ProMark 2 Navigation mode

Q. How do I set up the unit to navigate with NAD83 State Plane Coordinates ?
A. The following procedures will enable user's to navigate with NAD83 State Plane coordinates:

Be sure to select the correct map datum and coordinate system (use the User-Defined feature to define State Plane grid zones).

It's advisable to have an adequate reference for the State Plane Coordinate System of 1983. In this example the following reference document was used:

NOAA Manual NOS NGS 5
State Plane Coordinate System of 1983
James E. Stem
National Geodetic Survey
Silver Springs, MD

This document is available on-line from the National Geodetic Survey (NGS):

http://www.ngs.noaa.gov

Once on the NGS Web Site - browse to the following location:

Products & Services

Select, **Publications** <click>

Then select: **Publications Available On Line** <click>

Browse the list of available publications, select & download:

State Plane Coordinate System of 1983 – NOAA Manual NOS NGS 5 <click>

Save to Disk , on your local PC.

Available in pdf format. (January 1989)

See: Appendix A –
Defining Constants for the 1983 State Plane Coordinate System

In the following example, we desire to navigate to the Waypoint - Control Station "MAX1"

NAD83 – Virginia North State Plane Coordinates for "MAX1"

Northing: **2143057.769 m**
Easting: **3598646.174 m**
Ortho Hgt: **122.933 m**

Per the: **State Plane Coordinate System of 1983 – NOAA Manual NOS NGS 5**

Appendix A –
Defining Constants for the 1983 State Plane Coordinate System

For Virginia North – NGS State Zone Code # 4501 (Lambert Conformal Projection)

Defining Constants (Metric):

Standard Parallels:

Bs	**Southern Standard Parallel**	**38° 02' N**
Bn	**Northern Standard Parallel**	**39° 12' N**
Bb	**Latitude of Grid Origin**	**37° 40' N**
Lo	**Longitude of Grid Origin**	**78° 30' W**
Nb	**False Northing**	**2000000.0000 m**
Eo	**False Easting**	**3500000.0000 m**

Note that the above values are expressed in DEGREES-MINUTES.

The default display system for the ProMark 2's Primary position screen is: DEG.MIN.MMM, the default display system for the ProMark 2's Secondary position screen is UTM.

The ProMark 2 unit requires that you enter the User Grid Constants in DECIMAL.DEGREE format, in the Primary Position screen. These constants need to be converted manually before data entry; the ProMark 2 unit cannot convert these constants for you.

To convert the VA-North constants into **DECIMAL. DEGREES** format:

Standard Parallels:

Bs - Southern Standard Parallel: 38° 02' N
Take the 02' ÷ 60 = .03333
Resulting **Bs - Southern Standard Parallel: 38.03333 N**
(For manual entry into the ProMark 2 – Parallel 1).

Bn - Northern Standard Parallel: 39° 12' N
Take the 12' ÷ 60 = .20000
Resulting **Bn - South Standard Parallel: 39.20000 N**
(For manual entry into the ProMark 2 – Parallel 2).

Bb - Latitude of Grid Origin: 37° 40' N
Take the 40' ÷ 60 = .66667
Resulting **Bb - Latitude of Grid Origin: 37.66667 N**
(For manual entry into the ProMark 2)

Lo - Longitude of Origin: 78° 30' W
Take the 30' ÷ 60 = .50000
Resulting **Lo - Longitude of Grid Origin: 78.50000 W**
(For manual entry into the ProMark 2).

Summary of the NAD83 Virginia – North Zone constants expressed in
DECIMAL.DEGREE format:

Standard Parallels:

Bs	**Southern Standard Parallel**	**38.03333 N**
Bn	**Northern Standard Parallel**	**39.20000 N**
Bb	**Latitude of Grid Origin**	**37.66667 N**
Lo	**Longitude of Grid Origin**	**78.50000 W**
Nb	**False Northing**	**2000000.0000 m**
Eo	**False Easting**	**3500000.0000 m**

Scale Factor: 1.00000000

Now that you have converted the published NAD83 Virginia – North Zone constants into Decimal.Degree format, you are now ready to manually enter these parameters into the ProMark 2 unit.

On the ProMark 2 GPS Receiver:

Turn on the Unit, wait for the Ashtech ProMark 2 logo screen to display…

<u>MODE</u>
Survey
Navigate – select **Navigate** from the **Mode** screen.

WARNING!
All Data is provided for reference only.
You assume full responsibility and risk when using this device.

