



Secure Grid '11

Exercise Briefing

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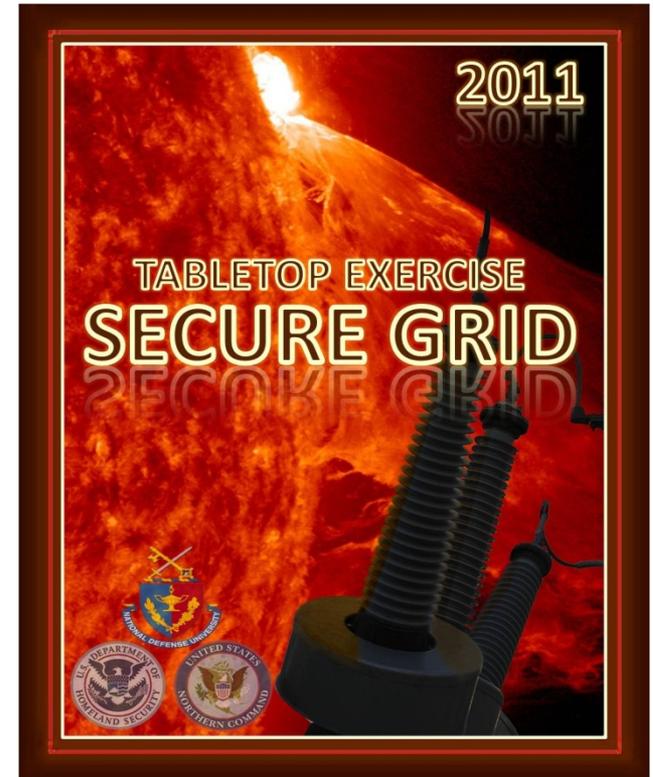
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Background on *Secure Grid*

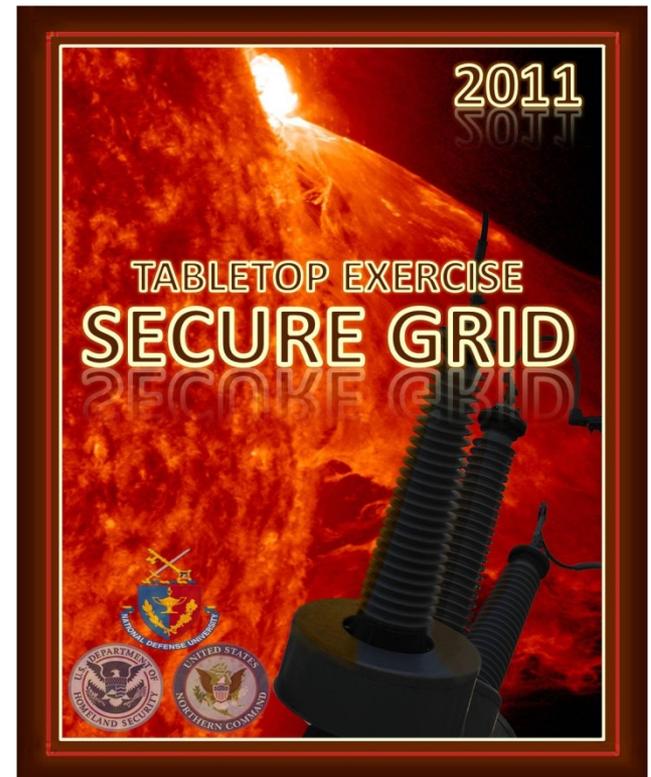
- Ongoing joint venture between NDU, DHS, and US NORTHCOM to study critical electrical grid issues
- Exercises in 2009 and 2010 examined physical and cyber vulnerabilities
- 2011 exercise looked at the risk posed by geomagnetic storms





