

Innovative Aircraft

The Launch Customer

Background to the Introduction of the Boeing 787

As of March 31, 2011, the ANA Group operates a fleet of 222 aircraft, of which approximately 30% are medium-body Boeing 767s. The Boeing 767 has played the role of the core aircraft supporting the growth of the ANA Group since the Group acquired its first one in 1983, taking advantage of the aircraft's excellent performance and high economic efficiency on domestic routes and short- and medium-haul international routes.

Aircraft operate for many years and deteriorate with age. This causes fuel efficiency to decline and maintenance and other operating costs to increase. Planned aircraft replacement is a crucial aspect of a business strategy for maintaining stable operations and stabilizing profitability in the air transportation business. Since the lead time from the development of new aircraft to their introduction is about five years, the ANA Group began studying a replacement for the Boeing 767 in the latter half of the 1990s.

But at that time air transportation industry participants worldwide were focusing on providing the value of spaciousness with ultra-wide-body aircraft (the Airbus A380 of today) and

providing the value of saving time by traveling at nearly the speed of sound (the Boeing Sonic Cruiser concept). The ANA Group wanted a medium-body aircraft that combined performance and high economic efficiency to cover everything from domestic to long-haul international routes. Such a requirement was unable to attract much support, which was a formidable barrier in the search for a new aircraft.

However, the emergence of profound changes in demand in the airline industry following the multiple terrorist attacks in the United States in 2001 made an economically efficient medium-body aircraft a top priority of new aircraft development. The ANA Group, which had long wanted this type of aircraft, took the initiative in The Boeing Company's development.

In April 2004, the ANA Group decided to be the world's first airline to place an order for this new medium-body aircraft, initially ordering 50 and subsequently increasing it to 55. As the launch customer for this new-generation aircraft, dubbed the Boeing 787, the ANA Group has participated in its development.

ANA Group Leadership in the Development of the New Aircraft

Flights on domestic routes and short- and medium-haul international routes to China and elsewhere in Asia account for a

◆ Flight Range Comparison

▶ Boeing 787

▶ Boeing 767

+52%

With significantly lighter weight due to the use of carbon fiber composite material and innovative engine performance, the Boeing 787's flight range extends 52% further than the Boeing 767. Although it is a medium-body aircraft, it offers a cruising range comparable to a wide-body aircraft.

ANA will finally achieve its dream fleet with the new-generation Boeing 787 aircraft.

significant proportion of the ANA Group's network, which means its aircraft repeatedly operate for short periods of time and take off and land frequently. These network characteristics inherently stress aircraft, requiring additional options to further strengthen the airframe structure.

Success in incorporating the necessary additional options into the standard model of conventional aircraft provides outstanding economic advantages. With this as a primary objective, the ANA Group worked proactively in the development of a medium-body aircraft that embodied the desired performance and economic efficiency.

Features of the New-Generation Medium-Body Aircraft

Innovations for Range and Fuel Volume

The Boeing 787 has many innovative features. Only parts of conventional aircraft used carbon fiber composite material, but using it for the main structures including the airframe achieved significant reductions in weight. Moreover, innovative advances in engine technology have dramatically improved operating performance by increasing range and reducing fuel consumption.

Operational Advances

Befitting the nickname "Dreamliner," the Boeing 787 introduces a wide array of innovative functions. It features improved riding comfort because it has a system that detects turbulence and controls the wings accordingly, which allows the airframe to maintain a stable position.

Moreover, the new "e-Enabling" system has significantly changed the methods for sharing information between the aircraft and the ground. For example, various digitized aircraft manuals and various computer software can be updated electronically over this network. The cockpit features displays that are one size larger than the wide-body Boeing 777, with improved visibility. Other standard features to improve safety and reduce workload include a head-up display (HUD) that allows users to check instrument data while maintaining a fixed forward line of sight.