PRESS ENTER TO AGREE

TIPS
Press right or left arrow from position screen for secondary coord system
OK

Press [**MENU**] button…

<u>Menu</u>

Browse down the menu to **Setup** <enter>

<u>Setup Menu</u>

Browse down the menu to **Coord System** <enter>

<u>Coord System</u>

Primary – select **Primary** from the **Coord System** screen.
Secondary

<u>Note:</u> In order to Navigate using NAD83 State Plane Coordinates – it is essential to select "Primary" in the Coord System screen. You will then enter your WAYPOINTS in NAD83 State Plane Coordinates in the USER Data Base.

Coord System (cont'd)

Primary <enter>

Coord System
Browse down the menu to **User Grid** <enter>

User Grid
Projection
Browse down the menu to **Lambert con** <enter>

User Grid
Lambert con
2 Standard Par – select **2 Standard Par** <enter>
1 Standard Par

User Grid   Enter NAD83 Virginia – North State Plane Zone Constants
                       Expressed in Decimal.Degree format.

Latitude of origin
[37.66667N] <enter>

Longitude of origin
[078.50000W] <enter>

Latitude of standard
Parallel 1   **[38.03333N]** <enter>

Parallel 2   **[39.20000N]** <enter>

[NEXT] - Icon <enter>

User Grid (cont'd)

Scale Factor
[1.00000000] <enter>

Unit to meters conv
[1.00000000] <enter>

False east at origin
[03500000.0] <enter>

False north at origin
[02000000.0] <enter>

< Back (Icon)   **Done** (Icon)

Select – **Done** (Icon)…

You have now completed the Creation of a **User-Defined Grid Coordinate System;** specifically for NAD83 Virginia – North Zone (meters).

You can now enter Waypoints in the NAD83 Virginia – North Zone State Plane coordinates, entered in Easting, Northing and Elevation format.

Remember, in order to Navigate in the User Grid system – NAD83 Virginia – North, your Waypoints must be expressed in the Primary System.

Next, select the correct **Map Datum…**

On the ProMark 2 GPS Receiver:

Turn on the Unit, wait for the Ashtech ProMark 2 logo screen to display…

MODE
Survey
Navigate – select **Navigate** from the **Mode** screen.

WARNING!
All Data is provided for reference only.
You assume full responsibility and risk when using this device.

PRESS ENTER TO AGREE

TIPS
Press right or left arrow from position screen for secondary coord system
OK

Press **[MENU]** button…

Menu

Browse down the Menu to **Map Datum** <enter>

Coord System
Primary – select **Primary** from the **Coord System** <enter>
Secondary

Map Datum

Browse down the Menu to the **NAD83** selection <enter>

Returns user to Navigation screens…

Creating New Waypoints Manually

Allows the creation of a new waypoint with coordinates other than your present position.
The coordinates for the new position need to be entered manually.

From Any Screen: **[MARK/GOTO]** button , hold down for 2-3 seconds…

Mark

ICON   Name
⊕   **WPT001**   highlight the Name Field - <enter>

                    Allows entry of ASCII / Numeric Name, using keypad
                    Enter **"MAX1"** Highlight **OK** when finished **–**
                     then <enter>…

<u>Mark</u>
Location

Highlight the Location Field - <enter>
Allows entry of the Way-Points Position, in this example NAD83, Virginia – North, Meters.

<u>NOTE:</u> The ProMark 2 requires entry of the coordinates in **Easting, Northing** format.

Easting   03598646.174 (m)
Northing   02143057.769 (m)

(NAD83 – Virginia, North Coordinates for "MAX1").

<enter> to save entered position.

<u>Mark</u>
Elevation

Highlight the Elevation Field - <enter>
Allows entry of the Waypoints elevation, in this example Orthometric – Meters.

123 m

<enter> to save entered elevation.

<u>Mark</u>
Message

Create Message ? <enter> to save entered message.

Allows entry of Message associated to entered Icon, Location, and Elevation, Using keypad. Highlight **OK** when finished.

Highlight – **[Save]** <enter> to save the Waypoint's properties.

Returns Use to Navigation Screen…

Waypoints / Database

Accessing Waypoints in the Database – All stored waypoints, whether user-input or preloaded, can be found in the Waypoint Database. You will need to access waypoints in the database whenever you are editing waypoints, activating a GOTO point, route or multi-leg route.

From Any Screen…

Press the **[MARK/GOTO]** button…

Goto
User <enter>

User
Browse the list of available Waypoints – select the Waypoint you desire to Navigate to.

In this example: **MAX1** <enter>

Note: The ProMark 2 unit must have a current GPS Position in order for any of the Navigation functions to work.

You should be Outside, where the ProMark 2 unit has "line of site" to the GPS Satellites.

For Additional Technical Reference, Please see the following Magellan Manuals:

MAP 330 – User Manual   Magellan Part Number: 630778 C
ProMark 2 – User's Guide   Magellan Part Number: 630860-01, Revision A