GRID REFERENCE SYSTEM COORDINATES

MILITARY GRID REFERENCE SYSTEM (MGRS) AND U.S. NATIONAL GRID (USNG)

GRID REFERENCE SYSTEMS

The Military Grid Reference System (MGRS) is the geo-coordinate standard used by NATO militaries for locating points on the earth. The MGRS is used for the entire earth.

For all practical purposes, US National Grid (USNG) is the same as MGRS except USNG coordinates are written with some spaces for easier legibility.

- **Military Grid Reference System (MGRS)** = 20SLA31767505
- **U.S. National Grid (USNG)** = 20S LA 3176 7505

In some of the past large scale hurricanes, responders that came from all over used different types of coordinate systems and formats since that is what they trained with at home.

In the after-action reports, that disorganized approach was widely recognized as causing locational chaos. There had to be a better way.

A task force was appointed and in due course it recommended that the U.S. National Grid (USNG) be adopted as a coordinate system that was easy to learn, easy to use and easy to represent on maps.

WHY ARE USNG COORDINATES IMPORTANT?

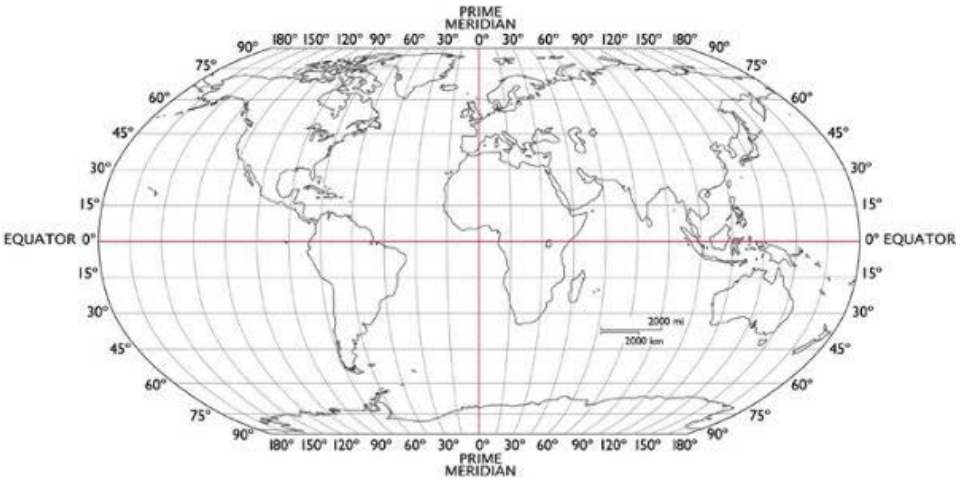
FEMA has adopted the U.S. National Grid (USNG) coordinate system as its “standard geographic reference system for land-based operations”.

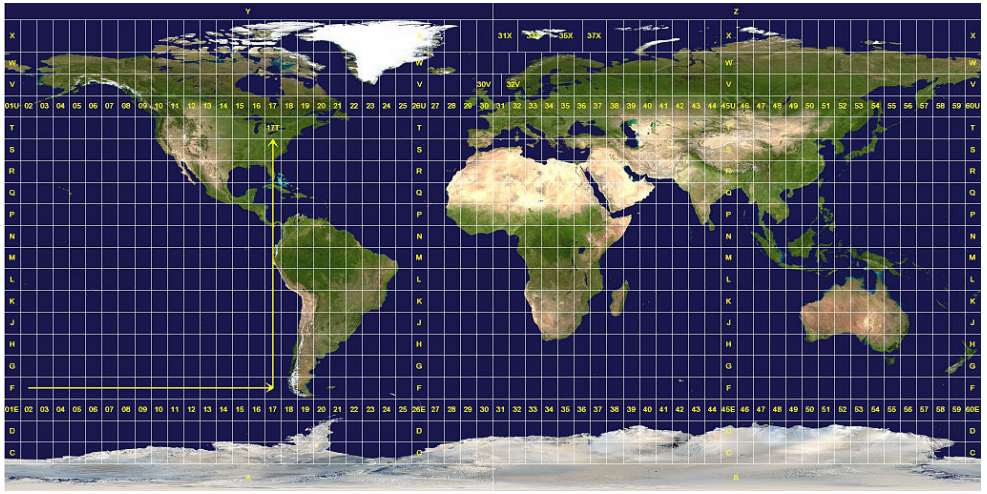
This was done in large part so that emergency responders can have a common ‘language of location’.

Using latitude longitude to express locations does not provide a common ‘language of location’ since there are a number of different ways to write and speak them.

