



DART

Double Asteroid Redirection Test

Double Asteroid Redirection Test (DART)

DART Kinetic Impact Demonstration
Dimorphos, moon of 65803 Didymos



- Demonstrate kinetic impactor deflection (impact in Fall 2022)
- A controlled impact experiment to increase confidence of kinetic impact predictions and improve understanding of asteroid physical properties and high-speed collisions
- Binary target allows measurement of deflection by ground-based observatories

Launch

July 22, 2021

Delayed to Second launch window
starting 24 November 2021



IMPACT: September 30, 2022

LICIACube
(Light Italian Cubesat
for Imaging of Asteroids)
ASI contribution

DART Spacecraft

650 kg arrival mass
18.8 m × 2.4 m × 2.0 m
6.65 km/s closing speed

Didymos-B

163 meters
11.92-hour orbital period

65803 Didymos (1996 GT)

1,180-meter separation
between centers of A and B

Didymos-A

780 meters, S-type
2.26-hour rotation period

Earth-Based Observations

0.07 AU range at impact
Predicted ~10-minute change
in binary orbit period

- Target the binary asteroid Didymos system
- Impact Didymos-B and change its orbital period
- Measure the period change from Earth

DART I&T Continues to Progress



ROSA Wing 1 Inspection at DSS



Spacecraft being prepared for TVAC

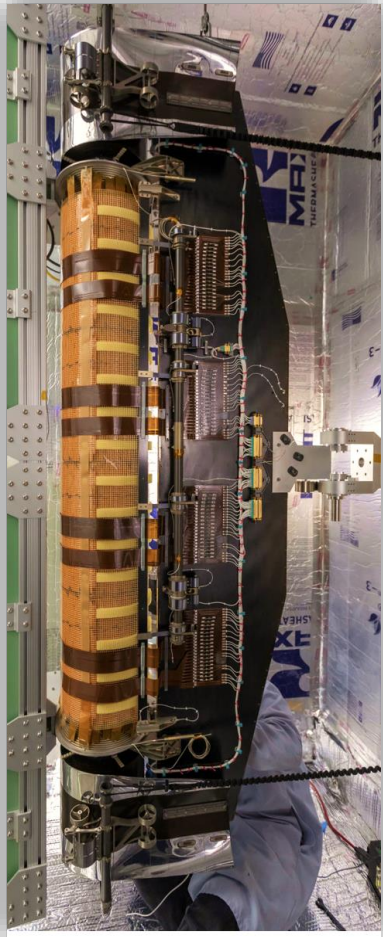
Roll-Out Solar Arrays (ROSAs) Ready to Ship



