



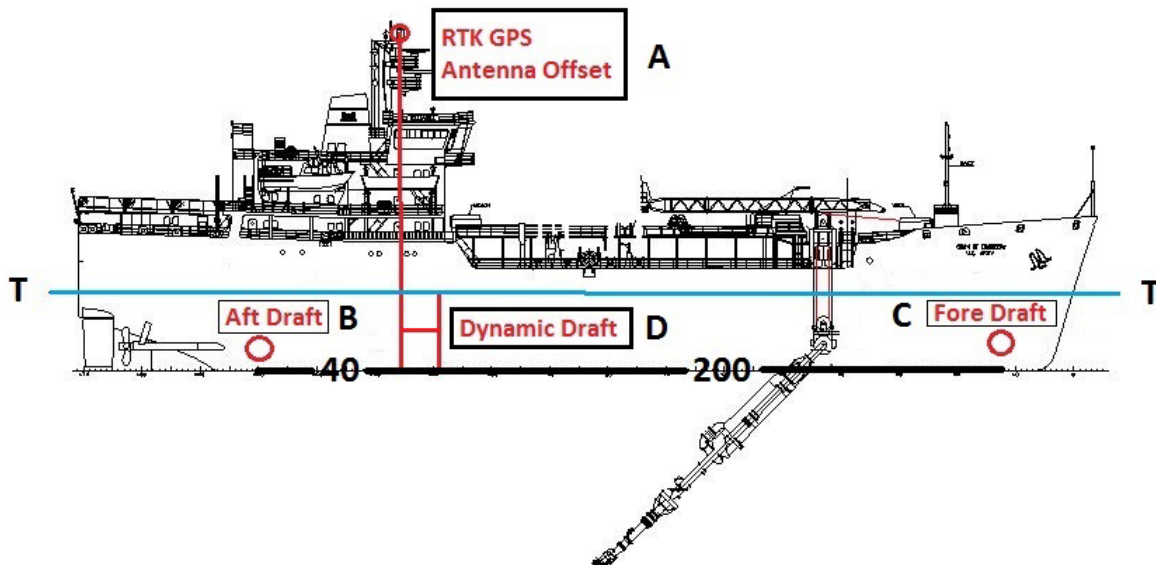
Hopper Dredges: RTK with Dual Draft Sensors

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Computing RTK on a hopper dredge can seem complicated however with the use of the HYPACK driver GPS.dll and draft drivers it can be made easy and the math can be easily followed.

In this example, we have an RTK GPS antenna on the mast. We also have dual draft sensors fore and aft. We must first compute the draft at the position of the RTK antenna (D). We take the distance between each draft sensor and prorate its value to be used for draft, which the GPS.dll will use for the tide calculation.

FIGURE 1. Sample Hopper Dredge Configuration



If we assume the following we can compute draft at antenna:

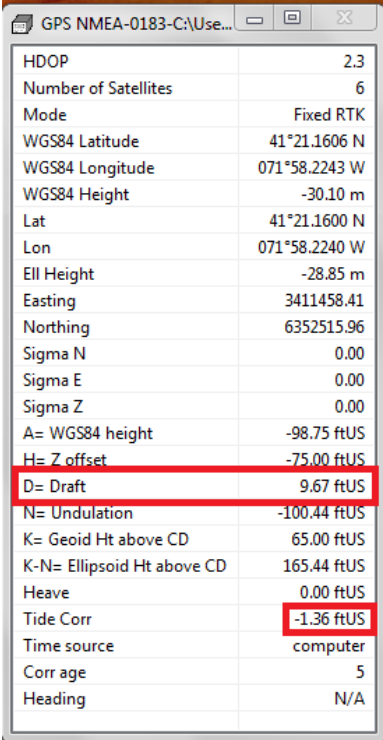
(A) GPS.dll Vertical offset to Keel = 75 ft.

(B) Aft Draft = 10 ft.

(C) Fore Draft = 8 ft.

(D) Dynamic draft at RTK Antenna = 9.67

The purpose of this exercise to show that the draft is a function of the tide calculation from the GPS driver. The *draft is not a function of the cutter tool*, but only a correction that facilitates the calculation of corrected depth of the cutter tool.



HDOP	2.3
Number of Satellites	6
Mode	Fixed RTK
WGS84 Latitude	41°21.1606 N
WGS84 Longitude	071°58.2243 W
WGS84 Height	-30.10 m
Lat	41°21.1600 N
Lon	071°58.2240 W
Ell Height	-28.85 m
Easting	3411458.41
Northing	6352515.96
Sigma N	0.00
Sigma E	0.00
Sigma Z	0.00
A= WGS84 height	-98.75 ftUS
H= Z offset	-75.00 ftUS
D= Draft	9.67 ftUS
N= Undulation	-100.44 ftUS
K= Geoid Ht above CD	65.00 ftUS
K-N= Ellipsoid Ht above CD	165.44 ftUS
Heave	0.00 ftUS
Tide Corr	-1.36 ftUS
Time source	computer
Corr age	5
Heading	N/A