

Orion architect aimed for moon and beyond Defying predictions, Karas helped Lockheed Martin land \$8.2 billion deal



Barry Gutierrez © The Rocky

John Karas, vice president of human space flight at Lockheed Martin, stands in front of a model of the Orion spacecraft at his office in Lakewood. Karas was the chief architect in Lockheed Martin's winning bid to build the next generation of spacecraft for NASA. The craft, called Orion, will take humans to the moon and eventually to Mars.

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By Roger Fillion, Rocky Mountain News

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John Karas pressed his foot on the accelerator of his rental car as he sped north up Florida's U.S. 1 toward the coastal town of Titusville.

The Lockheed Martin Space Systems Co. executive was in a funk. He'd been in Cape Canaveral on business. He was going to pay his aunt a quick visit. He would then catch a plane to Denver that night before flying to Washington the following day, Aug. 30, 2006.

NASA officials at the agency's Washington headquarters were scheduled to announce in two days - on Aug. 31 - the winner of a blockbuster contract to build a spacecraft to take humans to the moon, and later Mars.

Karas was the chief architect behind Lockheed Martin's Orion spacecraft bid. But the outlook was dismal.

The Washington grapevine, Wall Street and aerospace pundits were betting a Northrop Grumman Corp. and Boeing Co. team were a shoo-in for the deal. The duo shared strong pedigrees in manned space exploration. Also, Lockheed Martin had suffered a design setback.

Out of nowhere, Karas saw a billboard beside the road touting his company's Orion bid.

Reading "Step into the future," it featured an astronaut's super-sized footprint on a planet. Half the small planet was the moon, the other half Mars.

Karas was elated. "I needed a pick-me-up in the worst way at that moment," Karas recalled in a recent interview. "And there it was."

With the approach of the Aug. 31 anniversary of NASA's Orion decision, here's a look at the man and events behind Lockheed Martin's underdog effort to win.

John Charles Karas, 50, was born Aug. 20, 1956, in Miami.

The boy had rocket fuel in his blood. His father had been an early employee at Glenn L. Martin Co. in Maryland, the precursor of Lockheed Martin. Karas' parents later moved to Florida, where his father worked as a mechanic for Pan American World Airways.

One uncle, Charlie, worked for rocket pioneer Wernher von Braun on the Redstone rocket in Alabama. Another uncle, George, worked on NASA's Apollo project in the early days at what is today Cape Canaveral.

The uncles, both electrical engineers, loved to fly model airplanes and jets they had built from scratch. Young John kept model planes at the Karas' Miami home, too.

"Between my dad's background and my uncles' backgrounds, I was always around the technology," said Karas, a Georgia Tech graduate with an electrical engineering degree.

Boy watches NASA launches

During the early 1960s, the Karas family sat glued to the home TV to watch the Mercury launches - the first NASA spacecraft involving manned spaceflight.

Years later, Karas and his family would pile into the car and drive a few hours up the coast to watch the Apollo launches at the Cape.

In December 1972, a 16-year-old Karas stood on a beach in Titusville to watch a Saturn V rocket roar into the night sky. Three Apollo 17 astronauts were aboard. It would be the last U.S. manned mission to the moon.

He didn't know it then, but Karas would some day be immersed in efforts to return humans to the moon.

Fast forward more than three decades to 2005. NASA's proposed spacecraft - the crew exploration vehicle - would ferry humans 239,000 miles to the moon by 2020.

It would take four astronauts on moon missions and six to the international space station and Mars.

The CEV, later dubbed Orion, would be deployed after NASA retired the space shuttle in 2010.

Northrop and Boeing teamed in 2005 to work on the CEV. Lockheed Martin's Space Systems unit in Jefferson County was in charge of drawing up a rival plan.

Karas - the married father of three children - was tapped to oversee Lockheed Martin's bid. He had joined the company in 1994 after Lockheed Martin bought General Dynamics' space systems division. Karas began his career with General Dynamics.

The Lockheed Martin team got off to a bumpy start. In September 2005, company engineers were forced back to the drawing board after NASA endorsed the type of spacecraft championed by Northrop Grumman and Boeing.

The Lockheed Martin team had proposed a wedge-shaped vehicle that looked like a wingless space shuttle. But NASA's chief, Michael Griffin, said the agency wanted the CEV to look like a blunt-body crew capsule, essentially a bigger version of Apollo.

"We failed kind of miserably," Karas said.

Lockheed Martin campaigns

At Lockheed Martin, Karas is known as a driven man who can drive home a key point with four-letter words.

John Stevens, director of business development for human space flight at Lockheed Martin, said Karas' use of profanity is like a thermometer that measures his passion for a topic.

"It's a good gauge," Stevens said.

Not one to relax much, Karas gets particularly jumpy during booster rocket launches.

"I'm a pretty hyper guy on the launch pad," conceded Karas, who previously headed Lockheed Martin's Atlas rocket program.

While working on the Atlas V in the late 1990s and early 2000, Karas' launch team at Cape Canaveral gave him a "launch kit."

The small cooler was filled with gag objects to help ease nerves, including Mylanta, a mini-bottle of wine, a pacifier, and fake bottles of Valium and prednisone.

To steady his nerves during the yearlong campaign before NASA's Orion announcement, the 5-foot-6 Karas took to running. He had weighed 208 pounds. A personal trainer dispensed exercise and diet orders.

"During the whole campaign I lost 30 pounds and got into shape," Karas said.

And if he hadn't done so?

"The stress might have killed me."

