An Interim Style Guide for the US National Grid (USNG) version 1.11

With ArcGIS Applications.

Part I. Introduction: The purpose of this guide is to aid GIS analysts and cartographers in depicting the Federal Geographic Data Committee's US National Grid standard (FGDC-STD-011-2001) on appropriate maps and planning graphics. Users of this guide are strongly encouraged to first download and study the FGDC's standard at http://www.fgdc.gov/standards/projects/FGDC-standards-projects/usng/fgdc_std_011_2001_usng.pdf

This guide was developed in response to identified needs of organizations, such as county GIS department, that are implementing the USNG.   It makes suggestions and offers a uniform convention for depicting the grid and other information, but is not a final authority. Users of this guide are cautioned that map users have proven sensitive to the need for a consistent format in how the grid is labeled, where some digits are in superscript and others are in normal size, as demonstrated below and in the attached sample maps. This document offers cartographic conventions which will aid map users by following a consistent standard.

There are other variables that affect some aspects of how the grid is depicted and these can be modified for particular products. These include map size (i.e. 8.5 x 11 inch or 21 x 27 inch), scale (i.e. 1:2,400, 1:24,000, 1:250,000, etc), or purpose. Furthermore, line weight, line spacing, and font size vary depending upon the scale of a particular map. On a small format map (i.e. 8.5x11 inches), the grid line labels internal to the map body might not be required. Alternatively, on a large format map, two rows of internal grid labels may be used to facilitate use of the grid if the map is folded. Other aspects of map layout can be modified by cartographers as required. While the USNG is being implemented in software applications, the Military Grid Reference System (MGRS) referenced to WGS-84 or NAD-83 can serve as a USNG surrogate —ESRI software is an example of this. The style guide was developed with ArcGIS 9.1.

Users of this guide are encouraged to provide feedback via http://www.fgdc.gov/contact-info

Attached sample maps:
a. Style guide, 1:24,000
b. Sample USNG Map, 1:500
c. Sample USNG Map, 1:1,000
d. Sample USNG Map, 1:500,000
e. Sample USNG at Zone Junction Map, 1:50,000

Part II. ArcGIS Grid Wizard setup. Part II is intended for use by GIS operators with a working knowledge of ArcGIS. With ArcGIS, before making the map grid, load the data layers and make desired adjustments for color, shading, labels, etc. Put map in Layout view and set to desired scale.

      1. To set map to a UTM coordinate system:

          A. Click the 'View' menu and click 'Data Frame Properties.'
          B. Click the 'Coordinate System' tab.
          C. Navigate to the 'Select a Coordinate System' window. Follow the steps: 'Predefined' > 'Projected Coordinate Systems' > 'Utm' > 'Wgs 1984' > 'WGS 1984 UTM Zone XXY', where XX is the UTM zone of interest and Y is the hemisphere of interest. ***Note: *In ArcMap, the 'N' and 'S' associated with the UTM zones stand for 'Northern Hemisphere' and 'Southern Hemisphere' respectively. Do not confuse them with the alphabetically denoted UTM bands.* Double click on desired UTM Zone and Hemisphere. Click 'Apply'. Click 'OK.'

             If your map spans two UTM zones
             In some cases, a map may span two UTM zones. Do not use the grid for one zone for the neighboring zone; they in effect are two separate grids (from a software perspective). At this time, ArcMap does not make concessions for grid zone junctions. USNG/MGRS files are available for download that show 1000-m grids and proper grid zone junctions. (See www.fgdc.gov/usng) The city of New Orleans, LA, is located at the junction of Zones 15 and 16, and is used as an example. The grid files are loaded similarly to any other file in ArcMap. Since the files are large, it may be a good idea to select the useful data and create that into its own layer. To turn on the ladder labels for the grids, right click on the file name under 'Layers.' Find the 'Text String' subheading and click on 'Label' in the dropdown menu. Under the 'Text Symbol' subheading, adjust the 'Font' to Arial, 'Size' to 14, regular formatting, (no Bold, Italics, or Underline), and black. Under 'Other Options,' click the 'Placement Properties' button. Click the 'Placement' tab, and 'Under Line Settings' > 'Orientation,' click on the 'Horizontal' radio button. Click 'OK.' This will need to be done for both grid files.

      2. To add a USNG in your list of personal styles:

          A. Click the 'Tools' menu, point to 'Styles,' click 'Style Manager.'
          B. In the 'Styles' tree view to the left, click the name of the style file into which you would like to add a USNG style. *Comment: It does not seem to matter which style you choose.* Click the 'Reference System' folder.
          C. To the right, click 'MGRS Grid' and click 'Close.' (If 'MGRS Grid' is not visible, right click in the white area on the right side of the 'Style Manager' box. Click on 'New' and click 'MGRS Grid.' When the

'Reference Systems' box appears, click 'OK.' This will add the MGRS Grid option to the list of grids and graticules in the 'Style Manager.')

D. The 'Reference Systems' window will open and have four tabs visible: 'MGRS,' 'Axes,' 'Labels,' and 'Lines.' Click 'OK.' Close the 'Style Manager' window.

3. To set up the 'Grids and Graticules Wizard' and load a 1000-meter grid:

A. Under the 'View' menu, click 'Data Frame Properties.' Click the 'Grids' tab.
B. Click the 'New Grid' button.
C. In the 'Grids and Graticule Wizard' window, click the middle radio button labeled 'Measured Grid.' In the 'Grid Name' window replace 'Measured Grid' by typing in 'USNG Grid.' ***Note. If clicking on the 'New Grid' button does not bring up the 'Grids and Graticules Wizard,' but instead brings up the 'Reference System Selector' window, then ArcMap is not configured to show wizards. To enable wizards, cancel the 'Reference System Selector' window, then click on 'Tools' > 'Options.' Select the 'Application' tab. Check the box next to 'Show Wizards when available.' Click 'OK.'
D. Click 'Next.'
E. Leave default 'Appearance' radio button as 'Grid and labels.'
F. Under 'Intervals,' type in 1000 meters for both 'X and Y axes.'
G. Click 'Next.'
H. Click 'Next.'
I. Click 'Finish.'

