

# **CHINA: EMP THREAT**

**The People's Republic of China Military Doctrine, Plans, and Capabilities for  
Electromagnetic Pulse (EMP) Attack**



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## CHINA: EMP THREAT

### *Chinese Military Doctrine: EMP Attack Decisive*

China has long known about nuclear high-altitude electromagnetic pulse (HEMP) and invested in protecting military forces and critical infrastructures from HEMP and other nuclear weapon effects during the Cold War, and continuing today. China has HEMP simulators and defensive and offensive programs that are almost certainly more robust than any in the United States. China's military doctrine regards nuclear HEMP attack as an extension of information or cyber warfare, and deserving highest priority as the most likely kind of future warfare.<sup>1</sup>

Chinese military writings are replete with references to making HEMP attacks against the United States as a means of prevailing in war. The foremost People's Liberation Army textbook on information warfare, Shen Weiguang's *World War, the Third World War—Total Information Warfare*, explicitly calls upon China to be prepared to exploit HEMP offensively—and to defend against it:<sup>2</sup>

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

China's military doctrine closely associates cyber-attacks with nuclear HEMP attack, as part of a combined operation in what they call Total Information Warfare. Cyber bugs and hacking are the tip of the spear, the functional equivalent of scouts and sappers who do reconnaissance and secretly prepare the beaches for the arrival of D-Day, or like the motorcycle troops that preceded the heavy armored divisions in Germany's Blitzkrieg.

Therefore, China's cyber-attacks (for example, most notoriously in June 2015 on computers in virtually every federal agency, stealing sensitive information on millions of federal employees,

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<sup>1</sup>Some of China's scientists have even published openly in the West their technical assessments of “high-altitude electromagnetic pulse waveform amplitudes at satellite orbits” as in Cui Meng, “Numerical Simulation of the EMP Environment” IEEE Transaction on Electromagnetic Compatibility (June 2013). Dr. Peter Vincent Pry, “Foreign Views of Electromagnetic Pulse (EMP) Attack,” Testimony on behalf of EMP Commission before the Subcommittee on Terrorism, Technology and Homeland Security, Senate Committee on the Judiciary (Washington, D.C.: March 9, 2005). EMP Commission, *Foreign Views of Electromagnetic Pulse Attack* (Washington, DC: July 2017).

<sup>2</sup> Ibid and textbook: Shen Weiguang, *World War, the Third World War—Total Information Warfare* (Beijing: Xinhua Publishing House, June 1, 2001) translated in Foreign Broadcast Information System (FBIS) CPP20000517000168. See also Wang Xiaodong, “Special Means of Warfare in the Information Age,” *Jianchuan Zhishi* (June 30, 1999) translated in FBIS FTS19990727000426. Zhang Shougi and Sun Xuegi, “Be Vigilant Against ‘Pearl Harbor’ Incident in the Information Age,” *Jiefangjun Bao* (May 14, 1996) translated in FBIS FTS19960514000049.

reportedly on every employee of the Federal government) should be regarded as possible practice or preparation for Total Information Warfare—including nuclear HEMP attack.

An article “Overview of Electromagnetic Pulse Weapons and Protection Techniques Against Them” from the People’s Republic of China’s Air Force Engineering University describes nuclear EMP weapons as the most powerful and effective variant of electronic warfare weapons for waging Information Warfare. Nuclear and non-nuclear EMP weapons in the context of Information Warfare are the crucial instruments for implementing this Revolution in Military Affairs:

*“In future high-tech warfare under informatized conditions, information warfare will span multiple dimensions, including ground, sea, air, and the EM spectrum. Information superiority has already become central and crucial to achieving victory in warfare...If the communications equipment used for the transmission of battlefield information were attacked and damaged by an opponent’s EMP weapons, then the one attacked would face the danger of disruption in battlefield information transmission. EMP severely restricts the tactical performance and battlefield survivability of informatized equipment.”<sup>3</sup>*

Moreover, the article clearly makes a distinction between nuclear weapons (designed for blast and shock) versus nuclear EMP weapons (designed to maximize HEMP effects), describing the latter as “a new type of weapon” like non-nuclear EMP weapons, both designed for waging Information Warfare:

*“As opposed to conventional and nuclear weapons, EMP weapons are a new type of weapon capable of causing mass destruction by instantly releasing high-intensity EMP...They can interfere, damage, and overheat electronics, resulting in logic circuit dysfunctions, control malfunctions, or total failure. The unique destructive effect that EMP have on electronic equipment was unintentionally discovered by the United States in the 1960s during a nuclear test. In July 1962, the United States conducted a high-altitude nuclear explosion in the Pacific Ocean. This...unexpectedly overloaded the Honolulu power grid in Hawaii, 1,400 km away, even overheating lightning protection devices on powerlines. On a battlefield, this new-type weapon will cause devastating damage to electronic systems, including computers, communications and control systems, and radars, resulting in immeasurable losses.”<sup>4</sup>*

Furthermore, according to the article: “There are 3 types of military EMP based on pulse sources: the first is the high-altitude EMP (HEMP) produced by the detonation of a low yield nuclear bomb in the atmosphere at high-altitude; the second is...produced by high explosives and related devices; the third is the HPM [High-Powered Microwave]...produced by HPM devices such as magnetrons and vircators.” Nuclear EMP weapons are, or include, Enhanced-EMP or so-called Super-EMP weapons designed to produce gamma rays and high-frequency E1 EMP: “HEMP weapons are a type of weak nuclear explosive EMP bomb that produces EMP through the detonation of low-yield nuclear bombs at high-altitudes (70 to 100 km above ground).” The E1 EMP field “produced by nuclear EMP is about 10 to 100 kV/m and can penetrate and melt any electronic components.”<sup>5</sup>

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<sup>3</sup> Zhao Meng, Da Xinyu, and Zhang Yapu, “Overview of Electromagnetic Pulse Weapons and Protection Techniques Against Them” Winged Missiles (PRC Air Force Engineering University: May 1, 2014).

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

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## China Has Super-EMP Weapons

Chinese open source military writings describe the possession of Super-EMP weapons, as seen above for example in the article from the PRC Air Force Engineering University. How to execute a nuclear HEMP attack on Taiwan using a Super-EMP weapon was described in an interview with one of the founders of the PRC's nuclear weapons program and Deputy Director of the Institute of Theoretical Physics, General Lin Chin-ching.<sup>6</sup>

Taiwan military intelligence in open sources credits China with having a Super-EMP nuclear weapon—based on design information stolen from the U.S. nuclear weapon labs. Taiwan is generally regarded as the nation most expert on China's military capabilities, doctrine, and planning, just as Israel is generally regarded as the nation most expert on the military threat posed by its neighbors.

Taiwan's military analysts agree with the People's Republic of China that, "The EMP attack scenario presents the only attack option that meets the demand for making the first, paralyzing strike of a war, paving the way for the other troops to attack Taiwan." According to a briefing from Taiwan's Military College of National Defense University titled "Electromagnetic Pulse Attack and Defense" the People's Republic of China:

*"Used spies in the United States and engaged Russian technical consultants, resulting in the successful manufacture of a mini bomb using implosion technology...Military experts believe the Communist Armed Forces are capable of deploying a kiloton grade EMP warhead today...The EMP attack scenario presents the only attack option that meets the demand for making the first, paralyzing strike of a war, paving the way for the other troops to attack Taiwan."*<sup>7</sup>

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Another article "Special Means of Warfare in the Information Age" notes that Information Warfare includes computer viruses and EMP attack, and can be used to collapse an enemy's electric grid and other national critical infrastructures:

*"The methods used to achieve destruction or manipulation of the 'byte' can be 'atomic'—such as electromagnetic pulse bombs and so on—or can be 'byte' type—such as computer viruses...The so-called strategic information warfare is the use of destruction or manipulation of the flow of information on a computer network to destroy the enemy's telephone network, fuel pipelines, electric grid, transportation control system, national funds transfer system, various bank clearance systems, and health and sanitation systems, in order to achieve a strategic goal."*<sup>8</sup>

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<sup>6</sup> Ibid. Seij Yajima interviews General Lin Chin-ching, Sankei Shimbun (November 5, 1999) translated in FBIS FTS19991105000047. EMP attack on Taiwan described in Qi Leyi interview with He Zuoxiu, "It Is Impossible To Steal Top Secrets of Nuclear Weapons" Chung-kuo Shih-Pao (November 26, 2000) translated in FBIS CPP20001127000030.