When staying at hotels, Karas also found it comforting to fall asleep tuned to Roxy Music's *Avalon* album.

After NASA nixed Lockheed Martin's initial space plane proposal, Karas and his Jefferson County team retooled. They pulled out all the stops.

"Being the underdog sets you free," Karas said.

The Lockheed Martin team set about drafting a capsulelike spacecraft more to NASA's liking.

It also mapped out a strategy to win over NASA, as well as movers and shakers in key aerospace states with political clout: Texas, Florida and Louisiana.

The idea was to assure NASA that some of the workers and facilities involved in the space shuttle would "transition" over to developing and flying Orion.

"He understood what (NASA) wanted," said J.P. Stevens, vice president at the Aerospace Industries Association.

Meanwhile, Lockheed Martin would tell state leaders it would do the work in their backyards, creating jobs.

Some company insiders dubbed it the "Southern crescent" strategy, referring to Texas, Louisiana and Florida.

In a nutshell, Lockheed would do the engineering work in Houston, next to NASA's Johnson Space Center. Building CEV's big pieces would be done in Louisiana at NASA's Michoud Assembly Facility. Final assembly would be performed at NASA's Cape Canaveral site in Florida. Outside the region, engineering, development and design work would occur in the Denver area.

The company went very public with its plans - unlike Northrop and Boeing, which kept matters under wraps. Billboards, such as the one Karas saw, were thrown up in Texas, New Orleans, Florida, Alabama and Washington. All have NASA operations.

Lockheed Martin also held splashy news events in Texas, Florida and Washington. At a March 2006 briefing at the University of Houston's Clear Lake campus, Karas spoke to an audience of state and local dignitaries that included U.S. Rep. Sheila Jackson Lee, a Democrat; and an aide to Republican Sen. Kay Bailey Hutchison.

Standing on a podium in cowboy boots and a suit and tie, he told the crowd Houston would get 1,200 jobs if Lockheed Martin landed the CEV contract.

Lockheed Martin executives also were quick to note Houston's proximity to the Johnson Space Center, responsible for NASA's CEV program.

"You want to be with your customer," Karas declared.

And he joked with the crowd. Lockheed Martin executives had speculated Northrop and Boeing would do a good deal of the CEV work in California, Northrop's home state.

Keying off the Northrop-Boeing California link and Lockheed Martin's big Texas plans, Karas referred to the University of Texas' 2006 Rose Bowl victory over the University of Southern California.

"It's appropriate that I'm here in Texas, the national champs," Karas recalled telling the crowd. "And didn't they play some California team?"

Laughter erupted.

Despite the cheer, Karas was growing gloomy in the run-up to NASA's announcement. Speculation pointing to a Northrop-Boeing victory was intense.

Depression turns to elation

Lockheed Martin colleagues noted that the usually spirited Karas was coming to the office looking grim.

"He was actually depressed those last two weeks," said Stevens, the Lockheed Martin director of business development. "He wanted so much to win."

His dark mood came through in an e-mail he wrote just days before NASA's August 2006 announcement.

Seated one evening in a chair on the front porch of his metro Denver home, Karas typed a note via BlackBerry to a friend who didn't work at Lockheed Martin.

The gist of the e-mail, according to Karas: *I feel like I'm at a funeral.*

On the day of the announcement - Aug. 31 of last year - Karas got out of bed at the Crystal City Marriott, near Washington. He headed to the hotel's fitness center and ran five miles on the treadmill.

Later, he proceeded to Lockheed Martin's Washington office. NASA was set to make the announcement at 4 p.m. Eastern time. The companies would get the news between 1 and 2 p.m., so Karas or his Northrop counterpart could get to NASA headquarters for the ceremony.

Under NASA's plan, the agency would phone Lockheed Martin CEO Robert Stevens or the head of the company's Space Systems division, Joanne Maguire. Karas also would get a call. He would be sworn to secrecy.

Sitting in Lockheed Martin's Washington office, Karas watched the clock tick. By 1:30 p.m, nothing.

About 1:45 p.m., Karas called his boss, Maguire, to find out if she'd heard anything.

By now, Karas was exhausted. Maguire got on the phone. According to Karas, she said: "So John, how are you?"

After saying he was all right, -Maguire said, "Well?" An exasperated Karas, not knowing anything, blurted: "God, we didn't get it!"

Little did he know, but Maguire had learned the news from Stevens. NASA had phoned the CEO.

"She was playing with me," Karas recalled of Maguire. "And then she said: 'I hope you have your best suit on. Because we won.' "

Orion details

It's been almost a year since Lockheed Martin Space Systems in Jefferson County won the \$8.2 billion NASA contract to design and build the Orion spacecraft. Here's an update on the number of employees working on the program as of Monday, and other details.

488 Lockheed Martin Orion employees work in the Denver area.

726 Lockheed Martin Orion employees make up the nation's work force.

600 more Denver jobs are expected to be added in 2009.

- **Orion work being done locally:** Engineering, development and design work
- **Orion work outside Colorado:** Engineering, manufacturing, testing and assembly
- **Local work details:** Design and development of Orion's heat shield, launch-abort system, electronics, guidance system, etc. Engineers use computer-aided technology to perform design and development work.
- **Orion work site:** Lakewood, at Wadsworth and Hampden
- **Timetable:** NASA contract calls for Lockheed to have Orion operational, or "flying," by 2013. U.S. government budget outlays call for Orion to be flying by 2015.
- **John Karas' new Lockheed Martin job title:** Promoted to vice president, human space flight
Source: Lockheed Martin

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