4. The grid needs to now be configured in a MGRS format:

A. In the 'Data Frame Properties' window, a checked box next to 'USNG Grid' will be visible. Highlight this line in blue by clicking it once.
B. Click the 'Style' button.
C. The 'Reference System Selector' window will appear. Click on 'MGRS' on the left side. Click 'OK.'

5. The grid is now ready to be manipulated to fit your purposes:

A. Back in the 'Data Frame Properties' window under the 'Grids' tab, double click on the 'USNG Grid' heading in the window. In the 'Reference System Properties' window, there will be four tabs visible: 'MGRS,' 'Axes,' 'Labels,' and 'Lines.'

B. Click the 'MGRS' tab.
1. Under 'Ladder Labels,' check the 'Show a ladder of interior labels' box, select 1 for 'Rows and Columns,' check the 'Only show outer

rows and columns' box, Arial Font, Size of 14, regular formatting (no Bold, Italics, or Underline), and Color black.
2. If the map that you are making is a small enough scale (covers 100 km^2 or more), it may be necessary to adjust the '100,000 Meter Grid Square Identification' to Arial font, size 18, regular formatting, and black.

C. Click the 'Axes' tab.
1. Under 'Major Division Ticks,' check the boxes next to 'Top,' 'Left,' 'Bottom,' and 'Right.' Click on the 'Symbol' box and make the color black and the width 1.00, and click 'OK.' Click the 'Display ticks Outside of the dataframe' radio button, and make the 'Tick size' 5 pts.
2. Under 'Subdivision Ticks,' check the 'Top,' 'Left,' 'Bottom,' and 'Right.' Make the 'subdivisions' 5. Click on the 'Symbol' box and make the color black with a width of 0.2, click 'OK.' Click the 'Display ticks Outside of the dataframe' radio button and make the 'Tick size' 2.0 pts. Leave the 'Border Properties' as default Simple Border.'

D. Click the 'Labels' tab.

1. Under subheading 'Label Axes,' check the boxes for 'Top,' 'Left,' 'Bottom,' and 'Right.'
2. Under 'Label Style,' choose 'Corner Label' from the dropdown menu. Change 'Font' to Arial and 'Size' to 10, regular formatting, Color black, and 'Label Offset' of 12 pts. Click the 'Additional Properties' button. Click the 'Corner Labels' tab and check all four boxes. Click the 'Principal Digits' tab. Under 'Secondary Font subheading, choose Arial from the dropdown menu, 'Size' 6, regular formatting and 'Color' black. Under 'Digits,' choose 2 for 'Number of Principal Digits' and 4 for 'Number of Base Digits' and click 'OK.'

E. Click the 'Lines' tab.
1. Click the 'Show as a Grid of Lines' radio button. Click the 'Symbol' box. Make the 'Color' black and the 'Width' 1.0. Click 'OK.'
2. Click 'Apply' and 'OK.'

6. To make a 10,000-meter grid on top of the 1,000-meter grid that you have already made, it is necessary to make an entirely different grid. Bring up the 'Data Frame Properties' window under the 'View' menu button.

A. Under the 'Grids' tab, click the 'New Grid' button. Click the 'Measured Grid' radio button. Click 'Next.'

B. In the 'Create a measured grid window,' leave the default 'Appearance Grids and labels' radio button clicked. In the 'Intervals subheading,' put in 10,000 meter for both the 'X and Y Axes.' Click 'Next.' Click 'Next.' Click 'Finish.'

7. In the 'Axes' tab, under 'Major Division Ticks,' uncheck 'Top,' 'Left,' 'Bottom,' and 'Right.' Under 'Subdivision Ticks,' uncheck 'Top,' 'Left,' 'Bottom,' and 'Right.'

8. Under the 'Labels' tab, uncheck all four 'Label Axes.' Under 'Label Orientation,' uncheck all four 'Vertical Labels.'

9. Under the 'Lines' tab, turn on the 'Show as a grid of lines' radio button. Click on the 'Symbol' box, and choose a color and width that fits your map purposes. Note that these grid lines will go through the number labels that already exist, so the line width and color will need to be adjusted accordingly. Click 'OK.'

10. Under the 'System' tab, turn on the 'Use the data frame's current coordinate system' radio button.

11. Under the 'Intervals' tab, under subheading 'Interval,' choose meters for 'Units' and 10,000 for 'X and Y Axes Intervals.' Under the 'Origin' subheading, turn on the 'Define your own origin' radio button and set both the 'X and Y Origins' to 0. Click 'Apply.' Click 'OK.'

Part III. General Style Guide. The following provides a general style guide for maps depicting the USNG. Please refer to the attached sample style guide map as a visual template to accompany these narrative instructions. The attached sample style guide illustration is designed to be printed at full scale on 21" x 27" paper. Alternatively, it can be printed on 8.5" x 11" paper in black and white (see the note below the scale on the style sheet for this application). In this description of map elements, selections from the attached map appear in a similar font style but are sized for illustration here and do not necessarily reflect their correct map specifications.

1. Title - Beginning with the information in the margins from top to bottom, the **TITLE** is in Arial font, bold, 24 point, all caps. The subtitle of (USNG Demonstration Map) is in Arial font, 12 point.

