

# *Challenges for Louisiana to Help Assure the Viability of the Electric Grid*

**By**

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Chairman, High Frontier**

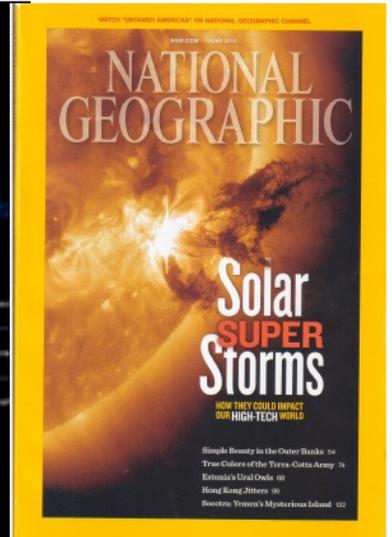
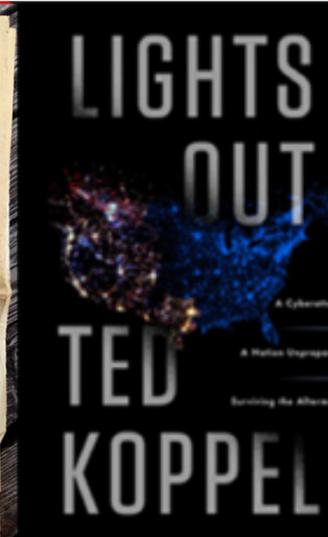
*See [www.highfrontier.org](http://www.highfrontier.org) for more information.*

*Briefing at the National Security Conference—  
Lake Charles, Louisiana May 3, 2016*

*For more information on the threat and how to get involved to protect your family and friends, see [www.highfrontier.org](http://www.highfrontier.org) and its links to others who are already engaged in this important fight.*

# *Electric Power Grid Vulnerabilities & Needed Countermeasures*

- *An Existential Threat*
  - *Electricity is Essential*
  - *Manmade & Natural Threats*
  - *Lethargy in Washington*
- *What can/should be done*
  - *Protect the Electric Grid*
  - *Missile & Cyber Defense*
  - *Physical Protection*
- *Significant State and Local roles*
  - *Potential National Guard leading role*
  - *Pilots to Assure Viable Power Plants*
  - *Louisiana can make major contributions*



*While there are hopeful signs that Washington is waking up to this threat, it is still essential that State and Local authorities engage—Louisiana can play a major role in assuring the combined threat is addressed in a timely way!*

# The EMP Threat well understood from Cold War tests: 1962 Starfish Prime High Altitude Test

- A “wake-up call”
- *1.5 megaton explosion, 240 miles above Johnston Island in the South Pacific*
- *Damaged test instrumentation*
- *Killed three satellites immediately, and 7 more died in the next few months*
- *Electrical damage 900 miles away in Hawaii*
- *Today’s electronics would have experienced much more catastrophic damage*
- *Weapon designs can be more lethal, too—and at much lower yields*



*Led to a major effort to harden our strategic systems—but we did little or nothing to harden our civil critical infrastructure*

# Hardened our Strategic Systems and their Supporting Command, Control and Communications Systems to EMP

- *Major hardening of our strategic retaliatory systems*
  - *ICBMs and SLBMs, Strategic Bombers, and Supporting BMC3 systems*
  - *But not civil critical infrastructure*
- *Associated classification constraints kept info closeted—at least to most*
- *Key 2008 release by Congressionally appointed EMP Commission (Reports on High Frontier webpage)*
  - *Included Soviet testing info, which was in some ways more revealing than our own*
- *Key Bottom Line Conclusion:*
  - *EMP from a single burst 200-300 miles over the US could shut down most if not all US electrical systems, possibly indefinitely*
  - *Return US just-in-time economy to 19<sup>th</sup> century operations without agrarian support*