Here are just a few examples:

Decimal degrees	40.68921,-74.04466
	N 40.68921 W 74.04466 40.68921
	N 74.04466 W
Degrees and decimal minutes	40° 41.353' -74° 2.680'
	N 40° 41.353' W 74° 2.680'
	N 40D 41.353M W 74D 2.680M
Degrees, minutes, seconds	40° 41' 21" -74° 2' 41"





THREE PARTS TO THE USNG ADDRESS

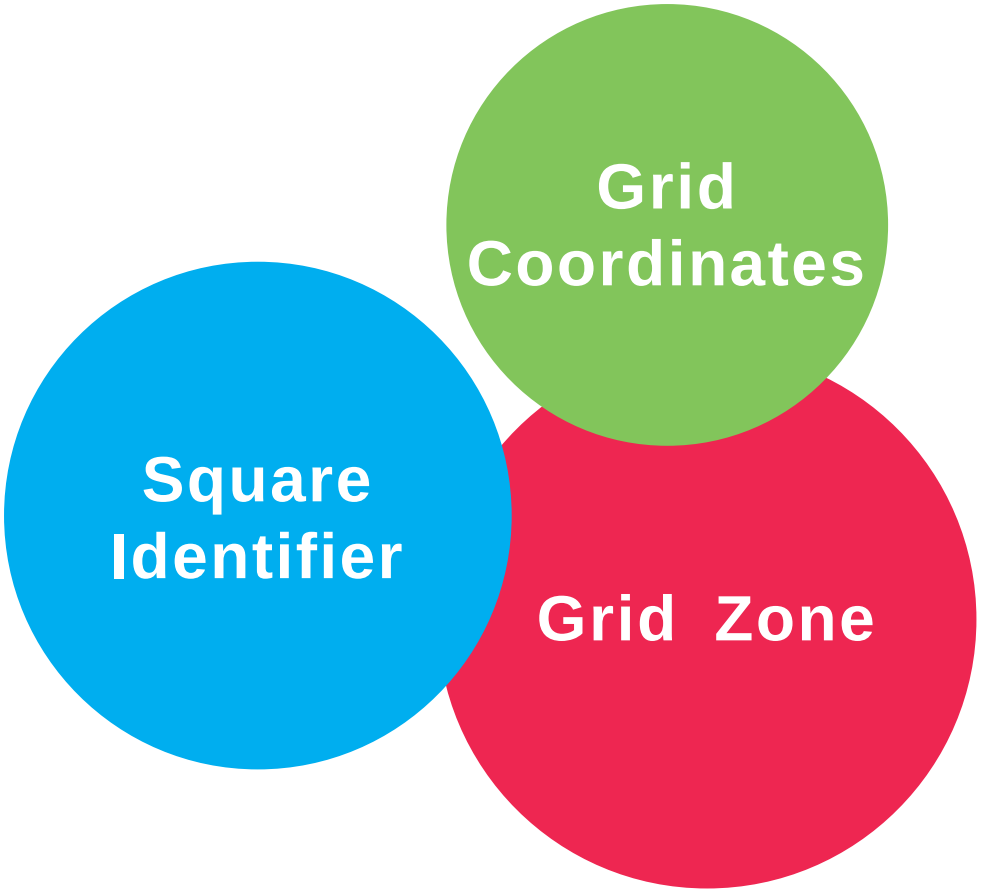
- **GRID ZONE DESIGNATION**
  For a world-wide unique address

- **100,000-METER (100 km) SQUARE IDENTIFIER**
  For regional areas

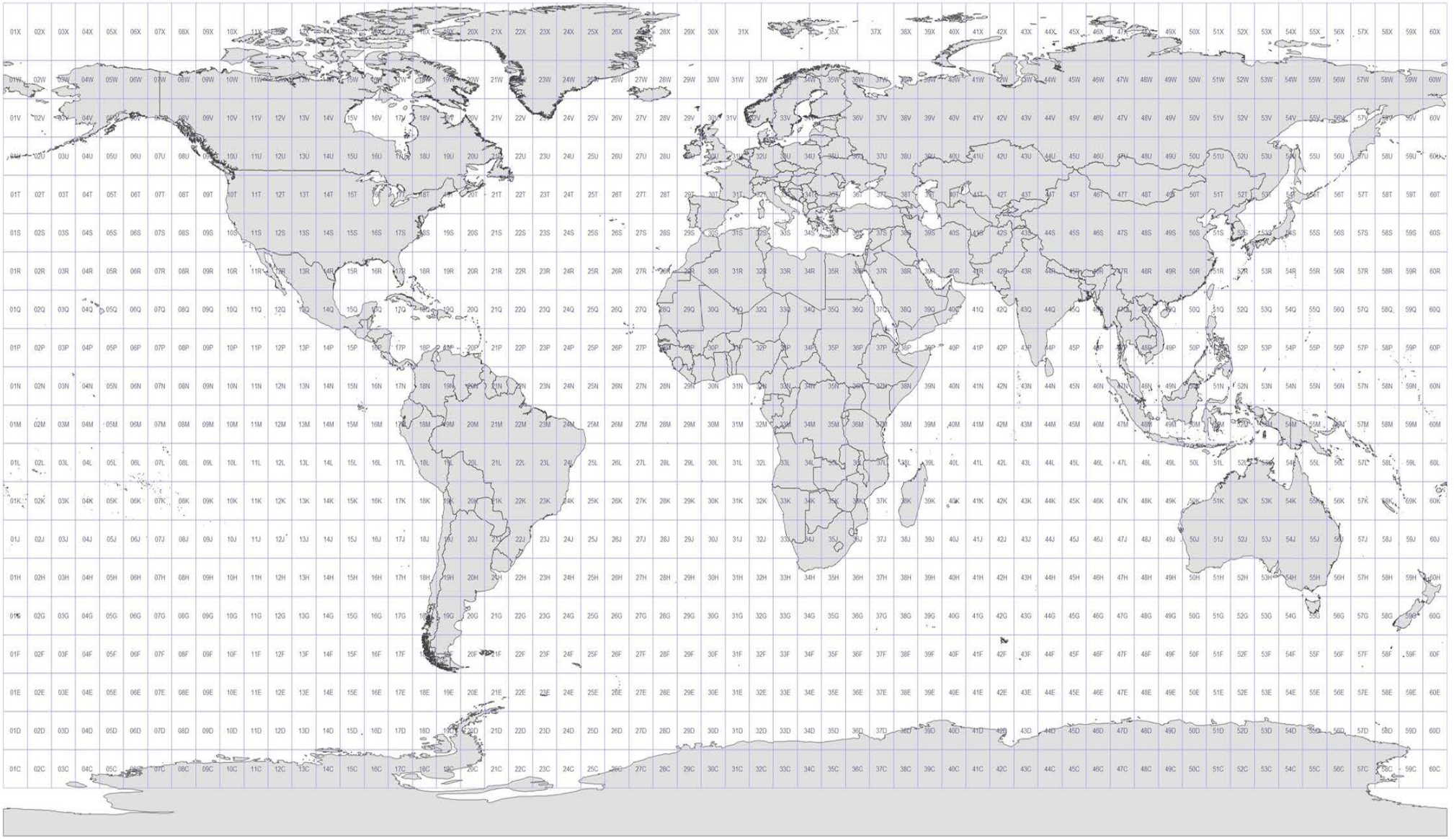
- **GRID COORDINATES**
  Represented by 2-10 digits depending on how precise you need to be. **The Award only focused on the 4-8 digit grid references for route cards.**
  - **2-digits = precision of 10 km**
  - **4-digits = precision of 1 km (Bronze)**
  - **6-digits = precision of 100 meter (Silver)**
  - **8-digits = precision of 10 meter (Gold)**
  - **10-digits = precision of 1 meter**

