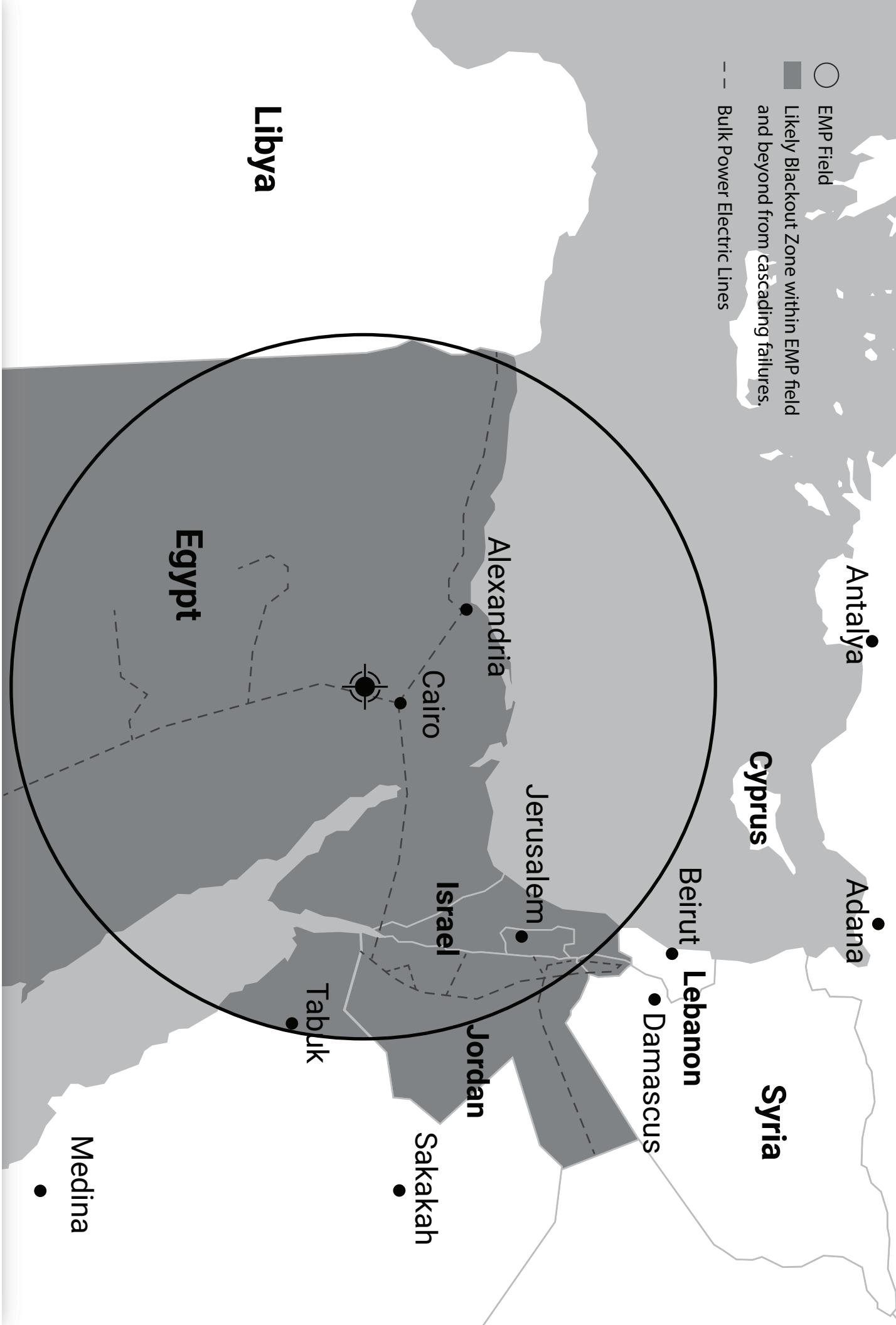
A nuclear weapon is detonated at 30 kilometers HOB southwest of Cairo, putting the peak EMP field over Cairo, Egypt's political-military center, and over many of its most important air, army, and naval bases. Radius of the EMP extends to a distance of 600 kilometers. Examples of some of Egypt's military assets covered in the EMP field are Navy HQ and the nation's main naval base in Alexandria, and the major air force bases such as Cairo West AFB, Abu Suwayer AFB, and Bir Gifgafa AFB. Cascading failures in the grid would blackout all of Egypt.

All of Israel is covered by the EMP field. Half of Jordan is covered by the EMP field. Cascading failures would probably blackout the whole of Jordan, which is on a single grid. Northeast Saudi Arabia is in the EMP field, but this would likely cause only localized blackouts as the region is not connected to the Saudi national grid.

⁵² "U.S. Officials: Up To 100,000 Iran-Backed Fighters Now In Iraq" Fox News, August 16, 2016.

IRAN STRIKES EGYPT AND ISRAEL

NUCLEAR EMP ATTACK SCENARIOS



None of Lebanon or Syria is covered by the EMP field. Thus, the EMP attack paralyzes Iran's enemies and spares its most important allies.

Egypt is so unstable that an EMP attack that paralyzes the government, communications, transportation, and cuts the supply of food and water might well trigger a protracted revolution or civil war, effectively destroying the state of Egypt and creating a zone of permanent chaos, as in Libya, Gaza, Lebanon, and Syria.

Iran Strikes Saudi Arabia and the Gulf States

In this scenario, Iran centers an EMP attack over Riyadh, the capital of Saudi Arabia, to destroy its main ideological rival for leadership of the Muslim world in the struggle between Shiites and Sunnis. Sunni Saudi Arabia, protector of the holy cities of Mecca and Medina, has long claimed spiritual leadership of Islam, a claim legitimated to many Muslims by the blessing of Saudi oil wealth. Oil rich Saudi Arabia and its oil wealthy allies Kuwait, Bahrain, and the United Arab Emirates, all Sunni, have used their wealth and influence with the West to lead Arab opposition to the rise of Shiite Iran.

Saudi Arabia and its Persian Gulf allies have small populations, and small militaries, that rely heavily on western jet fighters and other high-tech equipment to compensate for their lack of manpower with modern firepower. An EMP attack that neutralizes their military capabilities would be a red carpet for invasion and takeover of their oil wealth by Iran.

Iran knows that the world economy is heavily dependent upon Persian Gulf oil, and for that reason has frequently attempted to coerce the West by threatening to cutoff the supply of oil by closing the Strait of Hormuz with Iran's Navy. However, the presence of the U.S. Navy in the Persian Gulf to protect the strait makes this a hollow threat. An EMP attack that destroys Saudi Arabia and the Persian Gulf states, and better yet enables Iran to capture their oil wealth, would eliminate Iran's main Muslim ideological rival and put its foot on the throat of the world economy.

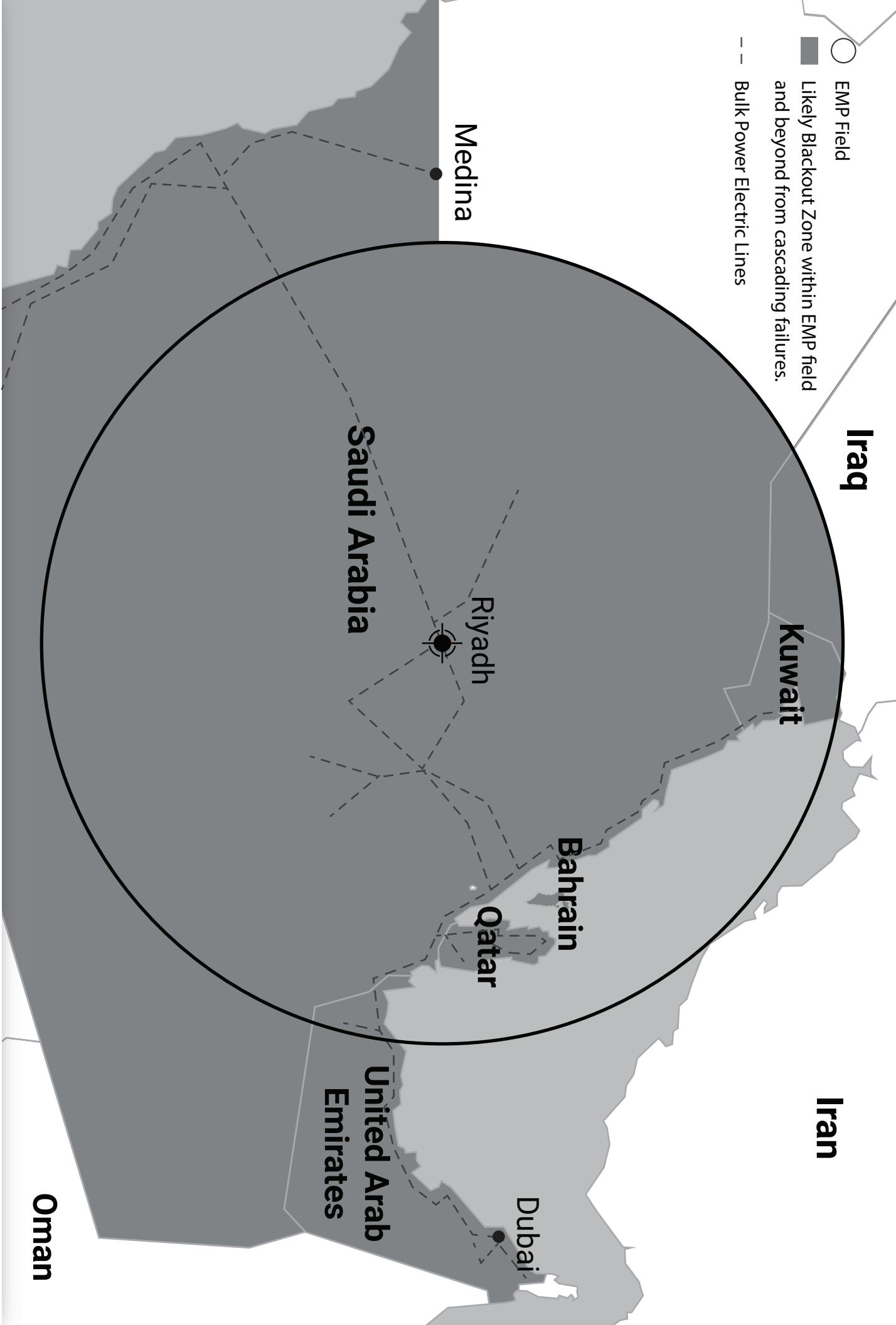
A nuclear weapon is detonated 30 kilometers HOB over Riyadh, the Saudi capital. Radius of the EMP field extends from Riyadh to a distance of 600 kilometers. The EMP field covers most of Saudi Arabia's most important military bases, including for example Riyadh Air Force Base, King Khalid AFB, Hail AFB, Al Kharj AFB, Al Kharj East AFB, Prince Sultan AFB, and Sulayel AFB. The EMP field covers all of Saudi Arabia's major oil fields and pipelines, including Jubail, Ras Tannurah, Dhahran, Dammam, and Abqaiq.

The EMP attack would probably also cause protracted blackout of all Saudi Arabia's Persian Gulf allies. The EMP field covers all of Kuwait, all of Qatar, all of Bahrain, and part of the United Arab Emirates. The EMP would most likely trigger cascading failures through the electric grid that would blackout all of the UAE.

While accomplishing the above, the EMP field would not paralyze Iran's allies in Iraq and Yemen. Although the EMP field covers part of southern Iraq, the national electric grid is not in this region, the Al Muthanna, which is inhabited by Sunnis hostile to Iran. Iraq's Shia regions are spared.

IRAN STRIKES SAUDI ARABIA

NUCLEAR EMP ATTACK SCENARIOS



Iranian Revolutionary Guard units now in Iraq could spearhead an invasion through Kuwait of Saudi Arabia and the Persian Gulf states, while the Houthis attack from Yemen.

The attack described would avoid placing an EMP field over the holy cities of Mecca and Medina, that might be an important consideration for ideological and propaganda reasons.

Pakistan Strikes Israel

Pakistan has nuclear weapons and nuclear-armed missiles and is capable of making an EMP attack. Although nominally a U.S. ally, Pakistan supports terrorist organizations and often works at cross-purposes undermining U.S. foreign policy objectives in the war on terrorism and in U.S. efforts to contain nuclear and missile proliferation.