Exercise Scenario

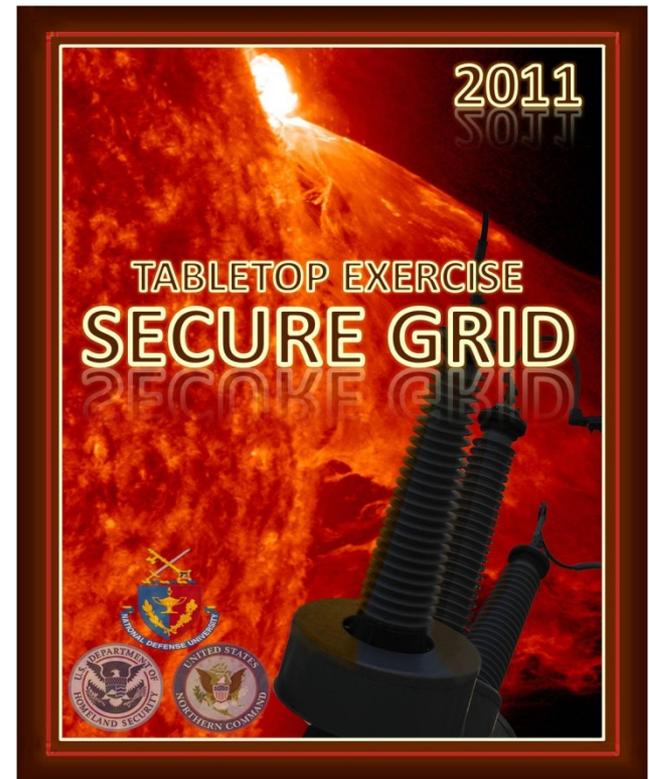
- Designed to examine problems similar to those highlighted in NAS “Severe Space Weather” report
- Made selective assumptions in order to provide a challenging, but manageable exercise scenario
- Information presented to participants as scenario updates before, during, and after event





Exercise Objectives

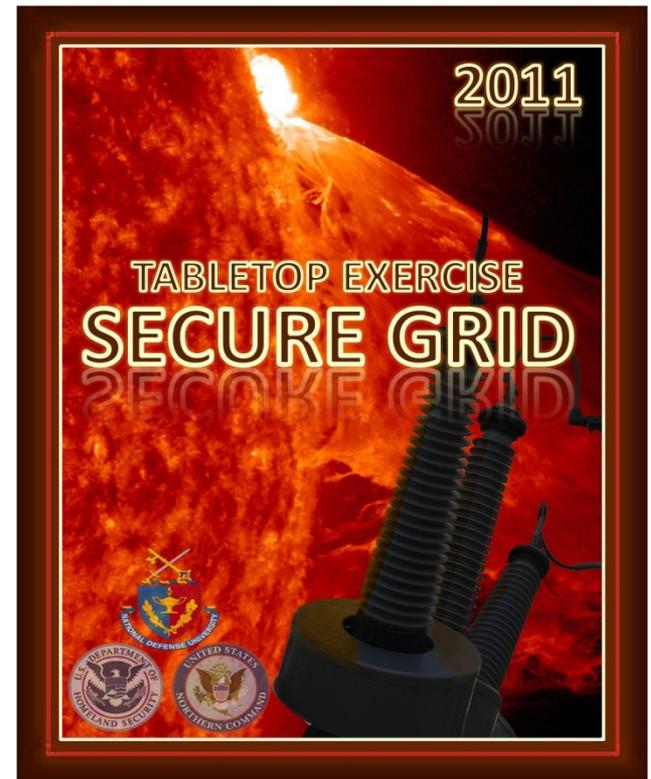
- 1) Identify and understand the potential impact of a geomagnetic storm
- 2) Explore and socialize ways to minimize event impact
- 3) Examine and assess recovery processes
- 4) Clarify and deconflict public versus private roles and responsibilities





Key Discussion Points

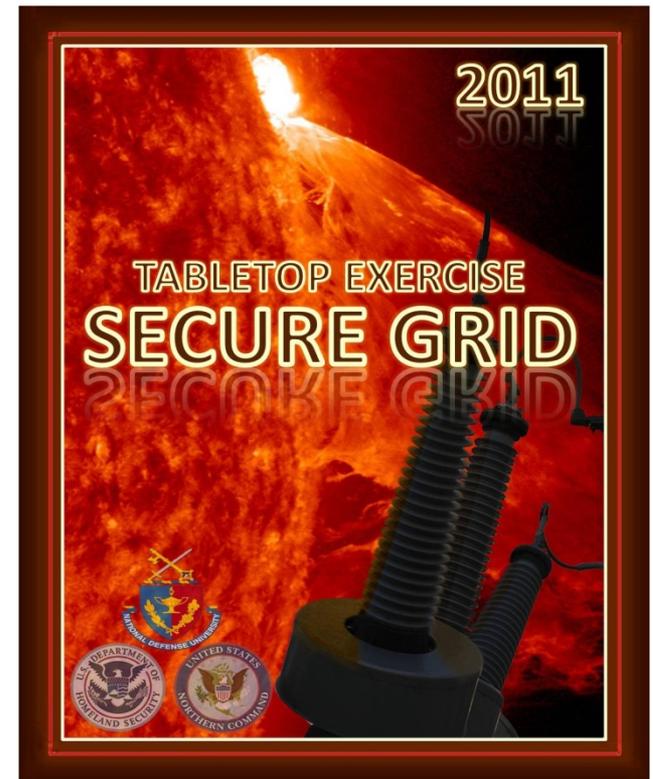
- Capacity of industry to respond and make key decisions
- Roles of industry, government authorities, and first responders
- Communication between grid stakeholders
- Ability to maintain public order during a potential national crisis