- Example for Bermuda (Albouy's Point):

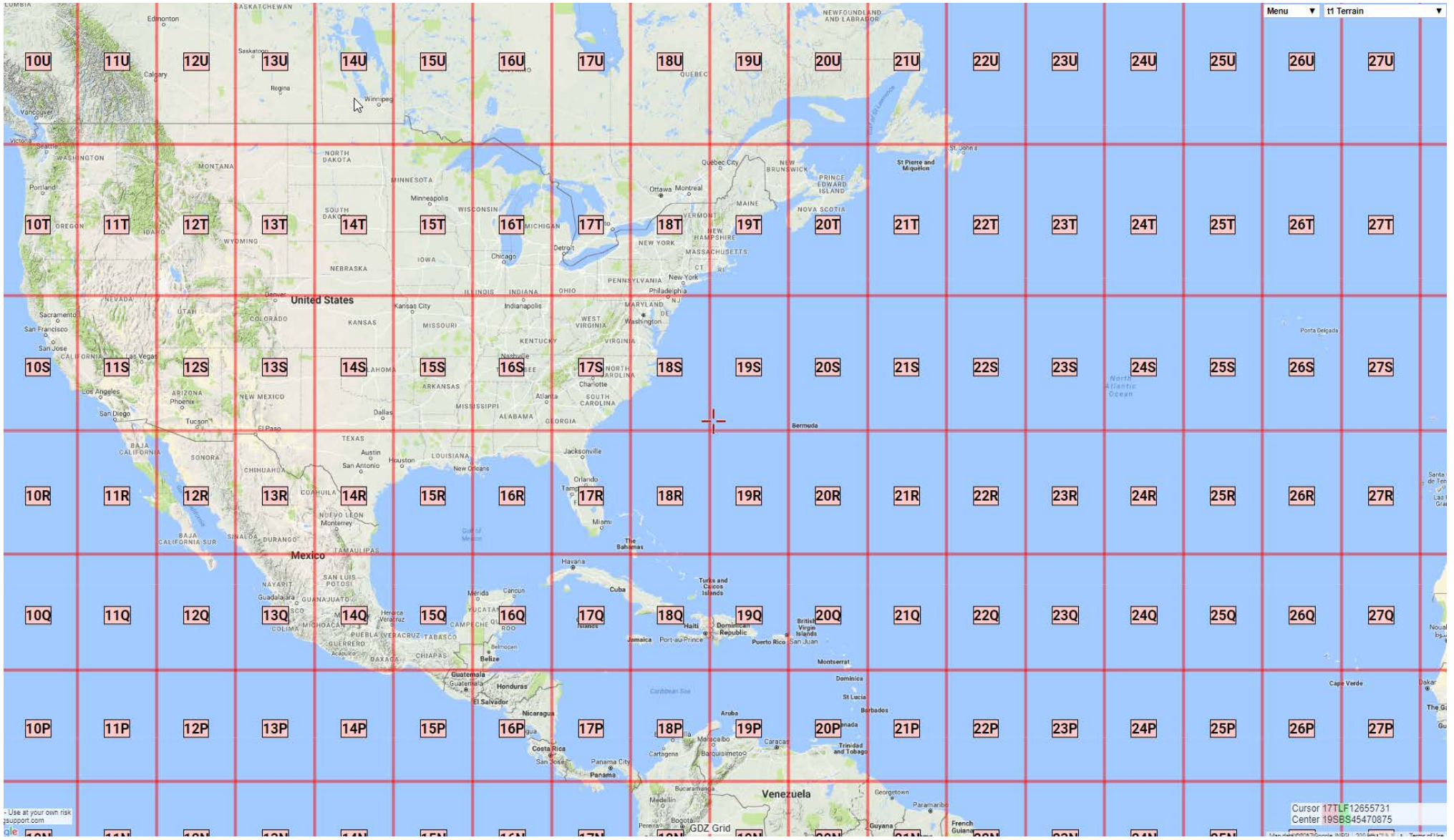
  20S LA 3196 7423



