A MILESTONE MISSION - CELEBRATING THE 100TH SHUTTLE LAUNCH

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Eighty-six miles north of here - as the pelican flies up the Indian River Lagoon - the space shuttle Discovery stands atop Cape Canaveral's Launch Pad 39A, awaiting a rendezvous with the stars.

Ninety-nine times during the past 20 years, the Discovery itself, or one of the other four space shuttles, has stood in this place, silently greeting the first morning's

sunlight and the early evening moon, becoming the focus of all activity at the Cape as launch day approaches.

This time, however, as the crew of what is officially known as STS-92 prepares for its 11- day mission, history is as thick at the Cape as the tropical air that blankets their every move.

At 9:38 p.m. Thursday, the 100th mission of the space shuttle is set to begin with the roar of 7.3 million pounds of rocket engine thrust and a fiery light bright enough to split the night as far south as Fort Lauderdale.

"You never want to treat one launch as more important than another, but when you step back and think about it, this one is different," said John Guidi, launch manager at Kennedy Space Center for the past 12 years.

"It's a milestone, not only for the longevity of the program, but a key step in the construction of the International Space Station as well," he said. "It's the culmination of where we've been and a guidepost for where we are heading."

The Discovery's mission will feature an international crew and actually be the fifth flight dedicated to the construction of the International Space Station.

During their week-plus mission in space, the Discovery's seven-member crew - Cmd. Brian Duffy; Pilot Pam Melroy; and Mission Specialists Koichi Wakata, of Japan, Leroy Chiao, Jeff Wisoff, Michael Lopez, of Algeria, and Bill McArthur - will begin the "heart" of the station's construction in orbit. The crew will attach two major components while performing four separate space walks to hook up electrical lines, computer connections and other finish work.

"Every so often there's a flight that makes people stand up and take notice," said Conrad Nagel, chief of the shuttle's processing office at the space center. "The John Glenn flight of a couple of years ago was like that, and this one is, too. This one's going to be cause for celebration, not just here at KSC, but for all the nation."

Preparations for the launch kicked into high gear last week with space center engineers and scientists checking and rechecking everything from the weather forecast for Thursday's launch to the status of rocket engine bolts and heat tiles.

"No launch is routine," Guidi said. "That's something every one of us understands a lot better since the Challenger disaster.

"This past week, for instance, the focus was on the game plan and our options should conditions unfold differently than expected. By the time people went home for the weekend, they knew that plan cold and that's key.

"We're keenly aware of the risk of this endeavor and that's why we're so rigorous in our preparations," Guidi said.

America's fleet of space shuttle orbiters are named after pioneering sea vessels of

the 18th and 19th centuries, vessels that crossed new frontiers in research and exploration.

A total of six working shuttles have been built, with four, Columbia, Discovery, Atlantis and Endeavor making up the permanent fleet.

The Enterprise, the first shuttle to be completed, was a test craft that only flew in Earth's atmosphere and has since been retired. The ill-fated Challenger was a history-maker - carrying the first American woman and first Black American into space, before becoming the first U.S. manned space vehicle lost during a mission.

(The space program's first great tragedy, the 1967 launch pad fire that killed Astronauts Virgil I "Gus" Grissom, Roger Chaffee and Edward H. White, occurred during a training exercise for the then-upcoming Apollo program, not during an actual mission.)

As of the Discovery's launch, the shuttle will have carried about 3 million pounds of cargo into space and 624 passengers.

The shuttle fleet will cumulatively have spent almost 21/2 years in orbit and amassed almost 15 years of passenger hours in flight.

In its 20-year history, the shuttle has deployed more than 60 satellites, retrieved and repaired two dozen more, supported two space stations; made three maintenance flights to the Hubble Space Telescope; launched planetary missions to study Jupiter, Venus and the sun; and conducted hundreds of studies of the effects of weightlessness on materials, plants, animals and humans in onboard laboratories.

"Having space shuttle missions seem routine is a good thing, I guess, because it means we are doing something right," said Astronaut Scott Horowitz, pilot of three shuttle missions, including one earlier this year.

"But that's a two-edged sword because when you are doing something new and exciting, it catches the public's attention. When it's "routine,' it doesn't seem newsworthy to some people.

"What people don't appreciate or see, for that matter, are the millions of man hours that go into making this vehicle go. A million things have to go right for a single shuttle mission to get off the ground," he said.

But that's not to say people have gotten to the point of taking the shuttle - and especially shuttle launches - for granted.

Among those who'll be gazing skyward Thursday night is Jon Bell, director of the Hallstrom Planetarium at Indian River Community College in Fort Pierce.

"Whether you like raisins in your cookies or chocolate chips, whether you're for Bush or for Gore ... this hits you where you live and it hits you in the heart," Bell said."When you think of all that went into it, the work, the creativity, the ingenuity, the heart ... all this to see the Earth as it truly is ... it's an awe-inspiring and humbling

event at the same time."

Night launches are considered the most spectacular to watch because of the contrast between the rocket's glare and the night skies.

Once off the ground, the shuttle travels up to 17,500 miles per hour and at a height of 190 to 330 miles above sea level, depending on the mission.

Horowitz offered a pilot's-eye view of what a mission feels like.

