

# GPS Calibration Report

*Project : u4401\_Z\_cs*

|                          |                                |                        |                      |
|--------------------------|--------------------------------|------------------------|----------------------|
| <b>TIP Number</b>        | U-4401 & B-4580                | <b>Date &amp; Time</b> | 9:45:45 AM 3/28/2005 |
| <b>User name</b>         | jjeffreys                      | <b>Zone</b>            | North Carolina 3200  |
| <b>Coordinate System</b> | US State Plane 1983(at ground) | <b>Geoid Model</b>     | GEOID99 (Conus)      |
| <b>Horizontal Datum</b>  | NAD 1983 (Conus)               |                        |                      |
| <b>Vertical Datum</b>    | NAVD 88                        |                        |                      |
| <b>Coordinate Units</b>  | US survey feet                 |                        |                      |
| <b>Distance Units</b>    | US survey feet                 |                        |                      |
| <b>Height Units</b>      | US survey feet                 |                        |                      |

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## LOCAL SITE INFORMATION

|                   |                  |
|-------------------|------------------|
| Localized around  | U4401-3          |
| Latitude          | 35°15'34.53454"N |
| Longitude         | 80°39'48.14327"W |
| Site Scale Factor | 1.0001550240     |
| Height            | ?                |

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## Datum Transformation Parameters

|                                 |                 |
|---------------------------------|-----------------|
| <b>Method</b>                   | Three Parameter |
| <b>Translation along x axis</b> | 13.183sft       |
| <b>Translation along y axis</b> | -80.257sft      |
| <b>Translation along z axis</b> | 57.505sft       |

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## Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

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## Horizontal Adjustment Parameters

|   |                |
|---|----------------|
| <b>Northing coordinate of rotation center</b> | 553305.857sft  |
| <b>Easting coordinate of rotation center</b>  | 1503820.661sft |
| <b>Rotation about the center point</b>        | 0°00'00"       |
| <b>Translation north</b>                      | 0.000sft       |
| <b>Translation east</b>                       | 0.000sft       |
| <b>Scale factor</b>                           | 1.00000443     |

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## Vertical Adjustment Parameters

|  |                |
|--|----------------|
| <b>Northing coordinate of origin point</b> | 553565.202sft  |
| <b>Easting coordinate of origin point</b>  | 1503482.610sft |
| <b>Vertical separation at origin</b>       | 0.024sft       |
| <b>Slope north</b>                         | 0.317ppm       |
| <b>Slope east</b>                          | 15.145ppm      |

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## Geoid Model Definition

GEOID99 (Conus)

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## Residual Differences Between GPS (WGS84) And Local Coordinates

|         |
|---------|
| Summary |
|---------|

|                   | Maximum error | Root Mean Square error | Point       |
|-------------------|---------------|------------------------|-------------|
| Horizontal        | 0.002sft      | 0.001                  | U4401-4_GPS |
| Vertical          | 0.002sft      | 0.000                  | U4401-4_GPS |
| Three-dimensional | 0.003sft      | 0.001                  | U4401-4_GPS |