Radical Islam is normative in Pakistan. Israel and the U.S. are hated by the general population.⁵³ Many in Pakistan's intelligence services and the military are sympathetic to the Taliban and support terrorist operations. If the Taliban or radical Islamists in the military took over the reins of government, virtually overnight Pakistan could become a nuclear threat to Israel.

The current Pakistan government is hostile to Israel because of Israel's commercial and military cooperation with India--Pakistan's archenemy.⁵⁴

Pakistan, like Iran, has aspirations to lead the Muslim world, which is one of the reasons it developed nuclear weapons. Pakistan could become the Sunni version of Iran, and shift its energies from an endless territorial struggle with India over Kashmir to asserting its military supremacy and ideological leadership of all Muslims.

Indian analyst Regan Traje in "The World Must Prepare For A Sunni Islamic Nuclear Coalition" foresees just such a development. Spurred by the threat of Shiite Iran with nuclear weapons, Sunni Saudi Arabia and newly Islamist Sunni Turkey would turn to nuclear-armed Sunni Pakistan to form what Traje calls a "Sunni Islamist Nuclear Axis":

*"In the Sunni Islamist worldview, Dar ul Harb (the realm of war) must ultimately become Dar ul Islam (the realm of peace/submission). In this worldview, all non-Muslim states are part of Dar ul Harb and are colluding against Islam, in one way or another....To all three, the strategic benefits of a nuclear axis are undeniable. For Pakistan, any way out of its rut is a welcome one, and to emerge as leader of the Islamic world has always been its ambition. Saudi Arabia considers itself the leader of the Islamic world already, but it will probably be willing to share the table for a public nuclear umbrella over which it exercises some overt control. As for Turkey, the government of President Recep Tayyip Erdogan is turning the country into a quasi-Ottoman state with a strongly Sunni orientation....For all three, the creation of a Sunni nuclear axis covering Turkic, Arab and South Asian Muslims--who make up the bulk of the world Islamic population--promises a powerful re-orientation from their current secondary role in the global public space."*⁵⁵

⁵³ Pakistan is number 3 in "Countries Who Hate Israel The Most--Top Ten List" thetoptens.com, undated.

⁵⁴ "Why Israel And Pakistan Can Never Be Allies" Express Tribune, June 13, 2012; "Revealed: India Close To Signing \$3 Billion Defense Deal With Israel" The Diplomat, February 10, 2016.

⁵⁵ Regan Traje, "The World Must Prepare For A Sunni Islamic Nuclear Coalition" Swarajya, July 30, 2016.

In this scenario, Pakistan makes an EMP attack on Israel to assert its leadership of the "Sunni Nuclear Axis" and the Muslim world, and through "shock and awe" to deter the West and overshadow Iran. The EMP attack, from a nuclear weapon detonated at 30 kilometers HOB over Jerusalem, would be the same EMP field as in the scenario above *Iran Strikes Israel*.

However, in this scenario, where Pakistan is allied to Saudi Arabia and Turkey, the Saudis would have to be willing to sacrifice their northern cities of Tabuk and Sakakah--which they might do to destroy Israel and thereby assert their world leadership of all Muslims and also deter a nuclear Iran. Saudi money has paid for terrorist suicide bombings that have killed thousands of fellow Sunni Muslims and accomplished much less.

Alternatively, a Pakistan that is taken over by Taliban sympathizers would probably see Saudi Arabia as an apostate and "traitor" nation (as did Al Qaeda leader Osama Bin Laden, a Saudi Arabian and Sunni), and regard an EMP attack to destroy Israel that also injures Saudi Arabia as all for the best. In this less complicated scenario Pakistan would go rogue and attack Israel on its own.

Nuclear Terrorists Strike Israel

In this scenario, Hamas gets a nuclear weapon from Iran or from Pakistan or from North Korea or from a newly Islamist Turkey that captures U.S. tactical nuclear weapons at Incirlik AFB.⁵⁶

The Hamas version of a constitutional charter calls for the destruction of Israel.

Hamas uses a Scud missile, a commercial jet doing a zoom climb, or a meteorological balloon to loft the nuclear weapon to detonate at 30 kilometers HOB over Jerusalem. Israel's Iron Dome missile defense has a ceiling of 10 kilometers. The EMP field would be identical as in the scenario above *Iran Strikes Israel*.

Hamas would regard EMP-induced protracted blackout of Egypt, Jordan, and Saudi Arabia as a bonus, as these are regarded as "traitor" nations. The peak EMP field would cover most of Israel probably including Gaza, the home of Hamas.

It would be the ultimate terrorist suicide bombing.

⁵⁶ See Stimson Center report "U.S. Nuclear Weapons In Turkey At Risk Of Seizure By Terrorists, Hostile Forces" August 14, 2016; Dr. Peter Vincent Pry, "U.S. Nuclear Airbase In Turkey At Risk" Newsmax, August 2, 2016. Permissive Actions Links (PALs) are intended primarily to prevent unauthorized use of a nuclear weapon by U.S. personnel and are no reliable safeguard if the weapon is captured by hostiles.

V

THE FAR EAST

As of this writing in August 2016, following the earlier crash of a B-52 bomber in Guam, sent to make a demonstration flight over the disputed South China Sea, the U.S. has sent to Guam a B-52, a B-1B, and a B-2 bomber to make demonstration flights. It is the first time all three types of U.S. nuclear bomber have been sent on a joint mission to the South China Sea.⁵⁷

China is protesting the appearance of the nuclear bombers as a provocation. North Korea accuses the United States of preparing to launch a surprise nuclear attack. The North is threatening to launch preemptive missile strikes against the United States mainland and U.S. allies.⁵⁸

On Monday, August 22, 2016, according to Fox News "Tensions Run High In Asia As S. Korea, U.S. Begin Annual Military Drills":

"North Korea threatened Monday to launch a nuclear first-strike and turn Seoul and Washington into 'a heap of ashes'--a threat that comes on the heel of China using its military to signal that it, too, would go to war to enforce its territorial claims."

Plausible scenarios for nuclear EMP attack emerge from the Far East in newspaper headlines almost weekly.

North Korea Strikes South Korea and Japan

North Korea has nuclear weapons and nuclear-armed missiles--including medium-range, intermediate-range, and intercontinental ballistic missiles (MRBMs, IRBMs, ICBMs)--and satellites all potentially capable of delivering an EMP attack. The Congressional EMP Commission assesses that North Korea probably has Super-EMP weapons, as do reportedly South Korean military intelligence and at least one Chinese military open source.⁵⁹

In this scenario, North Korea makes an EMP attack on Japan and South Korea to achieve its three most important foreign policy goals: reunification with South Korea, revenge upon Japan, and recognition of North Korea as a world power.

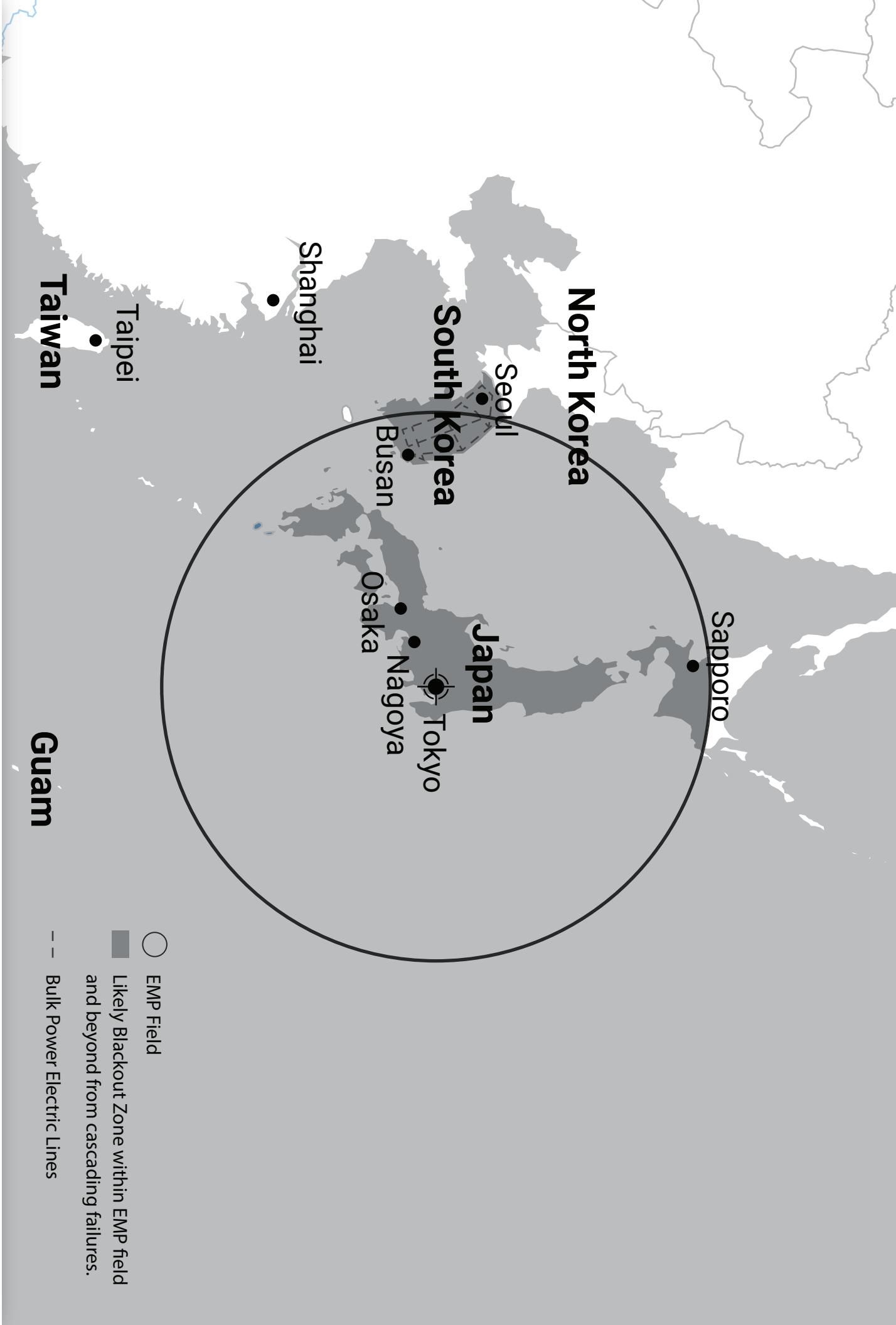
Conquest of South Korea is an obsession with North Korea's political-military leaders, constituting the chief reason for the existence of North Korea. Most of North Korea's production and activity is channeled into preparations to achieve reunification with South Korea by coercion and force.

⁵⁷ "Air Force B-52 Crashes In Guam" MilitaryTimes.com, May 18, 2016; "B-52, B-1, B-2 Bombers Share Tarmac On Guam For First Time" Stars and Stripes, August 11, 2016.

⁵⁸ "N. Korea Threatens Attack On U.S. Military Bases In Pacific Over Bombers Deployment" Korea Herald, August 18, 2016.

⁵⁹ Dr. Peter Vincent Pry, *Apocalypse Unknown*, EMP Task Force On National And Homeland Security, 2013.

NORTH KOREA STRIKES SOUTH KOREA AND JAPAN



Revenge against Japan for occupation of Korea during World War II and brutal exploitation of the Korean people is a daily theme in North Korean media and government statements. China, North Korea's closest and most important ally, is almost as vociferous as the North in condemning Japan for its predations during World War II--and in pretending that Japan's imperial ambitions are unabated, now transformed into joint empire building with the United States.

Revenge against Japan is a convenient rationale for someday attacking Japan.

War against Japan will be necessary for the North to conquer South Korea. North Korea knows from the experience of the Korean War that war against Japan will be necessary as it was an indispensable staging area for U.S. and allied forces defending South Korea. North Korea also knows from the presence of U.S. military forces in Japan and South Korea, that the conquest of South Korea will again be opposed by U.S. forces stationed in Japan and transiting through Japanese ports and air bases from the U.S. mainland, helped by Japan's military.

North Korea's dictator, Kim Jong-Un, is the scion of three generations of totalitarian rule, a megalomaniac and ruthless murderer who is described by state media as a demigod having supernatural powers. Kim in defiance of international law is testing and deploying nuclear weapons and missiles to prove that North Korea is a world power.

