

# LOVE & ROCKETS

BY JOE PAPPALARDO

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These days, the front door of Beal Aerospace is locked, and knocks go unanswered. Three vehicles dot the otherwise empty parking lot, testifying that there is still life at the headquarters of the defunct satellite launch company. All but a handful of the 200-plus engineers, rocket scientists, and assorted staff have been laid off, and the vacant rows of their parking spaces seem like unmarked graves.

One of the vehicles belongs to a woman who finally comes through the lobby to unlock the front door. She leads you into a bright room dominated by a 20-foot-tall model rocket. Photos line the lobby, shots of a dogleg in a jungle river, a spectacled scientist peering at a machine part, and an aerial photo of Sombrero Island, bare rock surrounded by blue water. All bear the same gruff remark in the corner: "Details of the operations and items shown in this photo are proprietary and confidential and cannot be discussed."

The woman signs you in on a clipboard. The list of visitors is short. "It's so rare anyone comes out here," says the woman, one of the few people still employed at Beal Aerospace.

One of the other surviving employees at the empty facility is corporate counsel David Spoede, who moved his office from the executive upper floors to ground level. What was once his office now houses only file cabinets and loops of wiring unspooling from the ceiling like intestines. Framed maps of South American islands sit against cardboard boxes stuffed with a mix of legal documents and mementos.

The emptiness hits home when you explore the cavernous space where they planned to build rockets. Not just any rockets: rockets powered by the largest engine developed by anyone in the United States since the Apollo space program. The Stage One rocket designed by Beal Aerospace burns three backyard swimming pools of fuel per second.

The abandoned, unsellable equipment stored in the empty warehouse provides some perspective on just how ambitious the project was. In one corner sits a 40-foot cylinder ringed with several hundred half-inch rivet holes, the thrust tube for a Stage Two rocket engine, which couples the second-stage engine to the rocket's body. This piece has seen action, fired during a well-publicized test in McGregor, near Waco.

Some of the equipment is too complicated or confidential to talk about. Other parts are simple, if huge, constructions of bent plywood. These are what engineers use to bend graphite epoxy composite materials to form the body of the rocket. "This is the low side of high tech," Spoede says.

The headquarters of Beal Aerospace in Frisco mirrors its history: hopeful and ambitious birth, thrilling and painful growth, and an early and tragic death. Its empty parking lot and vast vacant warehouse spaces are the remnants of a dream so bold it ranged from Texas to the jungle nation of Guyana to thousands of miles above the planet.

At the heart of this dream is Andrew Beal, self-made billionaire and amateur math genius, one of those rare people who have enough cunning, money, vision, money, ambition, and money to drag his vision into reality. What reality did to Beal's dream is not a lesson in hubris aimed at rich men but rather a warning for any visionary or uber-achiever: The world may not let you change it, and for reasons that may not make sense.

Beal's dream was deceptively simple on its surface: Form a privately held company to launch satellites into space cheaply, using proven technology, without becoming a government contractor. (Cheaply meaning about half of the \$50 million to \$80 million NASA pays for a comparable launch.)

To do this, one must have a spaceport, a Cape Canaveral for the private sector. Beal endeavored to build his own spaceport somewhere close to the equator, where his rockets could gain momentum from Earth's rapid spin and save on fuel.

It's eminently fair to say Beal's plan was a long shot. That's not to say it had no merit. Each stage of the business plan was backed by logic, reason, and market sense. Satellite launches are prohibitively expensive. The disposable Beal Aerospace rockets were designed to be cheap and effective, thanks to the combination of their simple old-school design and new lighter construction materials. Its rocket fuel was unorthodox but viable. The spaceport could have been built and maintained.

"If anyone was going to do it, it would be someone like Beal. They took him fairly seriously. He was putting most of his bank profits into the project," says aerospace analyst Marco Caceres. "He wasn't wasting a lot of time raising money...People thought he was progressing, that this guy could be up and running in a few years."

Beal Aerospace might have done the impossible: compete against NASA, Boeing, and Lockheed Martin and win. But the tough odds held, and in October 2000, Beal Aerospace, the largest private rocket development effort in history, shut its doors and laid off more than 200 people. Beal had spent \$200 million of his own money by that time.

Beal, already beset with export licenses and diplomatic quarrels over his proposed spaceport, claimed a massive subsidy program for government-contracted launch companies doomed the start-up's chances to make a profit.