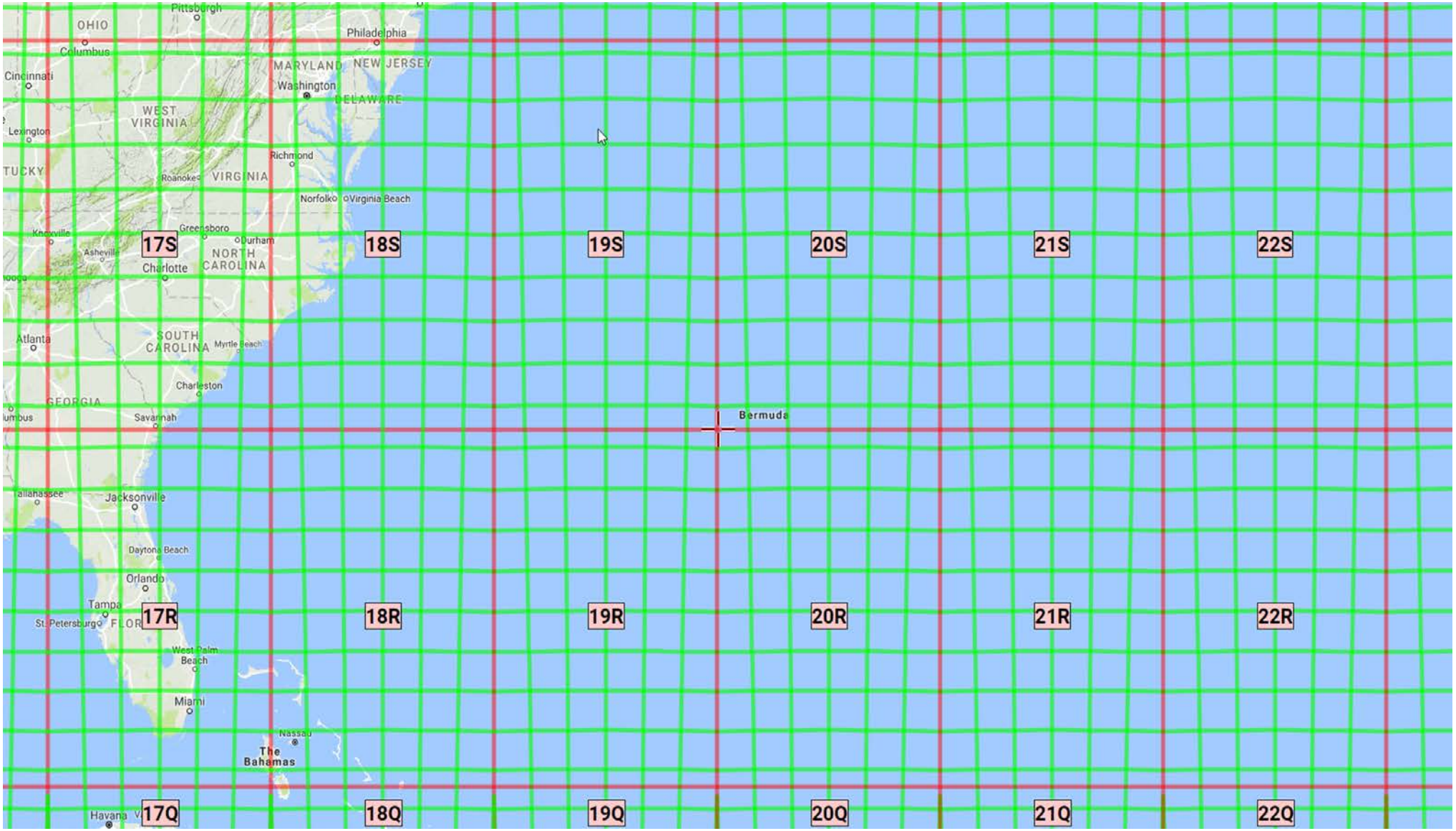
GRID ZONES – WORLD VIEW



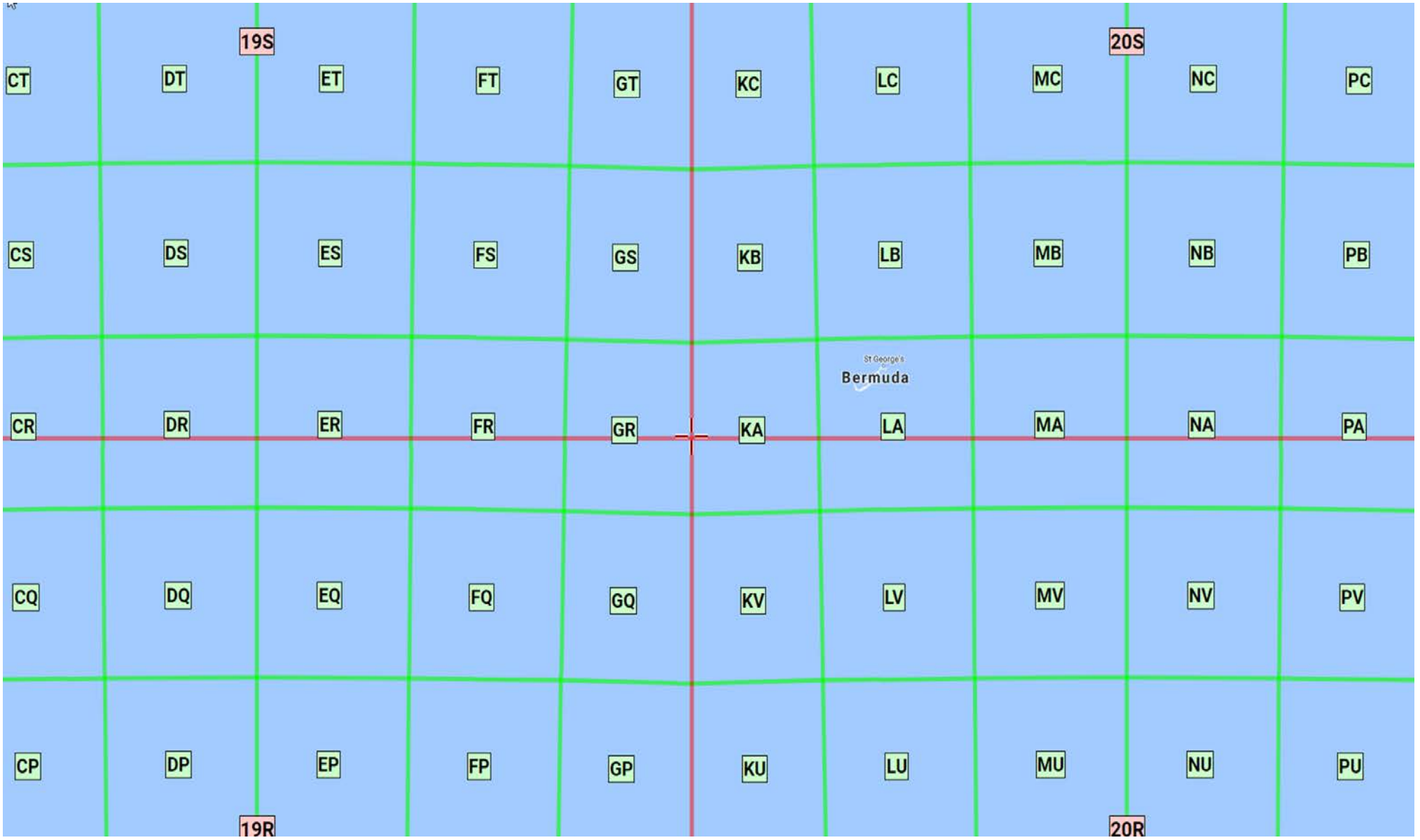
