Done with Pluto, New Horizons will drift in endless sea of space

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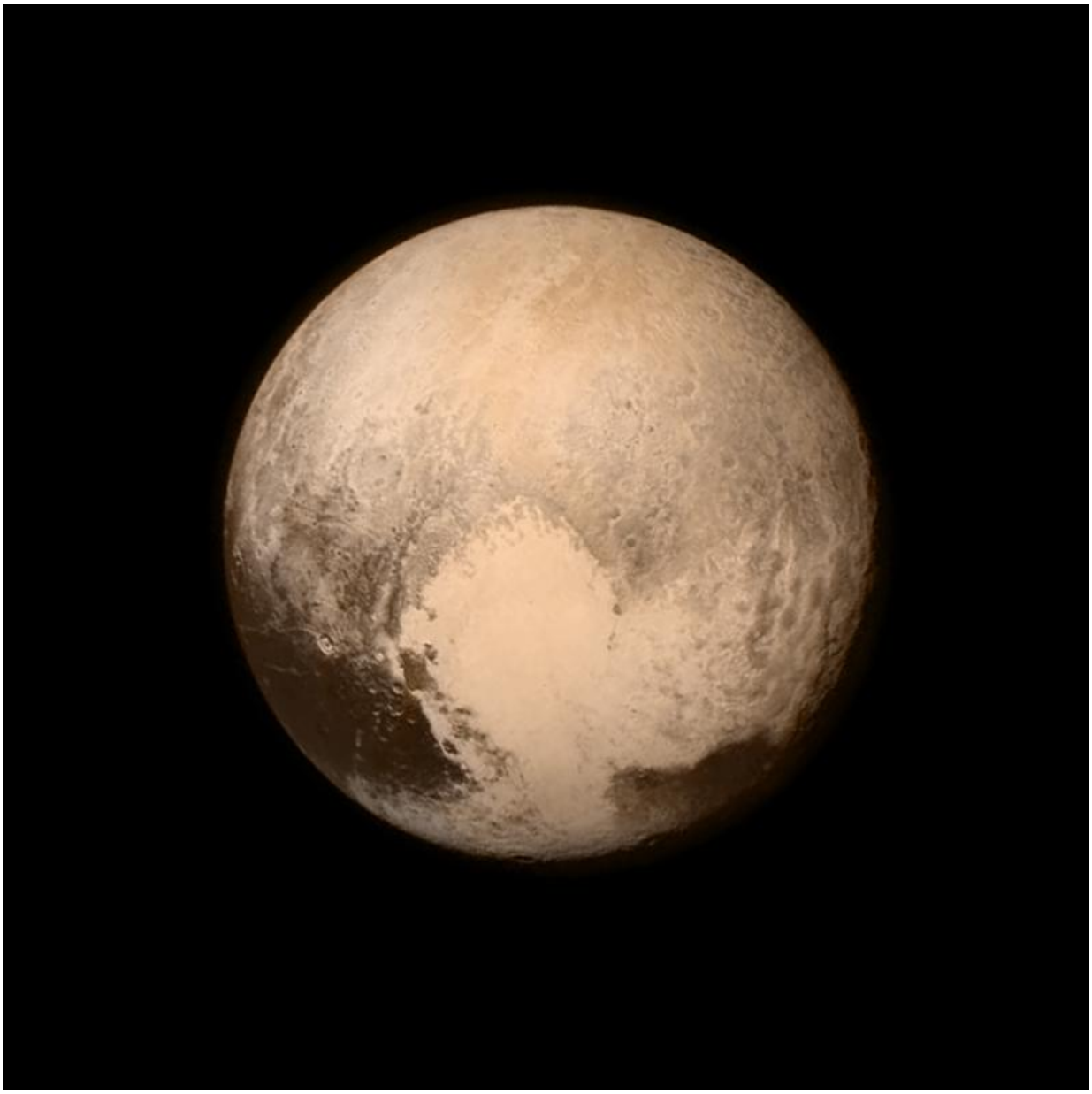

Pluto nearly fills the frame in this image from the Long Range Reconnaissance Imager (LORRI) aboard NASA's New Horizons spacecraft, taken on July 13, 2015 when the spacecraft was 476,000 miles (768,000 kilometers) from the surface. This is the last and most detailed image sent to Earth before the spacecraft's closest approach to Pluto on July 14. The color image has been combined with lower-resolution color information from the Ralph instrument that was acquired earlier on July 13. This view is dominated by the large, bright feature informally named the "heart," which measures approximately 1,000 miles (1,600 kilometers) across. The heart borders darker equatorial terrains, and the mottled terrain to its east (right) are complex. However, even at this resolution, much of the heart's interior appears remarkably featureless—possibly a sign of ongoing geologic processes. Credit: NASA/APL/SwRI

The New Horizons spacecraft did what it was meant to do. It explored the unexplored dwarf planet Pluto. So, now what?