<sup>7</sup> Dr. Chien Chung, Department of Nuclear Science, National Tsing Hua University, Military Lecturer for Military College of National Defense University, briefing "Electromagnetic Pulse and Defense" (Taiwan: Undated circa 2006).

<sup>8</sup> Wang Xiaodong, "Special Means of Warfare in the Information Age" Jianchuan Zhishi (June 30, 1999).

An article by China's National Security Policy Committee "General Trend of the Worldwide Revolution in Military Affairs" sees "electromagnetic pulse bombs" among the new "disruptive technologies" that "can change the 'rules of the game'" by disrupting U.S. military "precision warfare capabilities centered on information technology" thereby sounding "the horn of a new round of revolution in military affairs."<sup>9</sup>

HEMP appears to be the key to victory in China's military doctrine against U.S. aircraft carriers and Taiwan. For example, from the official newspaper of the Shanghai Communist Party Central Committee:

*"The weak points of a modern aircraft carrier are: 1) As a big target, the fleet is easy for a satellite to reconnoiter and locate it, and for missiles to conduct saturation attacks; 2) A high degree of electronization is like an 'Achilles' heel' for an aircraft carrier fleet, which relies heavily on electronic equipment as its central nervous system. These two characteristics determine one tactic...Electromagnetic pulse bombs (missiles) bear the characteristics that meet those requirements: 1) The strong magnetic field and electromagnetic pulse caused by an explosion can destroy all important integrated circuits and chips...thus paralyzing the radar and telecommunications system of the aircraft carrier and vessels around it as well as the ship-mounted missiles and aircraft. 2) The scope of demolition and effective action are wide, reaching dozens of kilometers. 3) The equipment is damaged without casualties. 4) An electromagnetic pulse bomb...does not have to hit the aircraft carrier but only needs to explode within dozens of kilometers around the aircraft carrier...As long as an electromagnetic pulse bomb can successfully explode, an aircraft carrier will be paralyzed. 5) If the central nervous system of an aircraft carrier is paralyzed, even a comparatively backward naval vessel or aircraft...will be able to aim at the aircraft carrier as a conventional target, thereby thoroughly changing the balance between the strong and the weak."*<sup>10</sup>

"The possession of electromagnetic pulse bombs (missiles) will provide the conditions to completely destroy an aircraft carrier fleet, and the way to complete victory in dealing with aircraft carrier fleets," according to "Using A-Bomb To Deal With Aircraft Carrier."<sup>11</sup>

An article in the newspaper of China's People's Liberation Army (PLA) notes that: "The United States is more vulnerable than any other country in the world" to attacks by EMP and cyber warfare:

*"Some people might think that things similar to the 'Pearl Harbor Incident' are unlikely to take place during the information age. Yet it could be regarded as the 'Pearl Harbor Incident' of the 21<sup>st</sup> century if a surprise attack is conducted against the enemy's crucial information systems of command, control, and communications by such means as electronic warfare, electromagnetic*

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<sup>9</sup> Li Bingyan, "General Trend of the Worldwide Revolution in Military Affairs" PRC National Security Policy Committee (January 2016).

<sup>10</sup> Ye Jian, "Armchair Strategy: Using A-Bomb To Deal With Aircraft Carrier" Jiefang Ribao (February 12, 2000). See also: Feng Changsong, "Six Aircraft Carrier 'Busters'" Zhongguo Guofang Bao (March 5, 2002) p. 4. Wang Jiasuo, "Aircraft Carriers: Suggest You Keep Out Of The Taiwan Strait!" Junshi Wenzhai (April 1, 2001) pp. 58-59.

<sup>11</sup> Ibid.