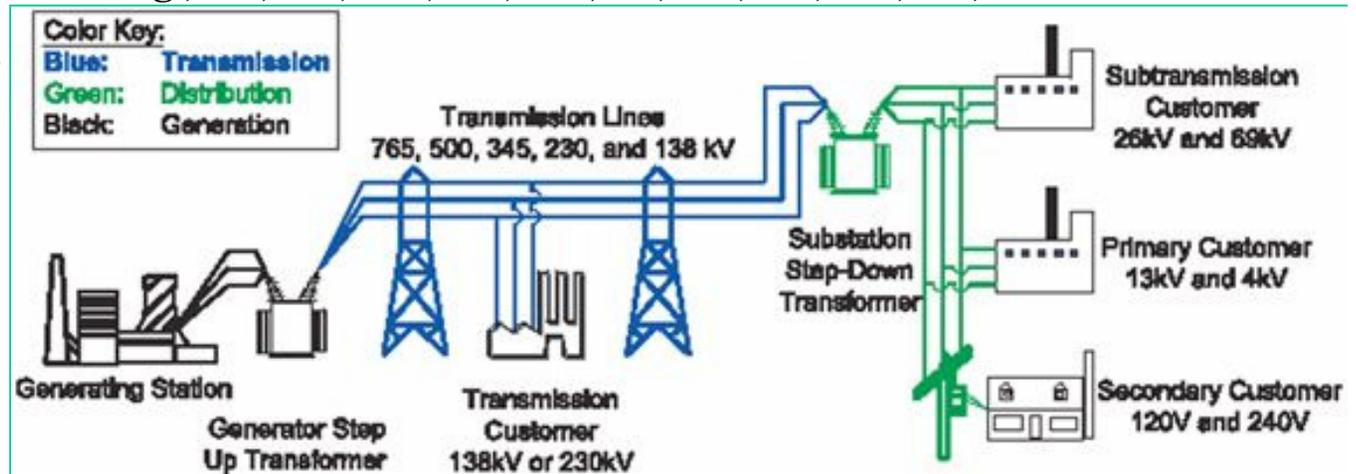
E-4B Airborne Command Post

*A key lesson for today: Success was insured by high level truly independent review—including key “red team” analyses and tests!*

# *Optimism for Future Solutions, BUT . . .*

- **Ted Koppel is waking up folks across the nation to the existential threat!**
  - Emphasis on Cyber, **BUT** physical and EMP threats also acknowledged & must be addressed!
- **Some Washington help, BUT much more is needed, for example:**
  - DoD—investing at least \$700 million to harden Cheyenne Mountain, **BUT** still not addressing Homeland Defense needs—not their job??? Really????
  - Congress re-established EMP Commission with expanded charter, **BUT** little funding & Senate action on House-passed CIPA/SHIELD Acts still in question
- **Growing state, local & power industry interest**
  - ME & VA legislation and Dominion Electric actions
  - Key initiatives in several states—e.g., FL, TX, OK, AZ, CO, IN, LA, NV, NC, SC, AL . . . NY?

- **Some Priority Efforts**
  - Restart EMP Commission
  - National Architecture
  - Encourage Industry Pilots
  - Enhance State Initiatives
  - DC Legislative Follow-up
  - Involve National Guard
  - Missile Defense Initiative
  - University EE Initiatives



*No initiative is more important than hardening our nuclear reactors and concurrently ending our vulnerability to missile attack!*