Focus on → The Working Together Project

As the Boeing 787 launch customer, the ANA Group participated in the Working Together Project. This was a win-win development technique that allowed manufacturer and user to mutually employ their strengths to directly reflect extensive airline operating experience and specific requests in the aircraft design.

For example, conventional aircraft have cockpit windows that can be opened for wiping, but the new aircraft does not. The ANA Group based persistent negotiations on Japan's unique weather and natural conditions such as the amount of precipitation, yellow sand and number of insects, and as a result were able to make a

cockpit windshield wiper and washer standard equipment.

The ANA Group proposed numerous other specifications for standard equipment, including oxygen masks shaped to fit customers better and the installation of mirrors that show the interior of the overhead storage bins in the passenger cabin. The project involved multiple thorny issues, but we are proud that the airlines worldwide that will use the Boeing 787 will benefit substantially in areas such as safety, economics, efficiency and convenience because of our results.

Special Feature: **We Fly 1st** Leading **Performance**

The Performance of the New-Generation Aircraft

An Aircraft That Will Strengthen Competitiveness and Contribute to Growth

Now that the Boeing 787 has been developed with these numerous features for performance, how will it benefit the ANA Group's results?

The Boeing 787 is precisely the ideal aircraft the ANA Group has been seeking. This strategic aircraft will display its value in a number of areas, enhancing the ANA Group's competitiveness and contributing to growth.

In considering the degree of the Boeing 787's effect on the ANA Group's profitability, the most important point is that the Group can expect to further innovate its network strategy because it offers performance nearly equal to a wide-body in a medium-body aircraft. The details of the ANA Group's future strategy using the Boeing 787 are on the following pages. This section takes a look at the direct economic and environmental benefits that the features of the Boeing 787's airframe provide.

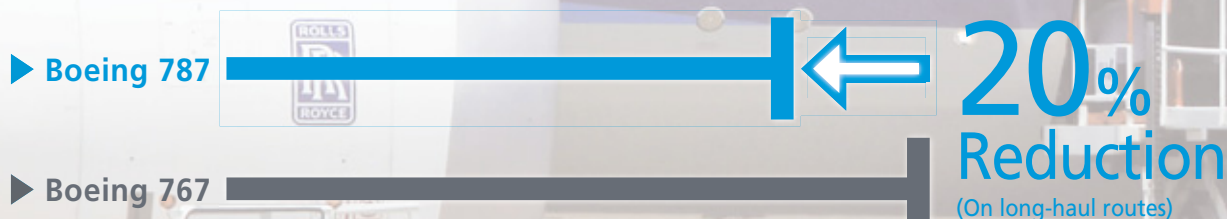
The Economic Advantages of the Boeing 787

Toward Lower Operating Costs

The Boeing 787 effectively lowers costs, beginning with operating costs. It offers enhanced fuel efficiency, which reduces consumption, along with significantly improved performance. As mentioned earlier, the lighter carbon fiber composite material airframe and engine performance innovations can significantly reduce fuel consumption compared with the Boeing 767, by approximately 20% on long-haul routes and about 10% on short-haul routes.

In the air transportation business, fuel expenses account for more than 20% of operating expenses. Restraining and reducing fuel expenses therefore provide substantial advantages for stable corporate performance. We have been working to restrain usage under our current Fuel Efficiency Project, but we expect that the introduction of all 55 Boeing 787s we ordered will substantially improve the fuel efficiency of the ANA Group's fleet. Moreover, the lighter airframe will also decrease weight-based airport usage charges such as landing fees.

◆ Reduced Fuel Consumption



The Boeing 787 achieves a substantial reduction in fuel consumption compared with the Boeing 767 (approximately 20% on long-haul routes). Its improved fuel efficiency will result in major gains in performance for the ANA Group, including lower operating costs and reduced environmental load.

The new-generation aircraft has outstanding economic efficiency that will contribute to both revenues and cost performance.

