



Tracking Mobiles Over WiFi Connections

By Christian Shaw

The Request: Recently while working with the Rock Island Corps of Engineers Maintenance Dredge crew Barge 11 and Push Boat LaSalle, they asked if both the tug boat and the dredge could track each others position cost effectively. The idea was that communication between the tug and the dredge could be seamless for setting up the dredge on cuts and that safety of navigation in and out of the channel could be achieved more effectively and accurately.

The Solution: The computer on each vessel had a WiFi card so we placed a Cisco wireless router on each computer to serve as a gateway for the other. Typically the vessels stay within a close proximity to each other, so WiFi connections would work.

THE BROADCAST

Since we are going through a wireless router and most LAN Wifi connection IP's are dynamic, I set a static IP address in Windows® for both the Tug and the Dredge so they would never change. In Windows®, TCP/IP connections were made with the following settings.

Dredge: 192.168.1.107 Static – Default Gateway 192.168.1.1

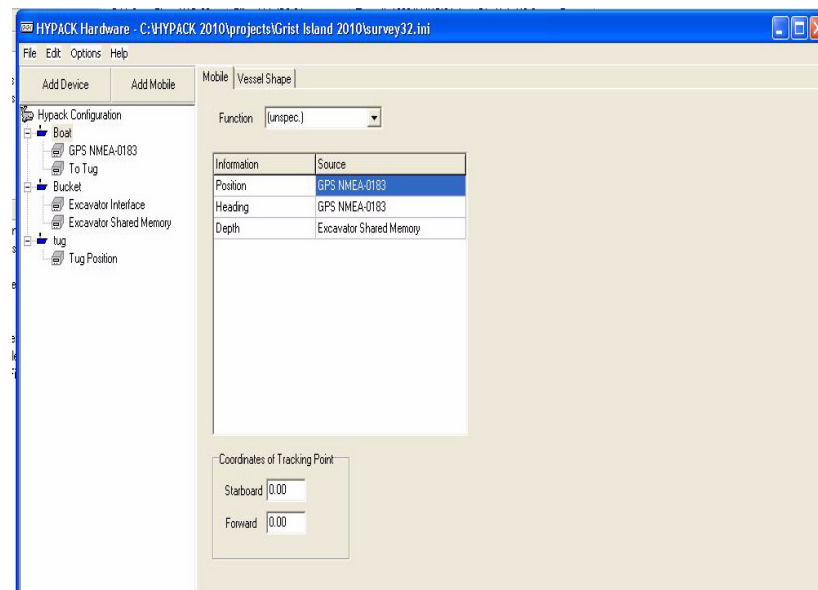
Tug: 192.168.1.106 – Default Gateway 192.168.1.1

HARDWARE CONFIGURATION

After Windows® networking picked up the Router and IP's were set, we setup HYPACK® HARDWARE.

Each Vessel Broadcasts its Position: We setup a NMEAOUTPUT.dll driver on each mobile for which we want to broadcast position. In both cases, I output GGA and HDT messages via the UDP Server.

FIGURE 1.



The connections settings for the NMEAOUTPUT.dll driver were as follows:

FIGURE 2.
*Tug Broadcasting
its Position
Through the
NMEAOutput driver*

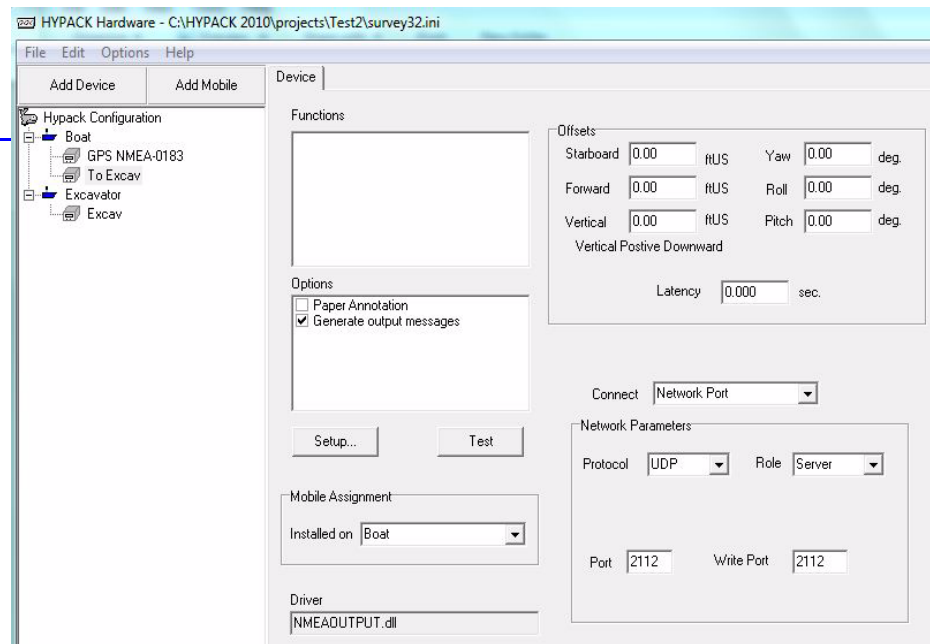
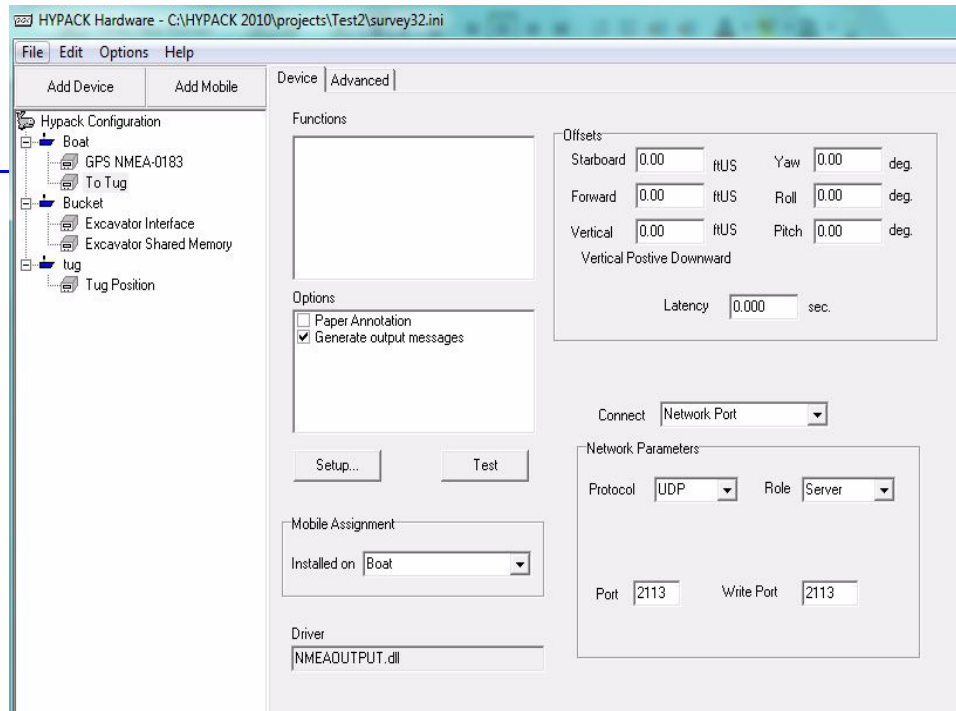


FIGURE 3.
*Dredge
Broadcasting its
Position Through
the NMEAOutput
driver*



Each vessel receives the position of the other vessel: Now the vessels need to receive the position each from the other and track them in the SURVEY program.

In the hardware configuration on each vessel, we added a MOBILE to which we assigned the GPS.dll. Each vessel had the following configuration for a UDP Client for receiving the NMEA messages.

