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New GPS Satellite's Problems Indicated

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Lt Col David Goldstein, chief engineer for the GPS Wing, told the plenary session at the European Navigation Conference in Naples, Italy, that the Wing is experiencing some “out of family” measurements from the recently launched IIRM (20) satellite. This appears to corroborate some unofficial rumors that have circulated recently about problems with “legacy signals” from the satellite, that is, L1 and L2. The April 10 broadcast of the first L5 signal secured that frequency for the U.S. GPS program; since that signal contains no navigation message at present, it is presumably not affected by these problems.

Goldstein told the ENC opening session, Monday May 4, that the Air Force will not launch any further satellites until this issue is resolved. IIR(M) 21, the last of the IIR(M) series, is currently scheduled to rise sometime in August, with the first of the IIF generation to follow in late 2009 or early 2010.

Normally, a satellite is set healthy within 28 days of launch, after extensive testing, but this has not occurred with the satellite launched on March 24. The U.S. Air Force has formed a response team and is working “nearly round the clock” to resolve the problem, but according to Goldstein is not rushing the issue, seeking a thorough solution since the overall constellation is robust at 30 satellites.

“We are currently examining data from the satellite that is not consistent with data from the other IIR(M)s,” he stated, characterizing the variances as “measurements with larger than expected pseudorange errors that are elevation-dependent, and that we have not seen before. We have experimented with a few fixes and it looks very promising.”

He described the response team’s approach as making a “fishbone diagram” of all potential failure mechanisms, and working through them methodically. “We think we have identified the failure but it may be several more months before the analysis is complete, and the situation is fully resolved.”