Recently, his team negotiated with the European nations, designing a global positioning system called Galileo to ensure it can adapt to the U.S. global positioning system so users on both sides of the Atlantic can enjoy service.

Mr. Morin met with Indian scientists searching for water on the moon. India plans to orbit a satellite around the moon by 2007 to search for water near the moon's south pole.

"There's a valley there that's constantly in the dark," he said. "Satellite radar shows lots of hydrogen in the valley. That could mean water."

Perhaps his most exciting project is fusion power, a process that fuses atoms to release energy. Fusion power is clean and immense, he said.

"We know it works because that's how the sun works. That's how a hydrogen bomb works. A gallon of sea water can produce the same energy as 18 gallons of gas."

Six nations are vying to build the first fusion research facility. "Competition is intense to host the project," he said. "That's where State gets involved."

Mr. Morin expects to remain at his job for another several months before returning to the Johnson Space Flight Center in Houston.

Not surprisingly, his office boasts the trappings and curios of a high flyer. The requisite crew photos grace the walls, a model of an Air Force T-38 Talon accents his desk and laminated checklists for operating the shuttle's complex systems are stacked on the bookcase. And what looks like a giant automotive piston that was cut in two are really bookends fashioned from the latch that holds the space shuttle to its launchpad after ignition, while the rocket develops its mighty 3,690 tons of thrust.

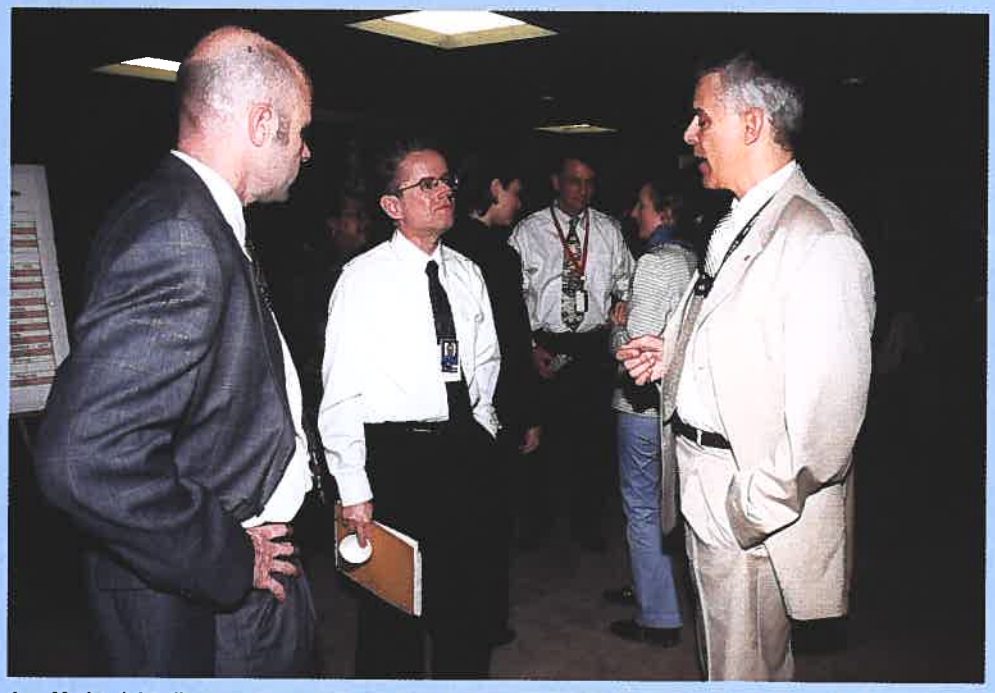
When the engine's momentum peaks, explosive bolts rips these stainless steel grips apart, sending the ship skyward, like an arrow shot from a bow. These incinerated chunks of metal are recovered, filed smooth, cleaned up and awarded to the crew as prized desktop bragging rights.

Being an astronaut these days is as much about public relations as rockets, reentries and 25,000-mile-per-hour orbital rendezvous with a space station. NASA insists that its astronauts mingle with the taxpayers. They must do a least one speaking engagement per month, visiting schools, offices, manufacturers and other venues to quench the public's fascination with and thirst for space travel. It's one reason the agency seeks strong interpersonal skills when selecting astronauts. The other is to ensure every flight has a crew that can work as a team under the unforgiving demands of space flight.

It's a complex environment that has irreversible consequences," said Mr. Morin. "No one person can fly the shuttle."

Despite the 2003 Columbia shuttle disaster and the recent privately funded space flight that captured the $10 million Ansari X Prize for successfully putting a man in space—at a fraction of the cost of a shuttle launch—Mr. Morin is still upbeat about the American space program.

Another 28 shuttle flights are scheduled beginning in late spring to complete the space station. The Europeans and Japanese already have prefabricated laboratories "set for delivery," he said. As for private space exploration, Mr. Morin isn't concerned. He compares SpaceShipOne's 62-mile-high feat with Alan Shepard's 15-minute suborbital flight in 1961, which was hastily prepared in response to the Soviet orbital flight of Yuri Gagarin earlier that year. "That was a pop-up flight," he noted about the corporate spaceship designed by aviation pioneer Burt Rutan. "They were successful with getting into space, but to stay there you have to fly at least 25 times the speed of sound or else you'll come right back down."



Lee Morin, right, discusses America's space program with Robert McCutcheon, a political officer with the Office of Russian Affairs, and Jeff Fisher, left, a physical sciences administrative officer.

He predicts better days for NASA, with renewed exploration of the moon and then on to Mars. He envisions better ways to get there, too, such as the plasma propulsion engine. That idea is still on the drawing board and there needs to be a way to contain the engine's nine-million-degree combustion. But a plasma vehicle would reduce the journey to Mars from nine months using today's rockets to about 30 days, according to Mr. Morin.

"Exploration is really the driver," he said. "We have very good presidential direction." ■

Paul Koscak is acting editor of State Magazine.

PHOTOGRAPHS: (ABOVE) PAUL KOSCAK; (OPPOSITE PAGE) THE MUSTAFA FAMILY