

Reconnaissance Missions to Near-Earth Object Impact Threats: A Pragmatic Approach

R. Terik Daly¹, Nancy L. Chabot¹, Angela M. Stickle¹, Edgard G. Rivera-Valentín¹, Ruth A Vogel¹, Andrew S. Rivkin¹, Julee A. Rendon¹, Andy J. López-Oquendo²

¹Johns Hopkins University Applied Physics Laboratory (APL) ²Goddard Space Flight Center

Corresponding author: terik.daly@jhuapl.edu

Flyby or rendezvous; purpose-built or repurposed

Implement **whatever type of reconnaissance mission will provide actionable information the soonest.**

Information that enables better planning by **meaningfully reducing uncertainties in impact risk and/or Earth impact prevention requirements.**

The sooner decisions can be made about how to proceed effectively, the cheaper the response will be and the faster normalcy will return.
But, if you could wait a month and use, e.g., a Falcon 9 instead of a Falcon Heavy Expendable, the wait might be worth it.

The SMPAG “Recommended Criteria & Thresholds for Action” do not recommend implementing reconnaissance (or other) missions. The U.S. *Report on Near-Earth Object Impact Threat Emergency Protocols* is short on particulars for implementing reconnaissance missions.

We advocate filling these gaps.

There will be uncertainty and churn in the event of a near-Earth object impact threat. Agreeing ahead of time, as a community of planetary defense specialists, on common principles will streamline discussions about courses of action and recommendations to decision makers, thereby saving time in a potentially time-sensitive situation.