North Korea's strategy is to sever U.S. security guarantees to South Korea and Japan by raising the stakes too high--raising the specter of nuclear war--and through "nuclear diplomacy" to cow the U.S. and its allies into submission.

In this scenario, North Korea detonates a nuclear weapon at 96 kilometers HOB over Tokyo. The EMP field extends from the Japanese capital to a radius of 1,080 kilometers, covering all of Japan's major home islands.

Virtually all of Japan's major military bases and seaports are covered by the EMP field, rendering them inoperable. Traffic control towers and systems are damaged and blacked-out stopping air and rail traffic. Highways are jammed with stalled vehicles. Communications systems are damaged or destroyed or in blackout.

Worse, Japan's population of 126 million people is at risk because suddenly there is no running water or food coming into the cities. EMP induced industrial accidents are happening everywhere. Gas pipelines are exploding and turning into firestorms in towns and cities. Refineries and chemical plants are exploding, releasing toxic clouds and poisonous spills. Tokyo knows from the experience of Fukushima that as the nationwide blackout becomes protracted, within days Japan's nuclear reactors will exhaust their emergency power supplies and begin exploding, contaminating the home islands with radioactivity.

As a consequence of the EMP attack, Japan's critical infrastructures are paralyzed and incapable of transporting U.S. forces to aid South Korea. Indeed, with Japan's survival at risk, Tokyo would probably oppose any effort to help South Korea by U.S. forces staging from Japan, fearing another North Korean EMP attack.

The EMP field also covers the western half of South Korea, including the vital seaport of Busan (the key to South Korea's survival and U.S. victory in the last Korean War). All the western coastal seaports, and all military bases and airfields in the western half of South Korea are under the EMP field.

The EMP field does not extend to North Korea.

Left uncovered by the EMP field are the eastern half of South Korea, including Seoul, the capital, and the major highway systems radiating around and from Seoul southward--the best invasion routes. Stalled traffic from the EMP will not be blocking Seoul or the highways.

U.S. and South Korean forces covering the Demilitarized Zone (DMZ) will not be covered by the EMP field. The EMP field, in their immediate rear area, will cause cascading failures of the electric grid throughout the DMZ and the entirety of South Korea. Thus, even those U.S. and South Korean forces not covered by the EMP field will be in a paralyzing protracted blackout that will cripple or deny allied forces communications, transportation, food and water, supplies and reinforcements from South Korean bases or from overseas.

The EMP attack creates conditions for North Korea's conquest of South Korea that are ideal.

China Strikes Taiwan or Taiwan and the Philippines

China has a wide variety of land-based and sea-based nuclear-armed missiles that could deliver an EMP attack. Chinese military articles and training describe making an EMP attack upon Taiwan and U.S. aircraft carriers. China has frequently conducted military exercises firing nuclear-capable missiles into the waters around Taiwan on trajectories consistent with EMP attack. Chinese and other open sources claim Beijing has Super-EMP weapons.

In this scenario, China--in preparation for the conquest of Taiwan--makes an EMP attack on Taiwan and on a U.S. aircraft carrier group sailing to the island's rescue.

China regards Taiwan as part of its territory occupied by counter-revolutionary forces who could someday pose a threat to the Peoples Republic of China. Animosity between China and Taiwan (officially the Republic of China) dates from the end of China's civil war when the communists defeated the nationalists on the mainland in 1949 and the nationalists fled to Taiwan.

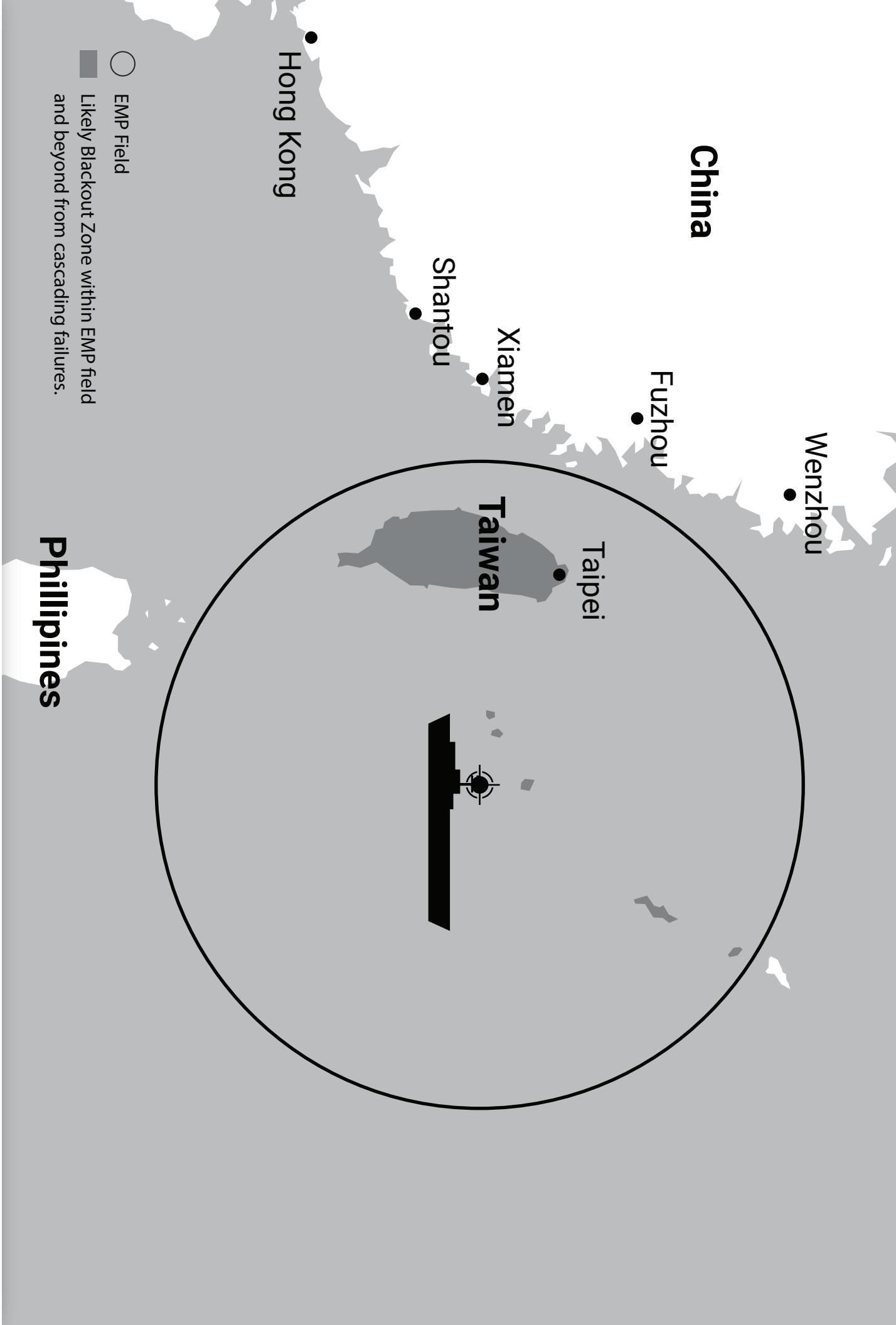
The nationalist Republic of China represented China in the United Nations until 1971, when the communist People's Republic of China took its UN seat. The United States treats Taiwan as an ally and has promised to protect the island from forcible reunification with the mainland. The U.S. under the 1979 Taiwan Relations Act continues to sell arms and provide military training. In January 2010, the Obama Administration announced it would sell \$6.4 billion in arms and military supplies to Taiwan.⁶⁰

Communist China warns that any official declaration by Taiwan of its independence or statement that reunification is impossible would be a cause for war. Over the years China has often fired

⁶⁰ John Ponfret, "U.S. Sells Weapons To Taiwan, Angering China" Washington Post, January 30, 2010.

CHINA STRIKES TAIWAN

NUCLEAR EMP ATTACK SCENARIOS



missiles and artillery at Taiwan and its surrounding islands to signal Beijing's continuing displeasure with Taiwan's de facto independence.⁶¹

Taiwan is also invaluable real estate to China's geostrategic interests.

In China's possession, Taiwan would become an unsinkable aircraft carrier enabling China to project air and naval forces over the South and East China Seas and Western Pacific and dominate these regions--including the disputed islands and oceanic natural resources claimed by Beijing. China has been building artificial islands to serve as platforms for air and naval forces to assert its right to the oil wealth of the South China Sea and to control the ocean and air lanes.

China's capture of Taiwan would convert the South and East China Seas into virtual Chinese lakes. It would give China a stranglehold over the vital maritime trade and oil supply routes from Europe and the Middle East to Japan, South Korea, Australia, North and South America. It would close the Taiwan Straits as a potential staging area for U.S. naval forces. It would push China's defensive perimeter far out into the Western Pacific.

China has massed missiles, air, ground, and naval forces on the mainland opposite Taiwan, and has practiced what appear to be invasion maneuvers. Most analysts agree that Taiwan is so heavily armed, including with an air force, that it would be very difficult if not impossible for China to project forces across the Taiwan Straits, without first reducing the island defenses.⁶²

EMP appears to be the key to victory in China's military doctrine and exercises.

In this scenario, China detonates a nuclear weapon at 30 kilometers HOB centered over a U.S. aircraft carrier group approaching to defend Taiwan from the Western Pacific. The EMP field extends to a radius of 600 kilometers, covering all of Taiwan. The peak EMP field covers the aircraft carrier group, that is partially hardened against EMP effects, thereby optimizing chances to damage the best protected and most effective allied forces in the theater of operations.

The EMP field does not extend to China, so Chinese military forces for offensive operations and invasion are not affected.

As a consequence of the EMP attack, Taiwan's electric grid and other critical infrastructures (communications, transportation, food and water) would go into protracted blackout. While Taiwan has reportedly EMP protected some of its military communications, most of its military forces are not hardened against EMP. Aircraft, tanks, artillery, trucks, and their logistical trains could be crippled or rendered inoperable, opening the door of fortress Taiwan to invasion.

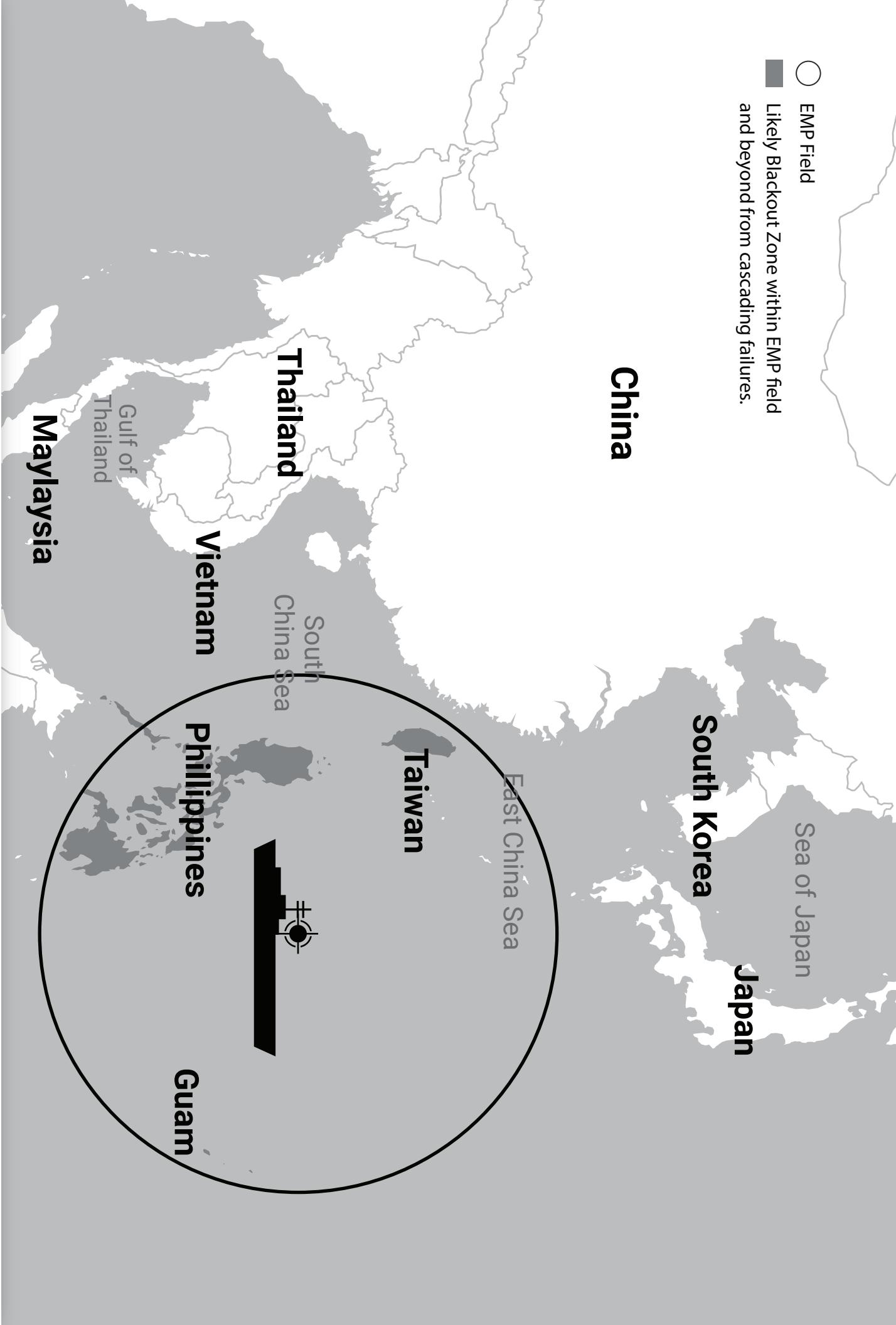
In another scenario, a more ambitious EMP attack might center the EMP burst over a U.S. carrier group, or over a vacant aimpoint, much further out in the Western Pacific. Detonating a nuclear

⁶¹For example: "Taiwan Strait 21 July 1995 to 23 March 1996" GlobalSecurity.org; U.S. Department of State, "The Taiwan Straits Crises: 1954-55 and 1958" Office of the Historian.