"We wonder where the computer industry would be today if the U.S. government had selected and subsidized one or two personal computer systems when Microsoft Inc. or Compaq Inc. were in their infancy," Beal said in a written statement declaring his company's demise.

Industry experts agree that the U.S. competition was a major hindrance, but other factors helped doom his project, including a satellite industry slowdown that surprised Beal and most aerospace analysts. The industry was stabilizing. Companies were planning for more rapid growth but were blindsided. Established satellite companies carrying huge debt loads were ailing; one declared bankruptcy, and others teetered on the brink.

Without satellites going into orbit, a launch service company is grounded. The pond was going dry, and the fish were dying, leaving birds like Beal to starve.

At the sad shell of available office space that was once Beal Aerospace, Spoede reaches into a box and plucks a publicity shot of a horizontal rocket test in McGregor. It pictures a 10-foot column of flame blasting 300 feet from the barrel of a rocket engine. A bright red truck sits near the lick of fire. "He had it freshly painted red and put out there, for scale," Spoede says, referring to Andy Beal. "People said he was nuts to put it there."

He pauses and gives his epitaph on Beal's dream: "I guess it's hard to be a genius."

In 1976, 21-year-old Beal, the son of an engineer and a state government employee, attended a property auction in Waco. The move would sow the seeds of a personal fortune of Lone Star State proportions.

Beal, a native of Lansing, Michigan, was attending Michigan State University when he began buying and selling rental property to pay for school. When he transferred to Baylor University, his interest in real estate was still high. In Waco, the young Beal bought a dilapidated apartment complex with the aim to fix it, rent it, and then sell it. The market and industry proved so lucrative that Beal dropped out of Baylor and devoted his full energies to real estate. By 1978, he had relocated and was dealing real estate in Dallas, a popular roost for entrepreneurial spirits and cravers of fast money.

Like a bird of prey, Beal's mind is wired to spot and seize opportunities. When the savings-and-loan crisis was eviscerating Texas' financial industry and shutting down banks, Beal decided to open one and began buying defaulted bank loans for as little as 40 cents on the dollar. Beal Bank launched in 1988 with \$3 million. It would become a billion-dollar enterprise.

Beal was 35 when the bank was founded. It grew into the largest privately held lending institution in Dallas and is still raging, frequently ranking first among all U.S. banks and savings and loans, judged on return on equity over a five-year period.

"I think he considers himself a lucky person," says Brad Oates, vice chairman of Bluebonnet Savings and Loan and a friend of Beal's for more than a decade. "He knows whoever is born in this country has won the lottery."

Oates describes an affable math geek invested with the business acumen to spot opportunities in unlikely places. "He's been able to see financial value in assets that others throw out the window," he says.

At the same time, Oates says the cerebral math enthusiast and banker is, at heart, a simple guy with a small circle of friends, a man who every night goes to his Dallas home to be with his wife, Simona, and their five kids. "You go into his office, and it looks like a bomb exploded, papers everywhere," Oates says. "You walk in, and he's got his shoes off...He's got a brilliant, quick mind, but he's down to earth."

Beal's mind has been active with self-education since he dropped out of Baylor. Math has been his first and steady love: Oates says he's spotted his friend working on complex equations to pass the time on air flights. Not content with simple self-improvement, Beal sought to make an intellectual and scientific mark through his hobbies. His money became a vehicle to leave a profound mark.

Beal Aerospace was conceived in 1995 as its founder read a magazine article about the coming boom in satellite technology. No one could predict that this boom would plateau in the new millennium, driving satellite and launch companies to the brink. Beal saw a problem, and his keen mind sought ways around it like an equation. The problem: expensive launches. The solution: "dumb" rocket launches using new twists on older, reliable technology.

He was a space buff, millionaire, and unorthodox libertarian thinker. He was ready for another project. He devoted his energies to researching the viability of Beal Aerospace.

"Beal never struck me as someone who was in it for the money. He was doing it more out of passion," says Caceres, senior space analyst at the Teal Group, a Fairfax, Virginia-based consulting firm.

Oates says the company was a great symbol of Beal's mentality and priorities. "He puts his risk capital to work to create something. That's a big difference in some other people's wealth mentality," he says. "It's not about him living in the palace of Versailles; it's about him creating something of lasting value...He puts up his own venture capital and doesn't expect a hand up."

