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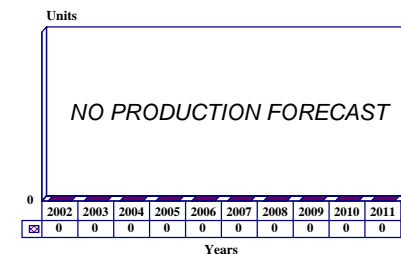
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AASI JETCRUZER - Archived 10/2003

Outlook

- The JETCRUZER program has been shelved
- Mooney has restarted piston production and is looking to acquire the Century Jet

10 Year Unit Production Forecast
2002 - 2011



Orientation

Description. Advanced-technology, six-seat, corporate/business turboprop transport aircraft.

Sponsor. The JETCRUZER is privately sponsored by Mooney Aerospace Group.

Contractors. Mooney Aerospace Group Ltd; Long Beach Airport, California, USA. Mooney Aerospace Group was formerly called Advanced Aerodynamics & Structures Inc (AASI).

Status. Development of the JETCRUZER 500 has been shelved.

Total Produced. One proof-of-concept aircraft and two JETCRUZER 450 preproduction prototypes were produced. The two preproduction prototypes were later modified to the JETCRUZER 500 standard.

Application. Business, corporate, and personal transportation. Other applications include training and medical evacuation.

Price Range. \$1.495 million in year 2002 US dollars.

Technical Data

(JETCRUZER 500)

Design Features. The JETCRUZER 500 employs a graphite composite fuselage reinforced with aluminum, and has all-metal main and canard wings. The main wings are swept slightly aft and incorporate swept tip sails, each with a rudder. The engine is installed in the

aft fuselage, with engine air intakes and exhaust housings mounted on the aft fuselage above the aft portion of the wing. Tricycle-type landing gear is used. The aircraft's standard avionics systems are supplied by Honeywell.

	<u>Metric</u>	<u>US</u>
Dimensions		
Length	9.19 m	30.17 ft
Height	3.20 m	10.50 ft
Wingspan	12.85 m	42.17 ft

	<u>Metric</u>	<u>US</u>
Weight		
Gross weight	2,722 kg	6,000 lb
Performance		
Cruise speed	555 km/h	300 kt
Range with reserves	2,593 km	1,400 nm
Propulsion		
JETCRUZER 500 (1)	UTC Pratt & Whitney Canada PT6A-66A turboprop engine, flat-rated to 634 kW (850 shp), driving a Hartzell five-bladed propeller.	
Seating		
Pilot and five passengers.		

Variants/Upgrades

JETCRUZER 450 POC. Proof-of-concept model powered by a single Allison 250 turboprop. First flight occurred in January 1989.

JETCRUZER 450. Unpressurized, more powerful version of the original proof-of-concept 450 and powered by a single PT6A-27 rated 507 kW (680 shp). First flight took place in September 1992.

JETCRUZER 500. Pressurized version of the 450. It is powered by a single PT6A-66A turboprop engine.

Besides the standard corporate configuration, the aircraft was also marketed in cargo, medical evacuation, and military patrol configurations.

JETCRUZER 650. Stretched, 12-passenger version. Development of the 650 had been on hold while AASI concentrated on certification and initial production of the 500.

Program Review

Background. In 1983, a commercial pilot named Darius Sharifzadeh began to conceptualize and design a corporate/business aircraft. His company, then called Advanced Aerodynamics and Structural Engineering (AASE), unveiled a radical pusher turboprop similar in design concept to the Beech Starship. The proof-of-concept aircraft made its first flight in January 1989 from AASI's Burbank airport facility. It was powered by a single Allison 250-C20S turboprop buried in the aft fuselage.

This aircraft, named JETCRUZER, could seat five passengers plus the pilot and cruise in excess of 250 knots. It utilized large, swept, aft-mounted main wings and foreplanes (canards). All airfoils were constructed of aluminum alloy, while the fuselage was a graphite composite/Nomex honeycomb structure embedded with aluminum mesh.

In March 1991, AASI decided to change its engine supplier from Allison to Pratt & Whitney Canada, specifying the PT6A-27 engine rated 680 shp. The company also decided to develop a pressurized version in addition to the basic unpressurized aircraft. Two new

designations were created, JETCRUZER 450 and JETCRUZER 500P, the latter being the pressurized version. AASI eventually stopped marketing the 450 and sold only the 500.

Manufacturing Experience. Upon receiving the necessary cash injection to begin manufacture of the preproduction JETCRUZER 450 and FAA flight testing, AASI was able to exploit the surplus of skilled aircraft engineers, technicians, and designers in the Los Angeles area. At about this time, Lockheed Corp was in the process of moving some of its California aircraft operations to Georgia. Hundreds of Lockheed employees who had decided to stay in California became an ideal pool from which AASI could pick the best. Many AASI employees were former Lockheed personnel.

FAA Certification. AASI passed a major hurdle in June 1994 when the JETCRUZER 450 received FAA Part 23 type certification. The aircraft was the first ever to be certificated by the FAA as being spin-resistant. The spin-resistant approval was confirmed after AASI and FAA test pilots attempted over 350 spin entries. Not one entry resulted in a spin. In all cases, the aircraft

recovered from spin attempts automatically in a level attitude or an easy-to-recover-from, long shallow spiral. The aircraft was also the first to be certified using more stringent FAA requirements, including up to 26 g crash-survivable seating.