⁶²Department of Defense, *Annual Report To Congress: Military and Security Developments Involving the People's Republic of China*, Office of the Secretary of Defense, April 26, 2016.

CHINA STRIKES TAIWAN AND PHILIPINES

NUCLEAR EMP ATTACK SCENARIOS



weapon at 185 kilometers HOB will generate an EMP field with a radius of 1,500 kilometers--enough to cover all of Taiwan, most of the Philippines, and the approaches to Taiwan from the Western Pacific including the U.S. territory and naval base on Guam.

This EMP attack would affect Filipino and U.S. forces based in the Philippines and Guam that oppose Beijing's claim to the South China Sea and that might try to help Taiwan. If China cannot precisely locate the U.S. carrier group in the Western Pacific, the larger EMP field will solve that problem--and send a bigger message warning Washington against intervention.

VI

EUROPE

For the first time since the end of the Cold War, the U.S. and its NATO allies are concerned about a major European war. Russian annexation of Crimea, support of a war in Ukraine, cyber blackout of Western Ukraine, large-scale military exercises simulating invasions and nuclear strikes against NATO, and nuclear threats against NATO voiced regularly by Moscow, cast the shadow of a New Cold War over Europe.

On July-8-9, 2016, President Obama and officials of the 28 NATO member states met in Warsaw and agreed to deploy 4,000 NATO troops to Poland and the Baltic states as a "tripwire" to deter Russian aggression.¹ In August 2016, Russia mobilized over 40,000 troops and thousands of tanks and armored vehicles at five places on the border of Ukraine claiming it was a "snap exercise." Some Western experts feared the exercise was cover for an impending annexation of Ukraine, or rehearsal for an invasion of NATO.²

Russia Strikes European NATO

Russia has a wide variety of missile systems that could execute a nuclear EMP attack. Russian military doctrine regards EMP attack as "the ultimate cyber weapon" and the key to decisive victory in a future war. EMP attack is also ideal for implementation of Russia's military doctrine of "nuclear de-escalation" where Russian first use of a nuclear weapon exploits "shock and awe" to intimidate an adversary into negotiation and surrender. The Congressional EMP Commission assesses that Russia has Super-EMP weapons, as claimed by Russian open sources.³

In this scenario, Russia makes an EMP attack on European NATO to paralyze their military capabilities, and to deter the U.S. and European governments, while Moscow annexes Ukraine and the Baltic states. The objective is to shatter NATO militarily and psychologically while Russia begins a series of campaigns to reconstitute the USSR by first conquering Ukraine and the Baltic NATO states of Lithuania, Latvia, and Estonia, while later moving to annex Georgia, Armenia, Azerbaijan, Kazakhstan and the other former Soviet territories in Central Asia.

Russian dictator Vladimir Putin, a former KGB agent, laments the disintegration of the Soviet Union as "the greatest geopolitical catastrophe of the century" and appears determined to reconstitute the USSR.⁴

¹ "NATO Agrees To Reinforce Eastern Poland, Baltic States Against Russia" Reuters, July 8, 2016.

² "Vladimir Putin Masses 40,000 Troops On Border With Ukraine" The Sun, August 18, 2016; "Ukraine Fears An Upcoming 'Full-Scale Invasion'" DailyCaller.com, August 18, 2016.

³ *Russia: Nuclear Response To America Is Possible Using Super-EMP Factor* CEP20061108358006, op. cit.; "Threat Posed By Electromagnetic Pulse (EMP) Attack" Hearing before the House Armed Services Committee, Washington, DC: July 10, 2008.

⁴ "Putin Deplores Collapse of USSR" BBC News, April 25, 2005; "Soviet Collapse A 'Tragedy,' Putin Says" NBCNews.com, April 25, 2005.

Putin and Russian military doctrine assert the right to protect ethnic Russians, or those who culturally identify as Russians, even if they are foreign nationals living in another country.⁵ It is the same rationale used by Adolph Hitler to justify aggression against Czechoslovakia and Poland--to defend "German minorities" from alleged persecution.

Putin claims ethnic and cultural Russians living in Ukraine and the Baltics are persecuted minorities.

In August 2016, Putin accused Ukraine of sending saboteurs to terrorize Russians in the annexed territory of Crimea, just before launching a "snap exercise" that mobilized thousands of troops on Ukraine's borders.⁶ Hitler concocted false "acts of aggression" by Czechoslovakia and Poland before crushing these nations under German tank treads.

Reconstructing the USSR, on the map, looks like an impossible task because of the vast territories that need to be recaptured. In fact, all of the former Soviet republics on the periphery of Russia--including Ukraine and the Baltic states--are hollow militarily.

Kazakhstan, for example, is the ninth largest nation in the world, but has only 18 million people, a small and obsolete military that is really more like a police force, and vast natural resources. Weakness and wealth are tempting to Moscow, and the Kazakhs know it. Kazakh officials wonder aloud, I discovered on a trip to Astana in 2014, when the Russian tanks will be coming.

Russia also has an interest in annexing the Baltic states and Ukraine so it does not eventually lose its Russian territories of Kaliningrad and the Trans-Dneister in Moldova, neither of which is contiguous to Russia but territorially separated by the Baltics, Belarus, and Ukraine. Russia has converted Kaliningrad and the occupied part of Moldova into heavily armed camps.

Historically, states that are territorially divided want to take over intervening territory to achieve geographic unification, a situation ripe for war, as was the case with East and West Pakistan.

European NATO has neglected investing in defense, because they thought the Cold War would never return, and become militarily hollow. The weakest part of NATO is opposite Russia in the Baltic states, Poland and other East European NATO frontline nations. RAND and the U.S. Defense Department estimate the Russian Army can roll over the Baltic states in 60 hours.⁷

Moscow must wonder about the political will of European NATO governments that neglect their military and will not even defend their borders or peoples from the predations of mass migrations from the Middle East.

In this scenario, Russia detonates a nuclear weapon at 60 kilometers HOB over NATO Headquarters in Brussels, Belgium.

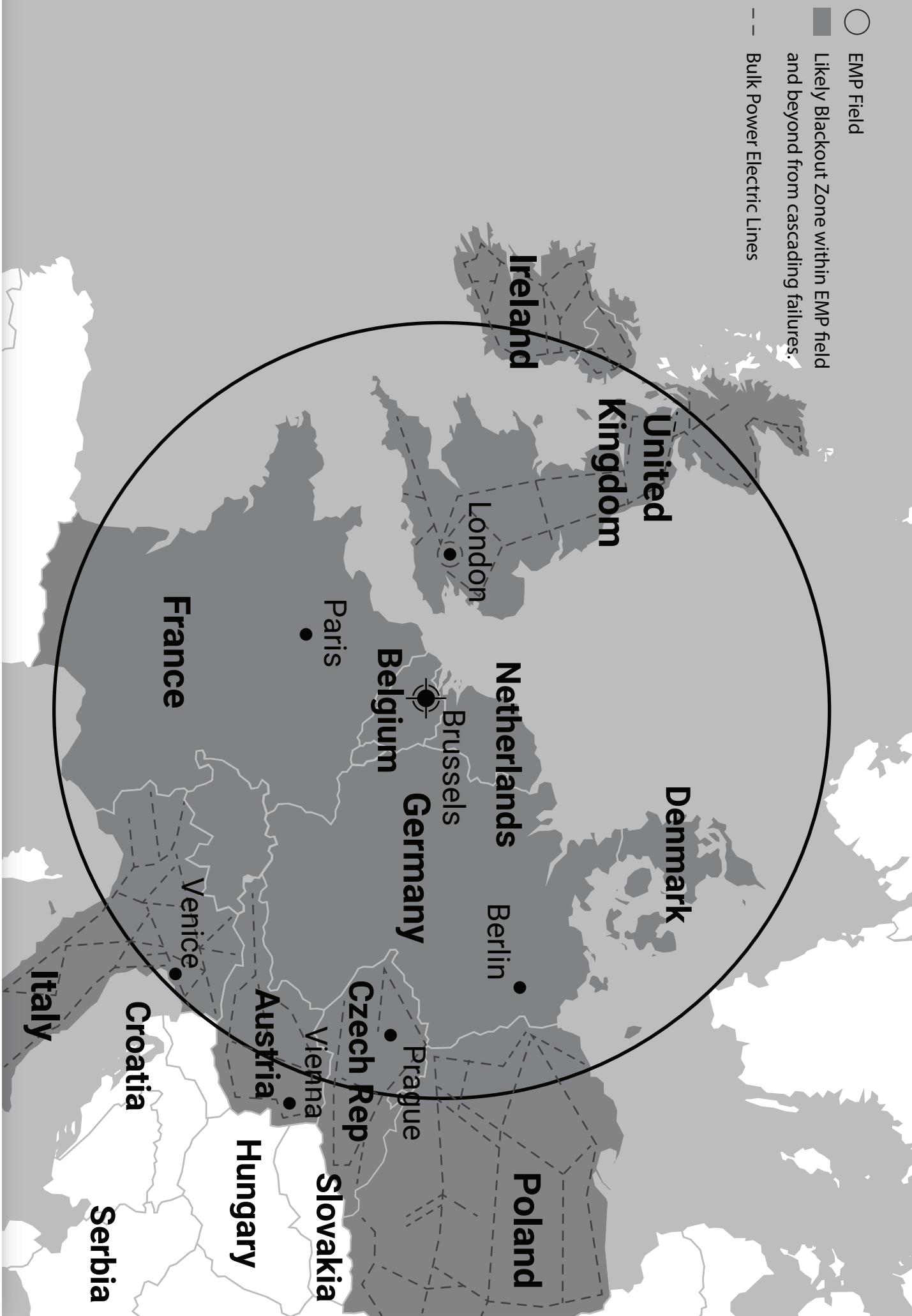
⁵ "Putin Pledges To Protect All Ethnic Russians Anywhere. So Where Are They?" Radio Free Europe, April 10, 2014.

⁶ "Putin Accuses Ukraine of Plotting Terrorist Attacks in Crimea" New York Times, August 10, 2016.

⁷ "Revealed: Russian Invasion Could Overrun NATO In 60 Hours" The National Interest, February 4, 2016.

RUSSIA STRIKES EUROPEAN NATO

NUCLEAR EMP ATTACK SCENARIOS



The EMP field extends to a radius of 850 kilometers, covering all the Benelux countries and all of Germany. The EMP field encompasses nearly all of France, covering to the Mediterranean Coast, and beyond Bordeaux on the Bay of Biscay, leaving only the far south outside the field. Nearly all the United Kingdom is covered by the EMP field except the far north of Scotland beyond Edinburgh. The EMP field covers virtually all Great Britain's military bases, including the home of its Trident nuclear submarines at Faslane, and the other major naval bases at Portsmouth and Devonport (the largest naval base in Western Europe).