It's hard to say for sure what Beal was thinking when he founded his aerospace company, and he isn't saying. Since the collapse of Beal Aerospace, the founder hasn't granted any media interviews. His last public communication was the two-page eulogy for his aerospace company. Access to his defunct company is forthcoming, but access to the man himself is denied.

"No one likes to talk about their failures," Spoede says. "Oh, please don't quote me on that. He never said that to me."

Beal was more American Dream than J.R. Ewing and Ross Perot combined. He was a self-made man worth an estimated \$600 million. With nothing but his wits, vision, and endurance, he created a banking empire from scratch. He was unstoppable.

Then, he set his sights too high. About 36,000 kilometers too high.

It didn't take long for Beal Aerospace to figure out that setting up your personal rocket program came with its own set of unique problems. The troubles ranged from the typical, such as problems with internal software, to the absurd, such as the nation of Venezuela protesting your project to the United Nations.

According to Beal Aerospace, there was no greater roadblock than the U.S. government.

Delays and unexpected hassles meant cost overruns. Beal was the sole investor in the company, and while this meant he need not explain the delays to anyone, it also meant that no one was accountable to anyone but Beal. Former employees say most of the problems were controllable, if not routine. "Yes, there were issues, but they weren't deal killers," Spoede says.

But the window of opportunity to make Beal Aerospace profitable was tight and closing. Competing against the large aerospace companies and NASA's new generation space-launch vehicles meant getting a jump on them by creating and launching his rockets within two years. Every delay pushed the timetable back and reduced the chance Beal's company would earn money.

Beal's first major challenge was to design a disposable rocket that could put large payloads in orbit. Beal decided on a creature from aerospace history: a multistage behemoth powered by a fuel of hydrogen peroxide cut with kerosene.

The future of space payload delivery is divided between two schools of thought, each with its own acronym. Beal and others believe the future should rest in cheap evolved expendable launch vehicles (EELV.) The majority of the launch market is focusing on what NASA declared the future spacecraft should look like, a reusable launch vehicle (RLV) called VentureStar that could fly 40 to 50 missions a year. The VentureStar would be the direct descendant of the Space Shuttle, while EELVs can trace their lineage to Apollo and Titan missions.

Lockheed Martin's publicly funded RLV program is currently grounded. The X-33, an experimental rocket plane designed to test technologies for VentureStar, has run into delays, most recently a two-year setback caused by problems in building its fuel tanks. Late last year, NASA gave the company another \$68 million of funding that was to be withheld until the craft had flown in March 1999. Now the test plane, which can't even get into space, won't fly until 2003.

Lockheed and Boeing are also in the EELV market, but Lockheed is less aggressive for the time being. Lockheed's EELV, called Atlas 5, will not even compete for government contracts against Boeing because the Air Force already assigned most of the future satellite payloads to Boeing, which will launch from a specially built spaceport on Vandenberg Air Force Base in California. Both Boeing and Lockheed will receive government subsidies to get satellites in orbit cheaper and be in a position to compete with Beal Aerospace in the private sector.

"Boeing has spent millions, no billions by now, on EELVs," says Paul Nisbet, an aerospace analyst with JSA Research. "He was doing everything on his own...Obviously, he was competing against the federal government, and they are very hard to compete against."

Beal's rockets were to be powered by a highly concentrated version of hydrogen peroxide. The stuff you find in your medicine cabinet contains a 3 percent solution, while the fuel topped off at 95 percent. Highly concentrated hydrogen peroxide is an unstable but powerful rocket fuel. While NASA used liquid hydrogen and liquid oxygen for liquid propellants, the Russians started their space program using a similar H<sub>2</sub>O<sub>2</sub> and kerosene recipe.

"He was talking about building an extremely powerful engine here," Caceres says from his office in Fairfax. "I sensed he had trouble with his engine development...Whatever the technical problems are, businessmen like to think that if you throw enough money at it and give the engineers all the materials and resources they need, it will get solved."

Michael Carden was one of the developers of the rocket fuel. At age 30, he was a student at Iowa State University and the owner of X-L Space Systems. His company developed a method of producing highly concentrated hydrogen peroxide, a concept he developed with ISU support. In 1997, he resisted cozying up to the university and losing his intellectual property rights in favor of trying to sell his fuel recipe on the open market.