GRID ZONE – 1000KM SQUARE



GRID ZONE & SQUARE IDENTIFICATION

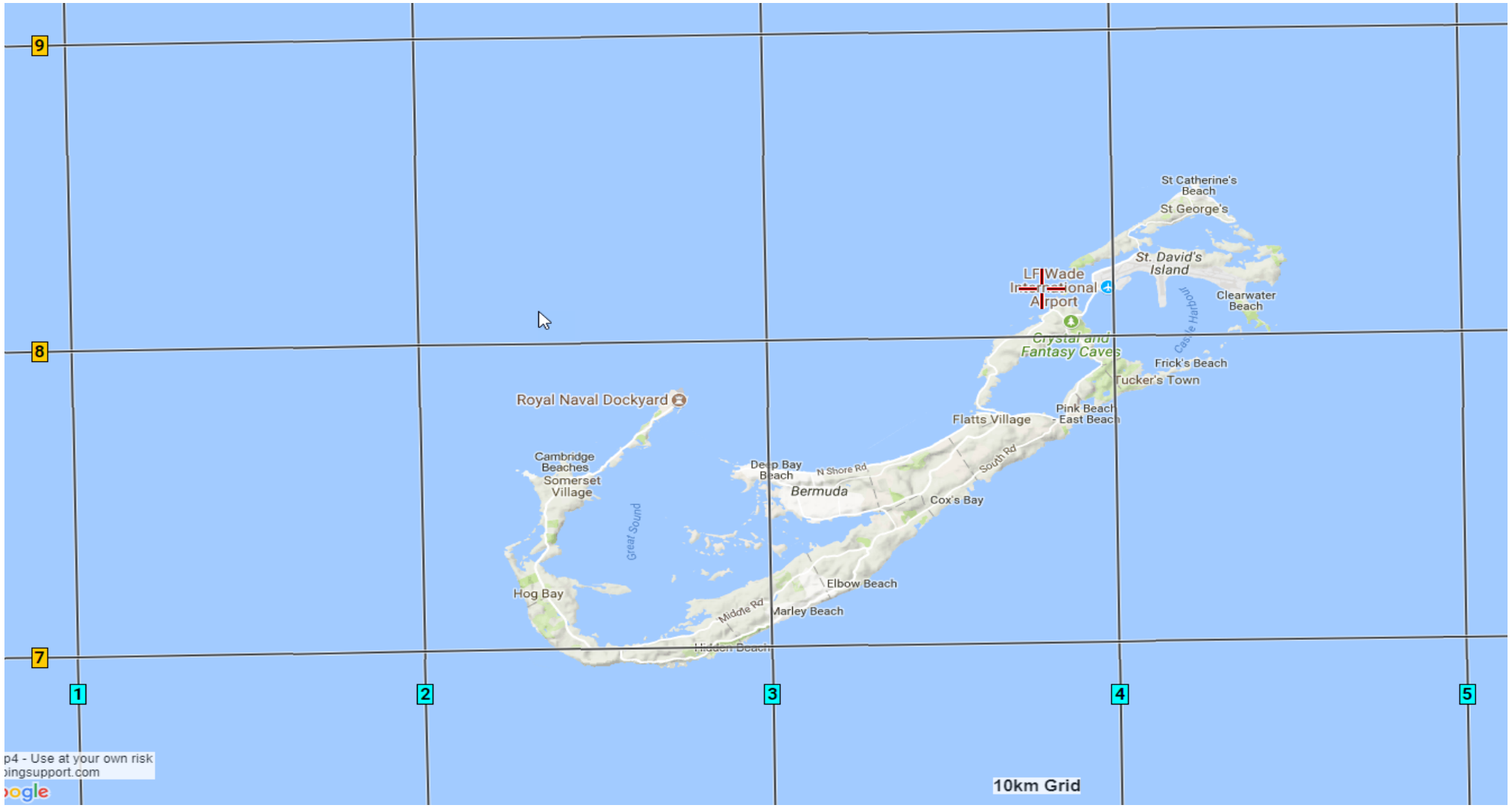