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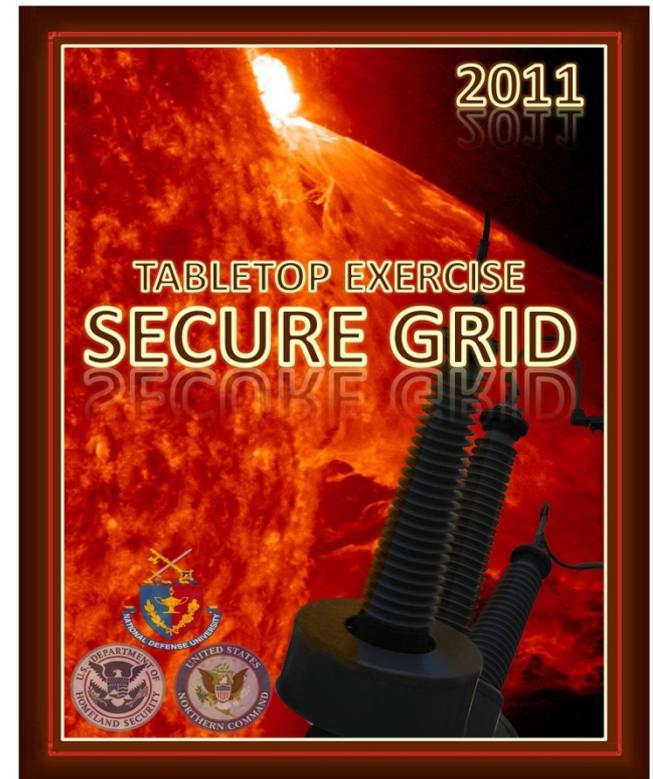
- Group coordination and fragmented lines of authority
- Backup generation capabilities, transformer replacement, and restoration of power
- Cascading and secondary effects and grid complexity
- Severe uncertainty over the true effects of a large GMD





Exercise Recommendations

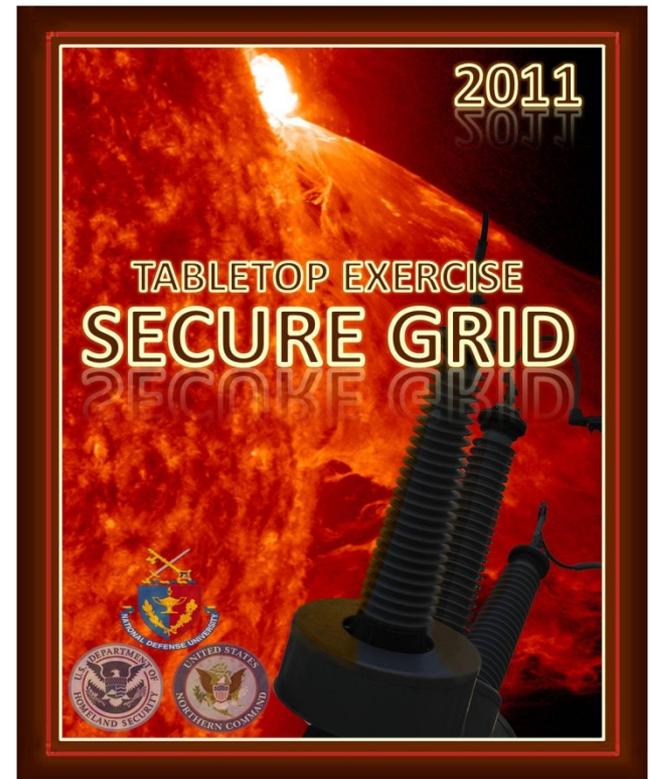
- Immediate replacement of the ACE spacecraft
- Hardening of grid or at least of limited, critical pieces
- Improvements needed in forecasting accuracy of GMD events
- Better education of actors and responders is necessary





Exercise Recommendations

- Need to establish appropriate response plans and lines of authority in advance
- Better coordination among industry and government
- Adoption of transformer sharing plans, portable generation equipment, etc.
- Comprehensive study of cascading failures





Full After-Action Report from *Secure Grid '11* is available for download at:

www.ndu.edu/inss