The merits of disinterring this fuel system were debated in the fly-boy geek world, and the verdict wasn't in. Late last year, the editorial board of *summed* up the range of opinion: "Some space-savvy engineers thought the...launch system's approach, with a hydrogen peroxide propulsion system, was odd. Others saw it as brilliant."

Carden attracted Beal's attention with his proposal for the X-Prize, a contest sponsored by a private space tourism foundation. The X-Prize Foundation is offering a \$10 million bounty to the first privately funded craft to carry three people to suborbital space (62 miles) then repeat the feat within two weeks. Carden's hydrogen peroxide fuel (which never got past the proposal) and entrepreneurial spirit seemed a perfect fit for Beal Aerospace.

In April 1998, the Iowan met Beal at the bank headquarters in Dallas. "I had a very good impression. I never felt like he was a millionaire," Carden says. "I mean, he flies economy."

He signed up as a peroxide scientist with Beal Aerospace. Bringing the concentrated hydrogen peroxide production in-house cut costs by two-thirds, and with the amount of fuel required, that meant a vast saving. "Andy Beal pinches every penny until it squeals," Carden says.

But there were problems almost from the start. The young Carden was annoyed by delays and hassles from inside and out. "A project this size is almost impossible to manage at all, and the management was trying to micromanage everything," he says. A particular irritant was the internal software system, Primavera-3, designed to keep everyone on the same page. "Staff engineers spent half their time playing with P3 instead of being on the floor."

Carden wished Beal was around more. "Looking back, if he stepped into the role of project manager, he could have gotten something off the ground. Unfortunately, he had many other responsibilities with Beal Bank."

There was another problem; the feds wanted to keep a close eye on the Iowans. The Bureau of Alcohol, Tobacco and Firearms came to the door of one of X-L's senior scientists and inferred that he ran a methamphetamine lab based on the chemicals he was buying for the company.

The problem was resolved quickly, but the scientist was insulted. "It really exposed, I don't know about harassment, but intimidation. The BATF agent just came to his door and said, 'You better come clean on this.'"

As the company progressed, Beal recruited more experienced talent. Walter Lewis, a 30-year veteran of the aerospace business, was tapped as vice president of business development. Lewis brought a wealth of knowledge about satellite customers and their products and was pleased to use that knowledge to advance his field.

"[Beal] did a lot of homework," he says now from his desk at International Launch Services, a satellite launch provider based in Virginia. "He was driven to do this. He had some personal reasons. He wanted to bring the cost of launching down, which I really believe in."

Lewis' job with Beal Aerospace was decidedly different from previous work at megacorps such as Hughes and Boeing. "It was great in that respect. There was kind of an entrepreneurial spirit there. I always thought we were competing against the big boys. I enjoyed that," Lewis says. "I did find it a little difficult working for a single individual...It was a plus and a minus. The company could be nimble and make quick decisions, but he could get out of bed and change his mind."

Lewis adds: "The best example of this is that Andy got out of it."

The bureaucracy at Beal Aerospace may have been slim, but the U.S. government bureaucracy was still a serious hindrance. No problem was greater than the State Department's refusal to give an export license to the company to ship its rockets out of the country for cheaper launches. The position became a frustrating unknown for the entire company and caused months of expensive delay.

The crux of the issue is the Missile Technology Control Regime (MTCR), a treaty signed in 1987 that was supposed to reduce a nation's ability to buy or sell long-range missile technology. Not only is MTCR failing, it's hamstringing space exploration. The problem with the treaty is space launch vehicles use parts similar to intercontinental ballistic missiles and other long-range missiles, and the treaty only affects those who try to use rockets legally. The missile "criminals" like Iraq don't consider signing the treaty.

Beal Aerospace got caught in this dilemma when it tried to launch from South American spaceports. The company needed the State Department to sign off on export licenses and wasn't getting a good response. "There was a key individual or two in the State Department who had reservations," says Spoede, declining to get into deeper detail. To break the institutional deadlock would have taken a supreme effort involving lobbyists and public relations drives in Washington, D.C.

Even peaceniks recognize the treaty is regarded as a failure. The Center for Non-Proliferation Studies stated in a recent position paper: "MTCR now sits on the horns of dilemma: It is increasingly under fire for its perceived failure to stem the missile proliferation tide at the same time it is admonished for aggressive and discriminatory technology denial...Odious is the implicit position of several founding members that they will not support new and even ongoing space launch vehicle programs."

