Subject: Re: Slight variation of satellite diameter and positions of some cavities
Date: Thursday, April 5, 2018 at 11:21:32 AM Eastern Daylight Time
From: David Arnold
To: Antonio Paolozzi
CC: Ignazio Ciufolini, Erricos C. Pavlis
Attachments: Copper.docx, Copper.pdf

Dear Antonio,

Attached is the analysis of the two configurations using a copper alloy. The results are almost identical with some very small differences near the equator. Both meet the one millimeter accuracy goal. The high thermal conductivity is a good idea to keep the satellite more isothermal.

Best,

David Arnold

From: Antonio Paolozzi <antonio.paolozzi@uniroma1.it>
Date: Wednesday, April 4, 2018 at 6:13 AM
To: David Arnold <david-arnold2006@earthlink.net>
Cc: Ignazio Ciufolini <ignazio.ciufolini@gmail.com>, ErricosUmbc Pavlis <epavlis@umbc.edu>
Subject: Re: Slight variation of satellite diameter and positions of some cavities

Dear Dave,
we will do what you suggest concerning the study on the effect of emissivity. However the change in diameter and the change in the distribution around the interface with the separation system is not related to the thermal problem you mentioned but to mechanical strenght and elasticity and to thermal conductivity. We are in fact thinking to change the alloy from nichel to copper, because copper alloy has a thermal conductivity about 15 times higher. The thermo-optical properties can be adjusted with the surface finish in both cases (copper or nichel based alloys) later. Unfortunately the schedule of the launch forces us to make in few days the final choice on which of the two alloys to start procuring. Actually we were supposed to give the final word on the alloy yesterday, but if you can make the simulation within a couple of days we will ask ASI to wait, otherwise they will proceed procuring the nickel alloy. Consider that copper alloy is slightly softer than nichel alloy so that change of the surface rugosity may be easier on copper alloy than on nichel alloy. We would like to check, with your analysis, if we are still below 1 mm accuracy with the two distributions I sent you yesterday.

Can you please provide us within a couple of days the analysis of the new distributions, it is very important.

Thank you
Antonio and Ignazio