# *Nuclear Power Reactors may be a hazard, but can be a critically important part of the solution!*



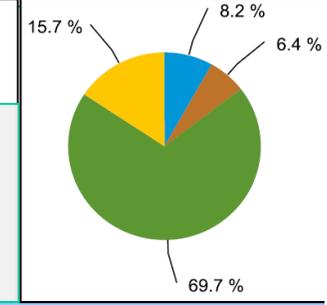
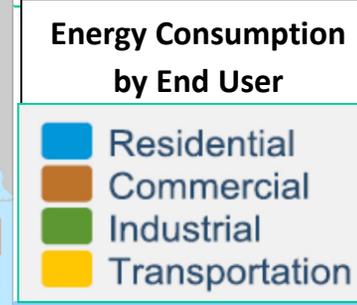
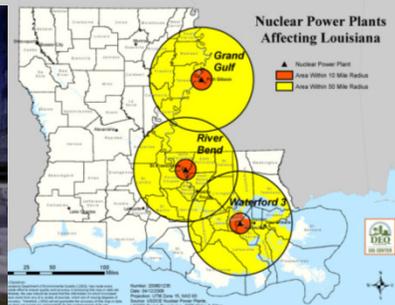
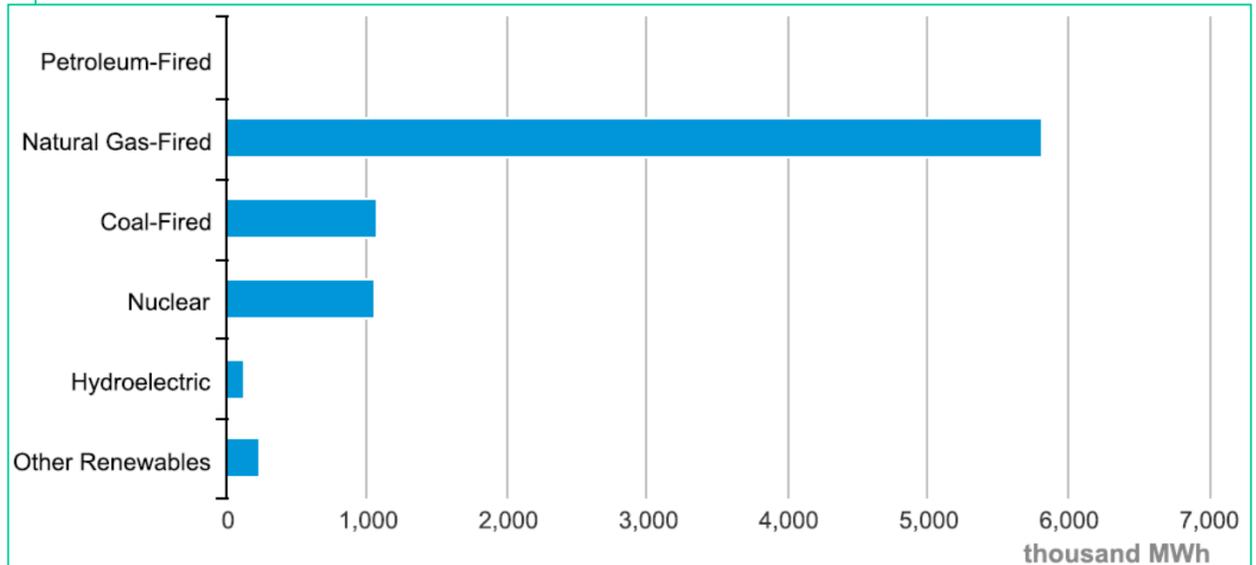
- *Reactors produce about 20% of US electricity—most are in the “Eastern Interconnection”*
- *If they lose the grid, they will shut down, possibly leading to multiple meltdowns*
- *Result could be up to ~100 Fukushimas, with radiation carried by wind across the US*
- *However, if engineers can figure out how to make them viable in such a shutdown, they would be important in reestablishing the national grid.*

*Top priority: Assure nuclear reactors can be restarted after a grid shutdown and become a source for restoring electricity to all Americans—Louisiana can help begin such an initiative!*

# *Notional Plan to assure Louisiana Citizens of Viable Post-EMP Event Sources of Electric Power*

**Louisiana Net Electricity Generation by Source, Jan. 2016**

- *Natural Gas fired plants likely depend on vulnerable SCADAs—So stockpile replacements!*
- *Grid shutdown causes nuclear reactors to shut down. Assure Louisiana hydroelectric & coal plant viability with hardened pathways to help restart reactors!*
- *Work with neighboring states!*
- *Prepare National Guard and local first responders!*



***Top priority: Assure Louisiana energy sources are viable and interconnected to help restart its & neighbor states' nuclear reactors after a grid shutdown—and help restore electricity to all Americans . . . an important national role!***

***Learn from Duke Energy pilot study at Lake Wylie, SC to help assure Nuclear Reactors remain viable to support reviving the electric grid after a major shutdown!***