The treaty was yet another hassle in a long string of hassles, and it was hampering Beal Aerospace's viability by throwing a cloak of uncertainty over the program. "Andy had a lot of struggles with it," says Carden. "There was nothing military about a 40-year-old rocket...For a month, we couldn't talk about the rocket at all."

Carden began distancing himself from Beal in early 1999, becoming an independent contractor employed by Beal under a six-month contract. When Beal folded his hand, Carden simply accepted the previous ISU offer to market his fuel. The school gets two-thirds of the royalties for its help and the intellectual property rights, and the scientists get free marketing and the intellectual gravitas of having university affiliation. Now, the scientist who was outraged at government bureaucracy is just another defense contractor peddling his wares to NASA and the Air Force.

"I have mixed feelings [about Beal Aerospace]," he says. "It was a great learning experience. Looking back, I'd have done things differently. But if I had known what I know now, I would not have gotten involved."

Welcome to Guyana      May 2000.

Spoede walks into the nation's federal government office in the steamy capital of Georgetown, briefcase in hand and sweat under armpits. Behind him, the crowd of protesters are chanting, waving signs, displaying red rage for cameras and reporters. They are a mixed bag of environmentalists, indigenous Indians, and Guayanese opposition party members, all dedicated to scuttling the South American country's deal with Beal Aerospace.

"All this, for little ole me?" Spoede says of the thoughts going through his head as he walked into the building to put signatures on the deal that would create a spaceport in one of the hemisphere's smallest and poorest nations.

If building a rocket program from scratch was a tough haul, building a spaceport in a Third World country was next to impossible. Spoede was the lead negotiator with the country, pitching an ambitious 21st-century project that may have dragged the nation from its 19th-century economy.

Spoede's life took a turn for the adventurous when he signed up with Beal. He graduated from the University of Texas' law school in 1981 and practiced commercial law in New Mexico for nine years. In 1990, he moved to Washington, D.C., to spend three years with the Department of Defense during the administration of Bush the Elder, buying "inferior products at higher costs" for the U.S. military.

By 1993, he was back in Texas, in private practice in Dallas. Then, in 1998, he bought a newspaper, and his life changed. "I read about the company in the paper and thought it was the neatest thing I'd ever heard of," he says. Spoede felt a passion for science but says he "wasn't smart enough" to pursue it as a career. The best he could do was get as close as possible. Beal's vision drew him like a kitten to an open paper bag.

His enthusiasm and Defense Department experience landed him the unadvertised job as corporate counsel, spokesman, and all-around go-to guy. "I got lucky," Spoede says simply.

That luck brought him to some strange places, including a desert island that was Beal Aerospace's first choice for a spaceport home. It was called Sombrero Island, a sad 95-acre rock about 100 miles from St. Croix, belonging to the island nation of Anguilla. Sombrero Island is a simple lump of coral and rock with a lonely lighthouse staffed with even lonelier lighthouse keepers. Beal Aerospace representatives would sleep on the tip of the island, as far from the squirrely keepers as possible, Spoede says. There are no trees or shrubs on Sombrero. The Dutch had already raped Sombrero Island when they strip-mined it for bird guano. It used to be shaped like its "hat" namesake, but all that remains is the brim. The Dutch mining operation and severe weather flattened the only parts that peaked well above sea level.

Besides the lighthouse keepers and rocketeers, there is only one other form of life that finds Sombrero appealing: birds. The island is a sometime roosting spot for boobies and terns, and environmentalists were scared that the sporadic rocket launches would have scared them away. The Royal Society for the Protection of Birds and BirdLife International were two groups on the forefront of the lobbies against the Beal proposal. "If one of those things explodes, we're not sure anything would survive," Jim Stevenson, a spokesman for the RSPB, told a newspaper at the time. (The plight of the lighthouse keepers was never mentioned.)

"I always thought the environmental concerns were bogus," Spoede says. An environmental assessment by a Washington firm hired by Beal stated Sombrero was not unique as a nesting site, has no endangered species, and provides nesting sites to a very small percentage of Caribbean seabirds.



A decision to build a headquarters and manufacturing plant in St. Croix in the U.S. Virgin Islands was also met with flak. A handful of environmentalists along with historic preservationists defending a historic slave plantation protested the plant, where the rockets would be assembled and fitted with customer satellites before being shipped via barge to Sombrero for launch. The Caribbean plans were scrapped after a judge ruled that the assembly plant land had been donated for use as a public recreational area. The Sombrero launch site was nixed when other nonbird-related problems became apparent.

