AE 502 HW 4 Report

Richard Eason, NetID: reason2

For each of the three sets of observations I found these state vectors and orbital elements:

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| Data Chunk | R1 (km) | R2 (km) | R3 (km) | V1 (km/s) | V2 (km/s) | V3 (km/s) |
| 1 | -4272.58 | -951.1 | 6185.25 | 5.886 | 0.783 | 4.155 |
| 2 | -4139.41 | -935.059 | 6294.57 | 6.046 | 0.818 | 4.090 |
| 3 | -4718.60 | -994.362 | 5834.67 | 5.584 | 0.724 | 4.643 |

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| Data Chunk | Eccentricity | Semi-Major Axis (km) | Inclination (deg) | RA of Asc. Node (deg) | Arg of Per. (deg) | True Anomaly (deg) |
| 1 | 0.00393 | 7564.5 | 87.648 | 189.22 | 170.72 | 244.07 |
| 2 | 0.0275 | 7804.91 | 87.679 | 189.26 | 57.403 | 358.69 |
| 3 | 0.0113 | 7655.78 | 87.782 | 189.21 | 48.454 | 2.025 |

|  |  |
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| Data Chunk | Epoch of data (MJD) |
| 1 | 60055.1340277 |
| 2 | 60055.2104166 |
| 3 | 60055.2854166 |

Clearly there is some variation between each of the three sets of determinations. In particular it is of note that because the eccentricity is so small, numerical error in the argument of perigee is very visible. The difference in the true anomaly is expected and due to the satellite moving through its orbit between observations.