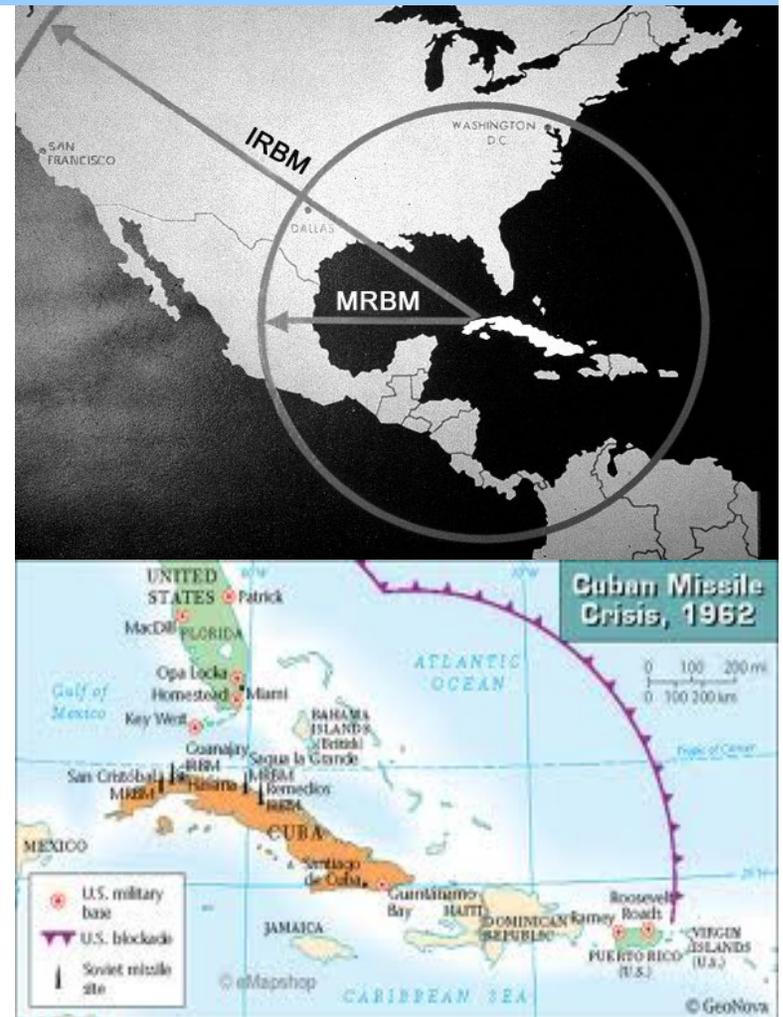
- ***Engineers at Duke Energy, the largest US electric power company, are on board!***
- ***Involving national level experts in this planning—as well as other power companies and the Electrical Engineering Departments of several universities.***
- ***Planning Lake Wylie Pilot Study—with nuclear, hydroelectric & coal power plants***
- ***Anticipate involvement of state and local authorities, at least in SC and NC***
- ***Rep. Mick Mulvaney (R-SC), whose district includes Lake Wylie, is on board—as are Rep. Joe Wilson (R-SC) (Chairman of the HASC Emerging Threats Subcommittee) and my Representative Jeff Duncan (R-SC).***



***Anticipate SC Adjutant General's support of this important initiative, eventually including exercises involving federal, state and local authorities, potentially leading to a future multistate Vigilant Guard exercise—and a viable electric grid!***

# October 22, 2015 was the 53<sup>rd</sup> Anniversary of Pres. Kennedy's TV Address Disclosing Soviet Nukes/Missiles on their Way to Cuba

- ***A Sober “Duck and Cover” Moment***
  - *U.S. introduced a Blockade, went to DEFCON 2 and threatened retaliatory response against USSR;*
  - *Behind the scenes negotiations—including agreement to remove our missiles from Turkey and for the USSR not to deploy missiles/nukes in Cuba*
  - *The Soviet ships stopped and the construction in Cuba halted and reversed*
  - *Secretary of State Dean Rusk said Khrushchev “blinked” in the face of U.S. resolve*
- ***We “dodged a bullet” but did not know how close we came to disaster***
  - *After the Cold War, we learned there were already ~100 nukes in Cuba and Castro wanted them to stay*
  - *Khrushchev refused; nukes removed by the end of 1962*
  - *Had we understood Khrushchev's deception, there might have been no deal*
  - *Your guess is as good as mine if they had not been removed*
  - *Between being lucky and smart, rather be “lucky” every time!*



***Today, we are again courting disaster by ignoring an existential threat from the South—again from distant powers! How lucky will we be?***

# Today, we are on the brink of another threat “from the South” . . . To which we seem just as oblivious as we were in 1962!

- *A Wake Up Call: June 2013 intercept of a North Korean ship carrying from Cuba to & through the Panama Canal nuclear capable SA-2s and other technology illustrates the “Cacophony of Proliferation”*
- *Of greater concern, Iran (or terrorists) could launch such missiles from ships off our coasts, especially in the Gulf of Mexico. They first tested this capability in in the late 1990s.*
- *Today, we have no defense against this real possibility—by choice, whether intended or not*



Ballistic Missile on Container Ship Ready to Launch

### MILITARY CARGO HIDDEN UNDER SUGAR ON FREIGHTER

Tracked by U.S. satellites, a North Korean freighter was intercepted on July 15 by Panamanian forces as it approached the Panama Canal. After resistance by the crew, the ship was boarded and searched. In its holds, under bags of brown sugar, were decades-old aircraft, engines and missile components.