*pulse weapons, telecommunications interference and suppression, computer viruses, and if the enemy is deprived of the information it needs as a result. Even a super military power like the United States, which possesses nuclear missiles and powerful armed forces, cannot guarantee its immunity...In their own words, a highly computerized open society like the United States is extremely vulnerable to electronic attacks from all sides. This is because the U.S. economy, from banks to telephone systems and from power plants to iron and steel works, relies entirely on computer networks...When a country grows increasingly powerful economically and technologically...it will become increasingly dependent on modern information systems...The United States is more vulnerable to attacks than any other country in the world...”<sup>12</sup>*

### ***Hypersonic Weapons: New EMP Threat***

China is on the verge of deploying or has already deployed hypersonic weapons that could potentially be armed with nuclear or non-nuclear EMP warheads, greatly increasing the threat of surprise attack against U.S. forces in the Pacific and against the United States.

Hypersonic weapons are of two types: Hypersonic Glide Vehicles (HGVs) and Hypersonic Cruise Missiles (HCMs). HGVs are boosted by a missile to an altitude of 40-100 kilometers where they skim along the upper atmosphere unpowered, using control surfaces on the glide vehicle to maneuver unpredictably, evading missile defenses, and highly accurately when they descend to target. HCMs are launched by an aircraft and have engines to power themselves to the upper atmosphere where, like HGVs, they speed toward target evasively and accurately.

Both HGVs and HCMs are capable of extraordinarily high speeds, depending upon design ranging from at least 5 times the speed of sound or 6,200 kilometers per hour to 25,000 kph.

The combination of hypersonic speed, a flat non-ballistic trajectory that flies below radar, and maneuverability that frustrates interception and provides for highly accurate delivery, makes HGVs and HCMs an unprecedented threat to strategic stability and the balance of power.

U.S. Strategic Command’s General John Hyten, chief of the nuclear Triad deterrent, in 2018 sounded alarms about developing hypersonic weapons threats from China and Russia.<sup>13</sup>

Former chief of U.S. Pacific Command, Admiral Harry Harris, testified to the House Armed Service Committee in February 2018 that “hypersonic weapons were one of a range of advanced technologies where China was beginning to outpace the U.S. military, challenging its dominance in the Asia-Pacific region.”<sup>14</sup>

DOD’s Undersecretary of Defense for Research and Engineering, Michael Griffin, in April 2018 testified to the Senate Armed Services Committee that “China had deployed, or is close to deploying, hypersonic systems armed with conventional warheads. These can travel thousands of miles from the U.S. coast and threaten American forward bases or carrier battle groups.”<sup>15</sup>

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<sup>12</sup>Zhang Shouqi and Sun Xuegui, Jiefangjun Bao (May 14, 1996).

<sup>13</sup> Starr, op. cit. See also: Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2019*, Annual Report to Congress (May 2019) p. 44.

<sup>14</sup> David Lague, “China Leads U.S. On Potent Super-Fast Missiles” Reuters (April 25, 2019).

<sup>15</sup> Ibid.

Griffin warned: “We do not have defenses against these systems.”<sup>16</sup>

Reportedly, by early 2016 China had performed six successful tests of hypersonic weapons and by 2019 deployed at least two, the DF-17 HGV with a range of 1,500 miles and the CM-401, a short-range (180 miles) anti-ship ballistic missile.<sup>17</sup> If armed with a nuclear or non-nuclear EMP warhead, either of these could perform a surprise EMP attack.

Hypersonic weapons are ideally suited for nuclear HEMP attack because their operating altitude (40-100 kilometers) is the optimum height-of-burst for maximizing HEMP field strength against a surface target that might be EMP-hardened, like an aircraft carrier group or an ICBM wing. Super-EMP warheads, in design resembling a low-yield tactical nuclear weapon like a neutron artillery shell, would likely be much smaller and lighter, and certainly much more effective, than any conventional high-explosives warhead for China’s HGVs and HCMs.

If China arms its ICBMs and SLBMs with hypersonic warheads designed for Super-EMP attack, then Beijing could virtually overnight transform its relatively (allegedly) small nuclear deterrent into a giant killer, capable of flying below U.S. radars and outracing U.S. reaction-time to deliver a HEMP “Pearl Harbor.”

### ***HEMP Satellites?***

China has the technical capability to make a surprise HEMP attack by nuclear-armed satellite orbited over the south polar region to evade U.S. BMEWS radars and National Missile Defenses, as planned by the USSR during the Cold War with its secret weapon the Fractional Orbital Bombardment System (FOBS).

