

SPACE DEBRIS SYMPOSIUM (A6)
Poster Session (P)

Author: Dr. Steve Jolly

Lockheed Martin (Space Systems Company), United States, steven.d.jolly@lmco.com

Mr. Mike Drews

Lockheed Martin (Space Systems Company), United States, micahel.e.drews@lmco.com

DE-ORBITING UNCOOPERATIVE BODIES FOR DEBRIS MITIGATION

Abstract

Orbital debris risk may well be one of the greatest challenges of near earth space operations that our generation will face. This represents an international threat to both the commercial use of space in LEO as well as science, earth observation, human space flight, and military spacecraft. Studies suggest that deorbiting even a few spent rocket bodies or spacecraft every year will have significant effect on space debris densities and help prevent the Kessler Effect from taking place. The purpose of this paper is to explore and present the mission system implications of rendezvous, proximity operations and interaction with an uncooperative body (UB) where the objective is to impart a delta V sufficient to cause the orbital decay and re-entry of the body and reduce the probability of a collision that would add to the debris cloud. Consideration will be given to an architecture that can visit and deorbit several UBs in one launch, with focus on minimizing cost while maximizing safe operations so that such operations do not result in inadvertent debris generation – the very thing the mission was designed to mitigate.