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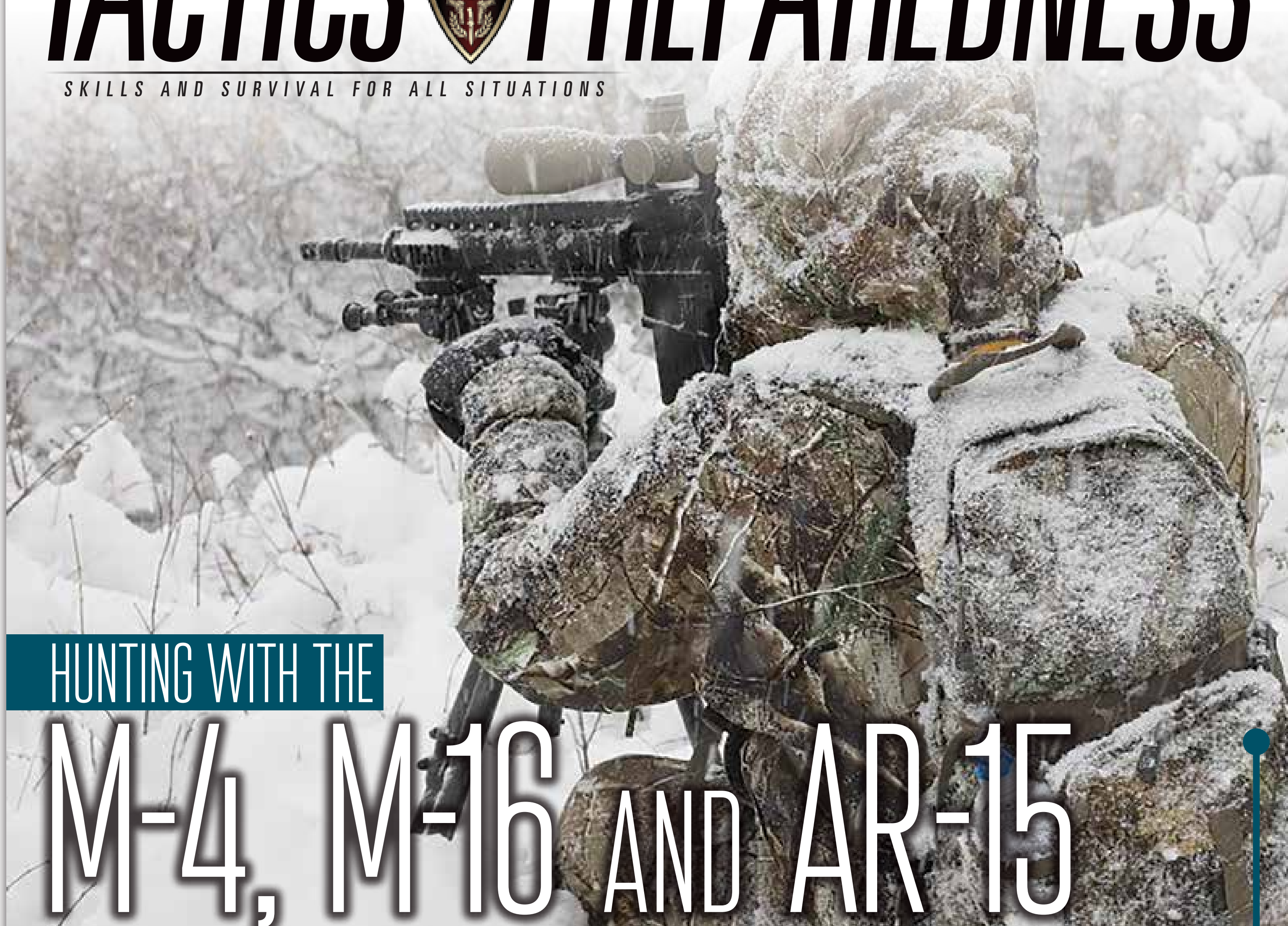
TACTICS AND PREPAREDNESS
SKILLS AND SURVIVAL FOR ALL SITUATIONS



HUNTING WITH THE M-4, M-16 AND AR-15

BY: KELLY ALWOOD / *PHOTOS COURTESY KELLY ALWOOD www.kellyalwood.com*

EASILY CONFIGURABLE, LIGHTWEIGHT AND VERSATILE, THE AR PLATFORM SHOULDN'T BE OVERLOOKED FOR HUNTING.