Solar Array Wing 2 Final Inspection and Cleaning at DSS

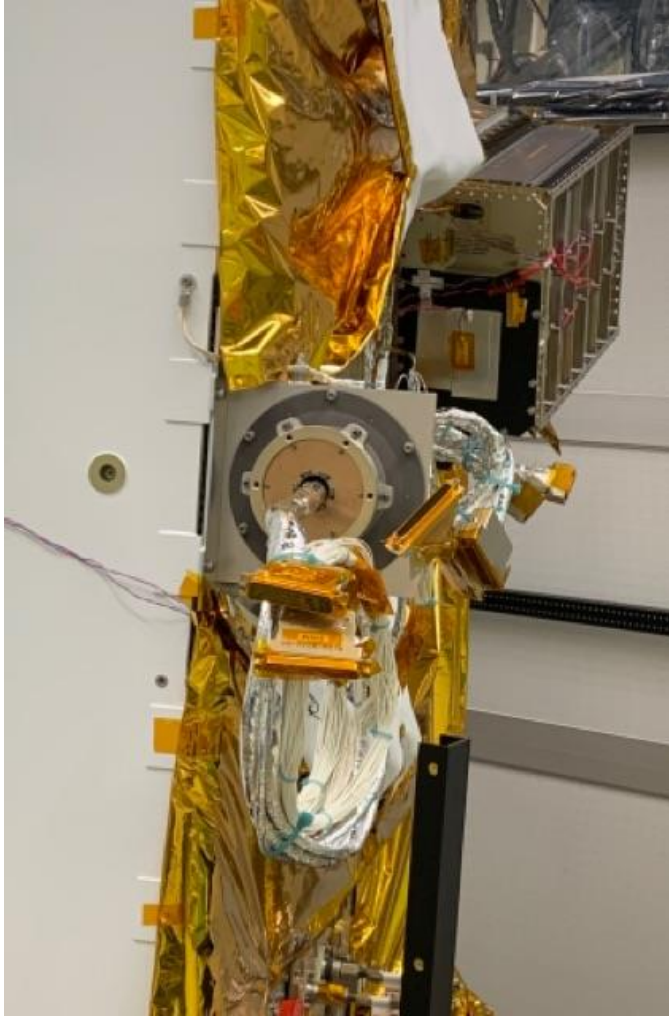


Stowed Wing 1



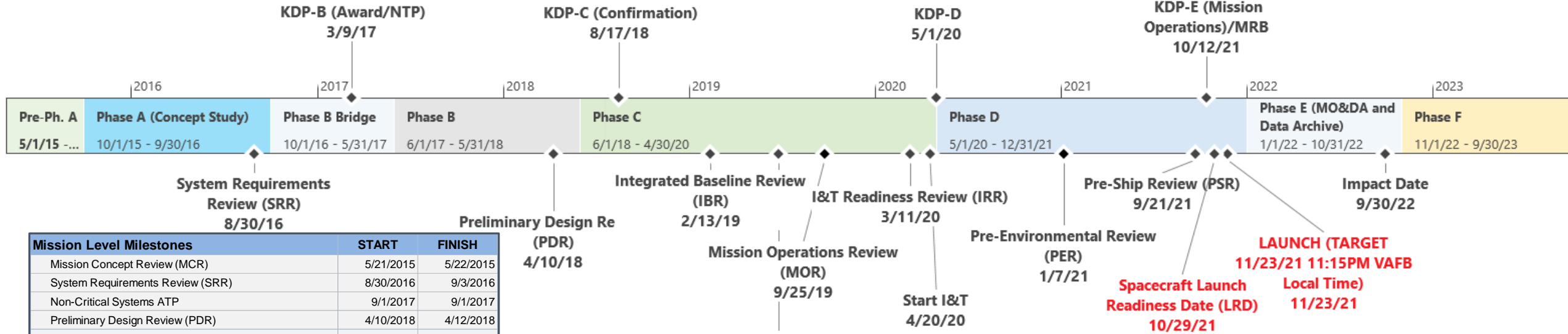
Stowed Wing 2

LICIA Cube Accommodation



DART Timeline and Mission Milestones

Primary Launch Period: 7/21/2021 - 8/24/2021
 Extended Primary Launch Period: 8/25/2021 - 09/04/2021
 Backup Launch Period: 11/23/2021 - 02/15/2022



Mission Level Milestones	START	FINISH
Mission Concept Review (MCR)	5/21/2015	5/22/2015
System Requirements Review (SRR)	8/30/2016	9/3/2016
Non-Critical Systems ATP	9/1/2017	9/1/2017
Preliminary Design Review (PDR)	4/10/2018	4/12/2018
Integrated Baseline Review (IBR)	2/13/2019	2/13/2019
Critical Design Review (CDR)	6/26/2019	6/28/2019
Mission Operations Review (MOR)	9/25/2019	9/26/2019
I&T Readiness Review (IRR)	3/11/2020	3/12/2020
Start I&T	4/20/2020	4/20/2020
Terminal Phase Review	9/10/2020	9/10/2020
Pre-Environmental Review (PER)	1/7/2021	1/11/2021
Pre-Ship Review (PSR)	9/21/2021	9/21/2021
Operational Readiness Review (ORR/FOR)	9/22/2021	9/22/2021
Mission Readiness Review (MRR / FRR)	9/30/2021	10/1/2021
OSMA Safety and Mission Success Review (SMSR)	10/12/2021	10/12/2021
Launch Readiness Review (LRR)	11/17/2021	11/17/2021
Spacecraft Launch Readiness Date (LRD)	10/29/2021	10/29/2021
LRD (TARGET 11/23/21 11:15PM VAFB Local Time)	11/23/2021	11/23/2021
Commissioning	11/24/2021	12/24/2021
Primary Launch Period	7/21/2021	8/24/2021
Extended Primary Launch Period	8/25/2021	9/4/2021
Backup Launch Period	11/23/2021	2/15/2022
Post Launch Assessment Review (PLAR)	12/24/2021	12/24/2021
Impact Date	9/30/2022	9/30/2022