The EMP field covers all of Denmark, including the capital at Copenhagen, half the Czech Republic, half of Austria, and northern Italy as far as Venice. All of these nations have single integrated electric grids that will probably, because of cascading failures induced by EMP, go into protracted blackout nationwide.

The EMP field covers western Poland to Poznan. Hundreds of kilometers of 400 kilovolt high power lines and many EHV transformer substations are exposed to EMP, which almost certainly will cause cascading failures blacking-out all of Poland. Consequently, the Polish military is crippled. It is 1939 all over again.

The EMP field does not cover the virtually defenseless Baltic states, Russia's heavily armed military enclave at Kaliningrad, or Russia's ally Belarus, who participates in Russian exercises simulating war against NATO.

Russian tanks roll over the Baltic states in 60 hours.

In six months, probably much less if tactical nuclear weapons are brandished or used, Moscow can reclaim the territories of the former USSR, while NATO struggles to recover. If NATO can ever recover.

European NATO is paralyzed. Its military capabilities are disrupted, damaged, and destroyed by the direct effects of EMP and by blackout of electric grids and other critical infrastructures essential to military operations and national survival. The highest priority of NATO's European governments would be to restore electric power, get lights, communications, transportation, food and water running again, to maintain law and order, avert societal collapse into chaos.

Europe probably would not support, would vehemently object, to the U.S. trying to prosecute a war against Russia from European territory. U.S. conventional long-range Global Strike capabilities would be too little too late to save the Baltic states.

Instead of defending the Baltic states, the highest priority of the United States would almost certainly be to rescue and recover Europe from catastrophe.

But even if stopping Russian aggression remains the highest priority for the Pentagon, will the White House be willing to risk a nuclear holocaust in order to protect the sovereignty of places like Lithuania and Kazakhstan?

ISIS Strikes Italy

Followers of Abu Bakr al-Baghdadi , messianic leader of the Islamic State in Iraq and Syria (ISIS), have threatened to make a missile strike on the Vatican in Rome. ISIS threats against Rome have been advertised on social media to their audience worldwide. For example, according to Voice of America (February 2015):

"Islamic State militants are goading Italy on their social media accounts by urging jihadist recruits to go to Libya in preparation for attack on Rome....The online propaganda offensive comes as Italian authorities ramp-up security measures...outlining plans to put 4,800 soldiers on the streets in Rome and in other major cities....One IS supporter even argued that the distance between Libya and Italy allows Scud missiles to be fired at Rome..."

ISIS agents in Rome have been arrested plotting attacks on the Vatican and the Israeli Embassy.⁸

Ideologically, an attack on the Holy See fits in with the ISIS apocalyptic worldview. ISIS claims to be the champion of Islam come to destroy the world's false religions, Catholicism being chief among them, in a final confrontation between the "true religion" and its enemies, during these final days of the world's end time. Crucifixions by ISIS, now higher profile than since Roman times, are supposed to be a symbolic harbinger of the coming Apocalypse and triumph of Islam, mocking Catholicism and Christianity.

ISIS has at least one Scud missile that it has paraded on social media. How ISIS acquired a Scud is unclear, although it was likely captured from the Syrian Army or from Syrian rebels. Contrary to some optimistic reporting in the press, the missile probably works, or can be made to work. ISIS can certainly figure out how to fire a Scud.

Scuds are engineered to be robust missiles that can take a lot of punishment and are easy to use, literally "designed by geniuses to be used by idiots." Houthi rebels and terrorists in the rough desert country of Yemen have successfully operated and used Scuds. In June 2016, the Houthis launched a Scud strike on King Khalid Air Force Base in Saudi Arabia, killing Lt. General Amed al-Shaalan, Chief of the Saudi Arabian Air Force. Reportedly, "South Korean intelligence officials said...20 Scud missiles fired at Saudi Arabia from Yemen by Houthi rebels and their allies originated in North Korea."⁹

Anything the Houthis can do, ISIS can do, and probably better. But even if ISIS has a Scud-D, the missile does not, from the ISIS "caliphate" in Syria, have the range to reach Rome.

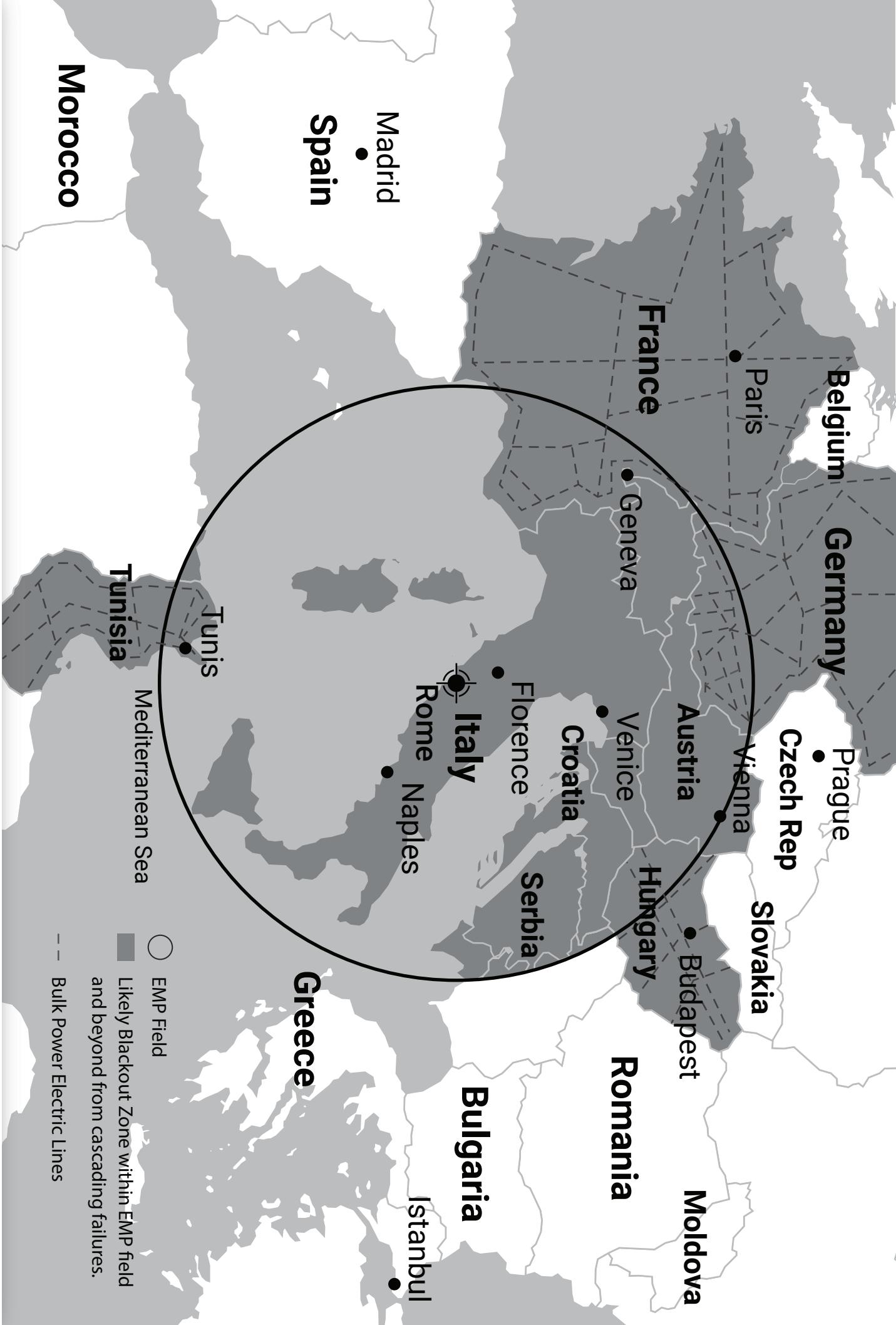
However, as the richest, largest, and most sophisticated terrorist organization in the world, ISIS might be able to engineer a spectacular act of destruction that finally eclipses rival Al Qaeda's 9/11 attacks on New York City and Washington, D.C. If New York and Washington are the economic and political capitals of the United States, Rome is the spiritual capital of Western Civilization and of the biggest religious rival to Islam.

⁸ "Italy Uncovers Islamist Plot to Attack Vatican and Israeli Embassy," Newsweek, April 28, 2016.

⁹ VICE News, July 29, 2015.

ISIS STRIKES ITALY

NUCLEAR EMP ATTACK SCENARIOS



In this scenario, ISIS buys a freighter with a nuclear-armed Scud missile in its hold from North Korea, which is strapped for cash and furious over UN economic sanctions. North Korea has threatened to sell nuclear weapons to terrorists, according to an intelligence report to Congress.¹⁰ ISIS makes a ship-launched EMP attack, detonating the Scud at HOB 30 kilometers over Vatican City.

The EMP field extends to a radius of 600 kilometers around Rome, covering all of Italy, including Sicily and Sardinia, and all Switzerland. The EMP field reaches across the Adriatic Sea and covers the Balkan states, Serbia, Albania, Bosnia-Herzegovina, Croatia, and Slovenia. ISIS would surely see this as divine justice for the "ethnic cleansing" of Muslims during the Yugoslav Wars of 1991-2001, and as punishment for Muslim "traitors" now living in peace with their Christian neighbors.

The EMP field covers most of Austria to Vienna, and significant parts of the electric grids in France, Germany, and Hungary. Across the Mediterranean in North Africa, the EMP field covers part of Tunisia including the capital, Tunis. All of these nations would probably go into protracted blackout from cascading failures that cause massive damage to their electric grids nationwide.

The stage is now set for ISIS cells in Europe to arise, and for ISIS fighters in Libya to cross into blacked-out Italy, and everywhere make bloody chaos. It would be like the Mumbai and Paris massacres on an international scale.

ISIS would finally eclipse Al Qaeda in everything.

¹⁰ "N. Korea Would Sell Nukes To Terrorists" Washington Times, February 5, 2008.

VII

NORTH AMERICA

Some plausible scenarios for EMP attacks against North America include the following:

--*Russia Strikes Canada*. The U.S. retaliates with long-range conventional bomber and cruise missile strikes for Russian aggression against European NATO, so Russia makes an EMP "warning shot" against Canada, that also damages U.S. early warning radars and National Missile Defenses in Alaska, hoping the U.S. will "de-escalate" and stop fighting.¹¹

--*China Strikes the United States*. Amidst an escalating conflict with the U.S. over Taiwan and the South China Sea, China makes an EMP attack blacking-out the mainland's 48 states, hoping to knock the U.S. out of the war.

--*Iran Strikes the United States*. The Obama administration is wrong, and critics are right, that Iran already has nuclear-armed missiles, and can make an EMP attack against the U.S. by satellite, which Iran does on Inauguration Day (January 20, 2017) to humiliate the departing president and destroy the "Great Satan" that is the United States.

--*Al Qaeda Strikes the United States*. North Korea or Iran provides Al Qaeda with a nuclear armed short- or medium-range missile in a freighter, to make a nuclear EMP attack by proxy to eliminate the U.S. as an actor on the world stage.

--*North Korea Strikes Texas*. North Korea makes an EMP attack using a Scud missile launched from a freighter to blackout the Texas electric grid as a "warning shot" for the U.S. to stop "aggressive" military exercises and deployment of THAAD missile defenses to South Korea.

Two of the most plausible scenarios are below.

North Korea Strikes the United States

On Wednesday August 24--while writing these words-- North Korea successfully launched a ballistic missile from its Simpo-class submarine, 5 more of which are reportedly under construction, thereby demonstrating yet another platform from which the North could potentially make nuclear missile strikes on the United States. North Korea already has two different classes of mobile ICBMs, the KN-08 and KN-14, both of which are assessed by the U.S. Department of Defense as nuclear-armed and capable of hitting the U.S. mainland.¹²

North Korea also has orbiting over the United States two satellites, the KMS-3 and KMS-4, that are potential nuclear EMP threats. Both satellites orbit on south polar trajectories, so they overfly the U.S. from the south, where the U.S. is blind and defenseless as Ballistic Missile Early Warning Radars and National Missile Defenses are oriented northward, or eastward and

¹¹ "The EMP Threat To Canada" Mackenzie Institute, October 22, 2015.