#### The Chong Chon Gang

- North Korean-flagged freighter
- Built in 1977
- Maximum speed 6 knots (7 mph, 11.3 kph)

#### Where the ship has been since January

#### Comparing sizes

Length of ship 508 ft. long

- Mig-21 in scale 51.7 ft. long
- Volga missile (variant of SA-2) in scale 35 ft. long

#### Mig-21 “Fishbed”

All-purpose fighter from Soviet era, first deployed in 1955, upgraded in many variants

- About 11,500 produced through 1985
- India built 657 of them

#### Volga anti-aircraft missile

Variant of the highly successful Soviet SA-2 system

- Also found on ship were Fan Song radar fire control units for the missiles

#### Ship diverted

Manzanillo, PANAMA, Gatun Lake, Canal, Panama City, Caribbean Sea, PANAMA, Pacific Ocean

Source: McClatchy Washington Bureau, MarineTraffic.com, The New York Times, Wall Street Journal, Miami Herald  
© 2013 MCT Graphic: Judy Treible, Robert Dorrell

*We are currently defenseless against these threats from the South!*

# Ballistic Missiles from Ships: Not a new Threat

*“Countries have placed ballistic missiles in ships – dime a dozen – all over the world. At any given time, there’s any number off our coasts – coming, going. On transporter-erector-launchers, they simply erect it, fire off a ballistic missile, put it down, cover it up. Their radar signature’s not any different than 50 others in close proximity.”*

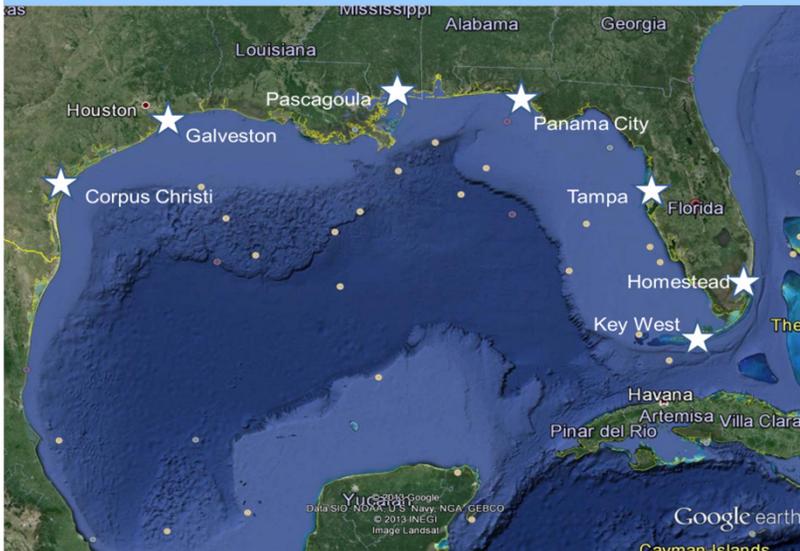
*Defense Secretary Don Rumsfeld*

*Pentagon Press Briefing—September 16, 2002*

- **But Secretary Rumsfeld and his lieutenants did nothing to protect against this well known threat, nor has anyone else since then . . .**
- **A profound failure, especially when considering the EMP Threat and the fact that we have long had near-term countermeasure options— and have not used them**
- **Aegis Ballistic Missile Defense (BMD) systems on ships near the East Coast and Aegis Ashore sites on bases around the Gulf of Mexico provide early response options**
- **Space-based defenses ultimately will provide the best defense**
  - **Ironically, the most cost-effective global defense, but not politically correct**

*We have relatively inexpensive options to make significant improvements quickly, if the powers that be acknowledge the problem and take immediate actions!*

