



Remote Connections to HYPACK®

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More and more, our users want to connect remotely to the computer running HYPACK® in order to have access to the real-time display and information provided by the SURVEY program. This article will try to show some options and discuss the advantages and disadvantages of each one.

Before going into each method, let's first talk about a few scenarios where remote access to SURVEY is required. The first requests we got were from users on large oceanographic ships where different stations or laboratories on the ship wanted to view the ship position on the map and the HYPACK® data acquisition status (information like the current line, whether they are logging data, how far down the line they are, etc.). Later, with the advent of mobile Internet connections, head offices wanted to see where a contracted dredge is and what it is doing in real time. After that it, was just a small step to ask to have the HYPACK® screen on one's smartphone or tablet so that you could see what the boat is doing even when you are not on the bridge.

To state the obvious, if you want remote access to HYPACK®, you need to have a network connection and, in many cases, this connection is going to be a wireless connection because running network cables on a boat is not much fun¹. Nowadays, so called MiFi access points are fairly common and provide a very easy solution to Internet access. These are small access points that, on one side, allow computers to connect to it through a WiFi link and, on the other side, connect to a cell phone provider to give you Internet access. They are easy to setup and work really well (when you have good cell phone coverage). The only drawback is that you have to pay for the Internet access.

FIGURE 1. A Novatel MiFi 2372
"Intelligent Mobile Wi-Fi Hotspot"

If you are on a tight budget and you just need to provide remote access on a small boat, you can setup your own laptop to act as a wireless access point. (You will find some instructions at the end of this document.) Otherwise, if you can splurge and buy a wireless router (\$50-100) it will probably provide a more stable solution, but you have to read and follow the instructions to set it up.