Key Decision Points (KDPs)	START	FINISH
KDP-B	3/9/2017	3/9/2017
KDP-C	8/17/2018	8/17/2018
KDP-D	5/1/2020	5/1/2020
KDP-E	10/13/2021	10/13/2021

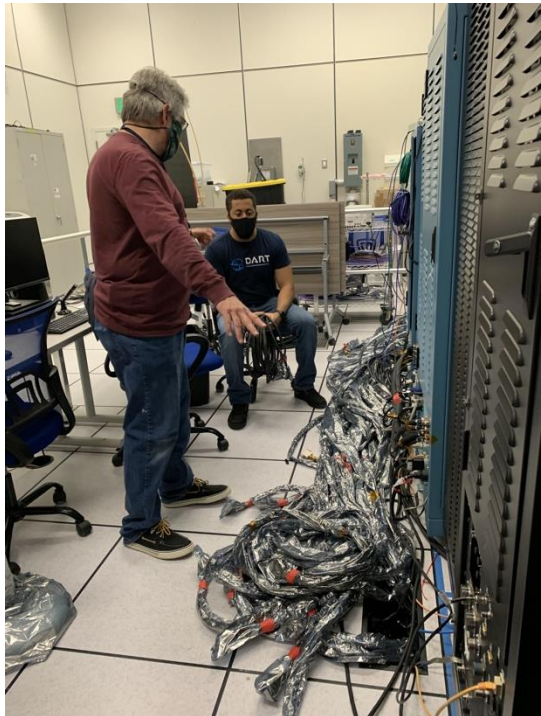
PHASE	START	FINISH
Pre-Phase A	5/1/2015	9/30/2015
Phase A	10/1/2015	9/30/2016
Phase B Bridge #1	10/1/2016	3/31/2017
Phase B Bridge #2	4/1/2017	5/31/2017
Phase B	6/1/2017	5/31/2018
Phase C	6/1/2018	4/30/2020
Phase D	5/1/2020	12/31/2021
Phase E	1/1/2022	10/31/2022
Phase F	11/1/2022	9/30/2023

LAUNCH (TARGET 11/23/21 11:15PM VAFB Local Time)
Spacecraft Launch Readiness Date (LRD) 10/29/21



