The original documents are located in Box C51, folder "Presidential Handwriting, 11/6/1976 (2)" of the Presidential Handwriting File at the Gerald R. Ford Presidential Library.

THE PRESIDENT HAS SEEN

THE WHITE HOUSE

WASHINGTON

September 17, 1976

MEETING ON AIRCRAFT NOISE

Saturday, September 18, 1976
10:00 a.m. (45 minutes)
The Cabinet Room

From: Jim Cannon

I. PURPOSE

You requested this meeting to discuss the environmental and economic aspects of Secretary Coleman's proposed aircraft noise policy.

II. BACKGROUND, PARTICIPANTS AND PRESS PLAN

A. Background

You have had three previous meetings with Secretary Coleman and others on aviation noise: Monday, September 6; Thursday, September 9; and Saturday, September 11.

At the last meeting you told Secretary Coleman that you wanted to discuss the environmental aspects of aircraft noise with Russell Train, Administrator of the Environmental Protection Agency; Russell Peterson, Administrator of the Council of Environmental Quality; and Dr. John McLucas, Administrator of the Federal Aviation Administration.

Alan Greenspan also wanted to comment further on the economics of the Coleman proposal.

You also asked for an appraisal of the likely impact of the A-300B Airbus. To date 34 A-300's have been sold, and foreign airlines have taken options on 23 additional planes. The best analysts consider that the A-300 is not at this time a serious threat to US produced aircraft (Tab A).

B. Participants

Secretary William Coleman
John McLucas (FAA)
John Busterud (CEQ)
Russell Train (EPA)
Dick Cheney
Max Freidersdorf
Alan Greenspan
Jim Lynn
Paul MacAvoy
Jack Marsh
Ed Schmults
Bill Gorog
Jim Cannon

C. Press Plan

To be announced.

III. Talking Points

A. The first objective of Bill Coleman's proposal is to alleviate problems associated with aviation noise. I have asked John McLucas, together with Russ Train and John Busterud (for Russ Peterson) to give me their assessments of the dimensions of the noise problem. Russ, would you begin?

B. Bill Coleman's proposal contains financing plan to help the airlines pay the cost of meeting any new noise standards. Alan (Greenspan), what is your assessment of the airlines' capacity to meet any new requirements without Federal help?

THE WHITE HOUSE

WASHINGTON

September 17, 1976

MEMORANDUM FOR: JIM CANNON

FROM: PAUL LEACH Paul

SUBJECT: A-300B Airbus and the Next Generation Medium Range Aircraft

Airbus

The Airbus is a multinational joint venture currently concentrating in the medium range market. Development of the first aircraft began in 1969, the first flight occurred in 1972 and the first sales began in late 1974. Two models of the A-300 are currently in production, the B2 and B4. Both are powered by two underwing General Electric CF6-50C engines. The approximate price of the aircraft is currently about $22 million.

Management and design leadership for the A-300 program is vested in the French firm Airbus Industrie. The aircraft is built by a consortium of manufacturers from four countries:

France	Aerospatiale
Germany	Deutsche Airbus (a partnership of Messerschmitt-Bolkow-Blohm and VFW-Fokker)
Netherland	Fokker
Spain	CASA

The main partners are the French and German companies.

The governments of the four participating countries have reportedly invested a total of at least $1 billion in A-300 development and production to date, which is believed to represent about 85 percent of total program investment. They may be called upon for an additional investment of $500 million in the aggregate.

To date, 34 A-300-Bs have been sold with over half already delivered and in service. The purchasers are:

AIRLINE	NUMBER
Air France	9
AirInter (France)	3
Germanair	2
Indian Air Lines	3
Korean Air Lines	6
Lufthansa	4
South African Airways	4
Transavia	1
Trans European Airways	2
	34

These airlines have options on 23 additional planes.

The A-300-B2 and A-300-B4 are currently competitive in terms of range and/or capacity with certain DC-10, L-1011 and B-727 models. The A-300-B2 has a range of 2,074 miles, and the B4 a range of about 2,417 miles, somewhat less than U.S. - made, medium-range, aircraft. Standard seating for both series is about 220 passengers in mixed-class versions and 345 passengers in a high-density, all-economy version, somewhat less than in the DC-10 and L-1011 and about one and one-half times the seating capacity of the Boeing 727.