### Point Residuals

| WGS84 Coordinates |                  | Calculated point<br>FOR DISPLAY ONLY |                 | Local Coordinates      |                  |
|-------------------|------------------|--------------------------------------|-----------------|------------------------|------------------|
| <b>Point</b>      | U4401-3_GPS      | <b>Northing</b>                      | 553565.202sft   | <b>Point</b> U4401-3   |                  |
| <b>Latitude</b>   | 35°15'34.53449"N | <b>Easting</b>                       | 1503482.610sft  | <b>Northing</b>        | 553565.202sft    |
| <b>Longitude</b>  | 80°39'48.14311"W | <b>Elevation</b>                     | 610.199sft      | <b>Easting</b>         | 1503482.610sft   |
| <b>Height</b>     | 510.593sft       | <b>Horz error</b>                    | 0.000sft        | <b>Elevation</b>       | 610.199sft       |
|                   |                  | <b>Vert error</b>                    | 0.000sft        | <b>Utilized</b>        | Horz and Vert    |
|                   |                  | <b>3D error</b>                      | 0.000sft        | <b>Quality</b>         | Adjusted quality |
| <b>Point</b>      | U4401-5_GPS      | <b>Northing</b>                      | 553993.243sft   | <b>Point</b> U4401-5   |                  |
| <b>Latitude</b>   | 35°15'38.32022"N | <b>Easting</b>                       | 1500792.405sft  | <b>Northing</b>        | 553993.241sft    |
| <b>Longitude</b>  | 80°40'20.66356"W | <b>Elevation</b>                     | 688.161sft      | <b>Easting</b>         | 1500792.406sft   |
| <b>Height</b>     | 588.579sft       | <b>Horz error</b>                    | 0.002sft        | <b>Elevation</b>       | 688.161sft       |
|                   |                  | <b>Vert error</b>                    | 0.000sft        | <b>Utilized</b>        | Horz and Vert    |
|                   |                  | <b>3D error</b>                      | 0.002sft        | <b>Quality</b>         | Adjusted quality |
| <b>Point</b>      | U4401-4_GPS      | <b>Northing</b>                      | 555229.571sft   | <b>Point</b> U4401-4   |                  |
| <b>Latitude</b>   | 35°15'50.80934"N | <b>Easting</b>                       | 1502376.627sft  | <b>Northing</b>        | 555229.574sft    |
| <b>Longitude</b>  | 80°40'01.81404"W | <b>Elevation</b>                     | 677.590sft      | <b>Easting</b>         | 1502376.627sft   |
| <b>Height</b>     | 577.978sft       | <b>Horz error</b>                    | <b>0.002sft</b> | <b>Elevation</b>       | 677.588sft       |
|                   |                  | <b>Vert error</b>                    | <b>0.002sft</b> | <b>Utilized</b>        | Horz and Vert    |
|                   |                  | <b>3D error</b>                      | <b>0.003sft</b> | <b>Quality</b>         | Adjusted quality |
| <b>Point</b>      | U4401-1_GPS      | <b>Northing</b>                      | 551267.117sft   | <b>Point</b> U4401-1   |                  |
| <b>Latitude</b>   | 35°15'12.26411"N | <b>Easting</b>                       | 1506233.545sft  | <b>Northing</b>        | 551267.115sft    |
| <b>Longitude</b>  | 80°39'14.51564"W | <b>Elevation</b>                     | 692.608sft      | <b>Easting</b>         | 1506233.545sft   |
| <b>Height</b>     | 592.995sft       | <b>Horz error</b>                    | 0.002sft        | <b>Elevation</b>       | 692.609sft       |
|                   |                  | <b>Vert error</b>                    | 0.001sft        | <b>Utilized</b>        | Horz and Vert    |
|                   |                  | <b>3D error</b>                      | 0.002sft        | <b>Quality</b>         | Adjusted quality |
| <b>Point</b>      | U4401-2_GPS      | <b>Northing</b>                      | 552474.153sft   | <b>Point</b> U4401-2   |                  |
| <b>Latitude</b>   | 35°15'24.19754"N | <b>Easting</b>                       | 1506218.118sft  | <b>Northing</b>        | 552474.154sft    |
| <b>Longitude</b>  | 80°39'14.94410"W | <b>Elevation</b>                     | 692.346sft      | <b>Easting</b>         | 1506218.117sft   |
| <b>Height</b>     | 592.721sft       | <b>Horz error</b>                    | 0.002sft        | <b>Elevation</b>       | 692.346sft       |
|                   |                  | <b>Vert error</b>                    | 0.001sft        | <b>Utilized</b>        | Horz and Vert    |
|                   |                  | <b>3D error</b>                      | 0.002sft        | <b>Quality</b>         | Adjusted quality |
| <b>Point</b>      | OLD DUTCH_GPS    | <b>Northing</b>                      | 520065.297sft   | <b>Point</b> OLD DUTCH |                  |
| <b>Latitude</b>   | 35°10'08.92695"N | <b>Easting</b>                       | 1538964.135sft  | <b>Northing</b>        | ?                |
| <b>Longitude</b>  | 80°32'34.08587"W | <b>Elevation</b>                     | 547.653sft      | <b>Easting</b>         | ?                |
| <b>Height</b>     | 447.519sft       | <b>Horz error</b>                    | ?               | <b>Elevation</b>       | 547.652sft       |
|                   |                  | <b>Vert error</b>                    | 0.000sft        | <b>Utilized</b>        | Vertical         |
|                   |                  | <b>3D error</b>                      | 0.000sft        | <b>Quality</b>         | Control quality  |