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**Mitigation of Imminent Comet Impact**

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**ABSTRACT**

Comets are not given much attention because their estimated collision frequency with Earth is two orders of magnitude less than that for asteroids. But a comet entering the inner Solar System is generally larger and faster than an asteroid and has a greater damaging potential. Moreover, since comets originate from the outer regions of the Solar System, they are discovered late, perhaps only one or two years before their potential impact, and they can approach the Earth on highly inclined orbits with respect to the ecliptic plane. Accordingly, recent assessments place the threat from comets on par with the threat from asteroids because their lesser frequency is compensated by their greater damaging potential. To help understand possibilities and limitations in addressing the comet threat, NASA's Jet Propulsion Laboratory (JPL) has constructed a fictitious comet threat that puts a comet on a collision course with the Earth. This new threat has been added to those available on the NEO Deflection App (NDA) developed jointly by The Aerospace Corporation and JPL. The NDA was used to examine similarities and differences between deflection of an asteroid on a highly inclined orbit and deflection of a comet, and considers the effectiveness of both the high speed kinetic impact and nuclear detonation mitigation approaches. Launch technology restricts the encounter area

between the spacecraft and the object to near the nodal regions. Short warning times require pre-built systems and put limitations on mitigation.

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