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| <b>Space Mission Areas</b><br>Force Enhancement<br>Support<br>Control<br>Force Application   | <b>the Sun</b><br>Fueled by Nuclear Fusion<br>Has the biggest effect on the Space Env't<br>By-product is Electromagnetic Radiation<br>By-product is Electrically Charged Particles                         | <b>2 Space Launch Facilities</b><br>Vandenberg Air Force Base, California<br>Cape Canaveral Kennedy Space Center, Florida                          | <b>Global Positioning System - GPS</b><br>Global Navigation Satellite System   |
| <b>Components of EOP</b><br>Universal Time<br>Coordinates of the Pole<br>Celestial Pole Offsets  | <b>Network Synchronization</b><br>Keeps GPS computers automatically updated and on the exact same time   | <b>Advantages of Space ISR</b><br>Coverage of AOIs w/o detection and w/o sanctions<br>More Precise Targeting<br>Enhanced Planning from Imagery     | <b>Advantages of GPS</b><br>Accuracy<br>Accessibility<br>Graceful Degradation<br>Jamming<br>Anti Spoofing  |
| <b>Astrometry</b><br>Relates to Precise Measurements and explanations of the positions and movements of stars and other celestial bodies                     | <b>Key Objectives of SSA</b><br>Ensure Space Operations and Spaceflight Safety<br>Implement Int'l Treaties and Agreements<br>Protect Space Capabilities<br>Protect Military Operations and Nat'l Interests | <b>Medium Earth Orbit - MEO</b><br>22, 300 miles above the Earth<br>Between LEO and GEO orbits<br>Offer better Round-trip Time than GEO satellites | <b>High Earth Orbit - HEO</b><br>Higher than 22,300 miles above the Earth<br>Useful for Communications Satellites  |
| <b>Atmospheric Drag</b><br>Causes Satellite Errors<br>Results from Expansion of Atmosphere<br>Atmosphere expands due to Bombarding of charged Particles      | <b>Disadvantages of Space ISR</b><br>Access Limitations<br>Predictable Fly-over Schedule<br>Atmospheric Disturbances & Weather<br>Administrative Limitations   | <b>Components of SSA</b><br>Intelligence<br>Surveillance<br>Reconnaissance<br>Environmental Monitoring<br>Space Common Operating Picture           | <b>Van Allen Radiation Belts</b><br>Impacts Comms Satellites in Geosynchronous Satellite Orbit   |
| <b>Space Situational Awareness - SSA</b><br>Current and predictive Knowledge of everything happening in the space environment relating to space operations   | <b>Polar Orbit</b><br>Passes over the Entire surface of the Earth<br>Imagery Satellites<br>90 degree inclination   | <b>GPS Satellites</b><br>21 Active, 3 Spare<br>Each contains: Computer, Atomic Clock, Radio<br>Receiver on the Ground Triangulates w/ 3 Satellites | <b>Earth Orientation Parameters - EOP</b><br>Describes Earth's Irregularities due to uneven rotation by providing Earth's rotation as a function of time |
| <b>Geosynchronous Orbit</b><br>A satellite that completes one revolution per day (e.g. the moon)<br>Ineffective at the Poles<br>Used for some communications | <b>Low Earth Orbit - LEO</b><br>150 to 800 miles above the Earth   | <b>Solar Winds</b><br>Stem from the Sun's Corona and are Responsible for Geomagnetic Storms that: Knock out Power Grids and cause the Auroras      | <b>Solar Cycle</b><br>11 year Cycle<br>4 year Rise to Maximum<br>7 year Decline to Minimum   |
|  |  |  | <b>Geo-location</b><br>Wireless detection of the physical location of a remote device  |



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