Not too long ago, in high mountain desert, I prepared to take a shot.

The terrain was rough and the shot would be no closer than 100 meters. I was confident though, that my 5.56 rifle would do the job out to 500 meters and beyond. I quietly made my way to the top of the ridge, being careful not to silhouette myself over the peak. I looked for my deer. My camouflage was good and my pre-season scouting was done. Now I just had to wait and remain invisible. I melted into the terrain, rifle ready. Finally, I saw movement. I estimated the range to my target to be around 240 meters. I adjusted my sight picture accordingly with my ACOG scope (which was calibrated for my 5.56 and was very fast to factor range adjustments with.) At that range I wanted maximum tissue damage, so I waited for him to give me the angle I needed to get a heart and lung shot in one. He presented himself perpendicular to me and I smoothly pressed the trigger. The shot was good. He immediately jumped when the round impacted, then stood still momentarily. Before he could sprint off, I recovered my sights and pressed off another shot. This one was on target too. One more good hit and he went down. I now had an ample supply of meat.

The AR-15 platform is extremely popular, but not everyone has put theirs to the test hunting their dinner with it. While the military and government have been using this platform for decades against enemies in warfare around the globe with favorable results, hunters have somehow been reluctant to employ this tool for game animals for the most part. Given the problems of

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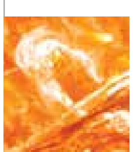
ELECTRO MAGNETIC PULSE AND GEOMAGNETIC DISTURBANCES

BY: JIM LeBLANC



When the technology that makes up the U.S. electrical grid and the control systems that operate it were developed, the security issues of today's world were not anticipated.

The goal of a local emergency planner who understands the current threat environment, however, is to prepare their community for a long term blackout that may be caused by electromagnetic pulse (EMP), a solar storm, cyber-attack or a system-wide asymmetric attack of other origins that takes down all or part of the U.S. electric grid.

An EMP or a coronal mass ejection (CME), which produces Geomagnetic Disturbances (GMD) both have the ability to render our 21st century civilization null and void, pushing us back into the non-electronic 19th century. Imagine no electricity, no Internet, no TV, no phones, no fuel for your car (if it will even run) and no factories running—and, no 911 or emergency services such as law enforcement, fire, etc.

As Americans, we have become increasingly dependent on electronic technology and the electric power grid. As a result of this technological dependence, a major EMP/CME event can be considered a ***"civilization ending"*** event. Based upon a previous U.S. study, it was estimated that a major EMP event would result in the death of sixty to ninety percent of the American population within one year due to loss of critical infrastructures, access to food, clean water and communication systems and due to a breakdown in society and the rule of law.

Some relevant previous incidents include:

Carrington Event of 1859: The first documented Solar Flare, named after solar astronomer Richard Carrington.

May 1921: 10 times stronger than the 1989 Quebec storm, the Aurora Borealis could be seen from Puerto Rico.

Star Fish Prime Test (U.S. 1962): A 1.4 megaton nuclear warhead was detonated 250 miles into the atmosphere and over the Pacific Ocean (Hawaii, 900 miles away, experienced damaged street lights and microwave links).