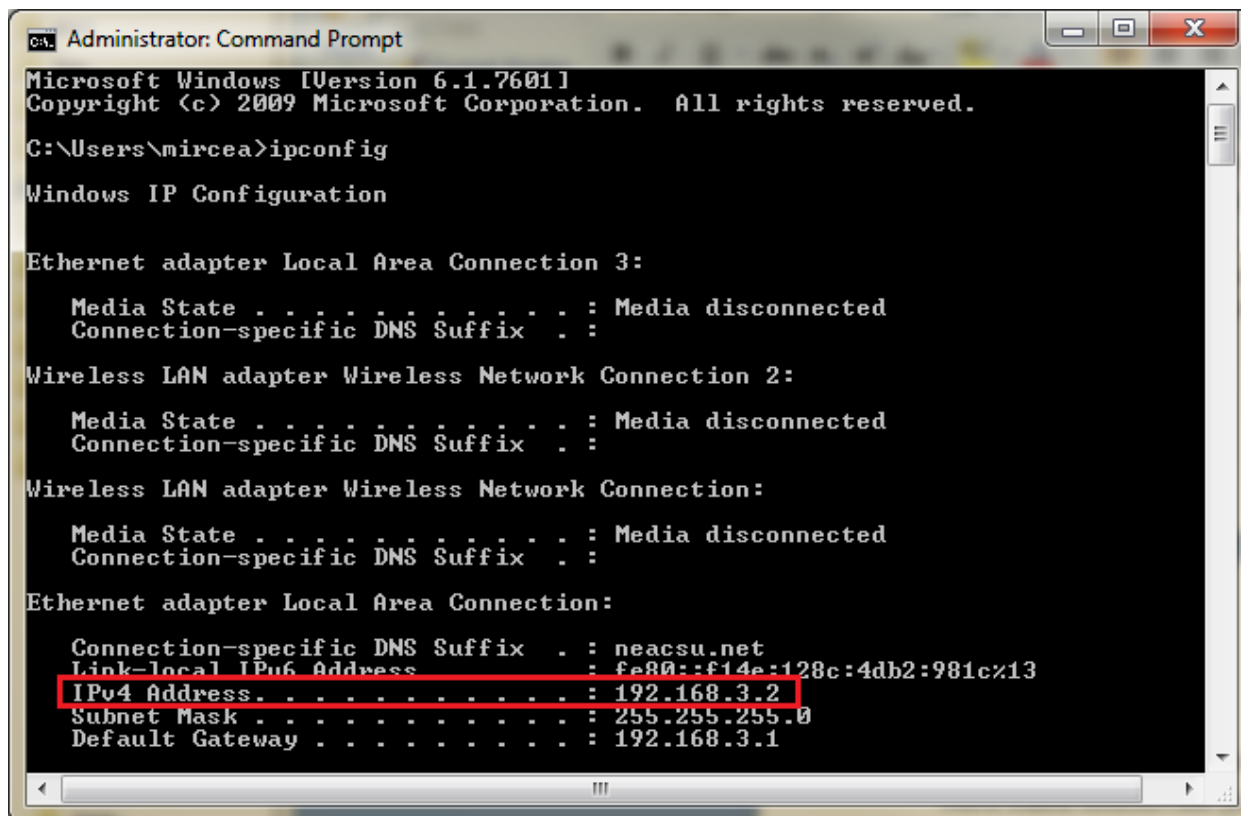


Most of what we will discuss here requires you to know the "IP address" of your computer(s). This is like the "Internet telephone number" for your computer. As each phone has a different

1. If you need remote access on a large ship as we discussed before you will have to run those cables. Unfortunately there is no way for the wireless signal to run through many metal decks and bulkheads to get to the other end of the ship.

number, so each computer needs its own IP address. There are different ways of finding the IP address. My personal favorite (because it hasn't changed since the times of Windows® 95) is to open a command prompt and type "ipconfig" followed by the Enter key. That should produce something like this:

FIGURE 2. *Finding the IP Address*



OK, let's move on to the different access methods.

SURVEY VIEWER

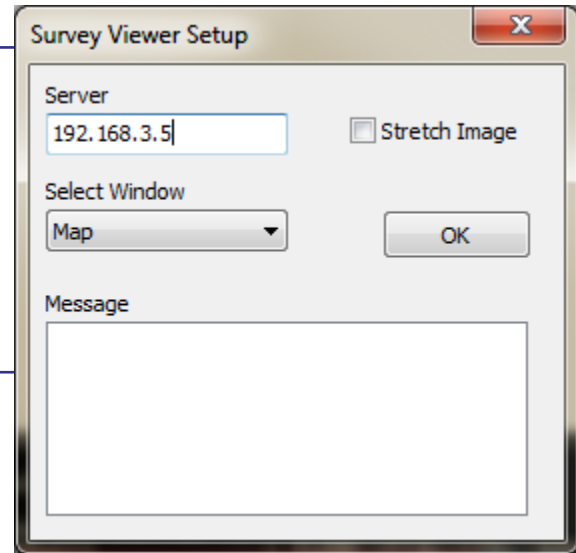
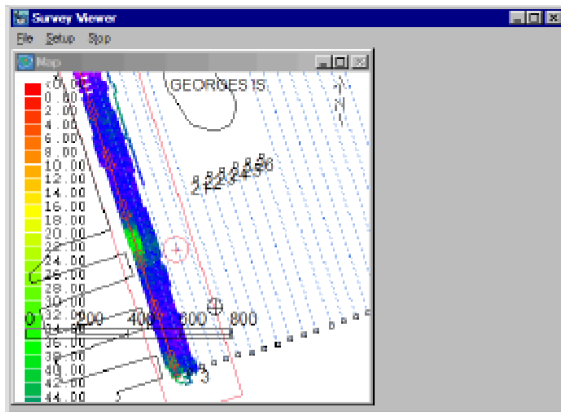
Survey Viewer is a small program that you can find in the SURVEY VIEWER folder of your HYPACK® installation. It is the oldest method for remote access provided by HYPACK® and it is starting to show its age. Using it is simple:

1. **Copy the content of the SURVEY VIEWER folder to the remote computer and run the program.**
2. **Go to the Setup dialog.**

FIGURE 3. *Survey Viewer Setup*

3. **Enter the IP address of the computer running SURVEY, select the window you want to see and click [OK].**
4. **Open the window you have selected (Map, Data Display or Left Right Indicator) from the Start menu.**

FIGURE 4. *Survey Viewer—Area Map Display*



You can run Survey Viewer multiple times and select a different window each time.

For Survey Viewer to work the two computers must be connected on the same LAN. That means you cannot send the image to a really remote computer (like the head office) unless you use a VPN. Setting up a VPN will probably require a visit from your IT technician and Survey Viewer is not a very efficient program in terms of bandwidth anyway. Chances are that you won't get a good connection over a regular cell phone link.

