



DGPS SITE OPERATIONAL ASSESSMENT

NDGPS Site: *Hudson Falls, NY*

Inspector(s): LT Michael Brashier and LT Hermie Mendoza

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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
MBA-2 Receive Antenna

PARAMETERS:

Frequency	324 KHz
Forward Output Power	600 W
Transmission Rate	200 bps
Field Strength/Range	100 μ V/m (40.0 dB μ V/m) at 250 KM

SITE PHOTO:



RESULTS

Signal Strength:

Figure 1 shows the DNAV readings from the Hudson Falls DGPS site and compares it with the predicted and advertised DGPS coverage of the site. The advertised range for Hudson Falls is 250 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 along the eastern border of the predicted coverage, which is approximately 175 KM from the Hudson Falls DGPS site, along a southeast bearing. The signal strength and SNR quickly deteriorated approximately 134 KM from the advertised range ring.

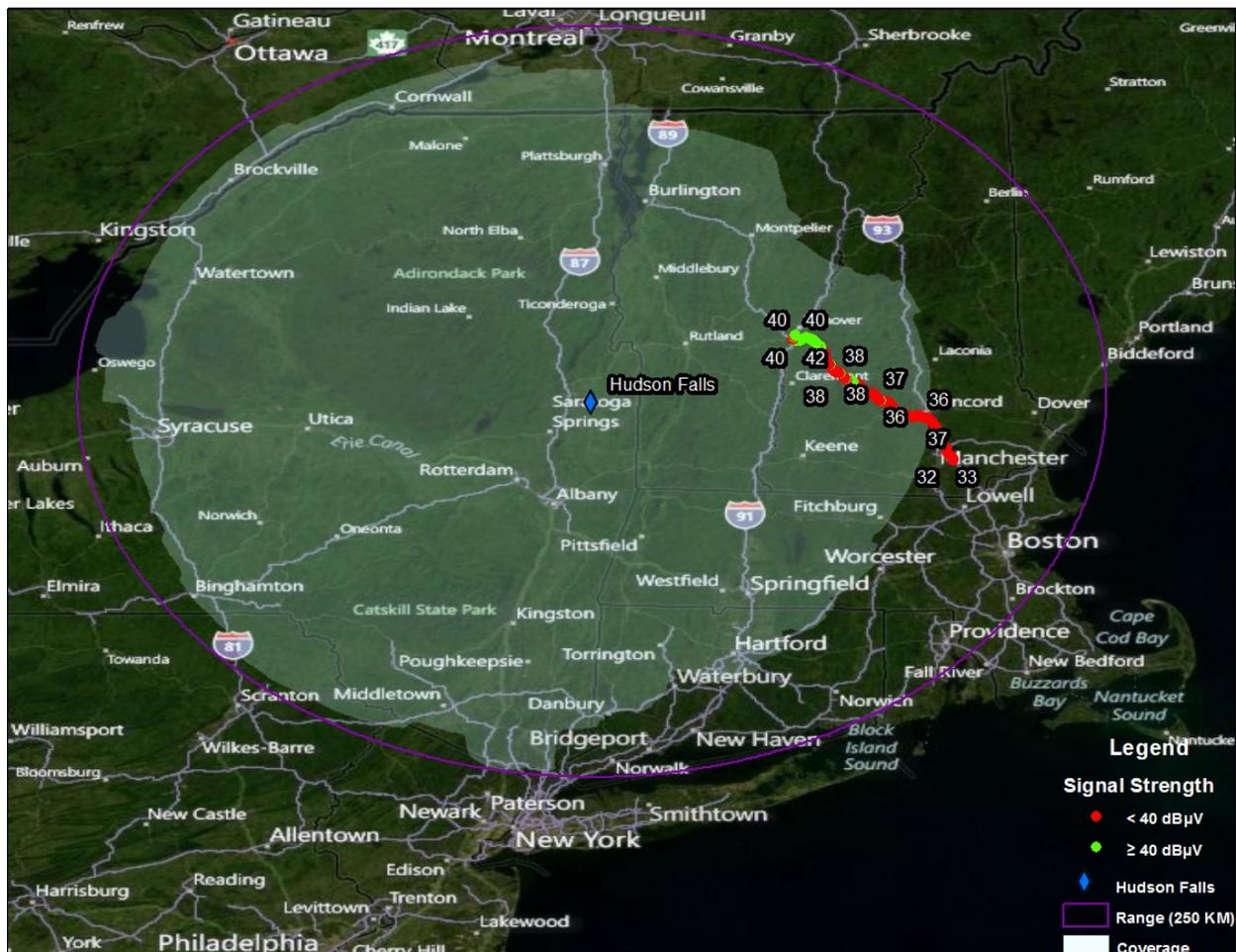


Figure 1: Hudson Falls DNAV readings and predicted coverage

Far-Field Signal Strength Reading 1:

Receiver:	DNAV 212 INVICTA
Antenna:	MBA-2
Position	43° 10' 00.1452" N 071° 31' 31.1412" W
Signal Strength	36
SNR	0

RTCM Message Verification:

RTCM messages were collected from both sides of the DGPS site utilizing a Raven INVICTA receiver.

All required RTCM messages were received with Side B. When Side A was transmitting, only Type 9 and Type 16 messages were observed. However, Type 3 and Type 7 messages were scheduled as confirmed by the DGPS watchstander. Both the Integrity Monitor and Reference Station on Side A were reset, but still neither Type 3 nor Type 7 was captured.

Side A

Type 3	Not Observed
Type 7	Not observed
Type 9	X
Type 16	X
Misc	Type 6

Side B

Type 3	X
Type 7	X
Type 9	X
Type 16	X
Misc	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:	OD1097
Monument LAT:	43° 39' 51.48286" N
Monument LON:	072° 18' 45.97612" W

Side A

Averaged LAT:	43° 39' 51.41292" N
Averaged LON:	072° 18' 45.94071" W
Distance from DGPS Site:	86.86 km (53.96 miles)
Distance from Monument:	2.36 m
Bearing from Monument:	23.80

Side B

Averaged LAT:	43° 39' 51.46980" N
Averaged LON:	072° 18' 45.95697" W
Distance from DGPS Site:	77.21 km (47.98 miles)
Distance from Monument:	0.65 m
Bearing from Monument:	51.92

OPERATIONAL RECOMMENDATION:

Recommend collecting additional DNAV readings along the western and southern bearings from the Hudson Falls DGPS site for better analysis of coverage matching. Furthermore, request the DGPS Product Line to investigate the message anomaly with Hudson Falls' equipment.