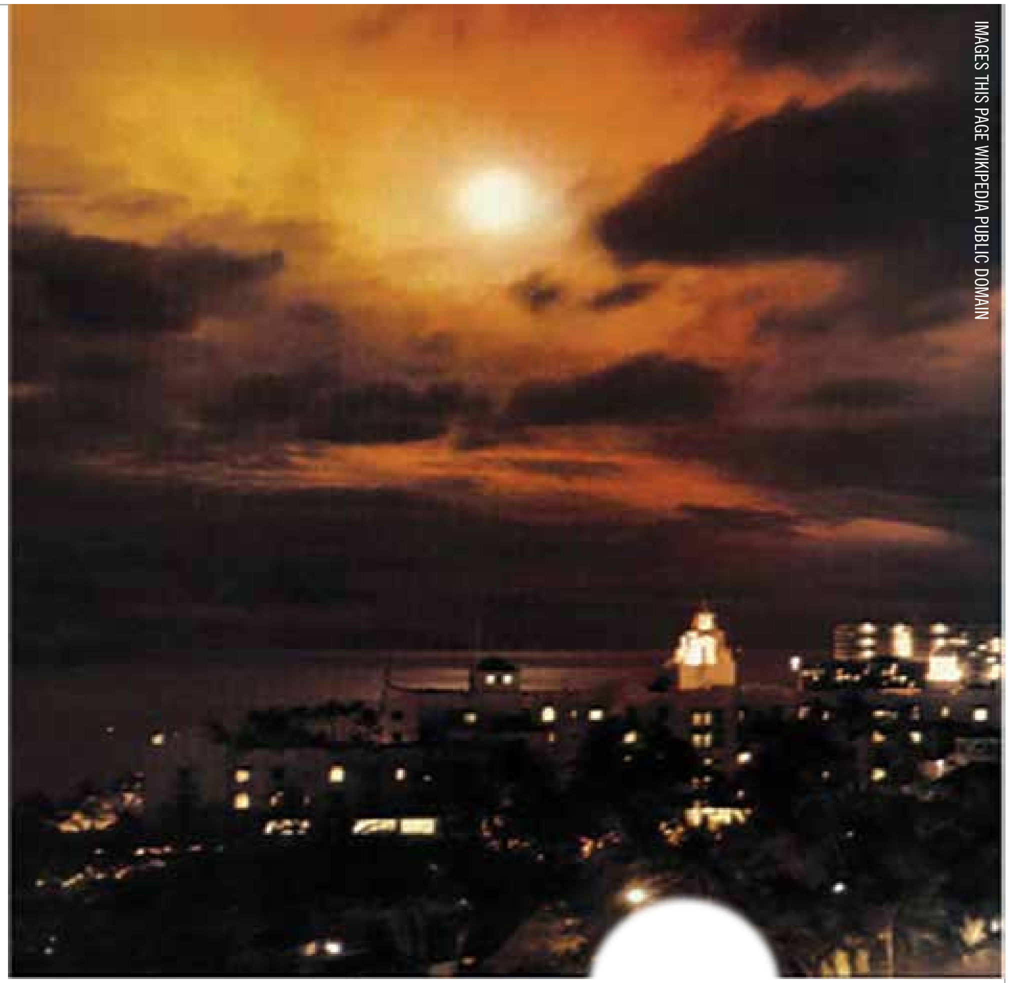
Quebec, March 13, 1989: the entire province of Quebec, Canada suffered an electrical power blackout caused by a solar storm. It lasted nine hours before power was restored.

July 23, 2012: a near miss, by nine days, of a solar flare larger than the 1859 Carrington event. It would have had global consequences.

It is important to keep in mind that long-term blackouts ***are*** preventable. Technology already exists that can protect the current electric grid. The failure to implement these mitigations is a testament to the crippling bureaucracy in our government and resistance to implement within our technologically outdated electric industry.

The reason this vulnerability exists is because of the technological monopoly created by electric utility lobbies. If electric generation had developed in a truly free market in America, innovators would compete to create local decentralized sources of power that could more easily recover from catastrophic events on a local level. But with the current electric grid, a system failure in Ohio could deprive American citizens in New England of life sustaining power supplies. The interconnectedness of the electrical grid is one thing that makes America so vulnerable. What compounds this vulnerability is institutional resistance to regulation.

The inability of electrical utility systems to recover from a system wide failure raises questions about the effectiveness of this approach. At this moment no public electrical utility is known to have developed a realistic restart capability for a system-wide failure caused by a nuclear electromagnetic pulse (EMP) attack or solar super storm.



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STAR FISH PRIME TESTING, AS SEEN OVER HONOLULU. A 1.4 MEGATON NUCLEAR WARHEAD WAS DETONATED IN THE ATMOSPHERE 900 MILES AWAY FROM HAWAII.