SQUARE IDENTIFICATION – 100KM SQUARE



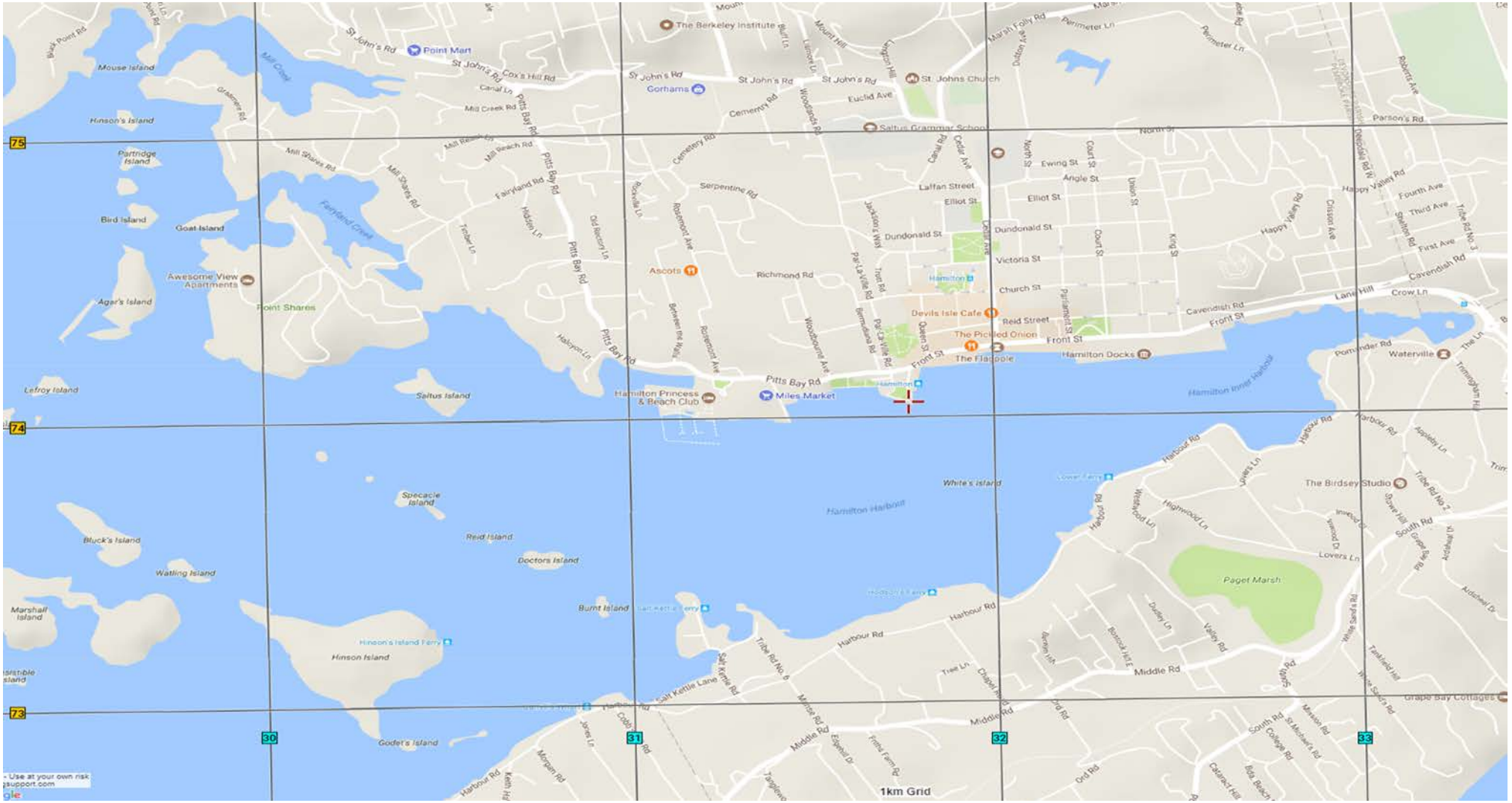
LOCAL COORDINATES – 10KM (2 DIGIT)