The real problem with Sombrero Island, Spoede says, was not the boobies but the weather. Periodically, the ocean reclaims most of the island, rising up so far so fast that only the lighthouse remains above water.

The disappointment was real. Artist renderings of Beal launches hanging in the defunct headquarters always show a rocket blasting from the lifeless rock of Sombrero. The rocket is rising from plumes of smoke with "Beal Aerospace" stamped across the sides, checkered bands painted on its frame so that the brains in the launch command center can tell if the craft is spinning correctly.

The new plan was centered on Guyana, one of the poorest countries in the hemisphere, ailing for industrial growth. The nation, desperate as it is, came with its own set of domestic and international problems.

The plan would have changed the political and economic landscape of Guyana, especially the Essequibo region along the northeast coast. The government sold Beal 26,000 acres of land for \$1 an acre and leased another 75,000 acres for an annual \$3 an acre. Beal was also to pay \$400,000 in compensation to the indigenous people who would have to relocate out of the flight path of the spacecraft, called the "footprint." Also included was \$25,000 to \$100,000 per launch, depending on the number of launches per year. Opposition politicians and civic groups complained their natural resources and indigenous groups were being sold cheaply. Spoede says most of the Indian families were eager for a move and regarded the deal as a windfall.

So did the administration in charge. "Guyana needs a project like that," says Terry Reis, honorary consul for Guyana in Houston, who helped coordinate negotiations with Beal Aerospace. She rarely puts the spaceport project in past tense, even though it is obviously deceased. "The project is wonderful, but the opposition is always in opposition."

The assembly and launch facilities would have spawned an entire city surrounding the launch site, an economic spaceport boomtown where now sits swampland and tiny Indian villages. Spoede says the facility would have birthed a city with electricity, running water, jobs from the support economy, and an environmentally protected area. The final spaceport price tag was estimated at between \$100 million and \$300 million.

Beal Aerospace this time hired Peter Pritchard, a well-respected researcher with Chelonian Research Institute, an international environmental protection group, to validate its claim that the space launches wouldn't hurt sea turtles that lay eggs on the nearby beaches.

Other problems proved out of the reach of hired consultants. Guyana may be small, poor, and virtually toothless, but that doesn't mean it can't tangle with its neighbors. In fact, it shares its corner of South America with two hostile states. Like hungry grackles, they fight over scraps of industry and resources that attract foreign investment. It takes a brave company to bring South American border politics into their business plan.

In 1998, Guyana and also-tiny Suriname came close to war over giant offshore oil fields. During the conflict, Surinamese gunboats moved in on a Canadian oil rig as it was preparing to begin drilling. The Canadians had been granted a concession from the Guyanese government and were doing business when the gunboats moved in and evicted them. Caribbean community leaders intervened, and a peaceful resolution was reached, although troops still guard the border between the two tiny combatants.

Suriname was less than thrilled to see a rocket launch company set up shop in Guyana. Visions of missiles raining on Suriname must have danced through their heads, and more important, the burst of Beal Aerospace revenue would have allowed Guyana to easily match a recent increase in Surinamese arms purchases. No nation is too poor to afford an arms race.

Even more problematic was Venezuela, which claimed ownership over the swampland Beal Aerospace was to lease.

When news of the Beal Aerospace deal reached Venezuelan ears, the country fell into deal-killing mode. Government officials and diplomats said the launching pad could have military applications and threatened its national security because of U.S. government involvement with Beal Aerospace. A flustered Spoede tried to explain that the government was only involved with export licensing and regulatory matters, but the complaints persisted. A U.N. moderator was called as saber-rattling ensued.

According to Reis, the concerns were invalid, and everyone knew it. "Venezuela was just trying to take the project away from Guyana. It's just a competition thing."

The border disputes were simmering nicely when the H2O2 fires at Beal Aerospace flickered out. Publicly, Guyana took the collapse with grace. A statement from the prime minister's office read: "The government entered into the agreement with Beal with the full knowledge and understanding that the commercial international space industry is a high-risk competitive business."