Apparently, the A-300 is the most technologically competitive foreign commercial aircraft ever produced. Because it is a two-engine plane, the A-300 uses less fuel per passenger mile on most routes as compared to the DC-10, L-1011 and B-727. However, to date the A-300 has not been a commercial success.

The A-300 has experienced slow sales since production began. However, the American competition has sold many more of each aircraft: about 240 of the DC-10s, about 160 of the L-1011s and about 1300 of the B-727s. Of course, these are older planes and most were sold before the Airbus was in production.

The strong competitive advantages of the A-300 are its fuel economy and its immediate availability (as contrasted to about a year and a half wait for the DC-10 and L-1011). The key competitive weakness of the A-300 is the lack of customer confidence in Airbus Industrie and the lack of demonstrated after-sales service. In the past airlines have generally had bad experience with earlier planes produced in Europe and the bad taste from this experience lingers on.

There has been some discussion of new variants on the A-300 B2 and B4. The most important variation might be the A-300 -B10 which would be a smaller 200 seat airplane which would compete with the proposed B-7X7 and DC-X-200.

New Generation Aircraft

The attached article from the latest Economist is the best, current discussion of the new aircraft development situation I have found. Within the past two weeks, the major European air show took place at Farnborough, England and a two-day international conference on aircraft replacement and new developments (arranged by the Financial Times) was held in London. This Economist piece is a follow-up to those events.

The conclusion of this article and my own investigations is that the U.S. manufacturers (probably Boeing) are likely to begin full development of next generation of medium range, 200-seat, wide-bodied aircraft by the middle or end of 1977 and that the U.S. will continue to retain its dominant position in the manufacture of commercial aircraft.

You might also be interested in the attached short report by Alan Benasuli at Drexel Burnham & Co. on Wall Street. Benasuli, who is considered the best aerospace analyst on Wall Street, indicates in this report and in a lengthy conversation we had this week that the commercial aircraft industry cycle has hit bottom and that the situation will continue to improve. He anticipates that Boeing will begin development of the new generation B-7X7 in the second half of 1977 (along with a couple of minority-interest partners from Japan and Europe) with production to remain in the U.S. and deliveries to commence in late 1981 or in 1982. He sees no appreciable competitive challenge from foreign consortia and manufacturers.

Also, the latest information on the proposed new A-300-B10 model is that Airbus has decided not to pursue development at this time (although this decision could be reversed).

Attachments

Billions and billions and billions to grab for

Aircraft and aero-engine makers were biting their nails at the Farnborough air show this week. With good reason: between now and 1985, something like $45 billion (at 1975 prices) is expected to be spent on commercial jets by non-communist airlines. And probably at least as much again in 1986-90. For once, civil aircraft projects overshadowed the more exciting world of military fighters and bombers, where there are few major decisions in the balance (see page 42). And time is short. If the airlines want (and can afford) to get new aircraft into service in 1981-82—which is when they will need them—development of the new aircraft will have to be started within the next year.

Who makes and who buys what will often depend on politics rather than economics. (What else when governments are so often paying?). But the future of a third of America's million and of Europe's 400,000 aviation industry workers who depend on civil projects, depends on the choices made. The following articles set out the background to these decisions.

More passengers, more aircraft

Why so many new aircraft? The simple answer is that more people will be flying, and flying farther, as the world gets richer. The 1973 oil price hike and the subsequent world recession pegged growth in passenger traffic to just over 1% in 1974 and 1975. That hiccup is over.

The forecasts are not for a return to the phenomenal growth rates of the 1960s, when passenger-miles went up by 15–20% a year in 1964–70 and freight ton-miles 15–28%. Charter fares apart, a large part of that rapid growth was due to the relative cheapening of air fares compared with other prices, first as a result of the increased productivity of jets—flying much faster than piston-engined aircraft—and, much later, when the new wide-bodied jets (747, TriStar, DC-10, Airbus A300) reduced seat-mile costs still further.