FIGURE 4.
*Tug
Configuration to
Receive the Dredge
Position*

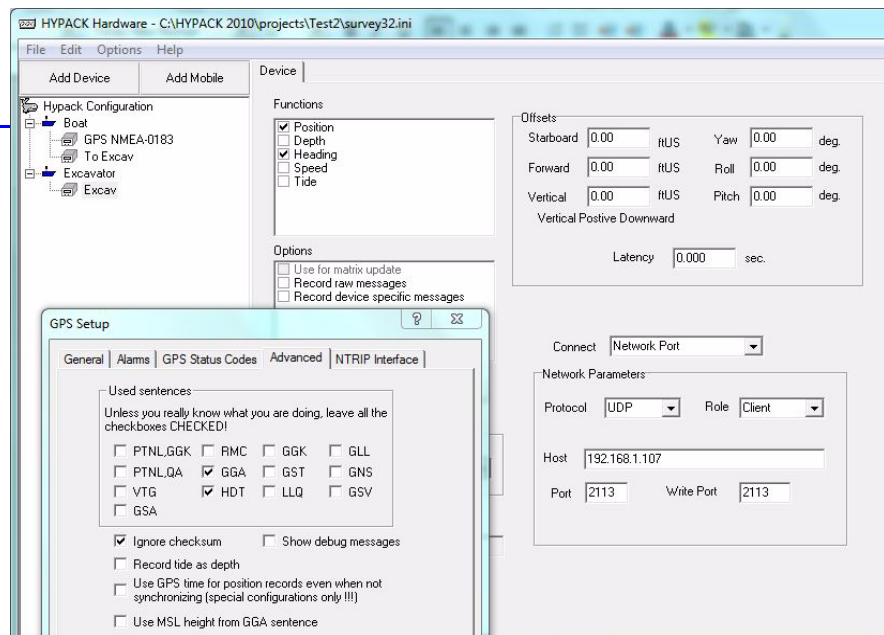
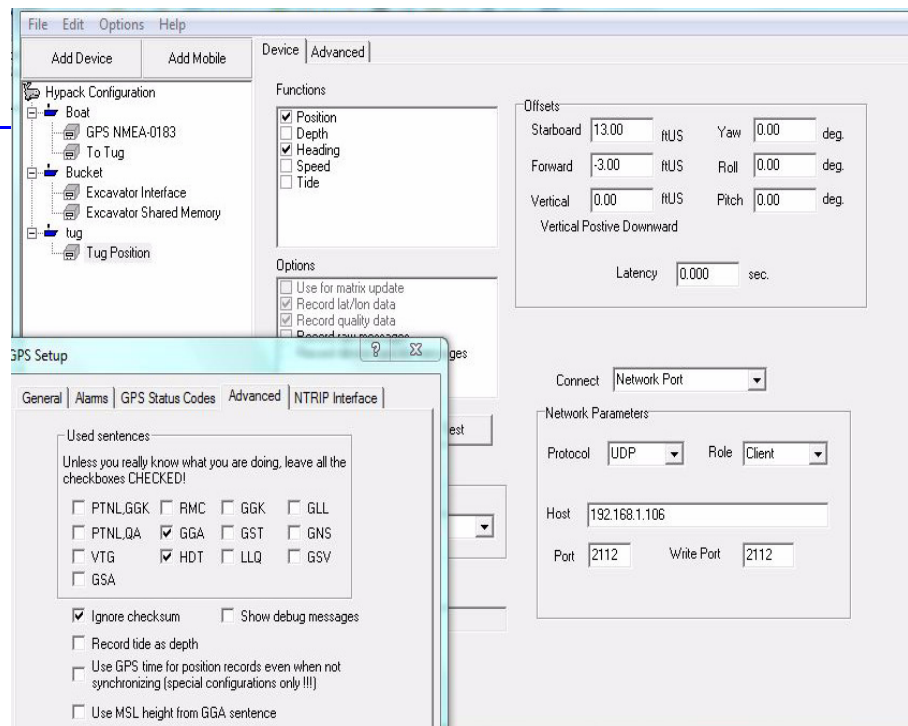


FIGURE 5. Dredge Configuration to Receive the Dredge Position



THE TUG AND DREDGE AT WORK

We are now ready to start the SURVEY program where each vessel will see the other's position as well as its own in the Map Window.

FIGURE 6. On the Tug, the Map Window in SURVEY Shows Both Vessels

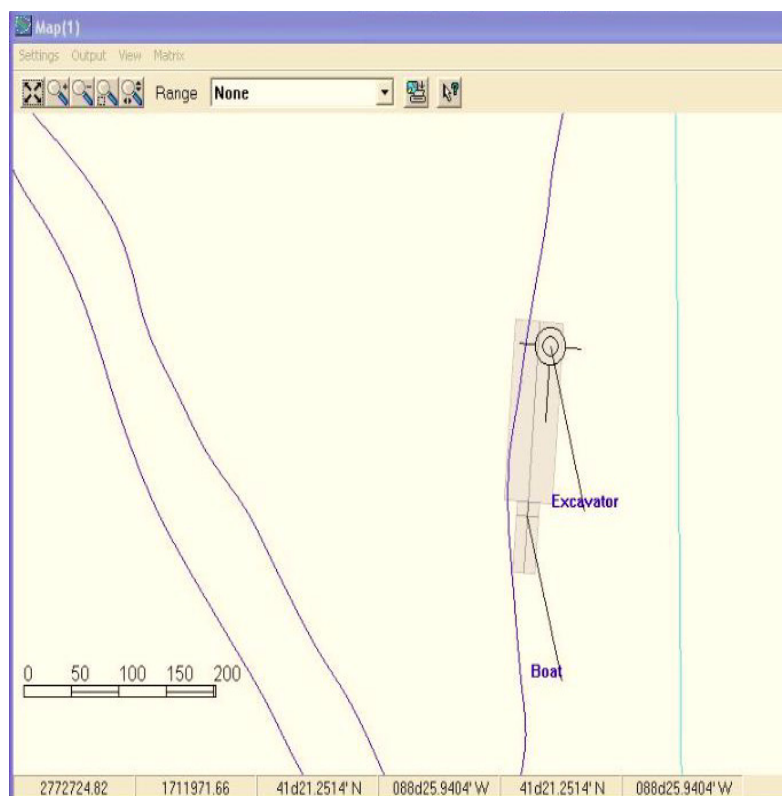


FIGURE 7. On the Dredge, the DREDGEPAK® Map Window Shows Both Vessels

