CATACLYSMIC POLARITY SHIFT IS U.S. NATIONAL SECURITY PREPARED FOR THE NEXT GEOMAGNETIC POLE REVERSAL

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Abstract:

The Earths core is undergoing a dramatic change with geomagnetic field strength dropping by 40 percent over the last 400 years, and satellite observations showing the field weakening ten times faster than previously calculated. These changes are a precursor to a common geological phenomenon known as a geomagnetic polarity reversal, where the north and south magnetic poles of the Earth reverse. Geomagnetic polarity reversals significantly decrease the strength of the magnetic field, thereby considerably increasing the interaction of the solar wind with the Earths atmosphere and biosphere. The purpose of this research is to answer if the United States is prepared for the impacts to national security resulting from the next geomagnetic polarity reversal. The report begins with an overview of pole reversals, then evaluates the effects of reversals on United States national security by utilizing six evaluation criteria ranging from infrastructure areas such as the electrical power grid to national response capabilities. The research evaluates the impacts of increases in solar and cosmic radiation and the threat of adverse space weather during a polarity transition on United States national security. This research concluded that the nation is not prepared for both geomagnetic polarity reversals and adverse space weather. Furthermore, the nation has neglected funding for geoscience and geomagnetism research. Based on the conclusions, this research recommends increasing geoscience and geomagnetism funding, spearheading an international geomagnetic initiative, developing response, recovery and risk plans at the national level and preparing the national infrastructure for the threats posed by pole reversals.

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