In addition, we expect major reductions in maintenance costs. Composite materials are not subject to problems such as metal fatigue and corrosion. This not only lengthens airframe service life, but also enables a 30% reduction in maintenance items without adversely affecting safety. Cutting back on inspection frequency and extending the interval between maintenance can reduce the number of times scheduled maintenance is carried out, enabling reductions in maintenance costs and component repair costs.

Objective: Optimize Customer and Cargo Revenue

The introduction of the Boeing 787 will not only reduce costs. It will also make a substantial contribution to the ANA Group's revenues.

The Boeing 787 will increase the number of seats available on aircraft used on domestic routes by more than 20% compared with the 270 seats available on Boeing 767s used on domestic routes. This will allow us to capture additional demand we are currently unable to handle using the Boeing 767 for high-demand routes and time slots.

For aircraft used on international routes, we will install ANA

BUSINESS STAGGERED, which is not available on the conventional Boeing 767. The additional space available will also allow us to configure seating to provide a premium feeling in both the business and economy cabins. We expect this to enhance competitiveness and improve earnings by supporting higher unit prices.

In addition, the Boeing 787 has 1.6 times the cargo space of the Boeing 767, which will have a strongly positive impact on the cargo business. Revenue from cargo carried in the belly space, or the internal cargo space, of aircraft on the ANA Group's extensive passenger flight network accounts for a high percentage of Group cargo revenues. This makes capturing cargo demand a key point alongside matching capacity to passenger demand, particularly in the international cargo business. The ANA Group will promote revenue management that efficiently structures passenger and cargo revenues with the aim of maximizing total revenues per aircraft. The Boeing 787 has the optimum performance for executing these initiatives.

Focus on → Reduced Environmental Load and Greater Passenger Comfort

A lighter airframe that uses composite material and improvement in engine performance raise the fuel efficiency of Boeing 787 aircraft. This enables reduction of CO₂ emissions by approximately 20% and nitrogen oxide emissions by approximately 15% compared with the Boeing 767. It also reduces takeoff noise by approximately 40% and the development of a durable paint that can be used on composite materials reduces repainting frequency. These are among the standout features that reduce the environmental load of the Boeing 787.

The airframe uses composite material that is strong, corrosion resistant and easy to mold. This enables cabin pressure control with higher humidity to create a comfortable cabin environment similar to

being on the ground, which helps reduce the headaches, dizziness and fatigue passengers may experience. Improved passenger comfort will contribute significantly to increasing the product value the ANA Group provides with a network that uses the Boeing 787.

◆ Comparison of CO₂ Emissions per Seat on Tokyo-Sapporo Route



Special Feature: **We Fly 1st** Evolving **Strategies**

Further Network Development Deepening Network Strategies

The increase in the number of arrival and departure slots at Tokyo-area airports has allowed the ANA Group to implement a dual-hub strategy using both Haneda Airport and Narita Airport, which offers opportunities to enhance network competitiveness because of the ANA Group's strengths on domestic and Asian routes. The introduction of the Boeing 787 is the key to this network strategy because of its extended range and superior economic efficiency.

Enhanced Ability to Match Capacity and Demand

Matching capacity and demand, which is central to the ANA Group's network strategy, involves realizing the optimal balance between revenues and operating costs by deploying aircraft of different sizes to accommodate changes in passenger demand. In this regard, the Boeing 787 will display tremendous power.

We can use the Boeing 787 not only on domestic and short-haul international routes, but also on long-haul international routes to Europe and North America that formerly were predicated on the use of wide-body aircraft. The air transportation business,

particularly international passenger operations, is volatile because passenger and cargo demand trends are easily affected by factors such as economic conditions and geopolitical risks. Our ability to choose between the wide-body Boeing 777 and the medium-body Boeing 787 for flights on long-haul international routes according to demand will provide a broader range of options in matching capacity and demand while enabling stable earnings.