# Quick Fix to Threats from the Gulf of Mexico: Aegis Ashore Sites on Nearby Military Bases



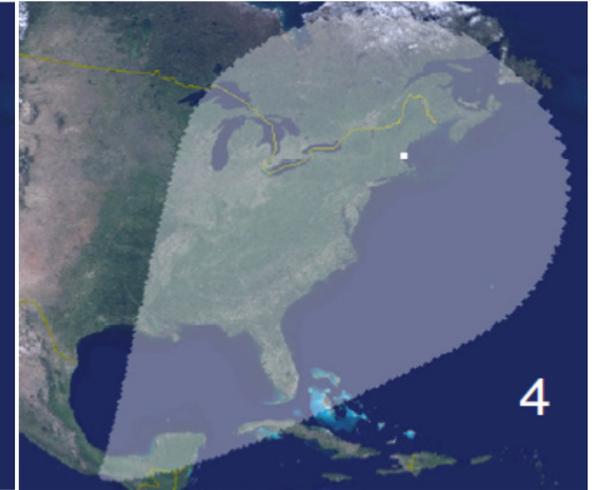
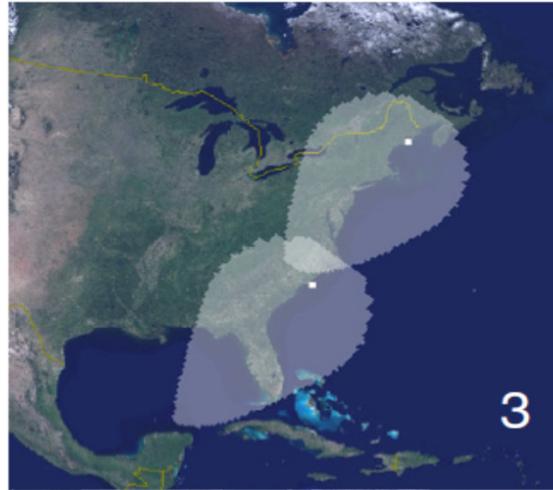
- *Aegis Ashore site in Hawaii is operational for testing purposes*
- *Romanian Site is Operational*
  - *Site in Poland Planned to be Operational by 2018*
- *Site spacing around Gulf coasts depends on interceptor speeds*
  - *Have met with folks in Mississippi and Florida*
    - *Pascagoula , Miss. where Aegis ships are built*
    - *Panama City/Tyndall AFB, FL home of 1<sup>st</sup> AFNORTH*
      - *Command Links to 263<sup>rd</sup> AAMDC in Anderson, SC*
- *Potential sites in Louisiana—Belle Chasse Joint Reserve Airbase?*



*Aegis Ashore employs Aegis BMD shipboard components as “football size” ground-based interceptor system—no additional R&D cost*

# Aegis BMD also has inherent unexploited Capabilities Against ICBMs from the North

- **With trained and ready crews, Aegis BMD ships could counter:**
  - Threats from vessels off our coasts
  - And from ICBMs from the North
- **At random in 2013, 4-6 Aegis ships were along the East Coast or could engage from Port**
- **With SM-3 IA&B and TYP-2 radars in MA & NC**
  - Potential coverage of Eastern Seaboard
  - Single TYP-2 in MA would enable North East to DC defense
- **SM-3 IIA (planned by 2018)**
  - Single TYP-2 radar would enable defense of US East of Mississippi
- **Future faster SM-3 (with lighter KKV) could defend entire US**



*Charts from Ret. VADM J.D. Williams, who helped me begin Aegis BMD in 1991*

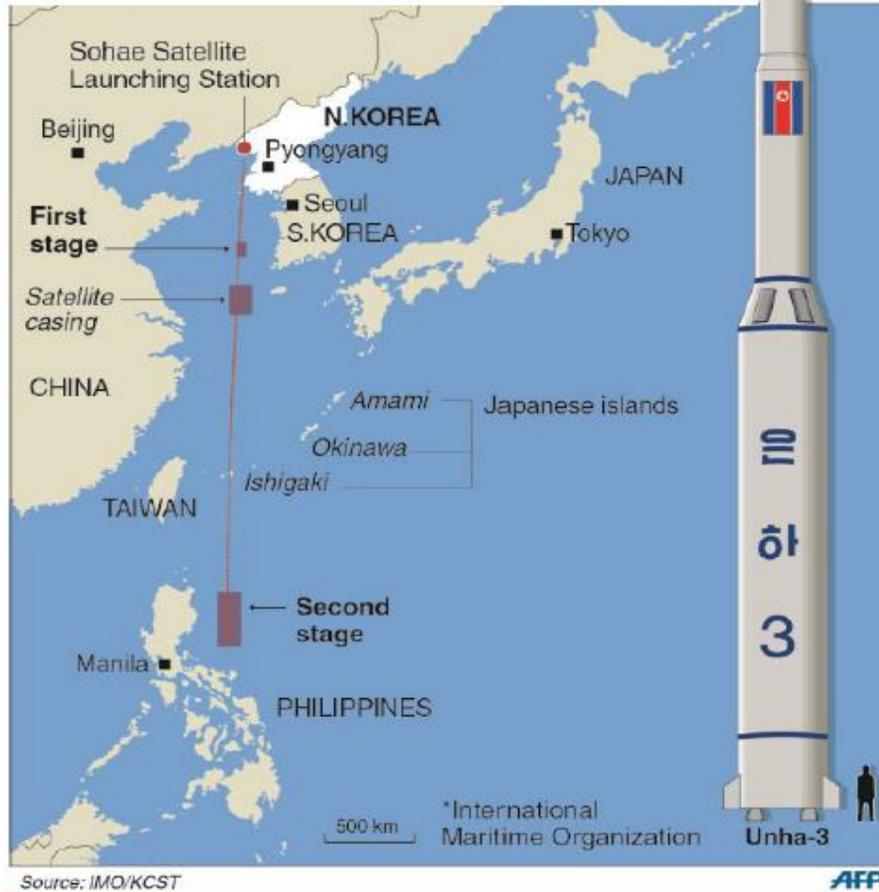
# TPY-2 radar at Aegis Ashore (or THAAD) site in the Philippines would help counter North Korean FOBS attack