2. Map Version - In the lower left is the map version in Arial font, 6 point.

Title_USNG_STYLE_SHEET_DEMO_V1

3. Grid Information - To the upper right of map version, grid information is displayed in Arial font, 6 point, all caps, for example as:

1000-m GRID, US NATIONAL GRID
NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATION 18S
100,000-m SQUARE IDENTIFICATION: UJ

***In some instances, the map will cover more than one 100,000-m square zone. In these cases, modify the above as the example that follows*:

1000-m GRID, US NATIONAL GRID
 NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATIONS: 18S, 19S
100,000-m SQUARE IDENTIFICATIONS:
TJ, UJ, TH, UH

    4. <u>Grid Reference Box (GRB)</u> - To the right of the grid information is the grid reference box. Additional variations on this format are found in the FGDC's USNG standard at Figure 4 or Appendix A in this document. The style sheet provides examples of how to label the 100,000-m Square Identifications within the body of the map at Square intersections and along the neat line outside the body of the map. Since the information in the boxes varies, the font size may vary. Choose a font that best fits the box. If a sample in Appendix A fits your situation, left click the box to select it and right click on the GRB.   Select 'Grouping' and click on 'Ungroup.' Next, click on the example letters and numbers in the GRB and edit them to fit your map. Left click the box to select it and then right click, point to 'Grouping' and click on 'Group.' Once the GRB is to aesthetically pleasing, right click it and then left click the 'Copy' function. Go to your map and click on the margin. Right click the map margin and left click on 'Paste.' The GRB may appear elsewhere on the map, so it must be dragged to the proper place. Also, the GRB will most likely not be the proper size. When it is selected, click and drag the corners and sides of the box to resize it. If the GRB is sized to your liking, but the words inside are too small to read, delete the box, go back to the GRB in MS Word and increase the font size of the words.

It is possible to make a GRB with the rectangle button in the lower left of the MS Word window. Lines can then be drawn inside the box using the Line button to the left of the Rectangle button. Click inside the box to type in the pertinent grid id information. Click on each element of the box while holding down the Ctrl key, and right click. Go to Grouping and click on Group. Then copy and past the grid ID box to your map.

Arial font, 6 point →	**U.S. National Grid**
Arial font, 5 point →	100,000-m Square ID
Arial font, 7 point →	UJ
Arial font, 5 point →	Grid Zone Designation
Arial font, 6 point →	18S

5. <u>Scale Information</u> - In the middle of the bottom margin is the scale information in Arial font, 9 point.

Scale:
1:24,000 (printed size: 21 x 27 inches)
1:61,000 (printed size: 8.5 x 11 inches)

6. <u>Scale Bar</u> - Below the scale information is the scale bar. Units of measurement for the USNG are in meters and label position is below the bar. The extension scale (to the left of the 0) is divided into tenths to facilitate measuring a USNG grid coordinate. The primary scale (to the right of the 0) is divided into even units of 1,000-meters. At various larger or smaller scales these may vary. In this case there are four divisions after the zero, each of 1,000 meters and labeled as such. There is one division before the zero with ten 100-meter subdivisions and labels for the 1,000 and 500 meter marks. Labels are in Arial font, 7 point and are placed underneath the scale bar.

1,000	500	0	1,000	Meters	2,000	3,000	4,000

1	0.5	0		1	2

Miles
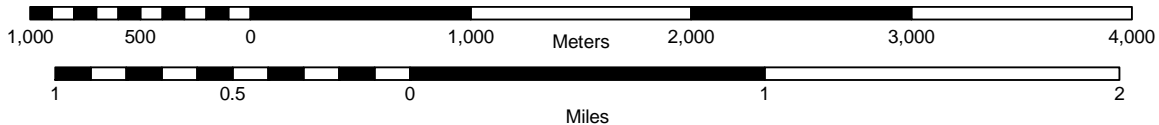
7. <u>Originator's Organization</u> - Below the scale bar is information regarding the map maker's organization and contact information. This is in Arial font, 6 point, caps.

PREPARED BY: FAIRFAX COUNTY DEPARTMENT OF INFORMATION TECHNOLOGY
GIS MAPPING AND SERVICES BRANCH, COMPILATION: FEBRUARY 4, 2004
CORRECTIONS OR ADDITIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE ABOVE ORGANIZATION
PHONE: (703) 555-2712

8. <u>Copyright</u> - Below and to the left of the contact information, is the road data copyright information in Arial font, 7 point, caps.

ROAD DATA COPYRIGHT (c) 2005 NAVTEQ

9. <u>Weblink</u> - To the right of the copyright information is a weblink for more information in Arial font, 5 point.

For additional information:
see www.fgdc.gov/usng

10. <u>Declination diagram</u> - Declination diagram and north arrow. To the upper right of the scale bar is a declination diagram showing magnetic north, grid north and true north. All of the text associated with this illustration is in Arial font, 6 point, caps.

To obtain accurate and timely magnetic declination information, it is necessary to enter the coordinates of the center of your map into a declination calculator. These can be found online at the NOAA website at: www.ngdc.noaa.gov/seg/geomag/jsp . Grid calculators show declination in degrees and minutes. To determine the mil values from the angle values do the following:

- If the angle is in degrees, minutes, and seconds: 1. Set DMS to represent the angle in degrees, minutes, and seconds respectively. 2. Divide the minutes by 60, and the seconds by 3600. 3. Add these two numbers to the number of degrees. 4. Multiply this sum by 17.77777. ie. $[D + (M/60) + (S/3600)] * 17.77777$.
- If the angle is in decimal degrees, multiply by 17.77777.

To calculate grid north, it will be necessary to contact CSAT at (314) 263-4171. NGA CSAT can generate both grid north and magnetic north data, but it may take a short time to get the results back to the customer, so plan accordingly. Information to provide NGA CSAT is the zone in which your map is located and the latitude and longitude of the center of the sheet. In the future, NGA CSAT plans to provide an online calculator to allow customers to not only calculate magnetic north but grid north as well.

If your map spans two zones – as was mentioned earlier in this guide, it will be necessary to make two declination diagrams because grid north changes between adjacent zones.

Since the three arrows in the declination diagram are highly variable, there is no template. It will be necessary to make your own. One way is to go to the Paint program and draw a declination diagram using the line, pencil and magnifying tools that fit your map in terms of orientation of the three arrows. It is possible to add text to the declination diagram while in Paint, but when it is pasted to the map, it often is illegible. After the declination diagram is drawn, use the Select tool to encircle the diagram and right click inside the selected area and click copy. Paste the declination diagram to your map and resize and position it. To add legible text to the declination diagram, click on the Insert menu button and then click on Text. Find the text box on your map, double click it, and type in the pertinent information.