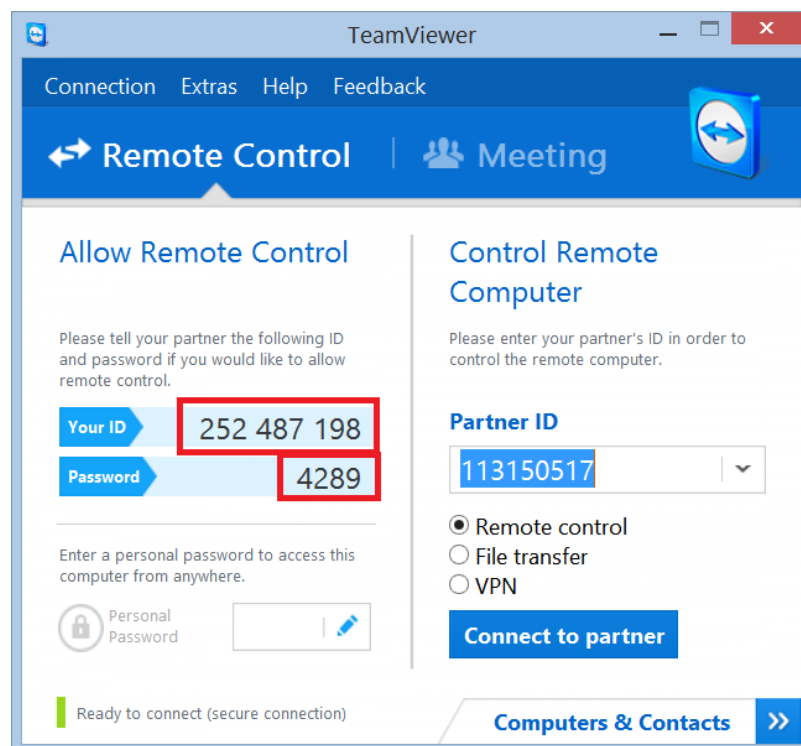
Another limitation of the Survey Viewer is that you can change absolutely nothing in those windows. Whatever is configured in the SURVEY program is what you see.

TEAMVIEWER

TeamViewer is a remote access solution provided by a German company (TeamViewer GmbH). It can be downloaded from their web site (www.teamviewer.com). In our opinion, it is one of the easiest solutions for remote access. With an uncanny ability to go through firewalls and poor connections, it is the closest we've found to an "it just works" solution. We like it so much that we incorporated a reduced version (client only) in our Remote Assistance menu. However, if you want to use TeamViewer for remote connection between two computers you will have to download and install the full version.

After you install the program, it will show you a dialog box like this:

FIGURE 5. TeamViewer Interface



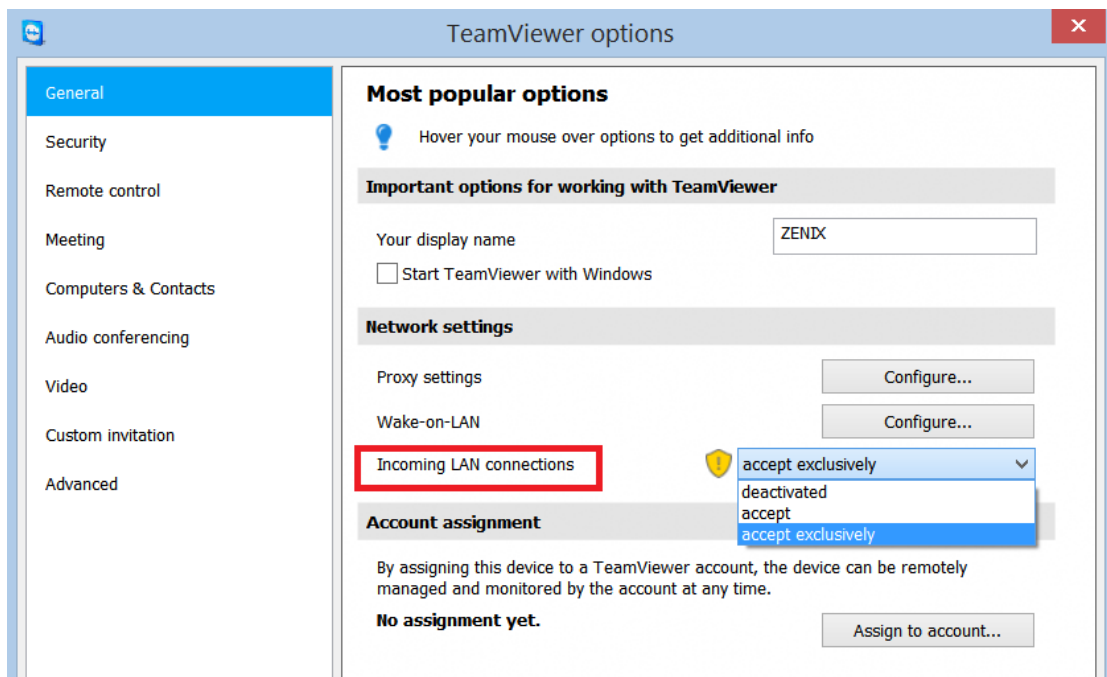
The ID highlighted in red is a unique number assigned to your computer (think “telephone number” again), while the password changes every time you start the program. When you want to make a connection you just have to enter the ID of the other computer and press “Connect to partner”. It will then ask for the password.

