

Overview of the Published Work of the U.S. EMP Commission

William A. Radasky
Metatech Corporation, Goleta, California USA, wradasky@aol.com

In 2004 the Congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack published Volume 1: Executive Report. This openly published report summarizes the work of the Commission, which was focused on the impact of the high-altitude electromagnetic pulse (HEMP) on civil electronic systems, especially those systems that control the critical infrastructures.

This presentation will review the main technical aspects of the work of the EMP Commission as summarized in the Executive Report. The presentation will review the nature of the EMP threat, the main critical infrastructures considered, and the planning needed to prepare for the recovery of the critical infrastructures.

As the author and his colleagues worked for the Commission on the analysis and testing of elements of the electric power grid infrastructure, this aspect will be emphasized in the presentation. The report will be reviewed with emphasis on the impacts of the early-time, intermediate-time and late-time HEMP fields, potential protection methods, and methods for restoration of the power grid.

In terms of the operation of the large power transmission grid, the report makes it clear that the early-time HEMP is a serious threat to the electronic controls and sensors that operate the power grid and the power line insulators that are present on the power distribution system. For the late-time HEMP the Commission highlights the generation of ground-induced currents (GICs) that will flow in the power transmission network and are likely to cause problems for the stability of the network. An example is provided in the Commission Report indicating that the collapse of the Hydro Quebec Power System in 1989 was due to a geomagnetic storm that produced GICs that are similar, but smaller than the GICs produced by HEMP.

This presentation will conclude with the latest information concerning the continuing work of the EMP Commission in terms of its schedule and objectives.