2005
G-M ANGLE
9º 30' W (169 MILS)
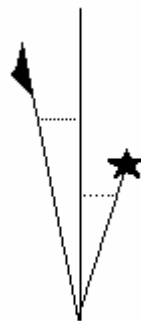
GRID CCONVERGENCE
1º 1' E (18 MILS)

GN

TO CONVERT A GRID
AZIMUTH TO A MAGNETIC
AZIIMUTH ADD G-M ANGLE.

TO CONVERT A MAGNETIC
AZIMUTH TO A GRID AZIMUTH
SUBTRACT G-M ANGLE.

12. Geographic Coordinates - At each of the four corners of the map depict latitude and longitude coordinates. Use Arial font, 7 point, with all geographic abbreviations in caps:

<div align="center">76⁰ 41' 3" W.</div>

The latitude and longitude coordinates of the cursor are visible at the lower right of the screen. If units other than latitude and longitude are visible, go to View, open the Data Frame Properties window, click on the General tab. Under the Units subheading, click on the Display dropdown menu and choose Degrees Minutes Seconds.

13. Labeling USNG grid lines.   It is critical to follow the below labeling formats. The Grid Zone Designation and 100,000-m Square Identifications must be shown on a USNG gridded map. Properly trained map users have shown great sensitivity to the labeling format. Deviations from this format will cause map users to make mistakes in the use of grid coordinates. For example, a grid line with the UTM value of $^{43}\mathbf{56}^{000m}\mathbf{N}$ or with the USNG alpha-numeric format as **56** that is *incorrectly* labeled as **4356000mN** or **4356** will cause users to make mistakes. Subtle deviations from the USNG format can operationally have safety of life consequences.

 In the map window, 1 km grid lines and ticks are 1.0 point (0.1mm) wide. Ten kilometer grid lines and ticks are 1.5 points (0.25mm) wide. Two-hundred meter ticks are 0.2 point wide. The grid labels are Arial 6 and 10.

1,000-m grid line labels along the edge of the neat line depict only the principal digits:

<div align="center">**57**</div>

10,000-m grid line labels along the edge of the neat line depict the principal digits and preceding digits as superscript:

<div align="center">$^{43}\mathbf{50}$</div>

Grid lines should be depicted on maps not closer than 20-mm and not further apart than 100-mm (see FGDC-STD-011-2001, Table 2. Grid Spacing Recommendations.).   At map-scales larger than 1:10,000, grid lines should be depicted at 100, 10, or 1-meter intervals in accordance with the grid spacing convention. An example of an exception to this is the attached 1:1,000-scale map. It depicts a full grid with 50-m spacing and 10-m tics because of the small area covered:

<div align="center">$\mathbf{57}^{2}$ or $\mathbf{57}^{23}$</div>

A full UTM value must be provided at least once on a map (lower left corner), and preferably on each corner:

<div align="center">$^{43}\mathbf{56}^{000m}\mathbf{N}$</div>

The ladder labels that are within the map window are Arial font, 14 point, for example:

<div align="center">57 or   57^{2}</div>
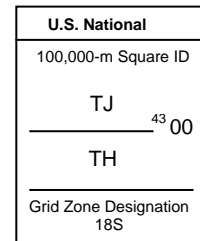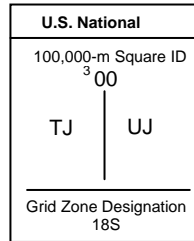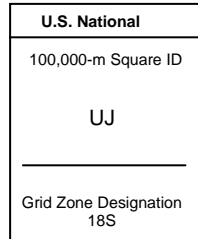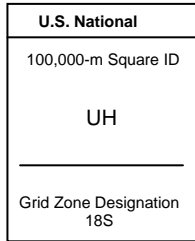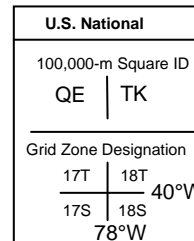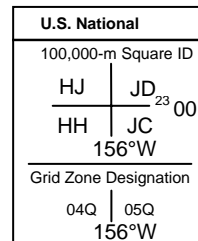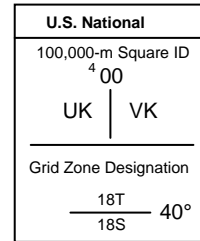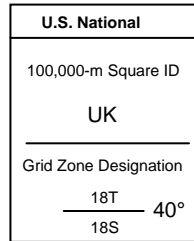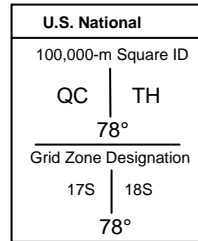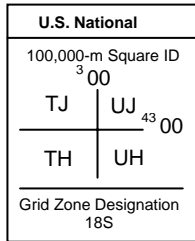
The outer border is 1.5 points (0.15mm) wide.

The ArcGIS software labels the grid lines automatically. If you are making a map of a grid zone junction and have to import the grid files, labels exist for the grid lines, but they will have to be edited. Once the grid files are brought in, select the necessary grid lines. To turn on the grid labels, right click on the file name and click on 'Label Features.' Then right click on the date file again and click 'Convert Labels to Annotation.' The labels may not be in their final form and location, so put the map in data view to move and edit the labels. The only labels that show up after hitting 'Label Features' are ladder labels. Margin labels will need to be made manually. This is done by having the map in layout view and Inserting text lines with the appropriate grid labels. Since the grid labels must be typed in, pay special attention to the format rules mentioned above.

Appendix A.