Behind the scenes, each computer running TeamViewer connects to the TeamViewer servers and informs the server of its IP address and associated ID. When you want to establish a connection, the program connects to said server and asks for the IP address of the partner. The rest of the connection is handled directly between the two computers without going through the server. That means that you can have a very fast LAN connection between your computers on the same boat even if you have a slow Internet connection from your boat.

Budget conscientious users might prefer not to buy Internet access just for the short communication with the TeamViewer server. Luckily, the program has an option to work without an Internet connection:

1. **Select EXTRAS-OPTIONS.**
2. **In the general part of the dialog, select “accept” or “accept exclusively” for “Incoming LAN connections”:**

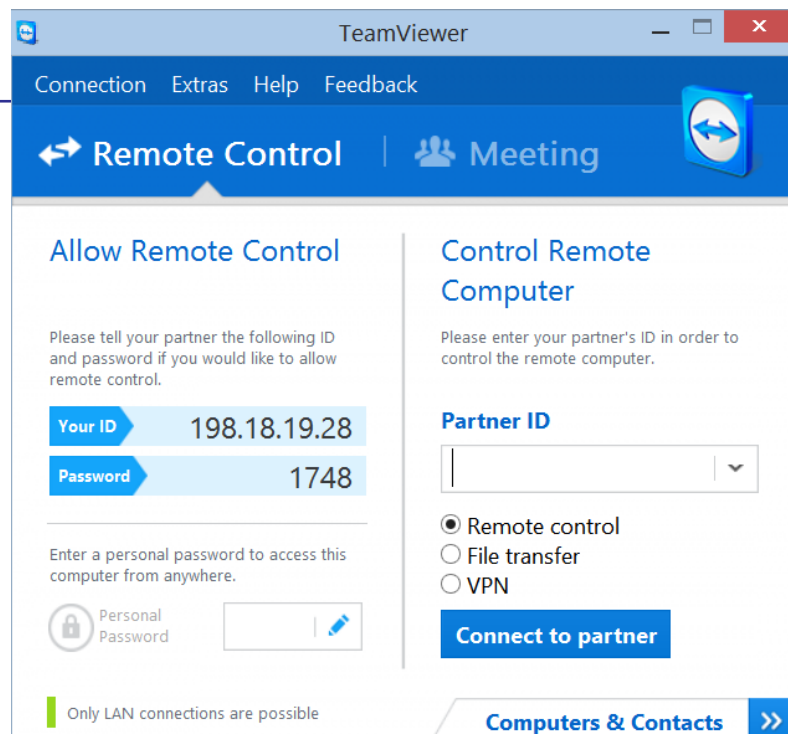
FIGURE 6. Accepting LAN Connections without Internet Access



After selecting this option, your ID will change to the IP address of your computer:

FIGURE 7. Connecting to a LAN Computer Without the TeamViewer Server

You can now establish a connection between your two computers without having to go through the TeamViewer servers.

