

United States Electromagnetic Defense (HEMP/GMD)



NATIONAL COMMITTEES & WORKING GROUPS

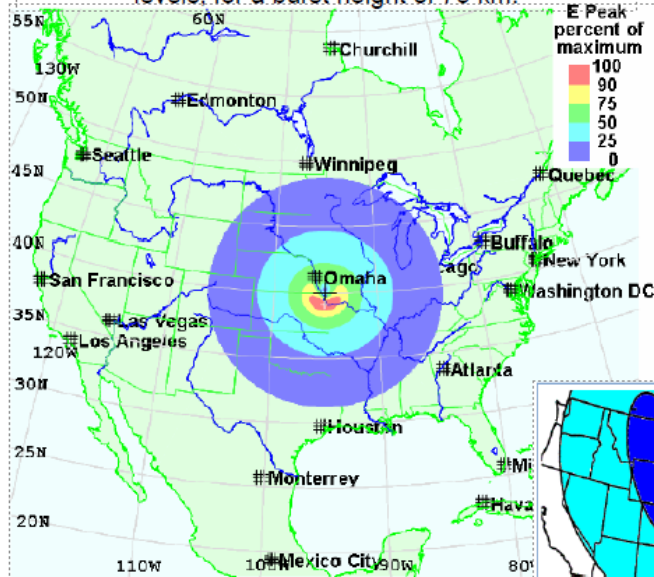


1. DHS / CISA – National Power Resilience Power Working Group
2. JBSA – DESMO Steering Committee / National Grid Pilot Project
3. NERC – EMP Mitigation Team – Working Group
4. NERC – EMP Policy Team – Working Group
5. NERC – EMP Response & Recovery Team – Working Group
6. FBI / InfraGard – National Disaster Resilience Council (NDRC)
7. FBI / InfraGard – NDRC / EMP Testing Team
8. FBI / InfraGard - Data Center Physical Security Working Group
9. National Security Collaboration Council (NSCC)
10. Homelands Defense & Security Information Analysis Center (HDIAC)
11. US Airforce Military Auxiliary Radio Service (AFMARS)
12. DHS/SHARES HF Radio Services (SHARES)
13. ICS-ISAC – Industrial Control System / Information Sharing and Analysis Center

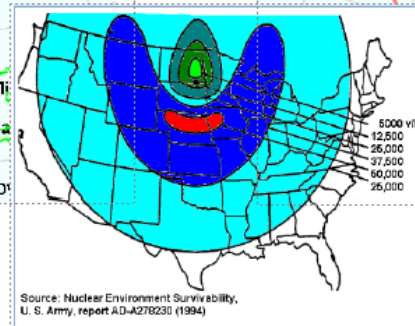
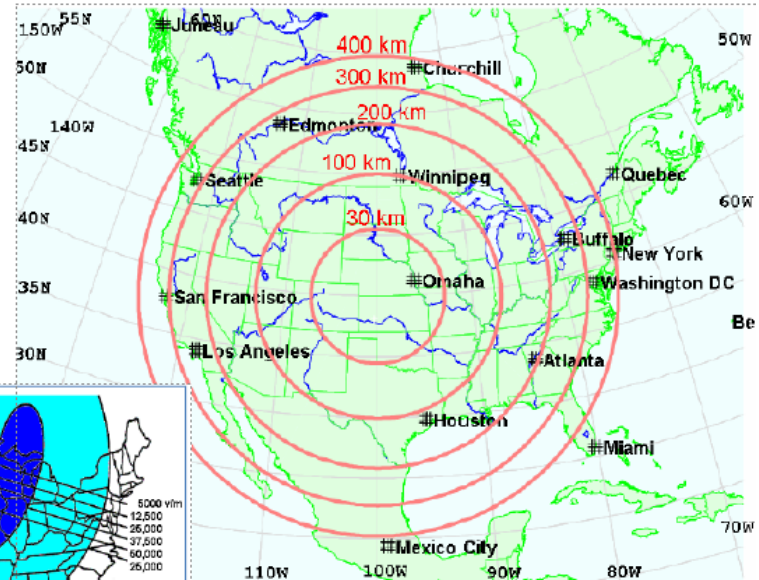


The HEMP: Physical Phenomena Dependences

E1 HEMP "smile" diagram contours of peak incident E levels, for a burst height of 75 km.



Contours of incident E levels, for bursts at different heights.



Source: Savage et al, "The Early-time (E1) HEMP and its impact on the US Power Grid", Metatech Corp., Technical R 320, Jan. 2010

Source: Nuclear Environment Survivability, U. S. Army, report AD-A278230 (1994)

Distribution A / Unclassified

The HEMP Threat: It is Real



Stephen Chen in Beijing [+ FOLLOW](#)
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"US is enhancing its capability and by 2032 will be able to protect vital infrastructure, tipping balance in its favor."





Increasing Threats

- N. Korean Satellites Possibly Weaponized
- Iran's +60% Enrichment, Possible Weapon Coupled with Iran's Ballistic Missile Capability
- Taliban Vying for Pakistan's Arsenal
- Russia Threatening Submarine Launch
- China Threatening EMP over U.S. Pacific Fleet
- Cargo Ships with Club K Launchers
- Iran and China Building Facilities in Latin America





Active EMP Mitigation

Protecting Mission
Support Equipment



Protection Strategies



Passive Approach

- Critical Equipment Within the Shield, Faraday Cage, ¼” Seam Welded Plate Steel, Powerline Filters

Active Approach

- Intercept the EMP Pulse: Absorb, Reflect, or Shunt the Pulse to Ground
- Protects Equipment Outside the Passive Shield, Improves Survivability

Outside the Shield



- * Fuel Delivery
- * Refueling Systems
- * Communications and I.T. Infrastructure
- * Backup Generators
- * Flightline Equipment
- * Military, Emergency, and Personal Vehicles
- * Food Preparation
- * Water and Wastewater Systems
- * Hospital Equipment



Improved Technology



- EMP Surge Suppression Now Fast Enough to Absorb or Ground the initial EMP (E1) Pulse
- For Vehicles, Building Infrastructure, Communications, Computing
- Protects from Lightning, Cyber Induced Grid Spikes, RF Weapons, EMP
- 10 Year Design Life, Hundreds of Hits
- Cost-Effective Solutions on GSA through Victory Systems, a Certified SDVOSB



Action Steps



- Support a dissuasion strategy by installing EMP surge suppression to protect C5ISR systems
- EMP-protect support systems including fuel, water and wastewater pumps, controls, cooling, HVAC, security, elevators, and lighting
- Protect supply chains by installing EMP surge suppression in cargo and support vehicles
- Prioritized phased implementation based on mission criticality



Active Mitigation



- * Servers, Routers, Switches
- * Vehicle Electronics
- * Circuit Panels
- * RF Antenna Feeds
- * Integrated Meter Bases

Testing Standards



- * MIL-STD-188-125-1
 - * (Pulse Injection)
- * MIL-STD-461G
- * MIL-STD-464C
- * MIL-STD-1766C
- * UL 1449 Edition 5
- * IEC 61000-2-10
- * IEC 61000-4-2/3/4
- * IEC 61000-4-5
- * IEC 61000-4-25
- * IEC 61000-6-1
- * IEC 61000-6-2
- * IEC 61000-6-5
- * IEC 61850

Tested at
Metatech



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EMP SHIELD GUARDIAN SERIES 8 PORT DATA

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