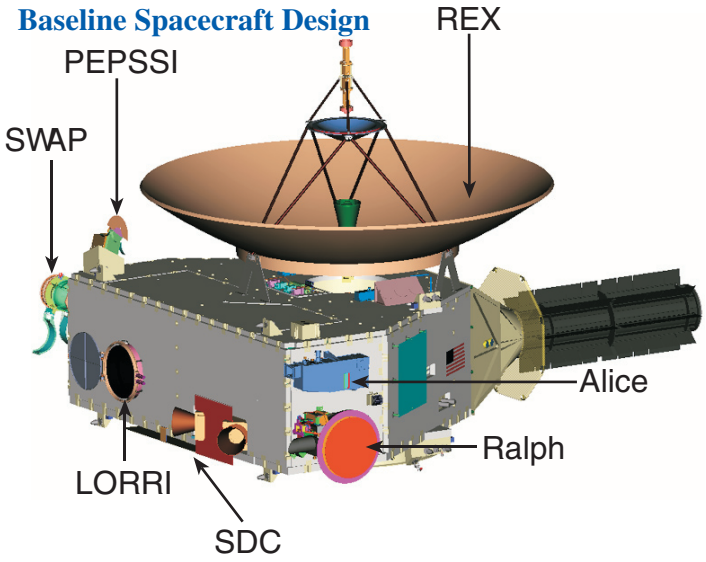
NEW HORIZONS:
Shedding Light on Frontier Worlds

Mission Overview. *New Horizons* is an exciting scientific investigation to obtain the first close look at Pluto-Charon, a binary planet, and then multiple Kuiper Belt Objects (KBOs). Owing to their fundamental relationship to understanding our solar system's origin and evolution, a Kuiper Belt–Pluto flyby was the top priority in the National Research Council's Decadal Survey of Solar System Exploration.

New Horizons seeks to learn more about the surfaces, atmospheres, interiors and space environments of Pluto, Charon and KBOs by using imaging, visible and infrared (IR) spectral mapping, ultraviolet (UV) spectroscopy, radio science, and in situ plasma sensors. *New Horizons* is scheduled to launch in 2006 and arrive at Pluto-Charon in 2015. Over a 150-day period it would conduct the first spacecraft reconnaissance of these worlds, then continue into the Kuiper Belt for further encounters.

Baseline Spacecraft Design



Mission Management

Principal Investigator:	Dr. S. Alan Stern, Southwest Research Institute (SwRI)
Project Manager:	Mr. Glen Fountain, The Johns Hopkins University Applied Physics Laboratory (JHU/APL)
Payload Manager:	Mr. Bill Gibson, SwRI
Spacecraft:	JHU/APL

Baseline Mission Summary

Launch vehicle:	Atlas V 551
Launch date:	January 2006
Jupiter flyby:	February 2007
Pluto-Charon encounter:	July 2015
Kuiper Belt Object encounter(s):	2017–2020

Mission Benefits

- Education/Public Outreach: comprehensive formal and informal education programs
- Potential Technology Transfer: low-power digital receiver
- Small Disadvantaged Businesses: proactive small and small disadvantaged business plan

Science Payload

Ralph:	Visible mapping, infrared spectroscopic mapping
Alice:	Ultraviolet imaging spectroscopy (SwRI, Ball, NASA/Goddard Space Flight Center)
REX:	Radio science and radiometry (Stanford, JHU/APL)
SWAP:	Solar wind (SwRI)
PEPSSI:	Energetic particle spectrometry (JHU/APL)
LORRI:	Long-range and high-resolution visible mapping (JHU/APL)
SDC:	Student-built dust counter (Univ. of Colorado)