China also has the technical capability to clandestinely orbit a nuclear-armed satellite or satellites to be maintained in orbit for years until needed to make a surprise HEMP attack against the U.S., India, Russia, or some other target.

China has a wide array of Space Launch Vehicles and satellite launch centers at Jiquan, Taiyuan, Xichang, and Wenchang that could be used for the above HEMP surprise attack options by satellite. China’s space and military programs are integrated. For example, the China Academy of Launch Vehicle Technology (CALT) “is China’s largest and most important organization for the research, development and production of space launch vehicles (SLVs), liquid-fueled surface-to-surface missiles, solid-fueled surface-to-surface and submarine-launched ballistic missiles” including ICBMs, IRBMs, and SRBMs.<sup>18</sup>

China has great strategic incentives for a clandestine capability to perform HEMP attack by satellite as a means of preempting or retaliating against its many nuclear-armed potential adversaries—the U.S., India, and Russia. Moreover, HEMP attack could enable China to “level

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<sup>16</sup> Ibid.

<sup>17</sup> David Brennan, “China’s Hypersonic Missiles: How Worried Should the U.S. Be About Futuristic Weapons” *Newsweek* (July 5, 2019).

<sup>18</sup> “China Academy of Launch Vehicle Technology” <https://www.nti.org/learn/facilities/59/>.

the playing field” or defeat the U.S. by being the most effective means of quickly neutralizing large numbers of LEO satellites that are crucial to U.S. military operations.

HEMP propagates downward through the atmosphere, not through the vacuum of space, so no PRC satellites would be at risk from HEMP, unless the HEMP field is over China so satellite ground stations could be damaged—a highly unlikely scenario, that China would make a HEMP attack on itself.

Satellites are at risk from an exo-atmospheric detonation for HEMP from the gamma rays which, if they reach the satellite and are close enough, can damage satellites by a phenomenon called System Generated EMP (SGEMP).<sup>19</sup> But China has almost certainly hardened its satellites against SGEMP and other phenomena that might be generated by the worst-case SGEMP threat they plan to employ: a Super-EMP weapon which is designed specifically to produce powerful gamma rays.

The U.S. hardens military satellites against SGEMP too, but probably not against the SGEMP produced by Super-EMP weapons, as the U.S. has no Super-EMP weapons. The U.S. does not even have simulators for Super-EMP weapons to test against this threat.

China can further protect its LEO satellites (those most at risk) from SGEMP by timing its HEMP attack so PRC satellites are over-the-horizon and will not be illuminated by gamma rays.

An exo-atmospheric nuclear detonation for HEMP can also damage LEO satellites by “pumping” the Van Allen belt with ionized particles, as happened after the 1962 STARFISH PRIME high-yield exo-atmospheric nuclear test that inadvertently damaged U.S. satellites.<sup>20</sup> Satellites can be hardened to survive this environment too, and presumably would be if HEMP attack is an important military option, as it is for China.

Ionization of the Van Allen belt is a much bigger threat to LEO satellites if the HEMP attack uses a high-yield weapon detonated above 100 kms HOB, but Super-EMP weapons are very low-yield and the HEMP scenarios that make most sense for China entail detonations at 30-100 kms HOB.

The U.S. should be very concerned about a scenario where China uses nuclear space weapons, perhaps ICBMs and IRBMs with specialized warheads, to quickly sweep the skies of U.S. satellites, even at the risk of losing PRC satellites, which could then be replaced with a surge of satellites launched by China to capture the “high frontier” and cripple U.S. military capabilities.

If China is orbiting nuclear-armed satellites for HEMP surprise attack, this would be one of their deepest and best protected military secrets. In addition to obvious strategic considerations, the Outer Space Treaty bans orbiting nuclear weapons in space, and China has pursued a long propaganda offensive criticizing the U.S. for “militarizing space” intended to deter the U.S. from orbiting space-based missile defenses and from improving U.S. military capabilities in space.<sup>21</sup>

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<sup>19</sup> The EMP Commission Report *Critical National Infrastructures* (2008) Chapter 10 “Space Systems” describes collateral threats to satellites from HEMP attack.

<sup>20</sup> Ibid.

