

Guest Editorial

>> Gavin Schrock, LS

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PUBLISHER Allen E. Cheves
allen.cheves@chevesmedia.com

EDITOR Marc S. Cheves, LS
marc.cheves@chevesmedia.com

ASSOCIATE EDITOR Joel Leininger, LS
ASSISTANT EDITOR Jacalyn Cheves
ASSOCIATE PUBLISHER Jason Metsa

CONTRIBUTING WRITERS

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The staff and contributing writers may be reached via the online Message Center at amerisurv.com

GRAPHIC DESIGN LTD Creative, LLC
WEBMASTER Joel Cheves

AUDIENCE DEVELOPMENT Edward Duff
ACCOUNT EXECUTIVE Richard Bremer
CIRCULATION Mirta Ryker

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The Sky Refuses to Fall GPS is NOT Dead!

The GPS constellation is not dying. Really. While yet another GAO (Government Accountability Office) report issued in September 2010 warned of potential risks to the constellation, this one titled “Global Positioning System—Challenges in Sustaining and Upgrading and Upgrading Capabilities Persist”, the report has only served to stoke the boilers of the “cottage-industry-of-GPS-is-doomed-slow-news-day-merchants-of-panic” crowd. The report does not predict failure, it only assesses potential risks. You do not have to believe me, read the report yourself: www.gao.gov/new.items/d10636.pdf and then read on below for responses from both the policy and operations sides of the program. In short, it looks like the GAO has simply found more elements of potential risk to consider (and some stretching the bounds of any kind of likelihood). Well meaning and thorough, the report is a valuable assessment, but many do not look past the title.

On two notable occasions in September 2010, the USAF GPS Wing and National PNT (Position Navigation and Timing) Coordination Office, which represent both the policy and operations side of the program, gave measured and thorough responses to the report. In my view the PNT Office and GPS Wing officials completely addressed the fears of all but the most seasoned skeptics or contrarians.



The first forum was the 50th CGSIC (Civil GPS Service Interface Committee) convened in Portland, Oregon September 20–21, 2010. The CGSIC is the officially sanctioned forum for civilian end user input and feedback for the GPS program. It has become a well attended international event representing civilian users, manufacturers, R&D groups, academia, and hosts of other GNSS constellations.

As with every year at the CGSIC, the GPS Wing provides an outstanding briefing on just how well operated and maintained the fleet is. Questions from the audience led discussions of how causes for past delays in deployment of new birds have been fixed even though

scrutinizing ever more unlikely scenarios than before? It was explained by the GPS Wing and the PNT Office that if the constellation were to drop below 24, compromises in service would be area dependent and would only greatly affect high precision users in those regions/time periods. Furthermore, to drop below 24, the modernization program would have to fall a full two years behind schedule (and some elements are several months ahead of schedule). Considering the astounding commercial, financial, and military dependencies on GPS, are we to believe that anyone would allow the program to fall more than two years behind schedule? If so,

respond to the GAO report mentioned above. Those that signed on to the teleconference were mainly from the press, folks that typically follow aerospace topics in sources like *Aviation Week*, *Air Force Times*, and *Inside the Air Force*, as well as more mainstream media, like Bloomberg Television. This broader interest, especially by financial media, shows just how much commercial use and dependence on GPS there is. Colonel Bernard Gruber, GPS Wing Commander, and Colonel David Buckman, AFSPC Command Lead for PNT, clearly put into perspective what they viewed as “a factually correct but overly pessimistic report”. In their view, elements of the GPS program, which have in the past been factors in delays, have been over-emphasized in the evaluation of future risks. “Time to look to the future, rather than the past,” stated Col. Gruber. The press seemed very satisfied with the characterization of the report as merely “assessing possible risks” as opposed to predicting any certainties. The sky is not falling.

“...the GPS Wing overcomes old problems, only to have the bar continually set higher.”

the requirements have been increased. Like Sisyphus, the GPS Wing overcomes old problems, only to have the bar continually set higher. The underlying message is that the constellation is at a record 31 birds, it is healthier than ever before, all performance is far above spec, and that the minimum 24 are not in any immediate danger. There is a new plan being implemented that has been dubbed “the expandable 24” where some birds are being shuffled around to have extra birds in critical slots. An example of a test over Afghanistan showed how the “expandable 24” could actually improve coverage over the standard 24 configuration. The shuffling of the birds should be complete by January 2011.

Still, for many, the sky continues to fall no matter how much they hear otherwise. Heightened awareness often breeds heightened (or hyped) panic. With more people using GNSS, and with increased dependencies by some user segments, of course there will be increased sensitivity to even the slightest risk factors. Are there more earthquakes than in the past or do we just hear about them via instant 24-hour news sources sooner and more frequently? Are they hiring TV stars with more wrinkles or do our HD and Blu-Ray just show them more clearly? Is the constellation really at higher risk than before or is the GAO

then we might have bigger worries than the GPS constellation.

Space weather and the solar max on the other hand is a concern where the magnitude, effects and outcomes are not entirely clear. I ran into Joe Kunches, a scientist with the NOAA Space Weather Prediction Center, who on one hand was happy to report that the run up to the expected 2013 solar max has been much calmer than expected, but also admitted that it was challenging to study the effects. More than one ‘old timer’ said they survived a previous solar max, so not to panic. Folks like RTN operators have not been reporting much direct problem with end users correlated with the rise to the max, but there are still a few years to go, and a lot of unknowns.

There was more talk of SVN49, the ‘test-bed’ satellite for L5, which has been set as unhealthy to users due to a form of internal multipath. The CGSIC and other entities have solicited feedback from the users/manufacturers as to how to correct this. After weighing the widely ranging suggestions, a very careful but complex plan has been developed to coax SVN49 back into a healthy state. Karl Kovach, technical advisor with the GPS Wing stated that this plan will take about four years.

The second forum on September 24th, 2010 featured a teleconference arranged by the USAF GPS Wing to

The Surveyors’ Stake

Surveyors have a big stake in this matter. Do you want a more direct say in the matter? You should. The state of GNSS services affects your profession and what you do as a land surveyor whether you are a practitioner of GNSS surveying or not. The national geodetic reference framework is nearly wholly dependent on GNSS, as well as many of your state and local references. With this much at stake, would it not behoove the surveying community and individual surveyors to demand a seat at the table in matters of the health and viability of the GNSS services? There is a mechanism, and it is much easier to participate than you might think. For more information and a full report on the 50th CGSIC, go online to the companion article “You are the Committee” At www.amerisurv.com. It tells how you can participate, and contains an update from the RTCM committee as well as highlights from the ION (Institute of Navigation) conference that followed.

Gavin Schrock is a surveyor in Washington State where he is the administrator of the regional cooperative real-time network, the Washington State Reference Station Network. He has been in surveying and mapping for more than 25 years and is a regular contributor to this publication.