EMP

An electromagnetic pulse (EMP) is an intense burst of electromagnetic energy caused by an abrupt, rapid acceleration of charged particles, most notably electrons. This rapid burst of energy is capable of causing severe damage to electronic equipment and devices, and may even result in physical damage to buildings, airplanes and power lines (i.e. lightning, nuclear explosion and solar storm geomagnetic disturbances.)

All nuclear explosions produce EMP. A weapon can be enhanced to optimize EMP at high altitude, but even the tower-mounted Trinity test in 1945 produced a lot of EMP damage. Many people mistakenly believe that EMP is a new type of weapon, but the nuclear EMP effect has actually been observed for at least 70 years.

High-altitude EMP is produced in the stratosphere between 20km and 40km above the earth's surface. To produce EMP, one necessary factor is that the electrons are accelerated to a very high speed (relativistic velocities.) In the stratosphere, conditions are just right for this. Gamma rays (from a nuclear weapon) hit atoms of nitrogen or oxygen and eject the electrons at enormous speeds. The rest of the atom that is positively charged is much heavier, and so receives very little acceleration. In the stratosphere, the air is thick enough to ensure that most of the gamma rays collide with an atom and yet thin enough to allow the ejected electrons to travel for a significant distance. The gamma radiation does the ionization. In the absence of a planetary magnetic field, the electrons ejected by gamma radiation would travel in a downward surge. In the presence of the Earth's magnetic field, however, the electrons are immediately deflected at a right angle, and begin to spiral around the Earth's magnetic field lines. This interaction with the geomagnetic field causes the resulting EMP to be more than 1,000 times as strong as it would if the electrons just traveled linearly downward.

This effect is also one of the reasons why the EMP from the Starfish Prime detonation caused relatively little damage in Hawaii. In tropical regions, the Earth's magnetic field is much weaker than it is in higher latitudes. Starfish Prime would have been much more intense over the continental United States.

Incidentally, in near-surface nuclear explosions, the EMP is produced by electrons traveling in a straight line because the electrons hit air molecules in the dense air before they have time to interact with the Earth's magnetic field, so near-surface nuclear EMP fields fall off quickly with distance from the burst. However, the strong fields near the burst couple very large currents to long lines that run through or near ground zero. These currents are strong enough to affect systems tens of kilometers away.

EMP is radiated out to the horizon of the burst location, affecting a circular area of the Earth's surface with a radius that can extend to thousands of kilometers. Because of the downward tilt of Earth's magnetic field over the USA, the maximum EMP occurs south of the detonation and the minimum occurs to the north.

The resulting massive electrical surges would severely damage all types of electrical and electronic equipment: transformers, power grids, SCADA (supervisory control and data acquisition) plant control systems, computers, electronics and virtually anything dependent on electricity.

FREERANGESTOCK.COM - CHANCE AGRELLA

IF THAT POWERFUL SOLAR STORM HIT US, IT COULD HAVE KNOCKED OUT POWER GRIDS, LEFT MILLIONS OF PEOPLE WITHOUT POWER FOR MONTHS AND CAUSED **WIDESPREAD CHAOS.**

EMP TYPES

E1

E1 is referred to as the EMP "fast pulse." It has a very brief duration, lasting less than a microsecond, but is extremely intense. Example: Nuclear Blast or other EMP weapon. E1 is a very brief, but intense electromagnetic field that induces very high voltages in electrical conductors. E1 causes most of its damage by causing electrical breakdown voltages to be exceeded. E1 can destroy computers and communications equipment and it changes too quickly for ordinary surge protectors to provide effective protection against it, although there are special fast-acting surge protectors that will block the E1 pulse.

E2

E2 is referred to as the EMP "intermediate pulse." It has a longer duration than E1, lasting several milliseconds.

E2 has many similarities to lightning, although lightning-induced E2 may be considerably larger than a nuclear E2. Because of the similarities and the widespread use of lightning protection technology, E2 is generally considered to be the easiest to protect against.