<sup>21</sup> U.S. Arms Control and Disarmament Agency, *Arms Control and Disarmament Agreements* (Washington, D.C.: 1982) “Outer Space Treaty” pp. 48-56.



Interestingly, one of China's foremost EMP scientists, Cui Meng, has published an unclassified technical article in Western press—"Numerical Simulation of the EMP Environment" IEEE Transactions on Electromagnetic Compatibility (June 2013)—that examines the "high-altitude electromagnetic pulse waveform amplitudes at satellite orbits."

### *China EMP Defenses*

It seems highly likely that China's development of offensive HEMP capabilities would inform and drive development of defensive capabilities too, especially protection of critical infrastructures necessary to support their war effort. Moreover, China's proximity to North Korea and Taiwan—both potential nuclear flashpoints for an HEMP event—would likely raise Beijing's concern about protecting its critical infrastructures in this dangerous neighborhood. The neighborhood is made more dangerous by China's own plans, described in open sources, to make HEMP attacks against Taiwan and U.S. aircraft carriers that may try intervening by entering the Taiwan Straits. A nuclear HEMP attack on Taiwan or on U.S. carriers in the straits could have catastrophic collateral effects against China, if its critical infrastructures are unprotected.<sup>22</sup>

Much less is known about the extent of China's efforts to protect its critical infrastructures from HEMP compared to Russia, which always had much higher priority as a U.S. intelligence target during the Cold War. However, recent analysis suggests that the United States has grossly underestimated the size and sophistication of China's nuclear arsenal and of the infrastructure to support it. Analysts have discovered that China, like the former USSR and Russia today, has an enormous complex of underground tunnels and command posts to hide nuclear forces, support nuclear operations, and to protect at least the military critical infrastructures. The deceptively named 2nd Artillery Corps (since 2016 the People's Liberation Army Rocket Force), that is China's version of U.S. Strategic Command and Russia's Strategic Rocket Forces, has constructed 5,000 miles of tunnels for military infrastructure, a complex that is described as "the Underground Great Wall."<sup>23</sup>

China appears to have been much more successful than Russia, in part because of U.S. negligence, in hiding its preparations for nuclear conflict. Given China's knowledge of HEMP effects, and development of Super-EMP weapons as potentially decisive instruments for winning a war, it

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<sup>22</sup> See earlier on China's plans for EMP attack on Taiwan and U.S. carriers and see also reporting on declassified U.S. intelligence report in Bill Gertz, "Report: China Building Electromagnetic Pulse Weapons for Use Against U.S. Carriers" Washington Times (July 21, 2011). See the redacted previously classified report at <http://www.examiner.com/slideshow/declassified-intelligence-report-details-chinese-plansfor-war-against-us>. Example PRC open sources: Ye Jian, "Armchair Strategy: Using A Bomb To Deal With Aircraft Carriers" Jiefang Ribao (February 12, 2000) translated in FBIS CPP20000212000019. Feng Changsong, "Six Aircraft Carrier 'Busters'," Zhongguo Guofang Bao (March 5, 2002), p. 4. Wang Jiasuo, "Aircraft Carriers: Suggest You Keep Out of the Taiwan Strait!" Junshi Wenzhai (April 1, 2001), pp. 58-59.

<sup>23</sup> See report on a study by Phillip A. Karber for the U.S. Defense Threat Reduction Agency in Bret Stephens, "How Many Nukes Does China Have?" Wall Street Journal (October 24, 2011). Russell Hsiao, "China's Underground 'Great Wall' and Nuclear Deterrence" China Brief, Vol. 9, Issue 25, Jamestown Foundation (December 16, 2009). See also sections "Secrecy and Deception" and "Integrated Network Electronic Warfare" in Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington, D.C.: Office of the Secretary of Defense, 2011) p. 25 and "PLA Underground Facilities" p. 36.

seems a virtual certainty that China's preparedness to survive and recover from a manmade HEMP or natural EMP/GMD event is much greater than that of the United States.