JETCRUZER 500. AASI converted the two JETCRUZER 450 preproduction prototypes to the 500 configuration. The initial flight of the first modified 500 prototype was made in August 1997. This aircraft was later retired. Flight testing continued with the second modified 500 prototype.

Funding

From 1990 to 1994, AASI invested \$25 million in private funds to certify the JETCRUZER 450. In December 1996, the company completed an initial public offering that raised an additional \$32 million. This money was being used to amend the initial certification.

In the last quarter of 1997, AASI concluded an \$8.5 million Industrial Development Bond (IDB) with the state of California to finance construction of a new production facility in Long Beach, California. The \$8.5 million included \$7.0 million for the facility site and building, and \$1.5 million for computers, tooling, and other supplies.

In June 1999, AASI completed the sale and leaseback of the new production facility in Long Beach for \$9.8 million. The company was using the proceeds to complete development and begin production of the JETCRUZER 500. AASI sold the facility, which had opened in November 1998, to Abbey Company, a California real estate investment firm. Terms of the leaseback are for 18 years, with an option for a 10-year renewal.

In March 2000, AASI announced that it had received an initial \$5.0 million installment from a total of \$10.0 million in funds being raised by the sale of convertible preferred stock from the company. AASI received a second installment of \$2.5 million in July 2000. The funds were being used to complete the FAA certification process and begin mass production of the 500.

In August 2000, AASI announced that it had arranged a private equity line of credit with private investors. The investors committed to purchase, at the request of AASI, up to \$20 million of common shares of AASI stock over a period of two years. AASI could draw on this line of credit as funding needs arose.

In March 2001, AASI announced that it had received initial funding of \$4.1 million from a convertible debenture agreement with private investors, who committed to invest up to \$7.1 million within the year 2001. According to the terms of the agreement, AASI was to issue up to \$7.1 million of five-year, 5 percent convertible debentures, which were convertible into common stock of the company.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1983	Darius Sharifzadeh begins design of JETCRUZER
	1989	First flight of JETCRUZER proof-of-concept aircraft; change to PT6A-27 power made; AASI formed with the aid of Taiwanese investment capital
Sep	1992	First flight of JETCRUZER 450 preproduction prototype
Jun	1994	FAA Part 23 certification received for JETCRUZER 450
Aug	1997	First flight of JETCRUZER 500 prototype
May	2002	JETCRUZER 500 program shelved

Worldwide Distribution

Not applicable.

Forecast Rationale

In April 2002, AASI acquired the assets of general aviation manufacturer Mooney Aircraft Corp. AASI had been operating Mooney since early February 2002 under a court-approved plan. Mooney had entered Chapter 11 bankruptcy protection and ceased production in July 2001.

Following the acquisition of the Mooney assets, AASI changed its name to Mooney Aerospace Group Ltd. In May 2002, the company stopped work on the JETCRUZER 500 program. Noise concerns had prompted Mooney to run tests on the aircraft, which showed that the 500 was 2.9 decibels above FAA noise limits. The noise problem combined with performance, weight, and center-of-gravity problems to necessitate a major redesign of the 500, which the company has currently chosen not to pursue.

Mooney has since resumed production of the Mooney line of piston-powered general aviation aircraft. It is also attempting to acquire the rights to the Century Jet business jet.

Although it is apparently not legally obligated to do so, Mooney has decided to refund the \$10,000 deposits that have been placed for the 500 by more than 160 customers. The deposit holders have also been given the option of transferring their order to a Mooney aircraft or a Century Jet.

The JETCRUZER 500 program schedule had continually suffered from delays. In February 2002,

AASI had announced that the 500 was to undergo a redesign to reduce operating weight and manufacturing costs. The redesign was expected to take 18 months, with an additional 12 months estimated for certification. The redesigned aircraft, which tentatively was to be given the name the Mooney XP, was to receive a new type certificate rather than be certificated by an amendment to the 450 version's FAA ticket, as was planned with the 500. However, as mentioned above, Mooney stopped work on the 500 program about three months later.

Although the 500 program may not be completely terminated, the aircraft is unlikely to ever be produced. The 500 had a number of strong selling points, including its low purchase price, low operating costs, and impressive fuel consumption. Order rates had slowed considerably, though, since 1998.

The potential of the 500 in the business aircraft market could be limited by its futuristic design. The Beech Starship and the Piaggio Avanti, both recent futuristic designs, have had only limited sales success; in fact, the Starship is no longer being produced.

In addition, customers in the business aviation market are showing a decided preference for jet-powered aircraft, putting a turboprop design like the 500 at a significant disadvantage.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Aircraft	(Engine)	High Confidence Level				Good Confidence Level				Speculative			Total 02-11
		thru 01	02	03	04	05	06	07	08	09	10	11	
AASI													
JETCRUZER 450	250-C20	1	0	0	0	0	0	0	0	0	0	0	0
JETCRUZER 450	PT6A-27	2	0	0	0	0	0	0	0	0	0	0	0
JETCRUZER 500	PT6A-66	0	0	0	0	0	0	0	0	0	0	0	0
Total Production		3	0	0	0	0	0	0	0	0	0	0	0