E3

This is referred to as the EMP "slow pulse." It is caused by the nuclear detonation's temporary distortion of the Earth's magnetic field. The slowest of all pulses, it may last for minutes, hours or even days. The E3 pulse is very similar to the pulses produced by geomagnetic storms. Like a geomagnetic storm, E3 can induce currents in long electrical conductors, damaging components such as power line transformers. [1]

GMD

Geomagnetically induced current (GIC) and geomagnetic disturbance (GMD) events are caused by solar flares or Coronal Mass Ejections (CME) ejected from the surface of the sun. The ionized atoms of these supersonic plasma streams interact with charged particles in the earth's atmosphere and induce changes in the earth's magnetic field. GIC and GMD events may adversely affect the equipment used in the transmission and distribution of electric power and in the electronic equipment used to protect and manage the power system operation. The source of entry for GIC is at grounding points on the power system. Solar storms also impact the communications networks used by the power system.[2]

The largest storms that result from these conditions are associated with solar coronal mass ejections (CMEs) where a billion tons or so of plasma from the sun, with its embedded magnetic field, arrives at Earth. CMEs typically take several days to arrive at Earth, but have been observed, for some of the most intense storms, to arrive in as little as 18 hours. Another solar wind disturbance that creates conditions favorable to geomagnetic storms is a high-speed solar wind stream (HSS). HSSs plow into the slower solar wind in front and create co-rotating interaction regions; storms also result in intense currents in the magnetosphere, changes in the radiation belts and changes in the ionosphere, including heating the ionosphere and upper atmosphere region called the thermosphere. In space, a ring of westward current around Earth produces magnetic disturbances on the ground. During storms, the currents in the ionosphere, as well as the energetic particles that precipitate into the ionosphere add energy in the form of heat that can increase the density and distribution of density in the upper atmosphere, causing extra drag on satellites in low-earth orbit. The local heating also creates strong horizontal variations in the ionospheric density that can modify the path of radio signals and create errors in the positioning information provided by GPS. While the storms create beautiful aurora, they also can disrupt navigation systems such as the Global Navigation Satellite System (GNSS) and create harmful geomagnetic induced currents (GICs) in the power grid and pipelines.[3]

In July 2012, the Earth missed by about a week getting blasted by an extremely powerful solar storm. Most of us had no idea, but had it hit us, the storm could have knocked out power grids, left millions of people without power for months and caused widespread chaos. Daniel Baker of the University of Colorado told NASA, "If it had hit, we would still be picking up the pieces." According to a 2013 Lloyd's of London assessment, in a worst-case scenario, a massive solar storm could leave 20 to 40 million people in the Northeast without power—perhaps for years—as utilities struggled to replace thousands of fried transformers from Boston to Washington DC. The cost? As much as $2.6 trillion.[4]

At certain points in the sun's cycle, as sunspots appear and flares erupt, the sun will occasionally eject part of its outer atmosphere, a cloud of fast-moving charged particles. If this "coronal mass ejection" hits the Earth's magnetic field in just the right way, it can induce a strong ground current that can travel through power lines, pipelines and telecom cables.

If those currents are large enough, they can overload electric grids, which is exactly what happened in Quebec in 1989. But a truly severe storm could fry a significant number of high-voltage transformers. Those can often take years to replace. Many weigh up to 400 tons, are custom built with intricate supply chains and are currently only built in South Korea and Germany. None are built in the U.S. In the meantime, millions of people could go without power.

According to the Lloyd's report, the Northeastern United States is one of the places most at risk, thanks to its aging power grid and unique geologic features. Even a storm that knocked out just 20 key transformers would be "extremely concerning." I in a worst case scenario, 40 million people could go without power indefinitely. "The absence of such fundamental services could lead to major and widespread social unrest, riots and theft," the Lloyd's report warned.[5] ✓

NOTES

1. Real Risk Management: Monograph 1 (to be published by the Center for Security Policy) by Jim LeBlanc, Dr. George Baker, Nik Hanlon, Tommy Waller, Jerry Emanuelson, et al.
2. https://selinc.com/solutions/sfci/power-system-risk-mitigation/GIC-GMD/
3. http://www.swpc.noaa.gov/phenomena/geomagnetic-storms
4. http://www.vox.com/2014/7/30/5951263/a-catastrophic-solar-storm-just-barely-missed-earth-in-2012
5. http://quanta-technology.com/sites/default/files/doc-files/Geomagnetic%20Disturbance%20Hardening%20and%20Operation%20of%20Power%20Systems.pdf