Albouy's Point – 2 digit grid reference 3 7



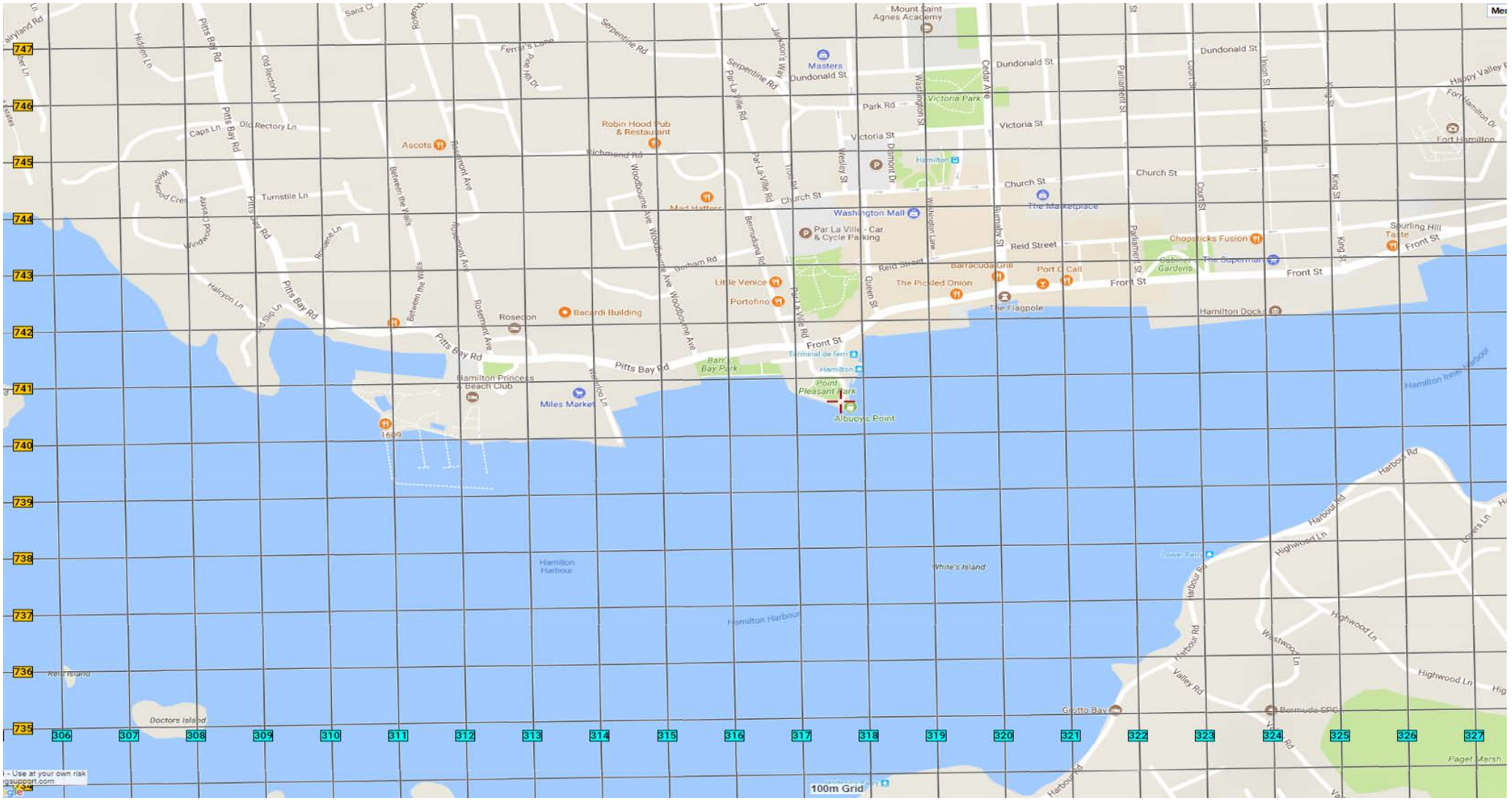
LOCAL COORDINATES – 1KM (4 DIGIT)