¹² Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of North Korea*, Report to Congress, Office of the Secretary of Defense, January 5, 2016.

westward, looking for missile threats coming over the North Pole or from the Atlantic or Pacific oceans.¹³

North Korea's KMS-3 and KMS-4 satellites are at the optimum altitude to generate an EMP field over the United States. They may be armed with Super-EMP weapons.

Dr. William R. Graham, Chairman of the Congressional EMP Commission, in a hearing before the House Armed Services Committee on July 10, 2008, warned that Russia developed Super-EMP weapons, and apparently transferred that technology to North Korea:

MR. BARTLET: It is my understanding that, in interviewing some Russian generals, that they told you that the Soviets had developed a "Super-EMP" enhanced weapon that could produce 200 kilovolts per meter at the center?

DR. GRAHAM: Yes, Mr. Bartlett. We engaged two senior Russian generals--who were also lecturers and authors from their general staff academy, who had written about advanced weapons--and actually brought them over to the U.S. and spent a day meeting with them and questioning them about EMP-type weapons; and they said a number of interesting things. One was that, in fact, the Russians had developed what they called the "Super-EMP" weapon that could generate fields in the range of 200 kilovolts per meter. And we had seen in other open literature that the Russians appeared to be using that figure as an upper bound for the kind of EMP that could be produced by nuclear weapons. So, we weren't surprised, too surprised, to see it.

They also told us that there were Russian and other technologists, engineers and scientists, who were working with North Korea and receiving Western wages, they emphasized helping North Korea with the design of its nuclear weapons....

MR. BARTLETT: This is about, what, four times higher than anything we ever built or tested to, in terms of EMP hardening?

DR. GRAHAM: Yes.¹⁴

A Super-EMP warhead, in the possession of Russia or North Korea, could put at risk the best protected U.S. assets, even threatening the survival of the U.S. nuclear deterrent. This point is emphasized in the continuing exchange between Rep. Bartlett and Dr. Graham at the congressional hearing on EMP:

MR. BARTLETT: Which means that, even if you were some hundreds of miles away from that, that it would be somewhere in the range of 50 to 100 kilovolts per meter at the margins of our country, for instance?

DR. GRAHAM: Yes. Over much of the margin, yes.

MR. BARTLETT: So, we aren't sure that much of our military would still be operable after that robust laydown. Is that correct?....I also understand that we aren't certain that we could launch, through a series of robust EMP laydowns, that we could launch our intercontinental ballistic missiles.

¹³ Ambassador R. James Woolsey, Dr. William Graham, Ambassador Henry Cooper, Fritz Ermath, Dr. Peter Vincent Pry, "Underestimating Nuclear Missile Threats From North Korea And Iran" National Review, February 12, 2016.

¹⁴ "Threat Posed By Electromagnetic Pulse (EMP) Attack" Hearing before the House Armed Services Committee, Washington, D.C.: January 10, 2008.

DR. GRAHAM: We designed both the missiles and their bases and the strategic communications systems during the Cold War to be able to survive and operate through EMP fields on the order of 50 kilovolts per meter, which was our concern at the time, before we realized that weapons could be designed that had larger EMP fields.¹⁵

Ambassador R. James Woolsey, former Director of Central Intelligence, in "The Miniaturization Myth" (Washington Times, April 24, 2016) warns North Korea's satellites may pose a constant EMP threat, a sword of Damocles always hanging overhead:

"The president and the press is missing, or ignoring, the biggest threat from North Korea--their satellites. On February 7, North Korea orbited a second satellite, the KMS-4, to join their KMS-3 satellite launched in December 2012. Both satellites now are in south polar orbits, evading many U.S. missile defense radars and flying over the United States from the south, where our defenses are limited. Both satellites--if nuclear armed--could make an electromagnetic pulse (EMP) attack that could blackout the U.S. electric grid for months or years, thereby killing millions. Technologically, such an EMP attack is easy--since the weapon detonates at high-altitude, in space, no shock absorbers, heat shield, or vehicle for atmospheric re-entry is necessary. Since the radius of the EMP is enormous, thousands of kilometers, accuracy matters little...Moreover, North Korea probably has nuclear weapons specially designed, not to make a big explosion, but to emit lots of gamma rays to generate high-frequency EMP. Senior Russian generals warned EMP Commissioners in 2004 that their EMP nuclear warhead design leaked "accidentally" to North Korea, and unemployed Russian scientists found work in North Korea's nuclear weapons program....Such an EMP nuclear warhead could resemble an Enhanced Radiation Warhead (ERW, also called a Neutron Bomb), a technology dating to the 1950s, deployed by the U.S. in the 1980s as the W48 ERW artillery shell, weighing less than 100 pounds.

"Are EMP warheads on those North Korean satellites?," former CIA Director Woolsey asks in the above article. Many think there might be, including such senior Reagan administration national security officials as Dr. William Graham (White House Science Advisor, Administrator of NASA, Chairman of the Congressional EMP Commission), Fritz Ermath (Chairman of the National Intelligence Council), and Ambassador Henry Cooper (Director of the Strategic Defense Initiative).

The Obama Administration and its media "echo chamber" dismiss nuclear threats from North Korea as "bluster" and "saber rattling" designed to coerce economic and diplomatic concessions, and as propaganda for a domestic audience in North Korea. But Kim Jong-Un's nuclear missile tests and hysteria have so far only increased international sanctions against the North and further isolated his "Hermit Kingdom." The North Korean dictator has absolute power over his people and no need to enthrall them with costly nuclear missile programs--which are literally starving thousands to death.

Kim Jong-Un's nuclear threats should be taken very seriously.

Kim is the twisted product of over 70 years of absolute power, inherited from his father and grandfather--as they were, he is corrupted absolutely. Kim's megalomania and paranoia are

¹⁵ Ibid.

psychopathic. The so-called Democratic People's Republic of Korea masquerades as an atheistic Stalinist dictatorship, but is in fact a theocracy dedicated to the worship of Kim Jong-Un. Kim is described in state media as endowed with superhuman characteristics, including a divine halo that sometimes magically appears. Kim has murdered hundreds of thousands of his own people and invented especially cruel ways of killing friends and close relatives.¹⁶

Kim Jong-Un is Caligula in the third generation, armed with nuclear weapons.

In this scenario, Kim Jong-Un becomes convinced that the United States is becoming too dangerous, too bold in pushing for economic sanctions against North Korea, and too aggressive in military exercises with South Korea.

While the Obama Administration and the press dismiss as "bluster" North Korea's threats to launch a nuclear preemptive strike in response to U.S.-South Korean military exercises, it is possible and even likely Pyongyang regards the annual exercises as a real threat. The U.S., Russia, China, and North Korea all subscribe to the view that a military exercise could conceal a surprise attack. In 1983, Moscow nearly launched a preemptive nuclear strike in mistaken belief that an annual NATO exercise, ABLE ARCHER-83, this time concealed a surprise nuclear attack.¹⁷

Kim Jong-Un is at least as paranoid as was Moscow during the height of the Cold War, and entirely capable of misconstruing an allied military exercise as an existential threat. Kim decides to strike first, before the U.S. destroys his regime, an act Kim believes will make him the most feared and most powerful man in the world.

A Super-EMP weapon hidden aboard North Korea's KMS-4 satellite is detonated at 400 kilometers HOB over the geographic center of the United States. The EMP field extends to a radius of 2,200 kilometers, covering the U.S., most of Canada and Mexico.

The U.S. East, West, and Texas electric grids collapse, as do the Canadian and Mexican grids. Unprotected against EMP, hundreds of EHV transformers are destroyed and millions of SCADAS and other critical electronics, leaving damage too broad and too deep to repair, requiring years, if the U.S. could survive for years.

But there is no coming back. Everything is in blackout and nothing works.

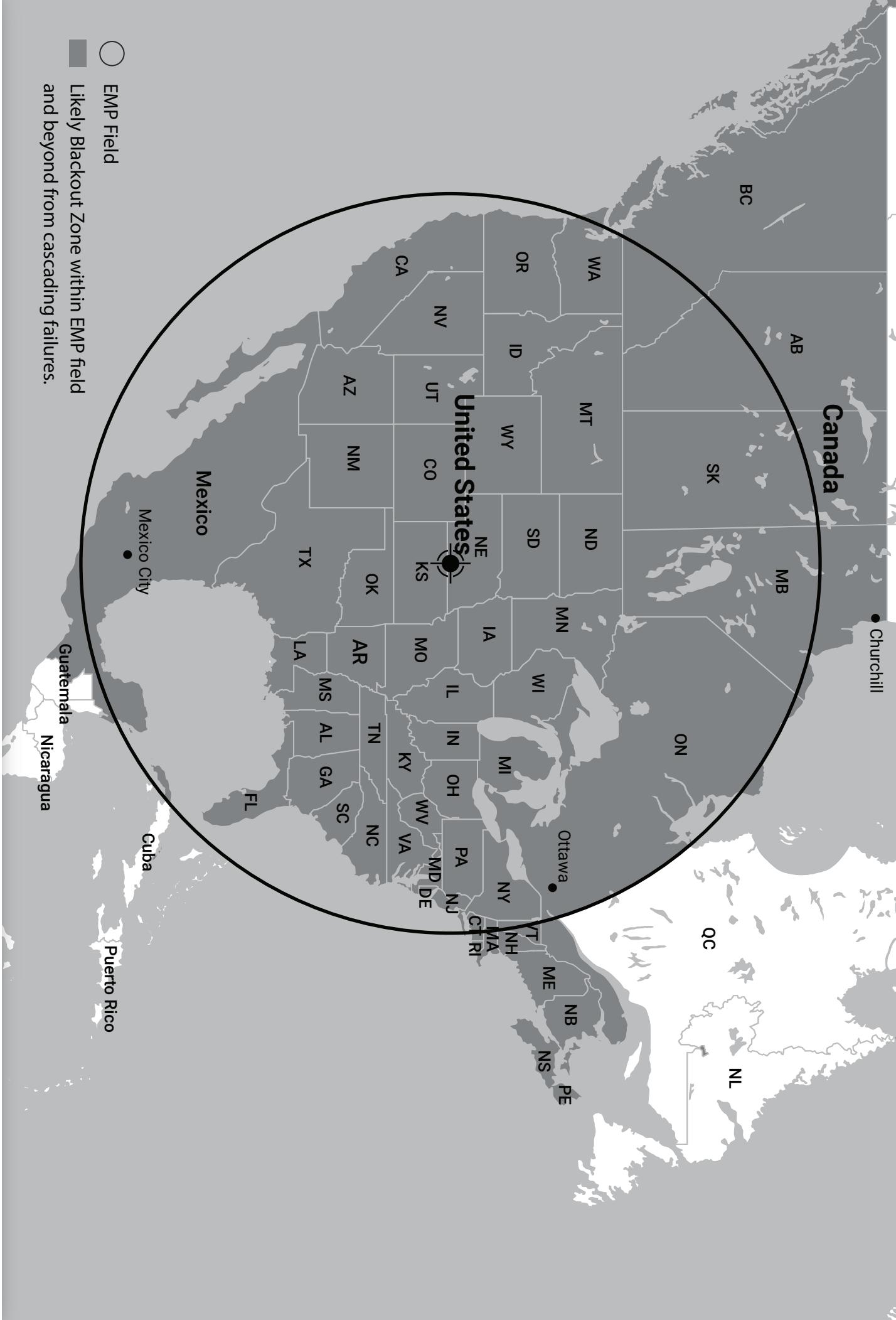
The EMP sparks widespread fires, explosions, all kinds of industrial accidents. Firestorms rage in cities and forests. Toxic clouds pollute the air and chemical spills poison already polluted lakes and rivers. In seven days, the over 100 nuclear power reactors run out of emergency power and go Fukushima, spreading radioactive plumes over the most populous half of the United States. There is no drinking water and the national food supply in regional warehouses begins to spoil in three days. There was only enough food to feed 320 million people for 30 days anyway.

¹⁶"In Hail of Bullets and Fire, North Korea Killed Official Who Wanted Reform" New York Times, March 12, 2016.

¹⁷ "The 1983 Nuclear War Scare--And Today" Family Security Matters, November 6, 2015; President's Foreign Intelligence Advisory Board , *The Soviet "War Scare"* PFIAB, February 15, 1990; Dr. Peter Vincent Pry, *War Scare*, Praeger, 1999.