Example Grid Reference Box Options

U.S. National

100,000-m Square ID

UH

Grid Zone Designation
18S

U.S. National

100,000-m Square ID

UJ

Grid Zone Designation
18S

U.S. National

100,000-m Square ID
^{3}00

TJ | UJ

Grid Zone Designation
18S

U.S. National

100,000-m Square ID

TJ
$_{43}$00

TH

Grid Zone Designation
18S

A

U.S. National

100,000-m Square ID
^{3}00

TJ | UJ $_{43}$00

TH | UH

Grid Zone Designation
18S

U.S. National

100,000-m Square ID

QC | TH
78°

Grid Zone Designation

17S | 18S
78°

U.S. National

100,000-m Square ID

UK

Grid Zone Designation

18T
——— 40°
18S

U.S. National

100,000-m Square ID
^{4}00

UK | VK

Grid Zone Designation

18T
——— 40°
18S

U.S. National

100,000-m Square ID

HJ | JD $_{23}$00

HH | JC
156°W

Grid Zone Designation

04Q | 05Q
156°W

U.S. National

100,000-m Square ID

QE | TK

Grid Zone Designation

17T | 18T
——— 40°W
17S | 18S
78°W

11

TITLE

(USNG Demonstration Map)

76° 41' 3" W

76° 33' 17" W

39° 20' 43" N

³55 ⁰⁰⁰ᵐ·E   56   57   58   59   ³60   61   62   63   64   65   ³66 ⁰⁰⁰ᵐ·E

39° 20' 49" N

56

55

54

53

52

51

50

55 56 57 58 59 60 61 62 63 64 65

49

48

47

46

45

44

43

39° 13' 18" N

³55 ⁰⁰⁰ᵐ·E   56   57   58   59   ³60   61   62   63   64   65   ³66 ⁰⁰⁰ᵐ·E

39° 13' 24" N

76° 40' 53" W

76° 33' 7" W

GN

2005
G-M ANGLE
9° 30' W (169 MILS)

GRID CONVERGENCE
1° 1' E (18 MILS)

Scale:
1:24,000 (printed size: 21 x 27 inches)
1:61,000 (printed size: 8.5 x 11 inches)

1,000   500   0   1,000   2,000   3,000   4,000

Meters
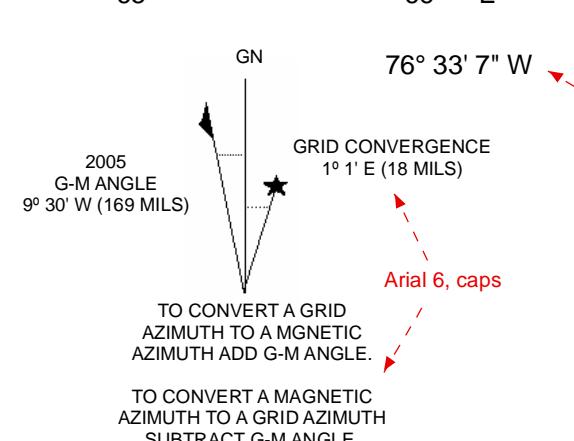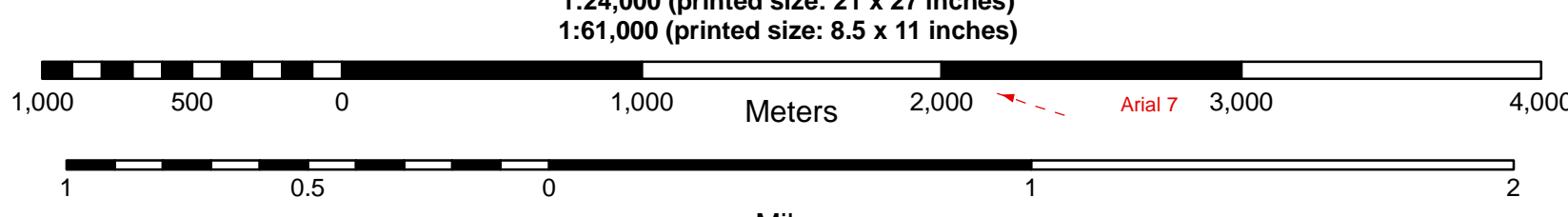
1   0.5   0   1   2

Miles

1000-m GRID, US NATIONAL GRID
NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATION 18S
100,000-m SQUARE IDENTIFICATION: UJ

U.S. National Grid

100,000-m Square ID

UJ

Grid Zone Designation

18S

TO CONVERT A GRID
AZIMUTH TO A MAGNETIC
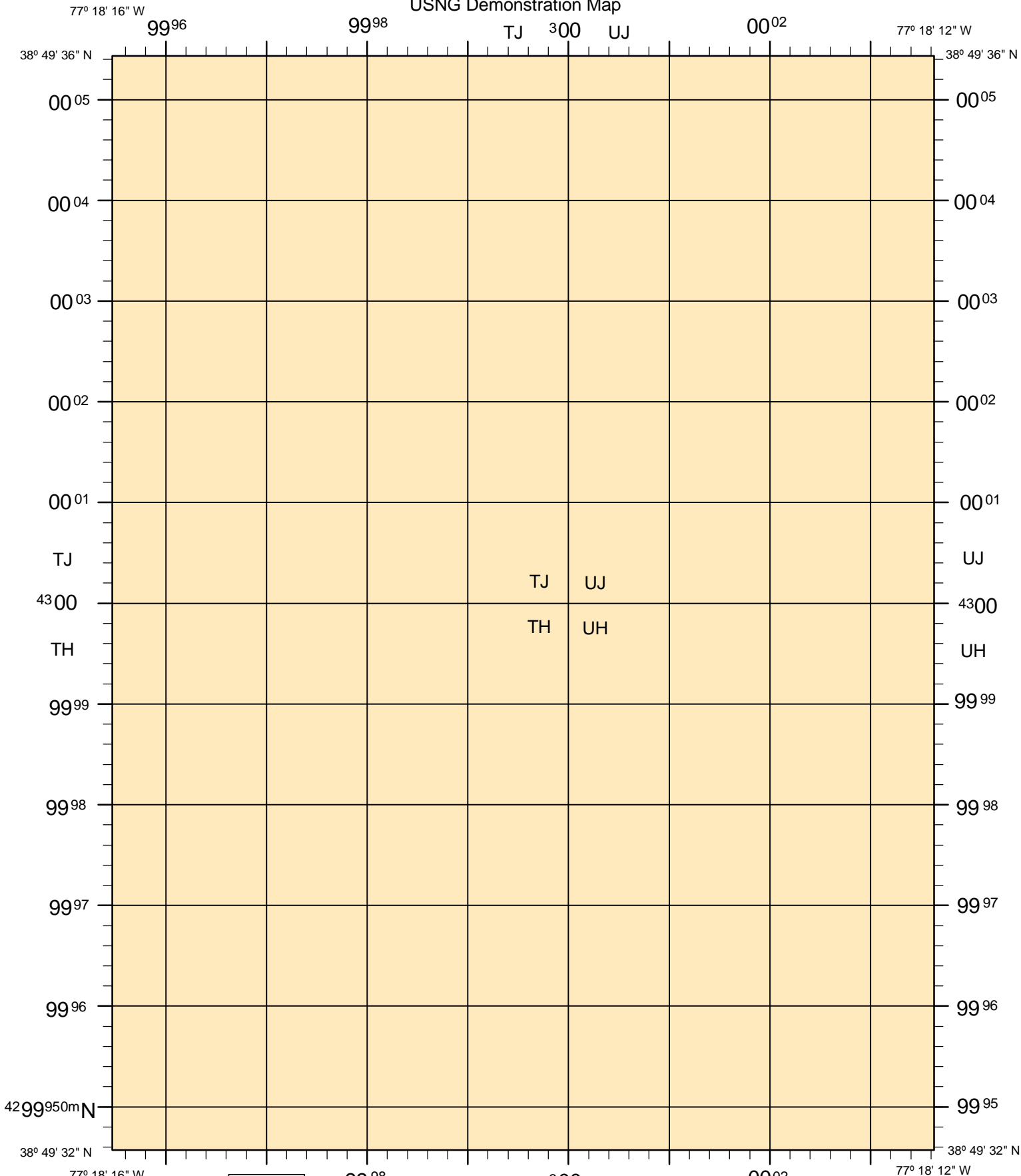AZIMUTH ADD G-M ANGLE.