- *TPY-2 X-Band Radar in the Philippines could cue Aegis BMD ships at sea and GBIs on Vandenberg AFB, CA*
- *First generation Aegis BMD shot down satellite in 2008; Aegis BMD ships at sea now and in the future will have improved capabilities*
- *Philippine cooperation is needed, as well as software modifications and crew training*



## North Korea rocket

Unha -3 Launch Trajectory toward the South Pole, anticipated to be repeated in upcoming launch from North Korea's Sohae Satellite Launching Station.



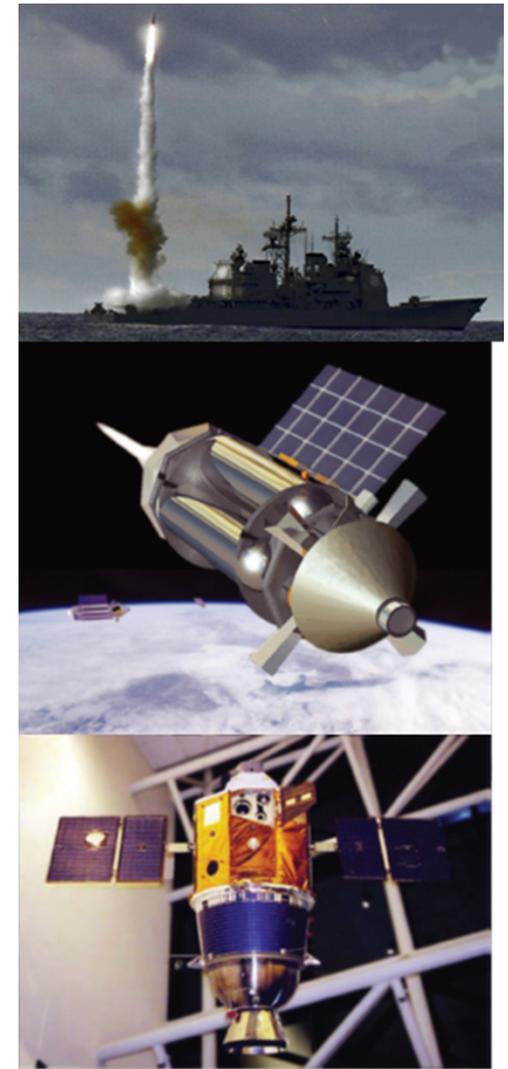
### Interception Strategy:

- Boost phase intercept opportunities during first and second stage burn—possible with the Navy's SM-2 Block IV interceptor if an Aegis BMD ship is appropriately located, and its crew and system is prepared to do so.
- Subsequent SM-3 intercept opportunities after burnout if the Aegis BMD crew is prepared and needed sensor cuing is provided—recall that the first generation of the SM-3 was used in 2008 to shoot down a dying satellite with the help of such cuing information.
- The Vandenberg AFB ground based interceptors can be used to shoot down the satellite before it overflies the U.S.—again with needed sensor cuing information.
- An appropriate ground based radar—e.g., a TPY-2 radar—in the Philippines could help provide this needed cuing.