Key Spacecraft Design Characteristics

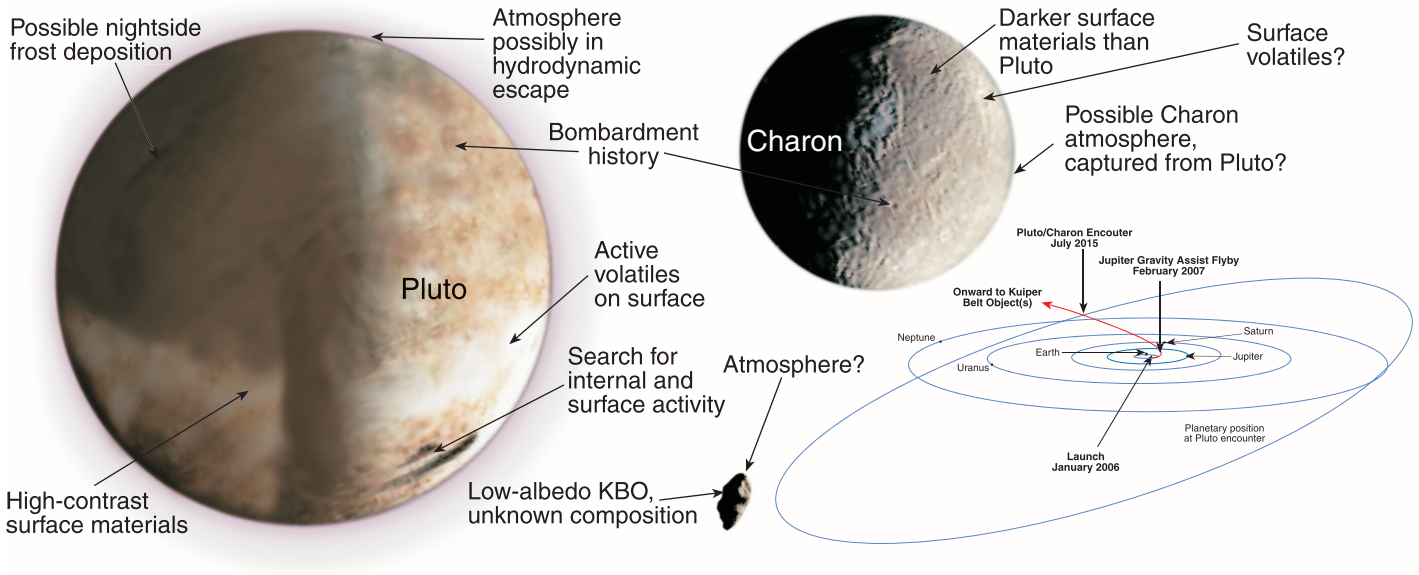
Power at Pluto:	190 watts (in 2015)
Spacecraft mass:	465 kilograms (including fuel)
Redundancy:	All major electronics
	Star cameras
	Data storage (Two 64-gigabit data recorders)
Propulsion:	Hydrazine monopropellant
Attitude control:	3-axis & spin-stabilized modes
Communications:	X-band, 2.1-meter high-gain antenna
Downlink from Pluto:	768 bits per second to 70-meter antenna

New Horizons on the Web: http://pluto.jhuapl.edu

New Horizons —

A mission to explore Pluto-Charon and Kuiper Belt Objects

One of the best images of exotic Pluto and its icy moon Charon, as seen by the Hubble Space Telescope.



At Pluto-Charon, New Horizons would provide:

- *Images superior to those from the Hubble Space Telescope for 75 days before flyby (12 Pluto days)*
- *Global maps of both worlds at 40-kilometer resolution and hemispheric maps at 1-kilometer resolution*
- *Infrared spectral maps at up to 7-kilometer resolution and visible 4-color maps at up to 3-kilometer resolution*
- *High-resolution terminator images at 100-meter resolution*
- *Ultraviolet and radio occultations of both Pluto and Charon*
- *Ultraviolet dayglow and nightglow spectra of Pluto's atmosphere*
- *In situ measurements of energetic particles and the solar wind*
- *Surface temperature maps at 50-kilometer resolution*

Similar data would be obtained at one or more Kuiper Belt Objects

Neptune's moon Triton is thought to be similar to Pluto. This Voyager 2 mosaic shows the fascinating complexity of this world and tantalizes us with the wonders that ***New Horizons*** could reveal at Pluto-Charon.

04-00901FS 12/01/04