If Russia and China are prepared to survive and recover from the HEMP effects of a nuclear war, they would also be well prepared to survive and recover from even the worst natural EMP/GMD effects generated by a geomagnetic superstorm, like recurrence of the 1859 Carrington Event. The EMP/GMD fields created by a geomagnetic superstorm, though they can cover a much larger area, are not as severe as the HEMP from the most powerful nuclear weapons. Geomagnetic storms produce no E1 HEMP, the powerful electromagnetic shockwave from a nuclear weapon that can couple into small targets and cause deep systemic damage. The natural EMP/GMD generated by a geomagnetic superstorm would be significantly less powerful than the E3 HEMP generated by some high-yield nuclear weapons.<sup>24</sup>

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### China's "No First Use" Fiction

Many China experts in government and academia, and especially among anti-nuclear activists like the Union of Concerned Scientists and Federation of American Scientists, are unworried by China's rapidly growing nuclear capabilities, hypersonic and Super-EMP weapons, because Beijing's official policy promises they will not be first to employ nuclear weapons in a conflict.<sup>25</sup> Beijing promises that their nuclear forces are for deterrence and retaliation only—not for aggression.

Western analysts consistently fail to understand that, for both Beijing and Moscow, nuclear war plans and C3 to execute those plans are national security "crown jewels" that they try to protect and conceal behind a bodyguard of lies and disinformation. Trusting open sources and commentary—especially when they are intended to cast nuclear doctrine and C3 in the most benign possible way—is a big mistake.

For example, during the Cold War the USSR went to extraordinary lengths to disinform Western policymakers and the public that Moscow had a nuclear "No First Use" doctrine. This was intended to conceal their real nuclear war plans—that we now know entailed a massive nuclear first strike early in a conflict. The "No First Use" disinformation campaign was also intended to mobilize Western anti-nuclear activists, in and out of government, to constrain U.S. nuclear programs and operational plans.<sup>26</sup>

China's alleged nuclear "No First Use" doctrine, like the USSR's during the Cold War, is almost certainly disinformation.

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<sup>24</sup> EMP Commission, *Recommended E3 HEMP Heave Electric Field Waveform for the Critical Infrastructures* (Washington, DC: July 2017).

<sup>25</sup> See for example: Gregory Kulacki, "Would China Use Nuclear Weapons First In A War With The United States?" *The Diplomat* (April 27, 2020). Fiona Cunningham, "The Role of Nuclear Weapons in China's National Defense" *RealClearDefense* (May 28, 2020).

<sup>26</sup> "Soviets Planned Nuclear First Strike to Preempt West" National Security Archive [nsarchive.gwu.edu/NSAEBB/NSAEBB154/index.htm](https://nsarchive.gwu.edu/NSAEBB/NSAEBB154/index.htm).

“No First Use” for China does not withstand the test of common sense. No conservative military planner would adopt “No First Use” when China lacks BMEWS and satellite early warning systems that would enable China to launch on tactical warning. “No First Use” would doom China’s nuclear deterrent to certain destruction by a U.S. or Russian conventional or nuclear first strike, or to a nuclear first strike by India.<sup>27</sup>

China’s nuclear posture, especially the lack of early warning radars and satellites, is “use it or lose it” which logically should drive PRC military planners toward nuclear first use—indeed toward surprise first use early in a crisis or conflict, based on strategic warning.<sup>28</sup>

Regardless of the PRC’s declaratory “No First Use” policy, it strains credulity Beijing’s political leaders would adhere to “No First Use” if confronted with compelling political and military intelligence of an imminent U.S. attack. Such strategic warning was the basis for the former USSR’s secret plans for a disarming nuclear first strike under their VRYAN (Surprise Nuclear Missile Attack) intelligence program, that nearly resulted in a nuclear apocalypse during NATO’s theater nuclear exercise ABLE ARCHER-83.<sup>29</sup>

Fortunately, at least some U.S. military leaders are not as naïve as academics about China’s “No First Use” pledge. Chief of U.S. Strategic Command, Admiral Charles Richard, testified to the Senate Armed Services Committee in February 2020 that he could “drive a truck through China’s no first use policy.”<sup>30</sup>

China’s unprecedented rapid expansion of its nuclear and missile capabilities is not consistent with a belief in “Minimum Deterrence” and “No First Use” but looks imitative of Russia’s policy seeking escalation dominance for nuclear diplomacy and nuclear warfighting. Lt. General Robert Ashley, Director of the Defense Intelligence Agency, warned in 2019: “China is likely to at least double the size of its nuclear stockpile in the course of implementing the most rapid expansion and diversification of its nuclear arsenal in China’s history...China launched more ballistic missiles for testing and training than the rest of the world combined.”<sup>31</sup>

