

# Business Dallas

---

## Man With a Mission

The founder of Beal Bank is seriously rich and seriously smart. Now he's serious about shooting for the stars.

*By Melinda Rice*



So, just who does this Andy Beal fellow think he is anyway?

Let's review.

He thinks he's a banker.

Check. He launched his eponymous Beal Bank, headquartered on the Tollway at Arapaho, at the height—or, rather, depth—of the Texas S&L debacle. For the past five years, the bank has averaged a net income of \$50 million on assets of \$1.3 billion. He owns 99 percent of it.

He thinks he's a successful businessman.

Check. See above, plus two decades' worth of personal real estate dealings in four states.

He thinks he's a player in the esoteric game of number theory.

Check again. In 1997, using his bank's computers, he started looking into a problem closely tied to Fermat's famous Last Theorem. When he announced the problem's existence, it became known in the tight-knit world of theoretical mathematics as the Beal Conjecture.

He thinks he can build rockets. Whoa. Reality check.

He thinks he can build rockets?

Yes, he does. And he's willing to put his assets where his ambitions are.

Although he has no background in aerospace, aviation, engineering, or any science, Beal is building a rocket in the Frisco plant he constructed and maintains without a penny of outside investment.

Andrew Beal might be called a man with a restless intellect. At the moment, contemplating a reporter's question in his office, he's a man with restless fingers.

He fiddles with a binder clip, toys with the cord of the phone on his cluttered desk, picks up several papers in rapid succession, glances at them, and puts them back down. Then he rakes his hands through short, dark hair that shows the first sprinklings of grey.

That leads his hands to the stem of his eyeglasses, so he takes them off and holds them to the light, squints through them, and puts them back on.

Then he goes back to the binder clip. Click, click, click. He snaps it open, flicks it closed, and tosses it back into the paperclip holder on his jumbled desk.

He makes another pass with his fingers through his, by now, disheveled hair, then laces the fingers of both hands together behind his head, tilts back in his desk chair, and gazes speculatively at the ceiling.

And then something unusual happens.

Hyperkinetic Andrew Beal—Highland Park father of five, banker, real estate developer, amateur mathematical theorist, and fledgling aerospace entrepreneur—is perfectly still. It lasts only as long as it takes him to consider an answer to the question.

You seem to have a penchant for taking chances in business. Why?

"I'm not sure I'd call it taking chances. I think of it as attributing a different level of risk to a problem than the rest of the world attributes to it. I'm not that much of a risk taker. I just take situations that people perceive to be high risk, and I decide that they can be managed to low risk. I'm really very conservative."

Then the motion marathon is on again.

Risk? What risk? He's invested tens of millions of his own dollars in an as-yet-untested product. It is being developed by a two-year-old company with no chance of making a profit for at least two more years. He's entered an embryonic commercial aerospace industry, which is capital intensive and highly competitive.

"People told me I was crazy. Someone said I was having a midlife crisis," says Beal. "I thought it was a reasoned decision and continue to believe it's a reasoned decision. It can be managed to very acceptable risk."

Andrew Beal may be restless, but he is not nervous.

As the 200-plus employees of Beal Aerospace bustle outside their boss' second-floor office, Andy Beal is energized. He's excited. He's enthusiastic.

Beal's enthusiasm surrounds him like a force field from a science fiction novel. It is a palpable thing, almost shimmering in the air around him. It lights his eyes and infuses his movements to such a degree that it would be easy to believe the electricity powering the lights, computers, and other machinery in the 163,000-square-foot Frisco plant comes not from TXU, but from Beal himself. And in a way, it does. Even more than his money, Beal's vision and his enthusiasm propel Beal Aerospace.

"Andy just convinces you," says Walter J. Lewis, Beal's vice president of business development. A 30-year veteran of the aerospace business, Lewis left industry giant Boeing in June to work for Beal. "He has a vision, and I believe in that vision."

But can Beal succeed?

Can a Texas millionaire with no college degree and a background in real estate and banking do what Beal plans to do: become the premier private commercial launch company in the world by designing and building a rocket for sending commercial payloads into space at a (relatively) low cost?

The U.S. commercial space transportation industry celebrated its 10th anniversary this year and is looking at a bright future—a future Beal plans to dominate.

The recent boom in satellite-based telecommunications has sent the demand for launch vehicles soaring. Earth imaging and weather tracking are already big business. New space-based technologies such as CD-quality radio transmission are in development, and they will need launch services, further increasing demand.

