IAA Study Group Status Report

Responsible Commission:

Commission 3

Study Number and Title:

SG3.25, The Maintainability and Supportability of Manned spacecraft in Deep Space

Short Study Description (repeat from Study Group Proposal):

Aiming at characteristics of manned exploring in deep space about long period, considering roundly the problems faced to solve with maintenance and repairs, spares carrying and supplying, reliability and fault-tolerant redundant of manned spacecrafts in deep space, carrying out analysis of maintainability and supportability with different strategies, forming multi-parameter optimization design; based on the analysis results, research the implementation of maintainability and supportability with new technologies, providing different solutions and schemes.

Progress in past six months:

- To continue the requirements analysis and restriction analysis to the flight mode of Mars manned spacecraft.
- To continue the analysis of maintainability and supportability, during the multi-parameters analysis, except ECLSS we also need consider the advanced propulsion scheme, and we add the Martian atmosphere comprehensive application for the effect to analysis.
- To carry out the research of ISRU and additive manufacturing for maintainability, and carry out the virtual reality for maintenance supportability.

Website Study Information update: (please give any update regarding Study Group Membership, documents, Study Plan and Schedule):

Please update Study Group Membership, the specific staff and the contact information could be seen on next page.

Please update the time line as following:

- Apr. 2017 — Jun. 2017: implementation of maintainability and supportability with manned spacecraft in deep space
- July 2017 — Sep. 2017: an interim report to the IAA.
- Oct. 2017 — Mar. 2018: To complete the Comparison of advanced propulsion systems and advanced ECLSS systems, and research the Martian atmosphere comprehensive application.
- Apr. 2018 — Jun. 2018: To complete the multi-parameters optimization and scheme selected.
- July 2018 — Sep. 2018: submission of a final report to the IAA.

Issues requiring resolution? (recommend approach):
Members/Participants from other space faring nations like Russia, USA, Europe, Japan, India are important for wide acceptability of the contents. We already send email to some experts, and we should strengthen communication to IAA Office for collecting experts' information from IAA website.
During analyzing the optimization mass on spacecraft, we should have in-depth research on the advanced propulsion technology, and advanced propulsion experts are also needed. We also wish some experts about Martian atmosphere comprehensive application to join our study group.

Product Deliveries on Schedule? (If modified explain rationale):
The research schedule is needed to be modified, because we adjust the part contents on analysis of maintainability and supportability, we need consider the advanced propulsion scheme, and we would complete the multi-parameters optimization and scheme selected.

Study Team Member Changes? (List any Study Team Members that you wish to discontinue, and provide names plus contact coordinates of any Members you wish to add on the second page of this Study Update form.) Note: Complete contact information including email, tel. and fax must be provided for all additions. Only Members with complete contact information will be listed and receive formal appointment letters from the IAA Secretariat.)

See next page.

Name of person providing Study Group Status (Study Group Chair or Co-Chair):
YANG Hong

Status Report Date:
16/03/2017

Study Team Membership Changes

Effectivity Date:

17/03/2016

Discontinue:

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