Summary of survey results performed 2 Nov. 2012.

Data reduction based on the videogrammetry data from the survey done on the secondary on 28 June 2004 which defines the coordinate frame. All calculations and results are in the dome centerline coordinate system. All units are inches and degrees.

The dome centerline coordinate system has the +x axis pointing uphill toward the secondary. The +y axis points toward the stairwell and the +z axis points upward. The angles are measured in the plane that names them, not as a rotation around that axis. A +x tilt means a unit vector pointing in the generally +z direction has a +x component, y is similar.

Each horn was surveyed multiple times and the y position adjusted with the turret floor until the y error of the fitted target circle reported by Netrology was acceptably small.

Nominal x,y,z location of focus:

-248.145   .0   -389.822

Nominal x,y tilts:

.625   .0

Focus (x,y,z) and tilt (x,y) errors for each horn, in inches and degrees.

S-band wide

0.141	0.394	0.014	-0.518	-0.490
0.143	0.265	0.019	-0.584	-0.494
0.152	-0.085	0.021	-0.536	-0.479

L-band

0.785	0.265	-0.902	-0.401	-0.777
0.794	-0.126	-0.896	-0.390	-0.738

C-band

-0.012	0.232	0.201	-0.529	0.463
0.002	-0.085	0.205	-0.490	0.501
0.008	-0.039	0.214	-0.524	0.489

X-band

0.186	0.325	0.107	-0.416	0.797

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   0.185      -0.045       0.121       -0.385       0.811
```

C-band high

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   0.439       0.315      -0.155       -0.380      -0.381
   0.428      -0.073      -0.159       -0.435      -0.438
```

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  -0.752       0.234       0.514       -0.396       0.052
  -0.741      -0.070       0.517       -0.353       0.129
```

S-band high

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   0.108       0.254      -0.084       -0.293       0.515
   0.132      -0.076      -0.084       -0.279       0.571
```

The sign sense of the position errors is a + error means the measured location
is too far in the + direction on that axis.

The sign sense of the tilt errors is a + error indicates the mouth of the horn
is to far in the - direction along that axis. The unit normal indicating the
tilt points approximately in the +z direction and the horn points roughly in
the -z direction so the sense reverses.