“This is a very, very young industry, and the potential for growth is huge,” says Marco Caceres, space analyst at the Teal Group, a Fairfax-based consulting firm for the aerospace and defense industries. He predicts there will be 850-900 space launches that will generate \$49.5 billion in business between 2000 and 2009.

1998 was the single biggest year yet for the domestic space industry, with 22 commercial launches. The FAA—which licenses all rockets and rocket launches from U.S. territory and all launches by U.S.-based companies—expects the industry to match or exceed that number in 2000. Only three companies—Boeing, Lockheed Martin, and Orbital Services—currently have FAA approval to conduct commercial space launches.

That leaves a lot of room for competition, and Beal is ready to rumble.

His weapon of choice is the BA-2, a three-stage, 200-foot-tall rocket with a 25-foot-tall, 20-foot-diameter payload compartment. For the aerospace uninitiated—that’s a big rocket that can boost a lot of hardware into space. And the bigger the payload, the bigger the payoff.

Beal believes the BA-2 will blast him past any competitors, leaving them eating his rocket fuel fumes. Beal is going back to an old concept, namely, using hydrogen peroxide and kerosene to fuel his rockets. When the hydrogen peroxide oxidizes, it ignites the kerosene, so Beal is able to eliminate the cost of developing and producing an ignition system for his rocket. An environment-friendly fringe benefit is that hydrogen peroxide breaks down into hydrogen and water.

He scrapped plans for a smaller rocket (which would lift smaller payloads) in favor of the BA-2 when he became convinced the market will need the bigger rocket by the time he is ready to launch in about two years.

It’s not the first time Beal has altered his plans for Beal Aero-space. Originally, he envisioned starting a satellite company. In 1995 he was presiding over a very profitable bank when he read an article about the growing satellite business. As a self-described space buff, he was intrigued. But the process and cost of getting a satellite into orbit was daunting.

Hmmmm, the cost of getting a satellite into orbit. The cost of getting a satellite into orbit...

The ember of an idea sparked by that solitary magazine article flashed into the blaze that doesn’t drive Beal so much as lures him, entices him—and, by proxy, kindles enthusiasm in those around him.

So what that the market is dominated by Lockheed and Boeing? “Andy relishes the opportunity to compete against the entrenched players,” says Beal’s friend, Brad Oates, vice chairman of Bluebonnet Savings and Loan.

Beal started a two-year course of independent research—he read books, toured aerospace facilities, consulted with engineers, observed launches—that culminated in the founding of Beal Aerospace in 1997. It is the third business he has started in the Dallas area, and Beal says it will be his last.

Andy Beal arrived in Dallas from Michigan by way of Waco. The middle child of an engineer and a state government employee, the Lansing native was an entrepreneur from the get-go. He went from mowing lawns and staging quarter-a-shot neighborhood carnivals to repairing and reselling old television sets. When a new highway in his hometown caused homes in the path of the proposed roadway to be vacated, he went into the house relocation business. That led to real estate, and while he was a student at Michigan State University, he began buying and selling rental property.

He bought his first house in the early 1970s with a \$500 deposit and a \$65-a-month mortgage, then rented out the house for \$119 a month. Beal knew a good thing when he saw it. He continued buying houses and eventually added apartment buildings to his real estate holdings. In 1976 he transferred to Baylor in Waco (but never graduated). Three years later, he was in Dallas.

The market was booming. Beal quickly found his way around in Dallas real estate circles. “He has an incredible ability to quickly cut to the chase and see and analyze the key components of any deal,” says longtime friend Steve Houghton, a Dallas real estate developer.

Then the savings-and-loan crash hit Texas. So Beal, of course, started a bank.

“All the other banks were failing. What better time to start a bank?” says Beal. “If everybody else is going broke, that simply means your competition is going away.” Houghton calls his friend “the consummate contrarian.”

In 1988 at the age of 35, Beal launched Beal Bank with \$3 million and started buying up defaulted loans from struggling or defunct institutions at bargain basement prices. It was the clearance sale of a lifetime, the stuff fortunes are made of. “He cherry-picked and bought the good assets and bought them at the lowest price,” says fellow banker Oates. “It was brilliant.”

Within eight years Beal was a multimillionaire, and Beal Bank was among the most profitable banks in Texas.

So when this idea of an aerospace company surfaced in his mind, Beal didn’t hesitate. The Loan Ranger became a Rocket Man. “If you know Andy, you just come to expect these things,” Houghton says.

Though Beal declines (politely, but firmly) to talk about Beal Aerospace’s finances, he will say he is financing the company himself from his “fairly substantial resources.” When he announced the company’s plans for the BA-1 rocket that was eventually scrapped, he said he’d be spending about \$250 million in development. The BA-2 he says now, “is twice as large a rocket, and we’ll leave it at that.”