TO CONVERT A MAGNETIC
AZIMUTH TO A GRID AZIMUTH
SUBTRACT G-M ANGLE.

ROAD DATA COPYRIGHT (c) 2005 Navteq
SOURCE: NGA (CSAT), ST. LOUIS, MO

For additional information:
see www.fgdc.gov/usng/index.html
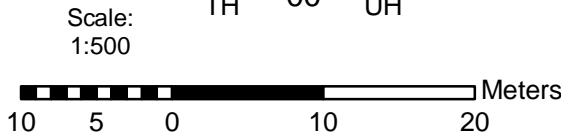
NATIONAL CAPITOL REGION
USNG Demonstration Map

77º 18' 16" W

99⁹⁶ 99⁹⁸ TJ ³00 UJ 00⁰² 77º 18' 12" W

38º 49' 36" N 00⁰⁵ 00⁰⁵ 38º 49' 36" N

00⁰⁴ 00⁰⁴

00⁰³ 00⁰³

00⁰² 00⁰²

00⁰¹ 00⁰¹

TJ UJ

TJ UJ

⁴³00 TH UH ⁴³00

TH UH

99⁹⁹ 99⁹⁹

99⁹⁸ 99⁹⁸

99⁹⁷ 99⁹⁷

99⁹⁶ 99⁹⁶

⁴²99⁹⁵⁰ᵐ N 99⁹⁵

38º 49' 32" N 38º 49' 32" N

77º 18' 16" W 99⁹⁸ TH ³00 UH 00⁰² 77º 18' 12" W

²99⁹⁶⁰ᵐ E

U.S. National Grid

100,000-m Square ID
³00

TJ | UJ
⁴³00
TH | UH

Grid Zone Designation
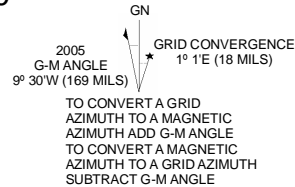
18S

Scale:
1:500

10 5 0 10 20 **Meters**

10-m GRID, 2-m tics, US NATIONAL GRID
NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATION: 18S
100,000-m SQUARE IDENTIFICATIONS:
TJ, UJ, TH, UH

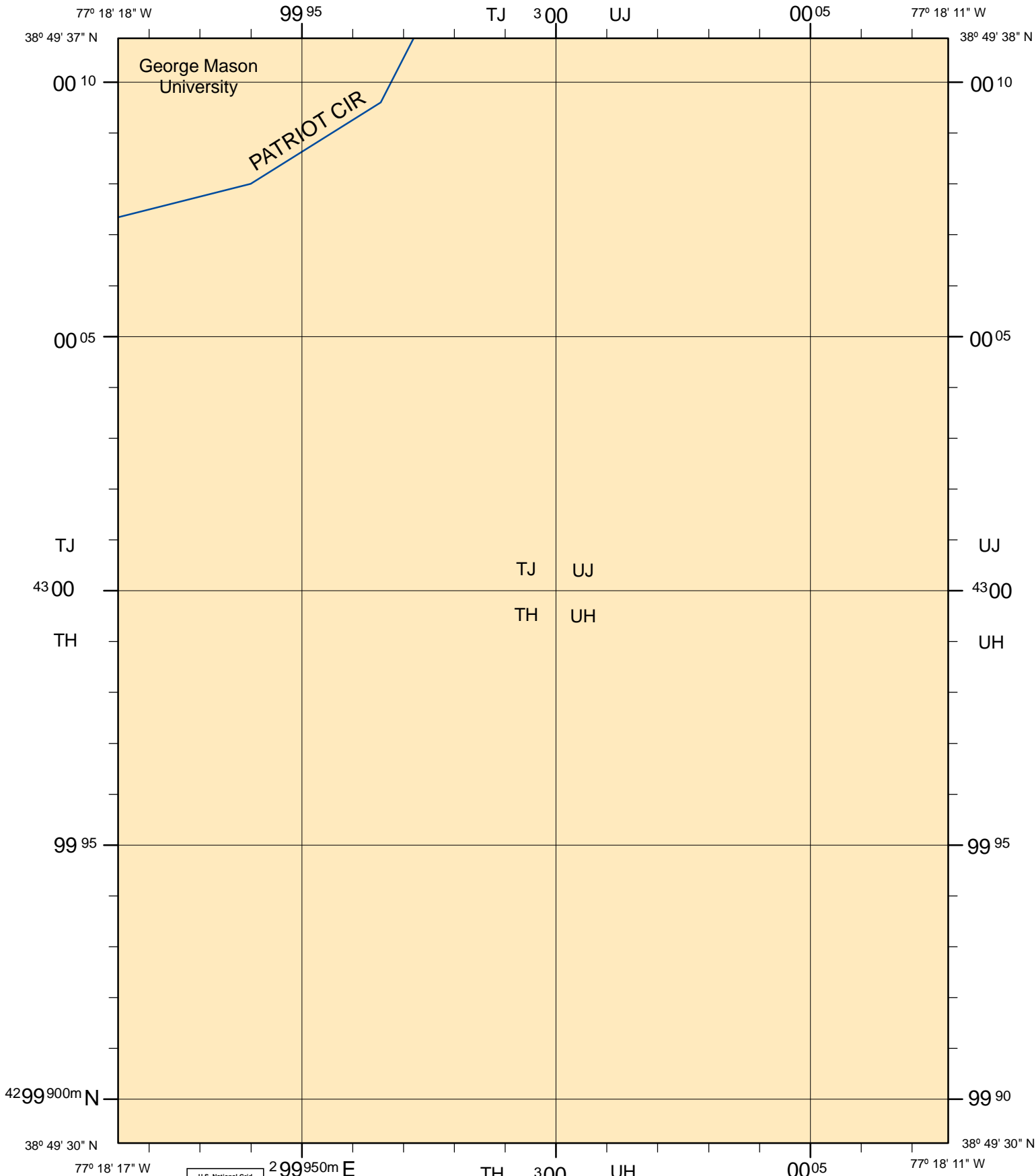ROAD DATA COPYRIGHT (c) 2005 Navteq
SOURCE NGA (CSAT), ST. LOUIS, MO