But it doesn't take much analysis to see that the country--the administration currently in power, at least--misses the project and doesn't want to believe the rain of Texas cash isn't coming. At the end of the interview, voice tinged with hope, Reis asks the \_\_\_\_\_ to forward any new information that could help revive the deal. Any hopeful information should be delivered before the Guyanese elections on March 19, she adds.

"If the opposition wins, Beal is out. The opposition party will not have Beal in there," Reis says. "Hopefully, we'll win again."

It's May 20, 1999, and Beal is pleading, begging, before Congress.

"Please, please do not give companies billions of our dollars to play around with experimental programs. You will create jobs by spending public money, but you absolutely will not produce low-cost commercial access to space," he told the Senate Committee on Commerce, Science, and Transportation. "We don't mind the risks, and we are confident of our ability to succeed. Please help either no one, or everyone."

Becoming a government contractor would have flown in the face of his entire philosophy and structure of his company. "We were set up as a commercial business, and Mr. Beal did not want to do what it takes to be a government contractor," says Spoede. "You stop focusing on building a product and start focusing on government relations. Your success is determined by how good your lobbyists are."

Beal was staring at stiff, government-funded competition in EELV and RLV markets, an uncertain spaceport project, a problematic rocket system, increasing costs, and a slow market. In September 2000, he cut half of the staff, but company officials refused to say the company was shutting down. When Congress approved \$290 million in subsidies a month later, as part of NASA's Space Launch Initiative, Beal decided to abort his mission.

"I think it was kind of an excuse. He knew it was coming," says Caceres. "He had technical problems, and the market wasn't booming."

After two years of stupendous launch rates, analysts say the number of payloads launched in 1999 dropped by about a quarter, and estimate another 15 percent drop during 2000. Adding to the woes was a hot stock market, where investors shied away from the high-risk slow-growth satellite companies in favor of quick Internet stocks.

The satellite market is now at a plateau, and the launch vehicle market seems glutted. Rockets that did go up were fitted with as many as 15 to 20 satellites. Domestic and foreign launch vehicles wait idly for cargo, waiting to be launched at high costs. Upticks are expected; the industry is anticipating launches dedicated to broadband multimedia communications satellites in 2003-04. But the short-term prognosis seems stagnant, especially after the promising 1990s.

Still, even in the face of these drawbacks, the industry had begun to accept the upstart business and was surprised by the company's abrupt demise. "Most people were taken aback. I think it was a shock," Caceres says. "The question became, was the market as strong as Beal thought it would be?"

Former Beal Aerospace Vice President Lewis watched the shutdown with interest, having seen Beal begin to accept that money and willpower couldn't create miracles. "He began to realize the scope of the job," Lewis says. "He began to realize this was no small feat."

Now, the stripped-down company is selling its best ideas to--who else--NASA. Spoede and Beal are negotiating with NASA representatives to sell them confidential technology systems "to make sure they don't end up in a basement." Other things are harder to sell: a million-dollar crane in McGregor awaits a buyer. Spoede laughs hard when you suggest placing it for sell on eBay.

For his \$200 million, Beal was left with the crane, an empty facility on prime real estate, used rocket engines, and a lease for undeveloped swampland in Latin America. No work on the spaceport had been done, and no full-size rocket had been built.

Also, 200 people had been issued pink slips. Spoede says the closure was extremely emotional. "There was a range of emotions from fatalism to acceptance to grief. The staff was unbelievably professional," he says. "He was very giving to his staff, and that probably mitigated a lot of the potential anger. It was almost certainly the correct decision."

The loss of Beal Aerospace may mean more than the continuing dilemma of expensive space launches. It can also be seen as a discouraging trend in America away from risky ventures, gutsy moves outside stiff government oversight, and the value of an individual to transform the world.

Beal's friend and banking peer Oates takes a moment to decry a government that stepped on the private sector. "The government should be pushing new technologies while the Andy Beals of the world commercialize it within the best business model."

Oates says he admires the discipline Beal displayed in the face of an emotional situation. "I admire him for getting into it, and I admire him for pulling out," he says. "It was an intelligent decision, and that's hard. His heart was pushing him to stay in; he was able to step back and keep that passion from consuming him."

He gives a prediction: Beal won't stop trying to change the world, in space or at lower altitudes. "I admire him for going to the frontiers and not being afraid to go outside the comfort zone," he says. "He'll never stop. He'll never retire...He represents the best that American entrepreneurship has to offer."