

[2005 07 26] July 26, 2005: **Jack Bacon/NASA JSC/OM3, In Pursuit of the Phantom Torque.**

Guidance, Navigation & Control Technical Committee presents

## **In Pursuit of the Phantom Torque**

by

**Jack Bacon / NASA JSC / OM3**

**Date:** Jul 26, 2005 (Tuesday)

**Time:** 11:30 am to 12:30 pm

**Place:** NASA/JSC Building 30 Auditorium

In the past year and a half, a previously unknown phenomenon has been observed aboard the ISS, leading US and Russian specialists on a challenging quest to isolate and to correct the cause. Only evident during Russian EVAs, the “Phantom Torque” grows to saturate the US control moment gyroscopes, occasionally causing the ISS to lose control of its attitude, and then to drift in unpredictable ways. Clearly, this effect has serious implications and needs to be understood and corrected.

Thanks to an impressive series of analyses and careful study of the on-orbit data, the root cause has been found: a second-order effect previously thought to be inconsequential — that is, until a spacecraft the size of the ISS amplified the effect into view. There are still some people who don’t believe it, because it flies in the face of 40 years of experience on smaller spacecraft, even though the evidence is conclusive and completely consistent with past experience. It’s very simple, but totally non-intuitive until you “think big”. The solution has implications for future large spacecraft and EVA gear. Come and see for yourself!

Dr. Bacon is the Program Integration Office representative to the ISS Mission Management Team and is the NASA lead of the Mission Analysis and Integration (MAI) team of the VIPER group. He was just one member of the team of specialists that resolved the phantom torque issue, and will share the reporting duties with various members of the team. A worldwide motivational speaker and author, Jack is a Distinguished Lecturer of the AIAA, and veteran of over 120 educational presentations per year in numerous US states and foreign countries.

Please bring your lunch and a friend. This free event is open to the public. AIAA membership is not required. If you require JSC badging, please register 3 days in advance (citizens) or 2.5 - 3 weeks

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