For additional information:
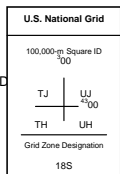see www.fgdc.gov\usng\index.html

GN

2005
G-M ANGLE
9º 30'W (169 MILS)

GRID CONVERGENCE
1º 1'E (18 MILS)

TO CONVERT A GRID
AZIMUTH TO A MAGNETIC
AZIMUTH ADD G-M ANGLE
TO CONVERT A MAGNETIC
AZIMUTH TO A GRID AZIMUTH
SUBTRACT G-M ANGLE

NATIONAL CAPITOL REGION
USNG Demonstration Map

77º 18' 18" W

99 **95** TJ ³**30** UJ **00** **05** 77º 18' 11" W

38º 49' 37" N

38º 49' 38" N

George Mason
University

00 **10**

00 **10**

PATRIOT CIR

00 **05**

00 **05**

TJ

UJ

TJ UJ

⁴³**00**

⁴³**00**

TH UH

TH

UH

99 **95**

99 **95**

⁴²**99** **900m** N

99 **90**

38º 49' 30" N

38º 49' 30" N

77º 18' 17" W

²**99** **950m** E

TH ³**00** UH

00 **05** 77º 18' 11" W

Scale:
1:1,000

U.S. National Grid

100,000-m Square ID
³00

TJ | UJ
⁴²00
TH | UH

Grid Zone Designation

18S

50-m GRID, 10-m tics, US NATIONAL GRID
NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATION: 18S
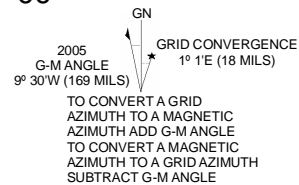100,000-m SQUARE IDENTIFICATIONS:
TJ, UJ, TH, UH

10 5 0   10   20   30   40   50   **Meters**

GN

2005
G-M ANGLE
9º 30'W (169 MILS)

★ GRID CONVERGENCE
1º 1'E (18 MILS)

TO CONVERT A GRID
AZIMUTH TO A MAGNETIC
AZIMUTH ADD G-M ANGLE
TO CONVERT A MAGNETIC
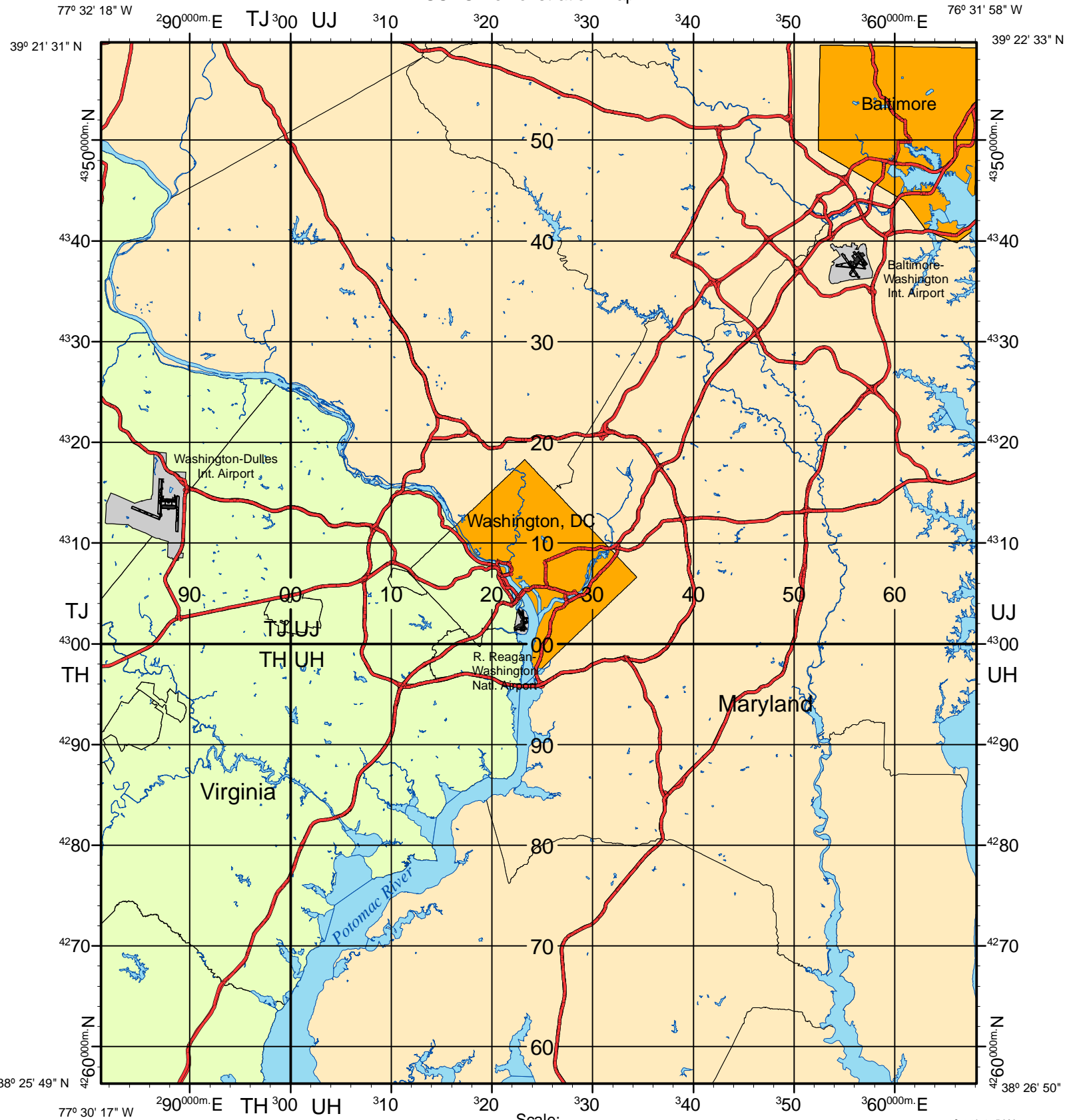AZIMUTH TO A GRID AZIMUTH
SUBTRACT G-M ANGLE