NORTH KOREA STRIKES THE UNITED STATES

NUCLEAR EMP ATTACK SCENARIOS



In one year, as the Congressional EMP Commission has warned for over a decade, 9 of 10 Americans are dead from starvation, disease, and societal collapse. The United States of America ceases to exist.

Russia Strikes the United States

In this scenario, Russia invades and annexes NATO's Baltic states and Ukraine, as a first step toward reunification of the former territories of the USSR. Russia makes an EMP attack on European NATO, centering the attack on NATO HQ in Brussels, blacking-out and paralyzing the great powers of Europe.

Simultaneously with the EMP attack, Russian embassies in the 28 NATO member states--including the United States--warn that any NATO attempt to intervene militarily will be met with additional EMP attacks, escalating if necessary to nuclear ground-bursts on NATO military targets and all-out nuclear war.

European NATO is cowed, their militaries helpless. But the United States defies Russia.

The U.S. retaliates with long-range conventional strikes using bombers and cruise missiles, initially concentrating on Russian military forces in the Baltic states. Gradually the U.S. escalates its conventional strikes to include crucial military and economic targets in Russian territory. The U.S. strategy is to rely on its non-nuclear Global Strike capabilities to increase pressure on Russia, hopefully forcing Moscow to retreat from the Baltics and abandon its scheme to become again "Great Russia."

Russian dictator Vladimir Putin--former KGB agent, national chauvinist, still humiliated by the USSR's defeat during the Cold War--cannot countenance losing again to the United States. If he retreats now, he will lose face before his own people. A coup against his government, maybe a popular revolution, and Putin's assassination would be real possibilities.

In 1999, senior Russian officials threatened a U.S. congressional delegation with an EMP attack against the United States to stop U.S. bombing of Russian ally Serbia--much lesser stakes than in this scenario.¹⁸

Forward deployed Russian submarines make short-warning EMP attacks using Super-EMP warheads to paralyze U.S. strategic and general purpose forces and blackout the national grid. Fourteen EMP bursts are at 30 kilometers HOB to maximize peak field strength, centered on 14 U.S. strategic C3I and strategic forces targets:

- National Missile Defenses at Fort Greely, Alaska.
- National Missile Defenses at Vandenberg AFB, California.
- Washington, D.C.
- NORAD HQ at Petersen AFB and the Alternate HQ inside nearby Cheyenne Mountain, Colorado.

¹⁸ Hearing on the Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack, House Armed Services Committee, Washington, D.C.: July 22, 2004; Peter Huessy, "Electronic Doomsday For The U.S.?--The Electromagnetic Pulse (EMP)" Gatestone, January 13, 2016.

- 91st ICBM Missile Wing and B-52 Bomber Wing at Minot AFB, North Dakota.
- 90th ICBM Missile Wing at FE Warren AFB, Wyoming.
- 341st ICBM Missile Wing at Malmstrom AFB, Montana.
- B-2 Bomber Wing at Whiteman AFB, Missouri.
- B-52 Bomber Wing at Barksdale AFB, Louisiana.
- B-1B Bomber Wing at Ellsworth AFB, South Dakota.
- B-1B Bomber Wing at Dyess AFB, Texas.
- Trident SSBN Base at Bangor, Washington.
- Trident SSBN Base at King's Bay, Georgia.
- C3I TACAMO Wing of E-6B aircraft for emergency communications (to ICBMs, bombers, and patrolling submarines) at Tinker AFB, Oklahoma.

The Congressional EMP Commission *Executive Report* (2004) warned: "Current policy is to continue to provide EMP protection to strategic forces and their controls; however, the end of the Cold War has relaxed the discipline for achieving and maintaining that capability within these forces."

Moreover, compared to the Cold War, today U.S. strategic forces are less ready and more vulnerable to surprise attack, perhaps especially from EMP:

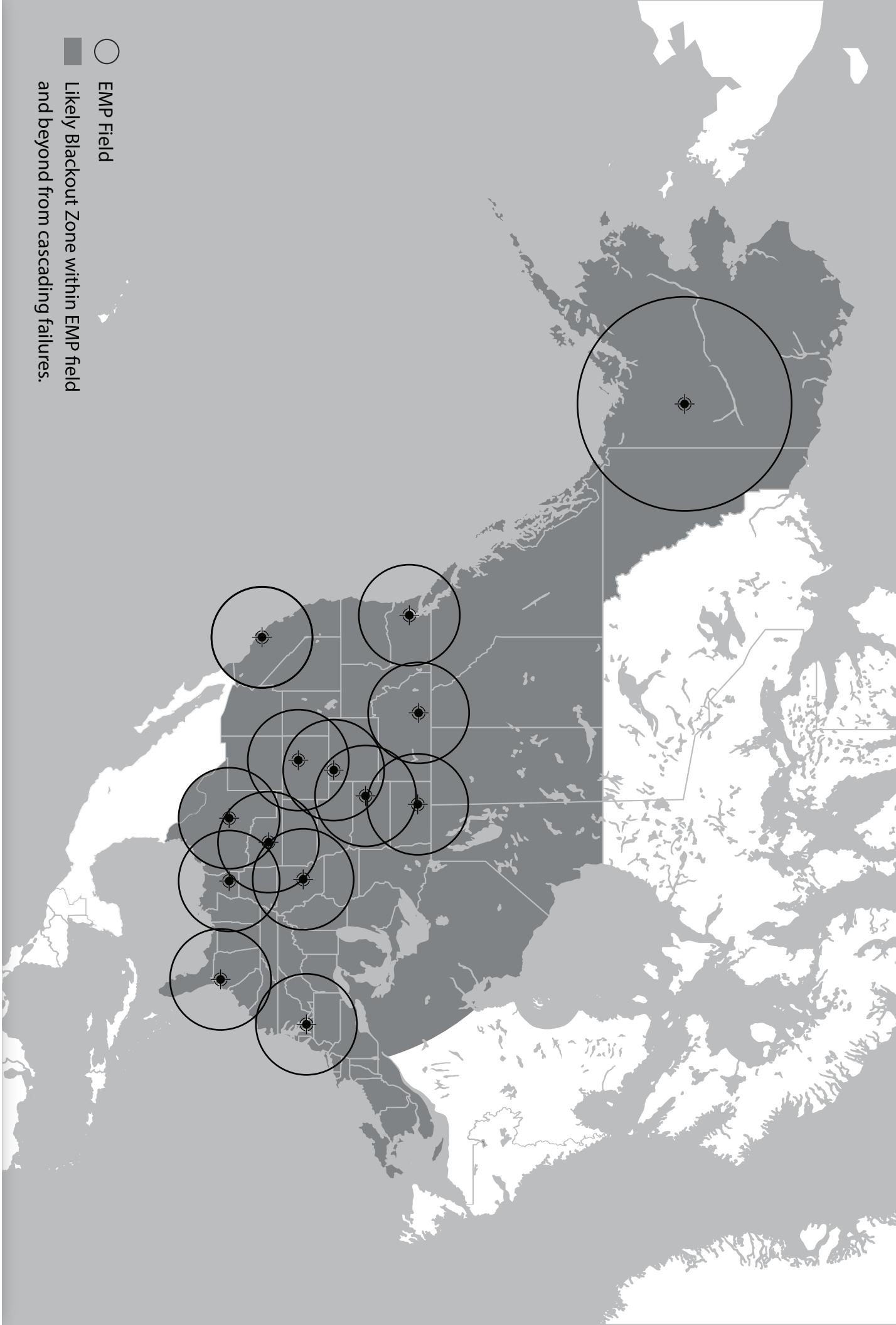
- U.S. strategic bombers are no longer armed and on strip alert, ready to takeoff on short warning, but must be made ready, including having weapons uploaded.
- U.S. ICBMs and submarine-launched ballistic missiles (SLBMs) are "de-targeted" so they are no longer aimed at targets in Russia, but aimed at the oceans, as a safeguard against accidental launch. Before launching, ICBMs and SLBMs must be re-targeted, which can be done quickly, but depends upon a vast array of computers and data links called the Rapid Execution and Combat Targeting System.
- U.S. ballistic missile submarines (SSBNs) are far less numerous today than during the Cold War, when 41 SSBNs were deployed. Today the SSBN fleet numbers 14 Tridents. Normally, 7 Tridents are at their ports in Bangor and King's Bay, so half the fleet would be caught at their berths by a surprise attack.
- U.S. SSBNs at sea no longer carry launch codes to permit an independent retaliatory strike in the event of decapitation of the National Command Authority, but must receive an Emergency Action Message from the President that includes launch code data.
- Take Charge And Move Out (TACAMO) aircraft are the only remaining redundant communications link to the three legs of the strategic Triad (bombers, ICBMs, submarines), other Cold War systems like Looking Glass, ELF, and GWEN having been retired.
- TACAMO E-6Bs, a modified version of the Boeing 707 airliner, are not kept on airborne alert (like Looking Glass during the Cold War), only a few are on strip alert, while most are grounded at Tinker AFB, where they would be sitting ducks in a surprise attack.

The postulated Russian EMP attacks place peak EMP fields (200 kilovolts per meter) on all U.S. strategic nuclear forces and all conventional Global Strike forces, except for submarines at sea. The attack also attempts to neutralize submarines at sea by severing their C3I and connectivity to the National Command Authority. Overlapping EMP fields cause the collapse and protracted blackout of all North America, further crippling U.S. power projection capabilities.

RUSSIA STRIKES THE UNITED STATES

NUCLEAR EMP ATTACK SCENARIOS

- EMP Field
- Likely Blackout Zone within EMP field and beyond from cascading failures.



VIII

EMP WORLD WAR

A final plausible scenario would be coordinated EMP attacks by Russia, China, North Korea, and Iran to advance their common global strategic and ideological interests by what would amount to an EMP World War.

What are the common strategic and ideological interests of a New Axis comprising Russia, China, North Korea, and Iran?

Strategically, these states are all dissatisfied with the established world order dominated by the United States and its allies. Like Germany before World Wars I and II, they perceive themselves as threatened, victim nations, hemmed in territorially and economically by an international system built by rival powers. Moscow, Beijing, Pyongyang, and Tehran would all like to overthrow the existing world order and replace it with a new world order--dominated by themselves. At minimum they would like to topple the existing game table and start a new game.

All also see "the world's only superpower" that is the United States as the greatest threat to their existence. No matter how benign the U.S. really is, they do not, perhaps cannot, see anything but that the U.S. is a great potential threat. The New Axis are what might be called "national security states" or "militant dictatorships" because they are obsessed with survival and dominance to the point of sacrificing prosperity. Co-existence might be a temporary necessity. But real security is achieved by dominance, by the annihilation of rivals, a view like that in organized crime. An unsurprising parallel, as these are criminal states.

Ideologically, contrary to common Western assumptions, these "outsider" states do not perceive the United States and the West as necessary to their prosperity, but as impediments actively hostile to their existence. Totalitarian and authoritarian societies see politics and economics, power and wealth, as a zero-sum game. Russia, China, North Korea, and Iran do not blame themselves for their economic and political problems--they blame the U.S. and the West.

Moreover, they fear the free political, economic, and cultural systems represented by the United States and the West, so alien and diametrically opposed to their own totalitarian and authoritarian systems. Like ancient militarist Sparta, in its war with democratic Athens, that made common cause against Athens with all other city states run by tyrants, the elites of Moscow, Beijing, Pyongyang, and Tehran are united by their fear and hatred of freedom.

Evidence is substantial that Russia, China, North Korea, and Iran are tacit allies. Russia and China conduct military exercises together, support each other at the UN, and typically have a united front on most international issues. China's new and growing military power is largely built on Russian technology. Russia and China have both helped North Korea and Iran's nuclear and missile programs, and often protect them from sanctions at the United Nations.¹⁹

¹⁹ Bret Stephens thinks Turkey might join Russia, China, and Iran in what he calls "The New Dictators' Club" Wall Street Journal, August 22, 2016.

Is it a coincidence that all four of these powers are now embarked on major acts of aggression in Europe, Asia, and the Middle East that challenge international law and the existing world order--simultaneously?