China’s political and military leaders have often threatened nuclear war, and in 2011 reportedly: “Former Chinese General Xu Guangyu...suggested China was planning a surprise missile attack on the American homeland.”<sup>32</sup>

The PLA Second Artillery Corps (now the People’s Liberation Army Rocket Force, equivalent to U.S. Strategic Command) leaked a planning document “Lowering the Threshold of Nuclear Threats” that stipulated some conditions where, in response to U.S. conventional attacks, China

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<sup>27</sup> Dr. Peter Vincent Pry, “Underestimating China’s Nuclear Threat” Washington Times (August 13, 2019).

<sup>28</sup> Ibid.

<sup>29</sup> President’s Foreign Intelligence Advisory Board (PFIAB), *The Soviet “War Scare”* (February 15, 1990). Dr. Peter Vincent Pry, *War Scare: Russia and America on the Nuclear Brink* (Praeger, 1999) Chapter 2 “Operation VRYAN.”

<sup>30</sup> Admiral Charles Richard, Senate Armed Services Committee Hearing (February 13, 2020) and quoted in Ibid.

<sup>31</sup> Letter to President Donald Trump from Senators Ted Cruz, Tom Cotton, and John Cornyn (May 27, 2020) [https://www.cruz.senate.gov/?p=press\\_release&id=5131](https://www.cruz.senate.gov/?p=press_release&id=5131).

<sup>32</sup> Gordon Chang, “Will China Launch A Nuclear 9/11?” FoxNews.com (September 9, 2011).

would launch a nuclear first strike. For example: “Targets that could draw such a response include any of China’s leading urban centers or its atomic or hydroelectric power facilities.”<sup>33</sup>

China’s military doctrine—including numerous examples presented here of using HEMP attack to win on the battlefield, defeat U.S. aircraft carriers, and achieve against the U.S. homeland a surprise “Pearl Harbor” writ large—is replete with technical and operational planning consistent with a nuclear first-strike. Indeed, China’s classification of HEMP attack in military doctrine as “electronic warfare” or “information warfare” indicates that HEMP is not even considered a form of nuclear attack, but would be equivalent to non-nuclear EMP weapons and cyber warfare.

In 2020, a panel of China’s military experts threatened to punish U.S. Navy ships for challenging China’s illegal annexation of the South China Sea by making an EMP attack—one of the options they considered least provocative, because the crew would be unharmed, but most effective, because the ship would be disabled.<sup>34</sup> This too, like other evidence, suggests Beijing considers HEMP attack as something short of nuclear or even kinetic conflict, akin to “gray zone” threats like electronic and cyber warfare.

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<sup>33</sup> Kyodo News (GSN August 17, 2010). “China Could Consider Nuclear First Use, Documents Indicate” NTI: Global Security Newswire (January 5, 2011).

<sup>34</sup> John Hayward, “China Threatens EMP Attack In South China Sea” Breitbart (March 17, 2020).



Source: "Missile Threat: CSIS Missile Defense Project"  
<https://missilethreat.csis.org/country/china>

## CHINA: MISSILES CAPABLE OF EMP ATTACK

MISSILE	TYPE	RANGE
DF-5	ICBM	13,000 km
DF-31	ICBM	8,000-11,700 km
DF-41	ICBM	12,000-15,000 km
DF-4	IRBM/ICBM	4,500-5,500 km
DF-26	IRBM	3,000-4,000 km
JL-2	SLBM	8,000-9,000 km
DF-17	HGV	1,800-2,500 km
DF-21	MRBM	2,150 km
HN-3	cruise missile	3,000 km
HN-2	cruise missile	1,400-1,800 km
HN-1	cruise missile	50-650 km
DF-16	SRBM	800-1,000 km
DF-15	SRBM	600 km
DF-12	SRBM	420 km
DF-11	SRBM	280-300 km

All China's missiles are listed here, as all are potentially capable of EMP attack if armed with a nuclear weapon or non-nuclear EMP warhead.