*Americans need to wake up to FOBS threat & demand that their Representatives provide for the common defense!*

# Need Effective Ballistic Missile Defenses ASAP— First from the Sea and then from Space!

- *Aegis BMD Ships, ~35 deployed around the world*
  - *Have about 80 seaworthy, available for upgrades if needed*
  - *Excellent test record—Demonstrated Pk ~ 0.85*
  - *Those along our East Coast could, with minor upgrades and if so ordered, defend against ICBMs from the North and missiles from off-shore vessels*
  - *System chosen to shoot down a dying satellite in 2008*
  - *With preparation can shoot down satellites coming at the US from over the South Pole — if they are not too high*
- *Aegis ships usually do not go into Gulf of Mexico—so deploy Aegis Ashore on several coastal military bases*
  - *Just like “Aegis Ashore” in Romania (2015) and Poland (2018)*
- *The most effective defense would be deployed in space*
  - *Was most effective defense system developed during SDI era against missiles of all ranges greater than a few hundred miles*
  - *But was killed by Clinton administration in 1993 & not revived*
  - *“Clementine” mission to the Moon “space qualified” the essential technology; now have more advanced technology*



*These missile defense systems would defend against southern attack scenarios—and be inter-netted into a global defense capability*

## *Bottom Lines*

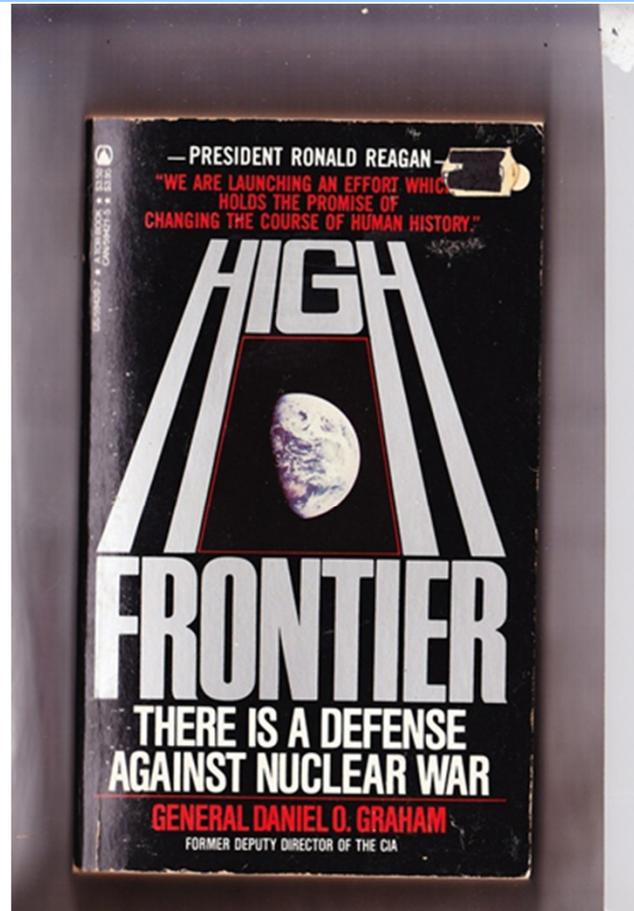
- *Credible Threats to the Nation's Unprotected Electric Grid*
  - *Manmade threats can/probably would be orchestrated in planned combined attack packages . . . Physical, Cyber, EMP*
  - *Natural threat will occur—only the time is uncertain*
- *Both pose an Existential National Threat*
  - *Most Americans could die from thirst, hunger, disease, and societal collapse within a year*
- *We know how to “harden” the grid against this threat—have known for half a century!*
- *Need to get on with affordable solutions*
  - *Harden the Grid and Build Effective Defenses*
  - *Start Pilot Studies to Assure Viable Electric Power “Islands”*
  - *Get the bureaucracy out of the way!*
  - *Work countermeasures from the Bottom-Up!*

*Get involved today—inform yourself and act! For more information on the threat and how to get involved to protect your family and friends, see [www.highfrontier.org](http://www.highfrontier.org)*

# *Please Let Us Hear From You!*

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*Daniel O. Graham*



*Ambassador Henry F. Cooper*

*Thanks for your support—the vision lives on!!!*

*At High Frontier, we dedicate ourselves to passing to future generations  
the blessings passed to us by the Founders and Forefathers.*

*May God bless America!*