ROAD DATA COPYRIGHT (c) 2005 Navteq
SOURCE NGA (CSAT), ST. LOUIS, MO

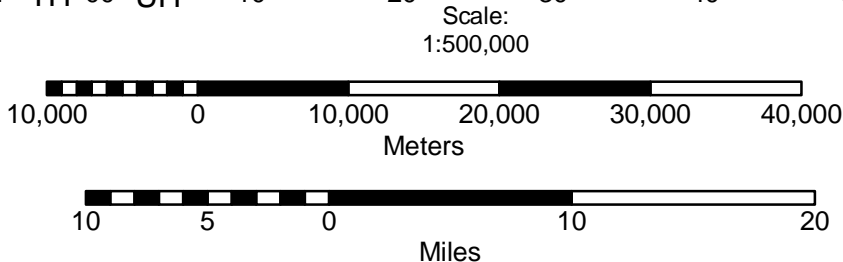For additional information:
see www.fgdc.gov\usng\index.html

# WASHINGTON, DC and VICINITY
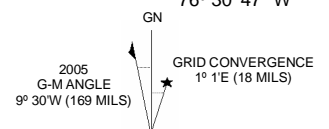
USNG Demonstration Map

77º 32' 18" W   76º 31' 58" W
39º 21' 31" N   39º 22' 33" N

2 90^{000m.}E   TJ ³00   UJ   ³10   ³20   ³30   ³40   ³50   3 60^{000m.}E

Baltimore

Baltimore-Washington Int. Airport

Washington-Dulles Int. Airport

Washington, DC

TJ UJ
TH UH

TJ
TH   UH

R. Reagan-Washington Nat. Airport

Maryland

Virginia

Potomac River

77º 30' 17" W   76º 30' 47" W
38º 25' 49" N   38º 26' 50" N

2 90^{000m.}E   TH ³00   UH   ³10   ³20   ³30   ³40   ³50   3 60^{000m.}E

Scale:
1:500,000

10,000   0   10,000   20,000   30,000   40,000
Meters

10   5   0   10   20
Miles

10,000-m GRID, US NATIONAL GRID
NORTH AMERICAN DATUM 1983
GRID ZONE DESIGNATION: 18S
100,000-m SQUARE IDENTIFICATIONS:
TJ, UJ, TH, UH

U.S. National Grid

100,000-m Square ID
³00

TJ   UJ
     ⁴00

TH   UH

Grid Zone Designation

18S

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SOURCE NGA (CSAT), ST. LOUIS, MO

For additional information:
see www.fgdc.gov\usng\index.html

GN

GRID CONVERGENCE
1º 1'E (18 MILS)
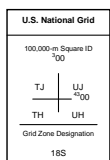
2005
G-M ANGLE
9º 30'W (169 MILS)

TO CONVERT A GRID
AZIMUTH TO A MAGNETIC
AZIMUTH ADD G-M ANGLE

TO CONVERT A MAGNETIC
AZIMUTH TO A GRID AZIMUTH
SUBTRACT G-M ANGLE

NEW ORLEANS, LA

(USNG Demonstration Map)

90º 00' W.

Lake Pontchartrain

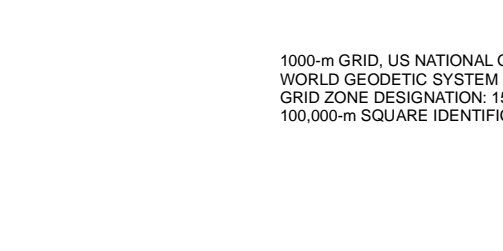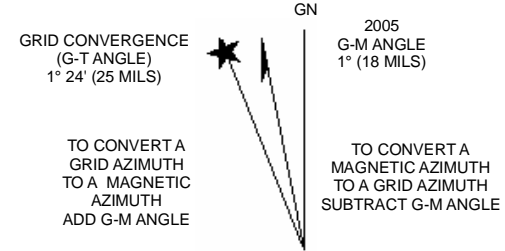Mississippi River

90º 00' W.

Scale:
1:50,000 (printed size 21 x 27 in)

1,000 500 0 1,000 2,000 3,000 4,000 5,000
Meters

1 0.5 0 1 2 3
Miles