An EMP World War might unfold by sequencing the already described theater EMP scenarios as follows:

--*Iran Strikes Israel* comes first, while Russia, China, and North Korea wait for U.S. forces to concentrate in the Persian Gulf. The U.S. military is now so diminished by cuts in budget, material, and manpower that it can no longer fight more than one big theater war. After perhaps a week, when U.S. forces and crucial C3I assets are committed and en route to the Middle East, simultaneously or in rapid succession:

--*North Korea Strikes South Korea and Japan*

--*China Strikes Taiwan*

--*Russia Strikes European NATO*

Finally, if necessary:

--*North Korea Strikes the United States*

--*Russia Strikes the United States*

This sequencing of EMP attacks would maximally exploit the U.S. "hollow" military. Where the U.S. is no longer able to support major military operations in more than one theater, the proposed plan would confront the U.S. nearly simultaneously with an EMP World War in four theaters--in five theaters if the U.S. itself is attacked.²⁰

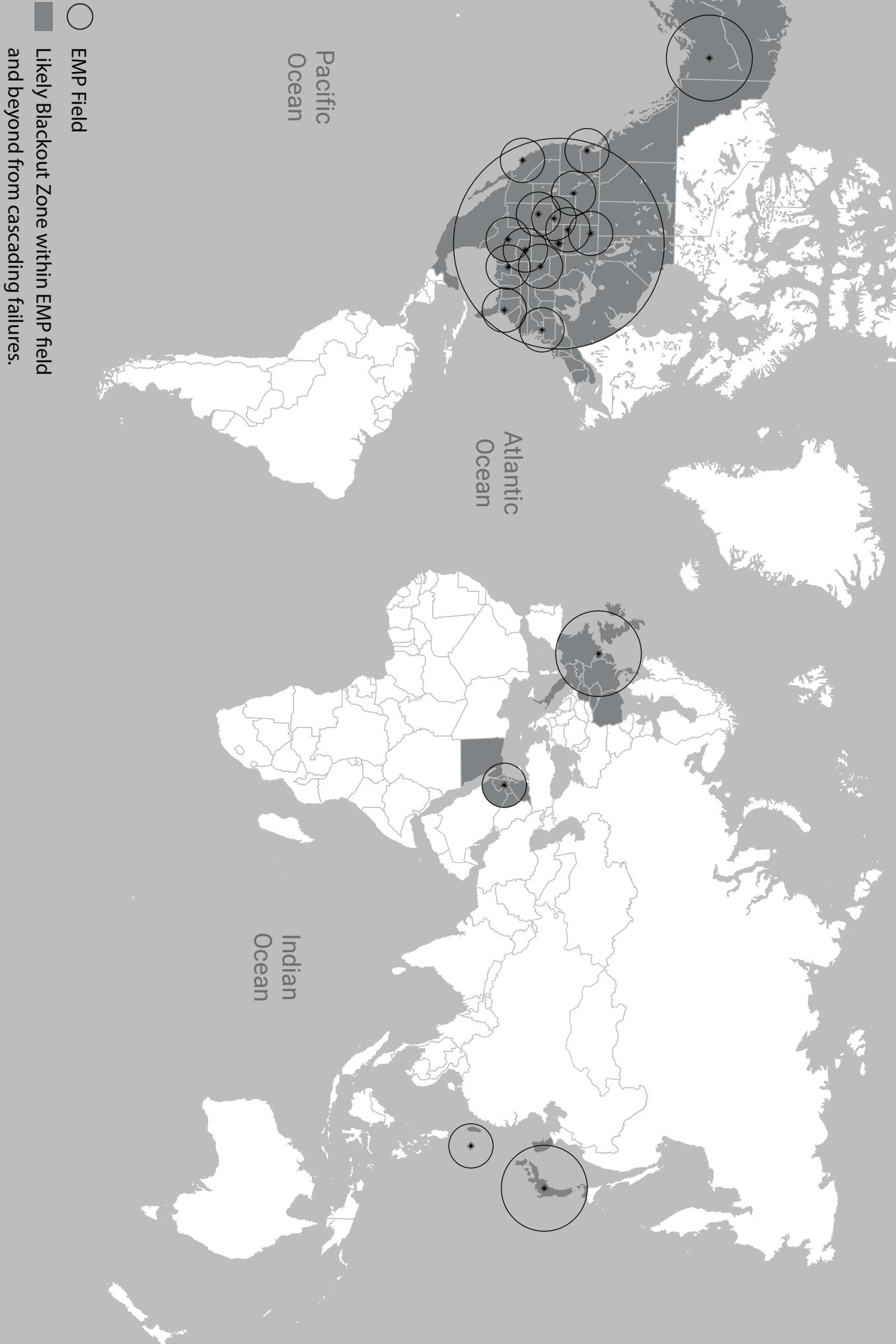
EMP is essentially an anti-technology weapon--and perhaps the perfect "silver bullet" to defeat and humble the high-tech military of the United States that is the basis for its claim to be "the world's only superpower."

Sic Transit Gloria Mundi

²⁰According to U.S. Army Chief of Staff Mark Milley "U.S. Military Not Ready To Take On Russia, China, Iran or North Korea" Newsmax, March 17, 2016; *2016 Index Of U.S. Military Strength*, op. cit., also supports what appears to be the consensus view that the U.S. is unprepared for more than one major regional conflict.

EMP WORLD WAR

NUCLEAR EMP ATTACK SCENARIOS



IX

RECOMMENDATIONS

The United States and the Free World may well be on the brink of an EMP and cyber Blackout War from which there may be no recovery. EMP can, literally and figuratively, turn out the lights of electronic civilization and bring on the advent of a New Dark Ages.

The magnitude of this existential threat and its proximity, evidenced almost daily by the increasing aggressiveness and mounting capabilities of numerous potential adversaries, constitutes a grave emergency necessitating immediate action:

The President should declare that EMP or cyber-attacks that blackout the national electric grid constitute the use of weapons of mass destruction that justify preemptive and retaliatory responses by the United States using all possible means, including nuclear weapons. Potential adversaries should not be allowed to think that the U.S. may agree with their military doctrines that a Blackout War waged with EMP and cyber weapons does not cross the nuclear redline. A Defense Science Board study *Resilient Military Systems and the Advanced Cyber Threat* (January 2013) equates an all-out cyber-attack on the United States with the consequences of a nuclear attack, and concludes that a nuclear response is justified to deter or retaliate for cyber warfare: "While the manifestation of a nuclear and cyber-attack are very different, in the end, the existential impact to the United States is the same."

The President should sign the draft executive order "Protecting The United States From Electromagnetic Pulse (EMP)" submitted by the EMP Commission and repeatedly by members of Congress to the White House. Among many other provisions to protect the nation from EMP on an emergency basis, the executive order would instantly mobilize a much needed "whole of government solution" to the EMP threat: "All U.S. Government Departments, Agencies, Offices, Councils, Boards, Commissions and other U.S. Government entities...shall take full and complete account of the EMP threat in forming policies and plans to protect United States critical infrastructures..."

The President should rescind Executive Order 13618 (signed by President Obama on July 6, 2012) and re-establish the National Communications System (NCS) in the White House to oversee national preparedness, including of the electric grid and other critical infrastructures, against EMP. President Ronald Reagan established the National Communications System to provide survivable and enduring communications to the White House, departments and agencies of the federal government, and the Congress, in order to support continuity of government in the aftermath of a nuclear war or other national catastrophe. Staffed with military and civilian defense professionals and EMP experts, NCS provided exemplary service. Under Executive Order 13618, President Obama transferred and subordinated NCS to the Department of Homeland Security, where its expertise is underutilized and the EMP threat is a low or non-priority.

Congress should rescind the legal authorities of the U.S. Federal Energy Regulatory Commission (U.S. FERC) and the North American Electric Reliability Corporation (NERC) as

the lead entities responsible for electric grid security, and empower a renewed NCS at the White House with enhanced legal authorities to order and oversee the immediate protection of the electric grid and other critical infrastructures from EMP. U.S. FERC and NERC have not only failed spectacularly to protect the grid, but NERC especially has actively lobbied against EMP protection and concocted "junk science" studies to justify its dangerous neglect of the public interest and of national survival.²¹

Congress should immediately pass the Critical Infrastructure Protection Act (CIPA) that passed the House unanimously, and now awaits action in the Senate. CIPA directs the Department of Homeland Security to include the EMP threat among its National Planning Scenarios that are the basis for all federal, state, and local emergency planning, training, and resource allocation. CIPA requires DHS to develop plans, new technologies, and launch pilot projects to protect the national electric grid and other critical infrastructures from EMP.

The Department of Defense should develop plans for conventional and nuclear preemptive strikes and develop new cyber and EMP weapons to prevent adversaries from launching a Blackout War. On April 13, 2016, in a hearing before the U.S. Congress, senior Pentagon officials testified that, because nuclear missile threats from nations like North Korea might be able to overwhelm U.S. national missile defenses, the Defense Department is developing new cyber and electronic weapons, and new operational procedures, to attack enemy missiles before they launch. During the Cold War this was known as "preemption" or "striking first."

The Pentagon also has a new euphemism for "striking first" calling it "left-of-launch" missile defense, which means destroying the missile before launch. As then Commander of North American Aerospace Defense (NORAD), Admiral William Gortney, explained to the Senate Subcommittee on Strategic Forces: "We need to augment our defensive posture with one that is designed to defeat ballistic missile threats in the boost phase as well as before they are launched, known as 'left-of-launch'."

Left-of-launch interception of enemy missiles, or more plainly striking first, would be accomplished by attacking enemy electronic systems--including missile electronics, command and control, and the power grid supporting military operations--to prevent the missile launch. Brian McKeon, Principle Defense Undersecretary for Policy, testified to U.S. Congress that development of new cyber and electronic weapons to strike first against impending enemy missile launches is "underway." According to Bill Gertz in "Pentagon Developing Pre-Launch Cyber Attacks On Missiles" (Washington Examiner, April 14): "Defense officials familiar with the research said the new, non-kinetic missile defenses include the planned use of cyber-attacks and other electronic warfare means, such as electromagnetic pulse attacks, against foreign command and control systems. An electromagnetic pulse is the force emitted from a nuclear blast that can disrupt all electronics over wide areas."

An EMP attack would enable the U.S. to destroy mobile missiles, such as North Korea's KN-08 and KN-14 mobile intercontinental ballistic missiles (ICBMs) and their hundreds of medium-

²¹ See: Ted Koppel, *Lights Out*, 2015; Jim LeBlanc, *Real Risk Management For The Electric Grid*, Center for Security Policy 2016; Pry, *Apocalypse Unknown*, op. cit., Part Three: NERC Gets It Really Wrong.

range missiles, before they launch. Mobile missiles operating in the field during a crisis may already have their launch codes and probably could not be stopped from launching by computer viruses or hacking. An EMP attack could stop them.

The Pentagon's categorization of EMP as a non-kinetic weapon like cyber-attack follows the lead of Russia, China, North Korea, and Iran, in whose military doctrines nuclear EMP attack is considered part of all-out cyber warfare. *Admittedly, preemptive strikes, including by EMP and cyber, are dangerously destabilizing and lower the nuclear threshold, making nuclear conflict more likely than during the Cold War--but U.S. vulnerability to EMP and cyber is even more destabilizing and dangerous.* Preemptive capabilities are necessary, at least until such time as the American people can be protected by hardening the grid and deploying adequate missile defenses.

The President, Congress, and the Department of Defense must cooperate on a crash program to bring back President Reagan's Strategic Defense Initiative (SDI) and develop revolutionary new missile defenses. Immediately, Aegis anti-missiles should be posted ashore in states on the Gulf of Mexico to close the hole in U.S. missile defenses, as recommended by Ambassador Henry Cooper, former Director of SDI.

There is a better way of defending North America and NATO than by striking first with cyber and EMP weapons.

President Ronald Reagan's Strategic Defense Initiative, foolishly derided by the press as "Star Wars," invented a revolutionary new missile defense system called GPALS (Global Protection Against Limited Strikes) that would have worked, had SDI not been canceled by President Bill Clinton. SDI technology has been proven, in peaceful applications, by NASA in Moon exploration and in the private sector space program.

SDI could make unnecessary the dangerous revolution in military technology now underway developing offensive cyber and EMP weapons for striking first. *SDI could replace these destabilizing offensive technologies with stabilizing defensive technologies, and make the world a much safer place.*

RECOMMENDED READING

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F. Michael Maloof, *A Nation Forsaken* (WND Books, 2013).

Jim LeBlanc, *Real Risk Management For The Electric Grid* (Center for Security Policy, 2016).