Albouy's Point – Bronze 4 digit grid reference 31 74



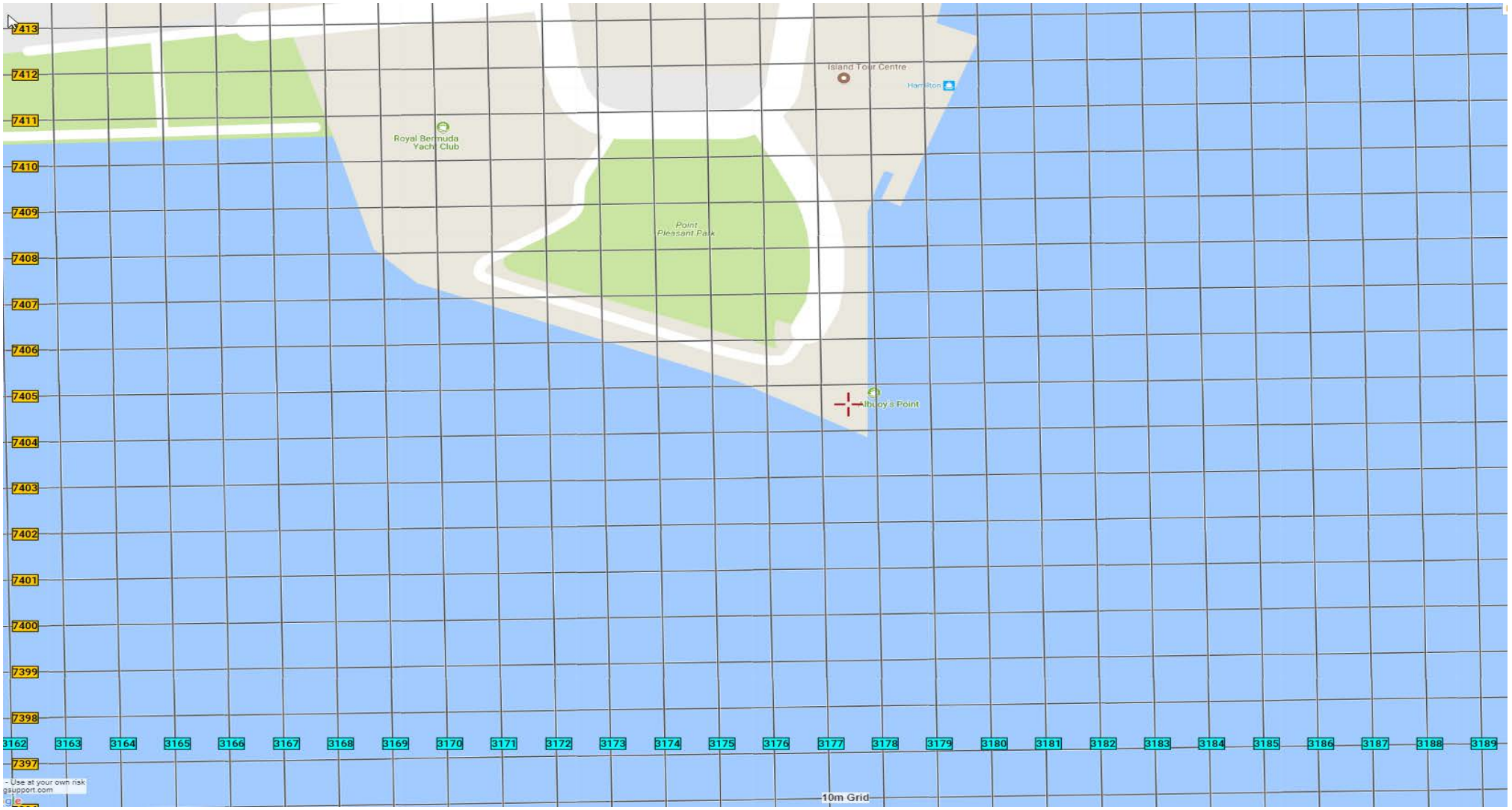
LOCAL COORDINATES – 100M (6 DIGIT)

Albouy's Point – Silver 6 digit grid reference 317 740



LOCAL COORDINATES – 10M (8 DIGIT)

Albouy's Point – Gold 8 digit grid reference 3177 7404



MORE ADVANCED INFORMATION

Breakdown for Albouys Point in Bermuda

20S .....GZD only, precision level 6° × 8° (in most cases)
20S LA .....GZD and 100 km Grid Square ID, precision level 100 km
20S LA 3 7 .....precision level 10 km
20S LA 31 74 .....precision level 1 km
20S LA 317 740 .....precision level 100 m
20S LA 3177 7404 .....precision level 10 m
20S LA 31775 74045 .....precision level 1 m