More Ways to Increase Flights

The Boeing 787 will allow the ANA Group to flexibly increase flights on existing routes. For example, consider cases where we are increasing available seating capacity when demand is strong on routes to Europe and North America that we currently serve with one flight daily. Rather than doubling seating capacity by adding another Boeing 777 flight on routes where we are already using this aircraft, the option of using the medium-body Boeing 787 allows us to control the risk of overcapacity when enhancing convenience by increasing the number of flights as we move to capture additional demand.

Late-night and early-morning international arrivals and departures at Haneda Airport are complementing daytime arrivals and departures at Narita Airport for flights to Europe and North America. Building on the October 2010 start of service on the

◆ Potential Service Area

Service on the Boeing 767 was limited to flights from Japan to East Asia. The Boeing 787 enables service not only to Asia and Oceania, but also to cities in North and Central America, the Middle East and Europe. The ANA Group's network strategy will further expand.



Potential Service Area
of the Boeing 787

Note: Maximum flight range at
maximum capacity

Network enhancement and the Boeing 787 will drive ANA's strategic evolution.

Haneda-Los Angeles route, during the fiscal year ending March 2012 we plan to initiate service on U.S. and European routes. The introduction of the Boeing 787 will help to realize the formation of an effective network that matches capacity and demand.

Enabling the Start of Service on a Wider Array of Long-Haul Routes

We will also have more options in initiating service on new long-haul routes. Until now, we avoided direct flights on long-haul routes, even when we expected definite latent demand, if forecast demand did not reach the level required for wide-body service to be profitable. Instead, we chose to expand our connecting flight network. In other words, we routed our flights through partner carrier hub airports and accommodated demand using partner connecting flights.

The Boeing 787 medium-body aircraft will allow us to assume we can match capacity to demand, enabling us to expand our lineup of direct flights and strengthen our network covering cities in Europe and North America as well as to capture new customer demand that is likely to increase for destinations including India and the Middle East.

The standout feature of the Boeing 787 is that it gives the ANA Group versatility in covering a wide array of the world's major cities.

Future Operations

Integrating Strategic Aircraft with Global Marketing

The ANA Group will speed up the pace at which it takes possession of Boeing 787s during the first two years, taking delivery of 12 during the fiscal year ending March 2012 and eight during the fiscal year ending March 2013, for a total of 20 aircraft. During the first year we will operate them on domestic routes, then use the superb performance of the Boeing 787 to maximize the competitiveness of our international route network by introducing it in stages on short-haul and long-haul international routes. The Boeing 787 will be the core aircraft in the ANA Group's network, and we plan to take delivery of 55 of them through the fiscal year ending March 2018. We will also renovate our Boeing 767s to maximize the benefits of our investment in strategic aircraft.

In addition to strengthening the competitiveness of its domestic network, the ANA Group will accelerate its initiatives to strengthen global marketing through its alliance strategy and the Japan-U.S. and Japan-Europe joint ventures that have evolved from it with the granting of antitrust immunity, the Haneda Airport and Narita Airport dual-hub strategy, and now the deployment of the strategic Boeing 787.

Focus on → The Future that the Boeing 787 Enables for the ANA Group

The Boeing 787 will be the core aircraft supporting the ANA Group's future growth. This new-generation medium-body aircraft will enable the effective integration of direct flights centering on the dual hubs of Haneda Airport and Narita Airport into the Group's existing network, thus further deepening the ANA Group's network strategy.

These developments reaffirm for me the importance of returning to our origins, of adopting the perspective of the customer, accurately understanding customer desires, and thinking about how we can meet them as we set our strategies. The introduction of the Boeing 787 is one of our responses to customer desire for saving time, comfortable flights and value with quality.

As the launch customer, the ANA Group consciously and responsibly participated in the development of the Boeing 787. We will use this aircraft as our primary weapon as we further deepen our network strategy to prevail against intensifying global competition.



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