"Launch is an almost unimaginable sensation," Horowitz said. "You've got 7.5 million pounds of thrust pushing at your back, lifting a 4 million pound vehicle and rocket assembly off the pad. It's a pretty rough ride, at first. Almost surreal. Different from anything else you might have experienced. Nothing can get you ready for it.

"Then, seconds after the flight has begun, the booster rockets are jettisoned. There's a big explosion. It sounds almost like a train wreck. After that, though, the ride becomes much smoother, and the pressure - up until now you've felt like a gorilla is sitting on your chest - slackens.

"The most amazing thing, though, is looking out the window and watching the Earth's atmosphere sink away from you," he continued. "Space isn't very far away; it only takes about eight minutes and 30 seconds and you're there."

The flight itself, is like a "three-dimensional camping trip," Horowitz said.

"Imagine you go on a camping trip and it rains all the time, so you have to stay indoors and can't open the door. That's life aboard the space shuttle. Only in this case, someone's turned the cabin upside down and dumped out all your stuff.

"It takes off like a rocket, lands like a plane, but re-enters the atmosphere like a really bad glider."

Asked whether he's ever been scared on a flight, Horowitz said he never had time to be.

"It's much more nerve-racking to watch your friends go up than to actually do it yourself," he said. "When you're piloting the shuttle, you are just too busy to think."

Shuttle pilots and crews, he said, are conditioned by their experience as military pilots, conditioning that helps them "compartmentalize" their fears and concerns.

"It's like this is my ‘home worries' compartment," Horowitz said."This is my ‘personal worries' compartment ... my flying worries compartment. It's like driving a car. You can't drive and be worried about a million different things. You have to get on to the task at hand or else you'll have an accident.

"Shuttle people are fairly focused, fairly goal-oriented and their main thought during a mission is let's get the job done.'"

Except, Horowitz sheepishly admitted, during the 2-minute long hold that is built into every launch.

"That's when you finally get to think, but I have to tell you, it's never profound," he said. "Your two basic thoughts are: "Boy, I really need to find a bathroom' and, "All the smart people are three miles away ... in the viewing area.'"

Although shuttles have been flying for two decades, Guidi predicts they will be around at least another decade more.

One reason is the space craft's design capabilities - the shuttle still will have more than three-quarters of its design lifetime available.

Out of 100 flights designed for each orbiter, when STS-92 is completed, the Discovery will be the most-flown shuttle with 28 flights. The Columbia will be second with 26 flights. The Atlantis will 22 flights and the Endeavor, 14.

Another factor is how difficult it is to replace one mission program with another.

NASA has spent four years and about $1 billion developing a shuttle replacement, with nothing to show for it but a half-built prototype sitting in a Palmdale, Calif., hangar.

The X-33 spacecraft was supposed to make its first test flight 18 months ago, but engineering problems have beset the project almost from the start, leading some experts to doubt it will ever fly.

For now, NASA is content to focus on the 100th mission milestone. Ask anyone at the Cape and what they'll tell you is, it's the mission itself and increasing frequency of missions in the future that excites the Kennedy Space Center crew.

"Some people might think we're downplaying the 100th flight and talking up the construction of the space station, but it's just that we anticipated this thing for years and here we are really doing it," said Nagel, who has been with the space center for 35 years, arriving at the start of the Apollo moon program in 1967.

"This space station they are building is going to prove to be great for this country and a lot of others," he said. "It's going to put in perspective how truly special this planet is and the station's a place we are going to inhabit indefinitely.

"It's a huge triumph."

Even now, days before the Discovery's scheduled departure, the shuttle staff at the space center is well into preparations for the next launch, scheduled for late November.

"We're ramping up and the schedule is very exciting," Nagel said. "We have 10 flights scheduled to go off over the next 12 months. We're going to be doing what this space center was built for - launching shuttles into space."

"It sounds simplistic, but I believe it is true that everything we do in space is about making life better here on earth," Horowitz said. "Throughout the history of mankind, we have been a people, a species, that has explored and when you explore you learn.

"It's not just about things like the advent of smaller computers, more fuel-efficient cars, advances in medicine," he said. "Equally important is how this kind of exploration excites kids and motivates them to want to excel in math and science. That's our future.

"I know because it was a prime motivator in my own life," he said. "I still have the letter from my sixth-grade teacher that says, "Someday you will be an astronaut.'"

As for the future, Horowitz described himself as a "big proponent of going back to the moon and going on to Mars."

"We've got the space station well under-way now," he said. "It's time to get back to exploration and answering some of the basic questions about our universe, not least of which is whether intelligent life exists somewhere else."

Captions from original article: (color) Photo by Bill Mitchell: The space shuttle Discovery lifts off from pad 39-B with a large crowd on hand to view the launch Oct. 29, 1998.(color) Photo by Bill Mitchell: The sun sets behind the launch pad 39B as the countdown continues during the September 1988 launch of the space shuttle discovery. It was the first missin after the explosion of the Challenger in 1986.(B/W) Photo by Sanford Myers: r The space shuttle Endeavour lights up the early morning sky over the Gilbert's Bar House of Refuge Museum in Stuart on March 2, 1995.(B/W) Photo by Bill Mitchell: John Glenn waves to the crowd as he and the other crew members of the Discovery go to the launch pad Oct. 29, 1998.In front is Chiaki Mukai, pilot Stephen Robinson, left, and Pedro Duque of Spain, back.

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