



DGPS SITE OPERATIONAL ASSESSMENT

NDGPS Site: *Reedy Point, DE*
Inspector(s): LT Hermie Mendoza and LT Christian Hernaez
Date: 07OCT2011

PURPOSE:

- Validate advertised DGPS coverage of the Angleton DGPS site.
- Validate required RTCM message delivery.
- Test differential correction accuracy versus a predetermined survey monument.

EQUIPMENT: DNAV 212 Receiver
Raven INVICTA Receiver
Raven MBA-2 Receive Antenna

PARAMETERS:

Frequency	309 KHz
Forward Output Power	800 W
Transmission Rate	200 baud
Field Strength/Range	100 μ V/m (40 dB μ V/m) at 113 KM

SITE PHOTO:



RESULTS

Signal Strength:

Figure 1 shows the DNAV readings from the Reedy Point DGPS site and compares it with the predicted and advertised DGPS coverage of the site. The advertised range for Reedy Point is 113 KM. Green points represent areas of satisfactory signal strength and signal-to-noise ratio (SNR). Those areas with unsatisfactory signal strength and SNR are designated with a red point.

DNAV readings were taken at 113 KM from the Reedy Point DGPS site along a southeast bearing. The signal strength and SNR exceeded the advertised coverage until approximately 14 KM away from the range ring.

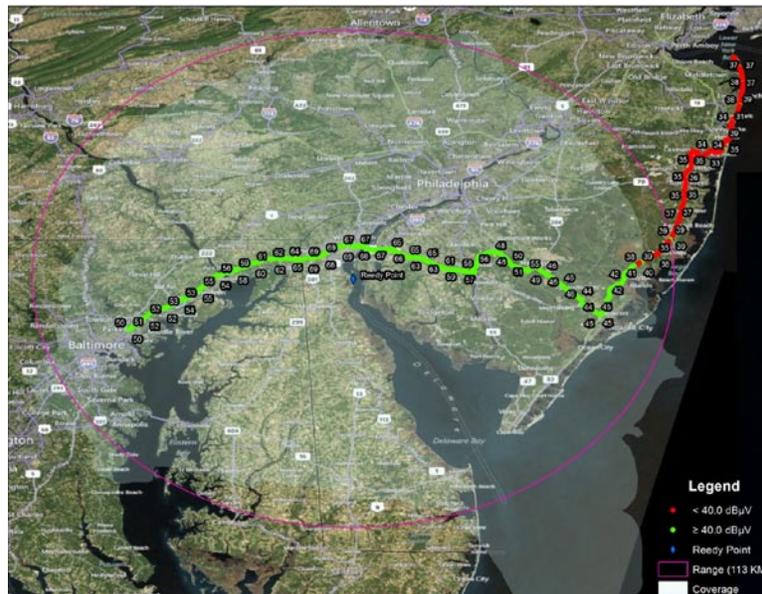


Figure 1: Reedy Point DNAV readings and predicted coverage for southbound trip

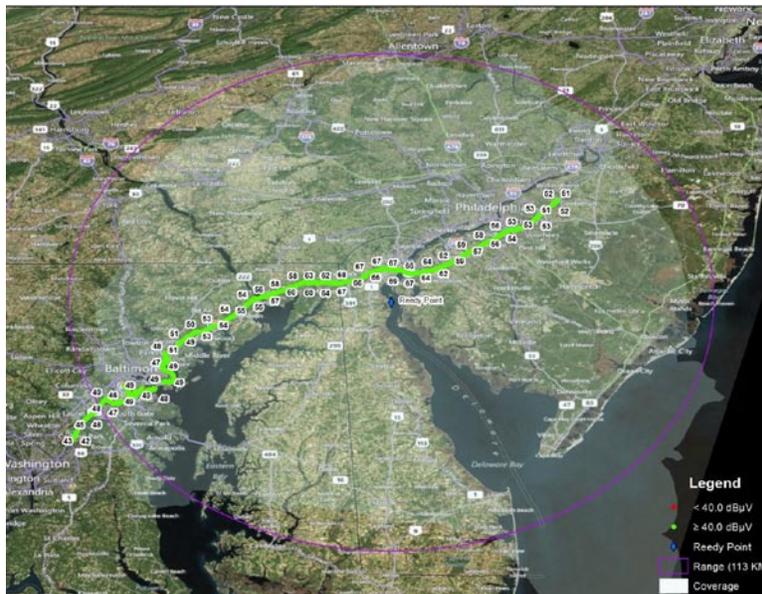


Figure 2: Reedy Point DNAV readings and predicted coverage for northbound trip

Far-Field Signal Strength Reading 1:

Receiver:	DNAV 212 INVICTA
Antenna:	MBA-2
Position	39° 43' 24.449"N 074° 16' 14.029" W
Signal Strength	40 dB μ V/m
SNR	13

RTCM Message Verification:

RTCM message were collected from both sides of the DGPS site utilizing a Raven INVICTA receiver. A Type 6 message was observed while recording Side A and B.

Side A

Type 3	X
Type 7	X
Type 9	X
Type 16	X
Misc	Observed Type 6

Side B

Type 3	X
Type 7	X
Type 9	X
Type 16	X
Misc	Observed Type 6

Accuracy Validation:

Data was collected for 10 minutes on each side. Positional data was then averaged and compared to the actual monument position to check the horizontal accuracy of the correction.

NGS Monument ID:	DJ5346
Monument LAT:	39° 36' 54.91939" N
Monument LON:	075°13' 50.83062" W

Side A

Averaged LAT:	39° 36' 54.94729" N
Averaged LON:	075° 13' 50.80937" W
Distance from DGPS Site:	28.54 KM
Distance from Monument:	1.02 m
Bearing from Monument:	327.57°

Side B

Averaged LAT:	39° 36' 54.94500" N
Averaged LON:	075° 13' 50.87164" W
Distance from DGPS Site:	28.53 KM
Distance from Monument:	1.32 m
Bearing from Monument:	53.19°

OPERATIONAL RECOMMENDATION: Analysis of coverage is mostly consistent with the current OORDER and predicted coverage plot. However, recommend decreasing the advertised coverage to 100 KM as shown in Figure 3.



Figure 3: Recommended reduction of the range ring for Reedy Point for southbound trip