Beal has built the assembly plant in Frisco, an engine-testing facility in McGregor near Waco, and he has signed an agreement with the tiny Caribbean island of Anguilla for a launch site within its territory.

## Beal Bank By The Numbers

(through september 30, 1999)

**total assets:** \$1.3 billion

**total liabilities:** \$1.1 billion

**equity:** \$200,623,000

### key performance ratios compared to dallas average

(first quarter, 1999)

#### beal bank dallas region

**return on assets:** 6.79% 1.11%

**return on equity:** 51.33% 13.16%

**net interest margin:** 8.75% 4.15%

**charge-off rate:** 0.39% 0.42%  
*Source: FDIC*

Beal Aerospace is not the only firm attempting to capitalize on the heavenly commercial launch market. The FAA is in licensing talks with more than a dozen companies, including Beal. But the Frisco start-up is one of only a few that is being taken seriously by the industry.

“I think everybody realizes this guy has a vision and the funds to back it up,” says industry analyst Caceres. “The one thing he doesn’t have to worry about is funding. If he wants to lose his money, it’s up to him.”

Some reported rocket rivals are struggling for funding, hoping to score business development aid from the federal or a state government. Others rely on funds from investors who may have high demands for return on investment and a low tolerance for long-term risk. Beal does not have to worry about his funding being yanked. But there are other dangers.

The rocket could fail, the market could fail, or Beal might have made the wrong choice when he went with an expendable rocket over a re-usable one.

Every new launch vehicle developed in the past five years has misfired at least once. The failure last May of a Boeing Delta 3 rocket temporarily put the kibosh on Delta 3 launches and on the launches of three Atlas rockets, which use the same component that failed in the Delta 3. Beal considers the possibility—some say the probability—his rocket will fail with characteristic determination. “If that happens,” he says, “we’ll do failure analysis, then we’ll launch again.”

While he has control over what he will spend to make his rocket successful, Beal has no control over its potential market. 1999 is a point in case. Industry insiders had expected to exceed last year’s number of commercial space launches, in part because of an ambitious plan by the Iridium consortium to sell high-end satellite telephone service. But subscriber rates for the service were drastically below projections, and the consortium has filed for bankruptcy.

What if he’s made the wrong choice about what kind of rocket to build? Some industry people swear by re-usable rockets and think Beal is wasting his time on what they consider the old-fashioned concept of disposable rockets. “This should be his biggest concern,” says industry analyst Caceres. “In 10 years or so, the demand for re-usable rockets is what’s going to make the market explode. If he doesn’t plan for that, he could be left behind.” Beal has considered the re-usable rocket—and dismissed it. The way to go, he believes, is offering low-cost access to space, and expendable rockets are cheaper rockets. If he’s there first, with the lowest price, Beal is convinced he’ll corner the market. And he is well on the way to getting there first. Beal actually has a rocket that has been test-fired. Many of his competitors have only their dreams and some high-tech drawings.

The question remains: Why would a reasonable man with a personal income of more than \$50 million a year decide to launch a rocket company? The pragmatic facade of the businessman is not a mask, but behind it lurks a space buff.

When Andy Beal turns those laser-beam eyes on you and tells you: one, it’s a mathematical certainty that an asteroid will hit the earth one day; two, all life will be extinguished; three, the only way to save mankind is to colonize other planets; and four, he finds it fulfilling to think that Beal Aerospace might play some tiny part in making that happen—well, you believe him.

“I don’t lose sleep over that because it could be a billion years or hundreds of millions of years or tens of millions of years away,” he says. “But the fact is it could be 20 years away. And to the extent that our efforts speed up the colonizing of other planets—you just never know all the implications of efforts like this.... So all the knowledge, all the answers to questions that we don’t even know to ask—all that will be furthered by what we’re doing. And I like that.”

And a lot of people in the industry like Beal's plan. NASA is working with him so he can launch test flights from Cape Canaveral, and the state of Florida is reportedly putting together a package of financial incentives to get Beal to do more business in Florida. Last June the organizers of WorldSat '99 Space & Satellite Finance Conference asked him to be a speaker at the event. ("These are Wall Street money people," notes Caceres. "They don't ask just anyone to speak at this thing.") According to several accounts, Beal was a hit with the insider crowd of industry analysts, Wall Street financiers, and aerospace executives.

