

[Online library] An Analysis of the Potential for Using Over-The-Horizon Radar Systems for Space Surveillance

An Analysis of the Potential for Using Over-The-Horizon Radar Systems for Space Surveillance

Matthew Colbert

*ePub | *DOC | audiobook | ebooks | Download PDF*



An Analysis of the Potential for
Using Over-The-Horizon Radar
Systems for Space Surveillance

BIBLIOSCHOLAR DISSERTATIONS

Matthew Colbert

DOWNLOAD



READ ONLINE

Matthew Colbert 2012-11-21Original language:EnglishPDF # 1 9.69 x .20 x 7.44l, .41 #File Name: 128833175496 pagesAn Analysis of the Potential for Using Over The Horizon Radar Systems for Space Surveillance | File size: 36.Mb

Matthew Colbert : An Analysis of the Potential for Using Over-The-Horizon Radar Systems for Space Surveillance before purchasing it in order to gage whether or not it would be worth my time, and all praised An Analysis of the Potential for Using Over-The-Horizon Radar Systems for Space Surveillance:

The Australian Defence Force is investigating the development of a space surveillance system. While several dedicated facilities for space surveillance are in operation around the world, Australia's Over-The-Horizon Radar

(OTHR) network has some potential for this role. The OTHR operates in the HF band and is constrained by the propagation effects of the ionosphere. A spherically stratified ionospheric model and a model for a nominal OTHR antenna are developed that allow calculation of path propagation, power distribution, and clutter returns. A software-based radar receiver processing system is modeled to determine detection probabilities and the minimum detectable radar cross-section of targets in typical low earth orbit (LEO) trajectories. The high clutter power levels, coupled with long target ranges and high velocities, mean that range-Doppler tradeoffs have a great impact on the resulting detection capabilities. While the system as modeled has the potential to provide some coverage for LEO targets, operational constraints mean the necessary conditions for detection of space targets would rarely be met while the system is involved in traditional OTHR tasking. Further, the long wavelengths and large antenna beams mean the accuracy of any positioning information is low.