A year from now, New Horizons will join four other unmanned spacecraft speeding out of our solar system: Pioneer 10, Pioneer 11, Voyager 1 and Voyager 2.

"The Pioneers (are) now dead," said Randii Wessen, a spokesman for NASA and an astronautical engineer who works on future mission concepts at NASA's Jet Propulsion Laboratory at the California Institute of Technology. The Pioneer 10 and Pioneer 11 explored Jupiter and Saturn in the 1970s and stopped sending information back to NASA in 2003 and 1995, respectively.

Now they just float in space.

"These things have heliocentric escape velocity," Wessen said, meaning they have the ability to leave the sun's gravitational pull. "These were given enough speed that the pull of the sun is going to slow them up but

it won't stop them from their departure from the solar system. So they're just going to glide, dead, leaving our star forever."

Voyagers 1 and 2, which also were launched in the 1970s, are still transmitting data back to NASA. According to Wessen, NASA gets 16 hours of information a day from the Voyagers, but they're losing fuel and power.

"We're slowly turning off things to reduce the electrical demand so the power we do have is used for the critical systems," Wessen said. "But what are you going to run out of first? We're saying 2020-2025 is when we're going to lose them."

According to Wessen, the Voyagers are still technically in the solar system, because they're still bound gravitationally to the sun, but they've been able to transmit data about space beyond the sun's pull that is crucial for understanding how the universe began.

"This is the first time we've been able to sample what interstellar space is composed of," Wessen said, "which gives us an understanding of what our solar system was exposed to and the environment that it was created in that eventually spawned life on the third rock out" - a reference to Earth.

New Horizons still has some time before it enters interstellar space.

This summer, the scientists running the mission will identify a target in the Kuiper Belt, the mass of small objects that circle the sun beyond the main planets, and set a course to explore it, given the go-ahead from NASA. It's a less exciting mission than documenting Pluto, but still an important one.

"We're curious about our place in the universe, and here's a chance to

understand the third region of the solar system, the Kuiper Belt objects, because those are probably the origins of planets," Wessen said.

Eventually, both of the Voyagers and New Horizons will "die" and stop sending information back to NASA. But even then, like the Pioneers, they'll serve as ambassadors of Earth.

"They're ambassadors in the sense that they're our eyes and ears going places where we as a species can't go," Wessen said. "So they represent us."

Each of the spacecraft contains some kind of message from Earth.

The two Pioneer missions feature a gold anodized plaque that has drawings of nude humans and some symbols meant to represent the mission.

The Voyager missions contain golden records full of sounds, greetings and pictures that are meant to symbolize mankind.

New Horizons has a number of objects, including an American flag, the state quarters of Maryland and Florida, the ashes of Pluto discoverer Clyde Tombaugh and a CD with more than 400,000 names, including former TV host Bill Nye "The Science Guy" and Elon Musk, the CEO of Tesla Motors and SpaceX.

The objects on New Horizons are varied, with no clear message. Jon Lomberg, a science artist and the designer of the golden records that went out on the Voyagers, hopes to change that with a crowd-sourced project that NASA would send to the computers on New Horizons. It's still in the fundraising phase, but there isn't much of a rush. It will be at least a year before NASA can send the information.

"This is the first generation that has been able to send objects outside of the solar system," Lomberg said. "That's as big a step as the first animal crawling out of the water onto the land."

Lomberg worked with astronomer Carl Sagan and a small team on the golden records and had only six weeks to produce a portrait of mankind. But the chances that his portrait will ever be seen by aliens is small.

"Voyager 1 is traveling faster than Voyager 2," Wessen explained. "It's traveling at about a million miles a day. At a million miles per day, to get to the nearest star, it would take 72,000 years. And if there are 200 to 400 billion stars in our galaxy alone, we're not even out of the driveway. We're just starting to put our little toe out into the cosmic seas to see what's out there."

Instead, Wessen thinks that our technology will develop to the point where we'll be able to track the spacecraft down and bring them back before they reach any intelligent life.

"I think it's more likely that we'll be able to fish these spacecraft out of the drink and bring them back than that they would be intercepted by some alien system," Wessen said.

For Lomberg, the act of sending messages is important, whether they're received or not.

"It shows that even though we're small and insignificant creatures," Lomberg said, "we can do some pretty big and significant things."

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