Assembly, Test and Launch Operations

- Completion of TVAC Operations and Move back to High Bay





NEO Surveyor Mission

25 March 2021

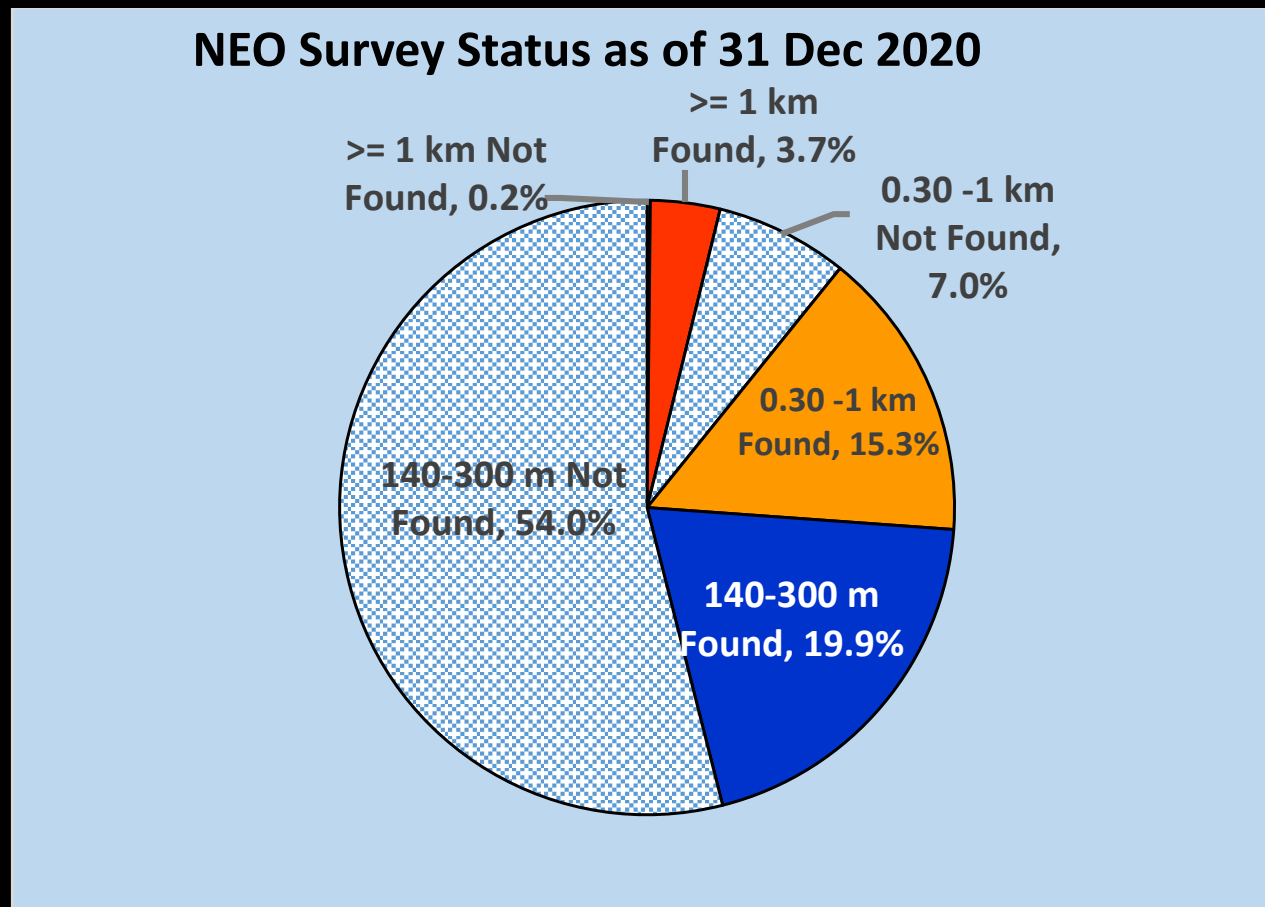


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Progress: 140 Meters and Larger

Total Population estimated to be ~25,000

**George E Brown
NEO Survey Goal**



At current discovery rate, it will take more than 30 years to complete the survey.

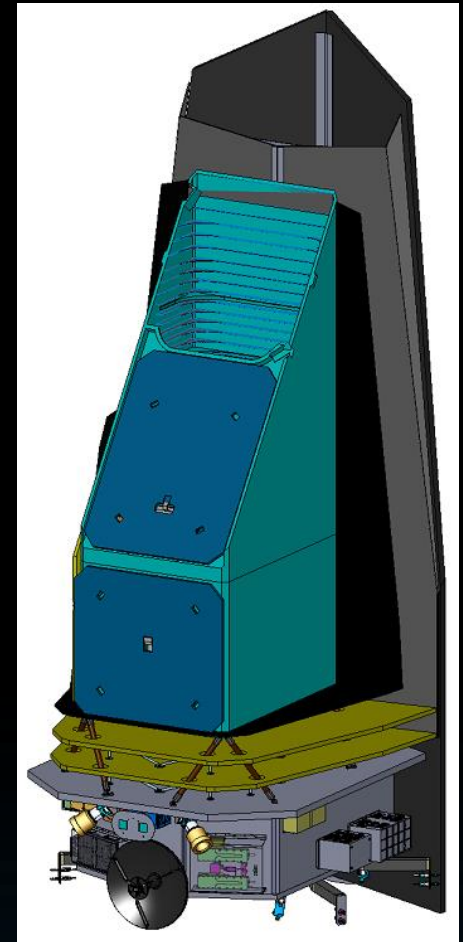
NEO Surveyor Mission

Objectives:

- Find 65% of undiscovered Potentially Hazardous Asteroids (PHAs) >140 m in 5 years (goal: 90% in 10 years)
- Estimate sizes directly from IR signatures
- Compute cumulative chance of impact over next century for PHAs >50 m and comets
- Deliver new tracklet data daily to the Minor Planet Center

KDP-B, entry to Preliminary Design, scheduled for late May 2021

NEO Surveyor
Space-based IR
Observatory





**NEOSM
field-of-regard**

**NEOWISE
field-of-regard**

