Editorial

>> Marc Cheves, LS
& Gavin Schrock, LS

CGSIC in Savannah

The 48th meeting of the Civil GPS Service Interface Committee (CGSIC) was held September 15-16, 2008 in Savannah, Georgia. Of particular note was the announcement that NDGPS will continue. Funding is still a challenge, but the powers that be have decided that NDGPS, like GPS, is a national utility. In addition to a certain number of agricultural users, the main proponents of continued funding are federal and state agencies. In the State & Localities Sub-committee meeting, presentations from the National Park Service, US Department of Agriculture, the DOTs of Oregon and Minnesota, and the NOAA weather folks clearly showed the utility and value of the system. 92 percent of CONUS has single coverage, 65 percent has double coverage, and if the user is within 150km of a station, sub-meter accuracies are easily achievable. GNSS is being used on a huge variety of resource mapping and classification projects. I was impressed with the basic research being performed by the USDA and DOI/NPS to get GNSS to work under tree canopy. I was also impressed that the thrust of many of the demonstration programs are designed to save our government money by developing efficient workflows.

American Surveyor author and RTN expert Gavin Schrock was also in attendance, and I asked him for his take on the meeting: The recent announcement of more than $2.5B in funds for a greatly accelerated launch and update program would have otherwise overshadowed all other aspects of the annual GLONASS program update given by Sergey Revnivykh, head of the Russian PNT Analysis Center, but it was other comments in his presentation that raised eyebrows. Much of the panel discussions on multiple constellations (and questions from the audience) to that point had revolved around the specter of a possible fee structure for elements of the (ever) pending Galileo program. A comment from Sergey's speech certainly provided a sharp contrast to the thinking behind the Galileo fee rationale:

"[The] GLONASS system is an element of the critical state infrastructure, ensuring national security and econom[ic] development." This is the strongest argument for public funding for GNSS systems. This is the same rationale that the U.S. has for public funding for the GPS program–dual-use, with free and open use for commercial and public purposes. GNSS has, by virtue of its wide adoption for a multitude of uses, far exceeding anyone's expectations, become a critical public amenity. The respective launch programs for GLONASS and GPS reflect this commitment. But then there is Galileo…

Paul Verhoef Head of Unit, Galileo, European Commission sat on the hot seat during a civil (but marginally tense) panel session. The three models for funding and operations were contrasted over and over. While there was little discussion of the upcoming Chinese Compass constellation, it was pointed out that that model would likely be more like the U.S. and Russian models than that of Galileo. Perhaps only time will tell if the Galileo program takes on more of a public amenity or critical infrastructure stance than the current model of exclusivity.

In the interim, the U.S. upgrades for L2C and L5 continue, and Russia plans to have 30 units in orbit by December of 2010, representing 24 active GLONASS satellites for 99% global availability. Will China get there with at least some elements free and open before Galileo? It would not surprise many…

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***[Editor's note:** The main thing I took away from Verhoef's presentation was that the EU has not yet decided what it will do regarding charging Galileo users. He pleaded with the audience to be patient as the EU examines all of its options. As always, my position on this is that Galileo, like GPS and GLONASS, should be free of user fees. The business activity created can then be taxed, and these taxes will far outweigh the fees collected from use, not to mention the difficulty in collecting the fees in the first place.]*

An excellent brief on the GPS constellation status and performance from the perspective of a Space Operations payload specialist was given by Lt. Joe Riedesel. Presented with genuine "Generation Y" slang and mannerisms (a refreshing contrast to the otherwise stodgy "death by PowerPoint" track) the lieutenant launched right into some surprising statistics: 19 sats are past their design life, 15 are past their pre-launch life estimate, 18 are one component away from system failure, and 8 are one component away from bus failure.

Wow! But not to panic. Joe explained how the system exceeds the required performance levels and that the components are so rigorously monitored that the chances of widespread failure are astronomically small. I also queried Joe on the widely discussed fear of a "huge solar event" knocking out the constellation (such fears surely fueled by recent disaster movies). He assured us that these sats (being dual-use) are very well hardened (much more so than most commercial and communications satellites) and could quickly be placed in a safe mode to ride out even the most serious of such events.

An update on U.S. Space-Based Positioning, Navigation, and Timing (PNT) Policy, presented by Michael Shaw of the National PNT Coordination Office, further emphasized the stance of "critical infrastructure" with bold bullet points: Service Assurance, Meeting Demands, Leading Militarily, Staying Competitive, Integrate Globally, and Leading Technically.

Shaw also highlighted the recent notice in the federal register "Preservation of Continuity for Semi-Codeless Applications" (see http://edocket.access.gpo.gov/2008/pdf/E8-22197.pdf). In short, the L1 P(Y) and L2 P(Y) signals are not planned to be supported in the design and operations of the GPS constellation beyond December 11, 2020. Again, this should not cause panic amongst GPS users. Firstly, there is a very telling line in the notice that the DoD will "reassess the transition date should significant program delays arise," and as the launch policy is on a needs basis (i.e., launch on failure of existing) this could take much longer than twelve years. By the transition date, the two new signals need to be in place. By then legacy equipment should be well past its lifetime, and mostly obsolete. Gear that can utilize the new improved signals should be cheap and plentiful by then. Twelve or fifteen years is a long time (just look back fifteen years–weren't you just making the transition from DOS at that time?) This move looks less like "planned obsolescence," as it is a fiscal move aimed at not having to drag old solutions along with updated ones. Limited resources and power on those sats must be considered.

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On the RTN front, the (now) Annual NGS CORS Forum was again dominated by all subjects RTN, and the NGS RTN task group commitment to work toward some solid guidelines for RTK/RTN. It was quite evident, however, that while there is still some division within NGS as to the merits of RTN, the rapid expansion around the country (and world) and the widespread acceptance of such networks as an adjunct to current spatial reference frameworks is a juggernaut that will eventually obviate such arguments. It was unfortunate that a session from Denmark on the very subject of RTN guidelines was not attended by many from the U.S. (it was scheduled at the same time as the U.S. States and Localities session).

Dr. Anna Jensen of AJ Geomatics, a firm hired by the Danish government to study RTN guidelines, explained that Denmark has had full nationwide RTN coverage since 2001, and that use by surveyors was now the norm for all aspects of their industry. Working directly with the surveying associations, RTN providers, and the government, some not-so-surprising recommendations are set to be adopted.

The products of this Danish evaluation of RTN take the form of two initiatives: the "Norm for RTK Services," aimed at RTK providers, and "Recommendations for Good Survey Practice." Both are short on specific technical details, but instead concentrate on simple "good practices." No kidding. And the Danes are not slouches when it comes to precision and detail. Perhaps we do not have to weigh ourselves down with onerous rules? Let's wait and see…

Another note from Sergey's presentation (that I have seen from countries that have had RTN for some time) was his quote "Use of GLONASS is mandatory for state entities and major sectors of [the] economy." Later clarified by other members of the Russian delegation as "mandatory for some uses," but for a lot more than one might imagine. This is not only on the basis of cost savings, but also just as important as to provide spatial consistency. Great idea.

Another note about the CGSIC, it is THE official interface and forum between the users of GPS/GNSS and those that fund and operate these systems. I have always been surprised that the surveying associations do not send delegations to these events and become more involved. Surveyors must be represented and heard at such forums.

Oops!

We neglected to provide the bio for the author of last month's popular GPS handheld and SPC article: Steven Weible is the Project Surveyor for Missouri State Parks. He has been licensed in Missouri since 2002. Our thanks to Steven for submitting the article! It's leading the Hit Parade on our website.