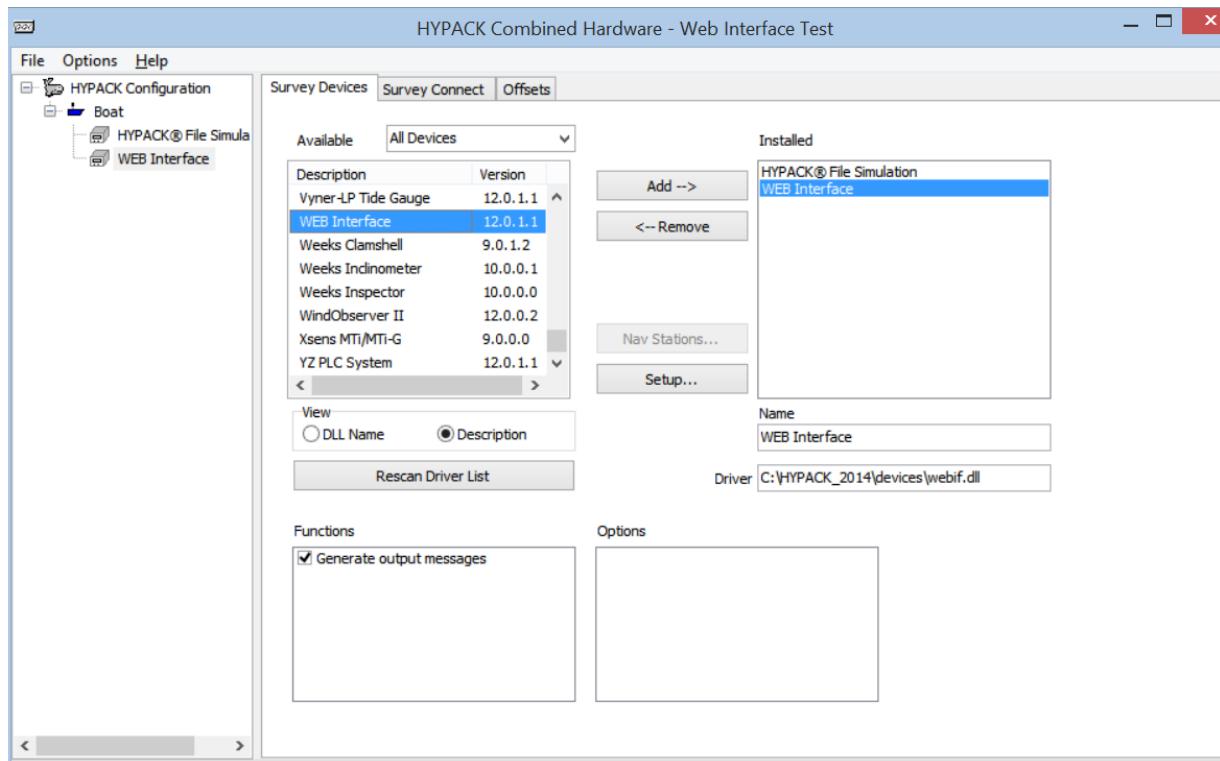


WEBIF – SURVEY WEB INTERFACE

The last method to remotely access the survey screen is through the Web Interface Driver. The driver is a small stand-alone web server that serves pages from the WEBIF folder of your HYPACK® installation. The current pages are rather limited and they look like they have been designed by a programmer - yes, I'm the one to blame – but, with the help of a web designer, they can be expanded to give all of the information that is available through shared memory.

In your HYPACK® HARDWARE add the WEBIF.dll device driver:

FIGURE 8. *Configuring the WEBIF Driver*



When the SURVEY program is running, you can access the web site by entering the IP address of the survey computer in your browser. Here are some images of what you would see on a smartphone screen:

FIGURE 9. WEBIF Area Map Display on a Smartphone

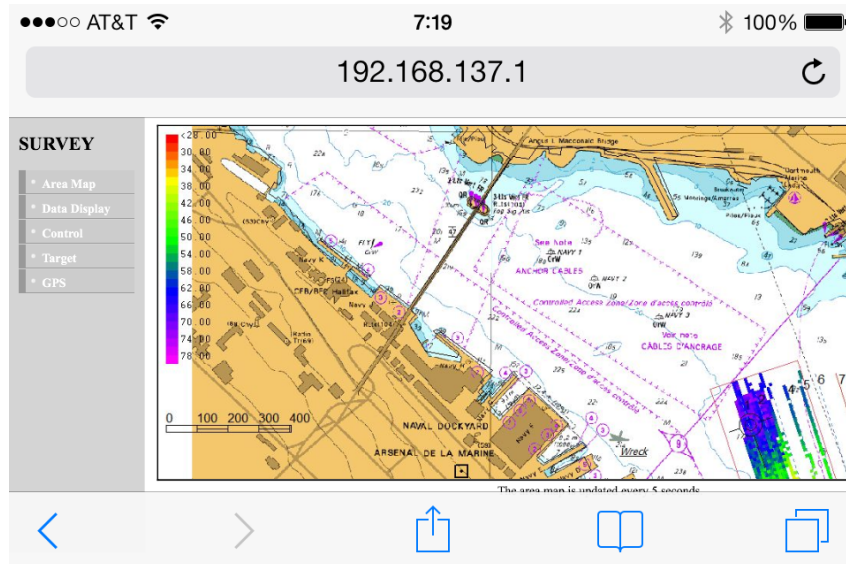
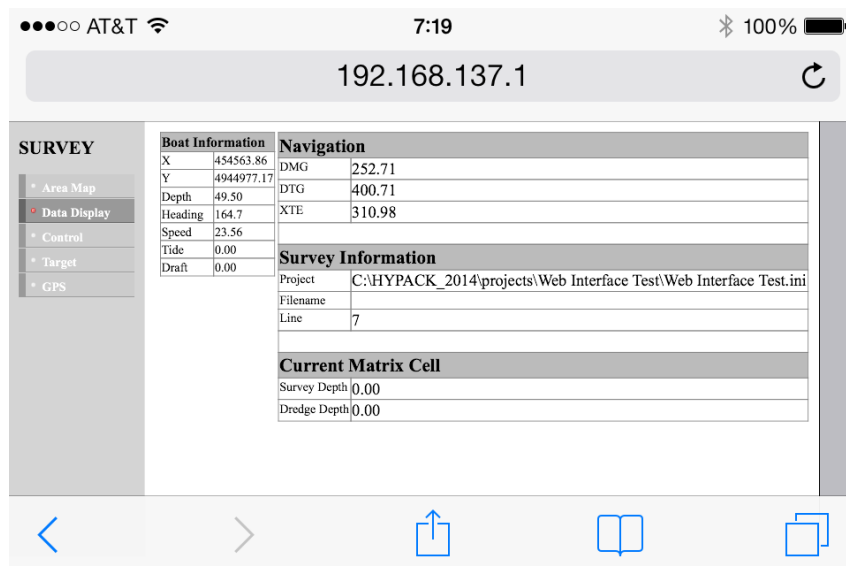


FIGURE 10. WEBIF Data Display on a Smartphone



CONCLUSION

There are many ways to “skin the same cat” of remote access in HYPACK® depending on what you need. On a large ship, where you need the HYPACK® screen available in multiple points, you can use either the Survey Viewer or the Web Interface. Meanwhile, if you want access from a remote site, probably TeamViewer is the way to go.

YOUR OWN LITTLE ACCESS POINT

In the beginning, I promised that I would provide instructions on how to turn your own laptop into a wireless access point.

There are a few free utilities out there – just do a web search for “Windows hotspot” – but my personal preference is to do it from a command prompt. There are just a couple of lines and it saves you the trouble of installing yet another program and fiddling with its settings.

Go to an administrator command prompt (in Windows 7: Run -> All Programs -> Accessories -> right click on “Command Prompt” and select “Run As Administrator”) and type the following two magic incantations:

```
netsh wlan set hostednetwork mode=allow ssid=wifi_name key=a_pass-  
word
```

```
netsh wlan start hostednetwork
```

You can replace “wifi_name” and “a_password” with anything you like. Password has to be at least 8 characters.

And that is it. Now, all the other computers in the area will see a new wireless network with the name you have chosen and you can connect them to this new network.

NOW THIS IS REALLY THE CONCLUSION...

For the past 22 years I've been a fixture at HYPACK. Now I've come to a point in my career where I will ease into my retirement.

Looking back at the young software engineer, who started at HYPACK knowing absolutely nothing of hydrography, surveying or dredging, I have to thank all of you who took the time to teach me all I know today. I had tremendous fun and I'm grateful for the chance to meet tremendous people.

Keep well, do good work and stay in touch!