Beal has enticed people from most of the top aerospace firms to work for him—Lockheed, Boeing, Thiokol, Orbital Services, even NASA. And he's convinced the industry to take him seriously. They're not convinced he's right, but many of them are beginning to think he might be. "He's doing pretty well for a Texas millionaire from out of nowhere," says Eric Stallmer, president of the Space Transportation Association, a national trade organization.

Most importantly, though, Beal has vision and the passion to pursue it.

That is what makes him leave his Highland Park home to make it to his office in Frisco by 7:30 a.m. That's what makes him stay, often, until 7 or 8 p.m. It's what makes him cheerfully answer endless questions from prospective employees, industry peers, reporters, and curious friends. It's what has made him plunk down his own money to play in this race to space. And it's what has convinced others to share his vision.

The smart money—that is, Beal's own money, and lots of it—says he's going to pull this off.

---

**Melinda Rice's** work has appeared on IntellectualCapital.com, and in the Dallas Morning News, Baltimore Sun, Baltimore Business Journal, and Dallas Business Journal.

## THE BEAL CONJECTURE

**How smart is Andrew Beal? Smart enough to astonish some of the smartest people on earth.**

*By Melinda Rice*

As a banker and businessman, Andrew Beal uses his number-crunching abilities to make money. As a mathematician, he puts his number-crunching abilities to another use.

"Oh no. No. No. I'm not a mathematician," says the entrepreneur, and the modesty is sincere. "I'm just a hobbyist. I dabble in number theory."

Two years ago, Beal stunned the rarefied realm of academic mathematicians by coming up with something none of them had thought of—a numerical puzzle that has since been dubbed the Beal Conjecture.

He worked on the problem himself, then threw it out for the world to ponder, offering a prize to whoever can come up with a proof. Beal recently added 25,000 additional incentives to the original \$50,000 award.

The American Mathematical Society, which administers the award, receives about 20 calls each month about the proof. A few of the callers are cranks; many are students—some as young as junior high school age—and the rest are a mixed bag of academics, reporters, and the merely curious.

"This helps stimulate interest and research in this field. It's at the very cutting edge of mathematical development," says R. Daniel Mauldin, the University of North Texas professor who chairs the AMS prize committee. He's referring to the Beal Conjecture, not the prize money.

But the cash incentive is unusual, too. Glory, not greenbacks, is often the only reward for unraveling mathematical mysteries.

One famous exception is Fermat's Last Theorem, a problem posed by French mathematician Pierre de Fermat in the mid-1600s. Fermat was reading a chapter by the ancient Greek mathematician Diophantus on a particular problem in Pythagorean number theory (these problems tend to hang around for a while) when he scribbled next to the text, "I have discovered a truly remarkable proof which this margin is too small to contain." He died before he could share his proof with anyone, leaving historians and mathematicians baffled for the next 300 years. German physician Paul Wolfskehl, who died in 1906, was so intrigued by the question that he bequeathed 100,000 marks to whoever solved it, setting a deadline of September 12, 2007.

Princeton University Professor Andrew Wiles claimed the prize in 1993, but a gap in his reasoning was discovered, so he went back to the drawing board. Two years later, the professor offered a conclusive proof that the equation  $x^n + y^n = z^n$  has no non-zero integer solutions for  $x$ ,  $y$ , and  $z$  when  $n$  is greater than 2. Wiles' proof, however, is very complicated, and that has left mathematicians wondering whether Fermat's own proof—the one he didn't write down—wasn't much simpler.

Speculating on the same mystery led Beal to a generalization of the Fermat theorem. Beal believes that the solution to his equation could provide a simpler solution to the Fermat equation. Over the last three centuries, attempts to grapple with the Fermat problem have led to important discoveries in algebra and number analysis. Mauldin says a solution to the Beal Conjecture could have further applications in cryptology. Already, the challenge has forced mathematicians to think in new ways about number theory. More important, though, in Mauldin's mind, is the mathematical interest the challenge is sparking in young people.

## THE \$75,000 QUESTION

the beal conjecture: If  $Ax + By = Cz$ , where  $A$ ,  $B$ ,  $C$ ,  $x$ ,  $y$ , and  $z$  are positive integers and  $x$ ,  $y$ , and  $z$  are all greater than 2, then  $A$ ,  $B$ , and  $C$  must have a common factor.

for more information, contact:

**The Beal Conjecture and Prize,**

c/o Professor R. Daniel Mauldin,

Department of Mathematics,

University of North Texas,

fax: 940-565-4805,

[mauldin@dynamics.math.unt.edu](mailto:mauldin@dynamics.math.unt.edu),

or web page: [www.math.unt.edu/~mauldin/beal.html](http://www.math.unt.edu/~mauldin/beal.html)