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SPACE DEBRIS SYMPOSIUM (A6)
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SPACE DEBRIS REMOVAL USING DE-ORBIT KIT TECHNOLOGY

Abstract

In this technique our main target is 46% nonfunctional satellites or other defunct objects in LEO. We propose a solution in the form of a satellite system serving as a delivery unit which houses a plurality of remote operated semi-self-attaching de-orbiter modules.These are assisted in deployment via robotic arm which is fixed to the delivery satellite chassis.The whole mission is divided into four phases from launching to de-orbiting of de-functional object followed by ejection of satellite system into LEO at a height of 600 2000KM and detection & deorbit installation system phase. In this technique we can use different module for both satellite system and deorbit kit.Moreover, the modules may include the communication system, satellite system and deorbit kit, electrical power system, OITC,altitude determination and control system, deorbit installation system and robotic arm assembly armature and at-last de-orbit kit, which comprises of GPS system, computer control and communication modules.The deorbit module consists of an assembly of systems in a compact package. It includes an automated installation system comprised of guided drills in an armature affixed to the deorbit module, a computer control module, communications array which connects remotely to the satellite, power system and a pulsed plasma thruster system using solid Teflon as fuel, as well as a GPS device intended to enable tracking on deorbit.This module connects to the arm via an electromechanical connection.We construct smallsatellite, it will be equipped with a rack designed to hold this de-orbit module.This smallsatellite would be a semiautonomous robot, sent into orbit to intercept a defunct satellite, and will be referred to as a payload delivery craft.The servicer craft would next locate and meet with the defunct satellite unit, by using its remote sensors to intercept the defunct satellite and achieve orbit lock.Once in orbit lock, controllers on earth can manipulate the on board robotic arm in realtime via a relayed downlink, and pull itself into a close operating range to the defunct unit. Once the servicer is in position,a securing footclaw would deploy from the base of the servicer, securing the servicer craft to the orbital debris, freeing up the robotic arm for the next task at hand.