

Two Gyro Options

18 November 2004

HSTP and STScI are considering gyro options to extend the science mission

- Current baseline – 3 Gyro As Long As Possible (ALAP)
 - When next gyro fails, turn on Gyro 6
 - When second gyro fails, go to Two Gyro mode
- Option – 2 Gyro in summer of 2005
 - Assuming no earlier failures, deliberately transition to two gyro mode at start of Cycle 14 (~ July 05) and turn off a gyro (Gyro n)
 - When next gyro fails, turn on Gyro 6
 - When second gyro fails, turn on Gyro n
 - Using current reliability models, this would increase science lifetime by about 9 months

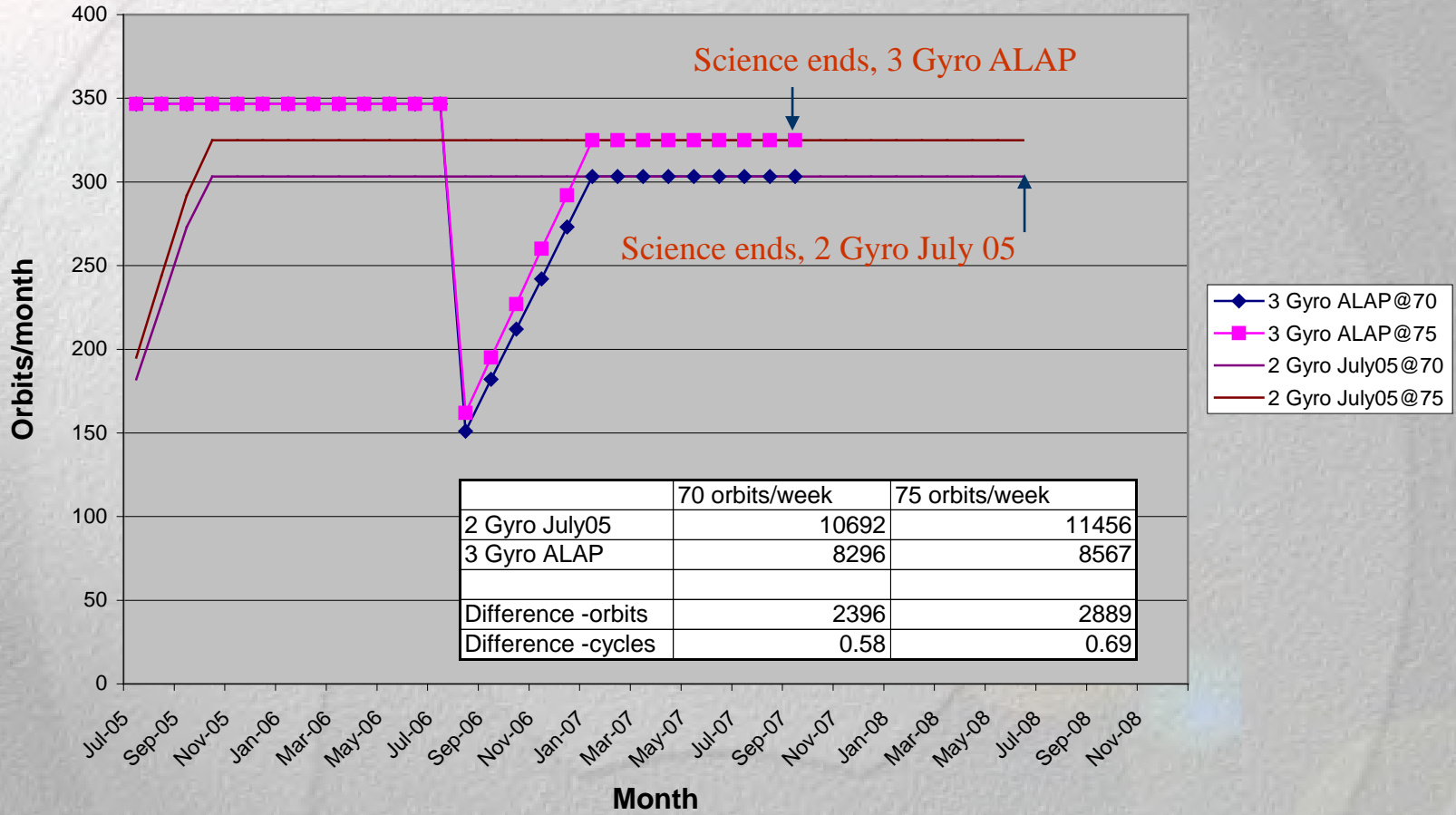
3 Gyro As Long As Possible

- Maximizes time with full performance
 - Jitter stays low
 - Scheduling flexibility remains high while 3 gyros are available
- Transition to Two Gyro Mode comes at an unplanned time
 - Scramble required to transfer programs to 2 Gyro
 - 3 Gyro Long Range Plan will not be optimal in 2 Gyro period
 - It will be impossible to transfer some programs to 2 Gyro
 - Estimate ~70 Orbits/week (vs. 80/week in 3 Gyro)

2 Gyro in July 05 (start of Cycle 14)

- Increases Hubble science lifetime
 - “Uses up” Gyros at a slower rate
- Transition at start of Cycle allows for advanced planning
 - Require Cycle 14 programs be Two Gyro compatible
 - Build Long Range Plan (LRP) in advance assuming Two gyro mode
 - Select specific transition time to manage Cycle 13 rework
 - Estimate ~75 Orbits/week (vs. 80/week in 3 Gyro)

Expected Scheduling efficiency



Two Gyro Options

- If we choose to deliberately go into two gyro mode early, we should inform community for Cycle 14 – requires decision soon
- Such a decision would have to be contingent on a successful flight test of the full Two Gyro mode in February
- STUC Input is welcome.....