The developments in the offing will not reduce costs anything like so dramatically. Even so, the growth predictions are respectable, varying from Boeing's lower prediction of a 5.5% a year increase in passenger-miles in 1975–80 (Boeing's optimistic forecast is 9%), to the International Civil Aviation Organisation's fairly hopeful 10½%.

Most of the industry works on the assumption that growth will average about 7½% a year to 1985, followed by 5½–6½% in 1985–90. That would increase the number of passenger-miles flown in the non-communist world from the 400 billion last year to 825 billion in 1985 and to well over a trillion in 1990.

New designs cost more to make and less to run

It costs millions to make the simplest change to an aircraft design, let alone design a new model from scratch. So why not simply update existing types?

This is being done wherever possible. Nobody is planning a brand-new long-haul jet. McDonnell Douglas reckons that, at today's prices, it would cost at least $2 billion to develop anew the DC-10—and makers have yet to get their investment back on the existing types. So tomorrow's long-haul jets will be modified versions of 747s, DC-10s, TriStars and Airbuses (a new supersonic transport will not be developed until 1990, at the earliest). The last major decision for some time in this area was taken in August, when British Airways ordered a new long-range Lockheed TriStar (see page 86).

These existing types already have all the main advantages open to aviation. They are as wide-bodied as seems feasible. They use big fan-jet engines (the JT9, CF6 or RB211) which are cheaper on fuel than older ones, much quieter and less prone to pump out black clouds of unburnt fuel and other emissions such as carbon monoxide and nitrous oxides. These aircraft also have acceptable modern aerodynamics that would cost a lot to better for a relatively small reduction in operating costs.

But that is not so with today's small and medium-range aircraft. It is in these categories that competition will be hottest.

The most immediate pressure for the airlines to change their existing short-

haul and medium-haul fleets is going to be noise. New regulations proposed for the United States (whose lead is likely to be followed elsewhere) will mean increasingly that older and noisier aircraft will be restricted, first from night flights, later from flying at all. Already some American airports (which are legally liable for compensating local residents for airport noise) have started to limit the number of movements by noisy aircraft.

The proposed emission controls now being considered for the United States will provide another, less immediate, pressure to re-equip. Older jet engines are bad where it counts, near the ground.

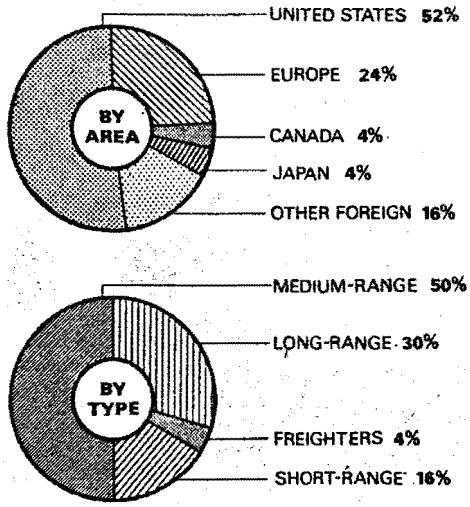
But the biggest pressure will be the lower operating cost of new designs. The combined effect of high-bypass-ratio fan-jet engines, modern aerodynamics (especially new low-drag wings), lighter structures (through using composites, titanium etc), and wider bodies (six seats abreast for the short-haul jets, eight for the medium-haul types) will reduce seat-mile costs by nearly a third.

Air France has found that the Airbus A300-B4—about the most aerodynamically advanced aircraft at present flying—uses 1,800 gallons of fuel an hour to carry up to 250 people, against the 2,250 gallons an hour used by a Boeing 707 to carry up to 140 people. The comparison with newer designs than the 707 is less dramatic, but the message is clear.

And all that leaves aside the higher costs (and technical problems) of keeping ageing aircraft to airline standards.

Who will buy what

Non-communist market for civil jets, 1976–85 (at 1975 prices)



Splitting the $45-billion market

About half (ie, around $22 billion at 1975 prices) the expected spending by airlines on new aircraft between now and 1985 will be needed to cope with the expected growth in the traffic. Few airlines make money at load factors below 50% (the industry average is around 55%). They coin it once traffic exceeds their break-even point, until the average load factor reaches around 75%, expected to happen industry-wide by 1981-82. Then profits stop increasing as fast; peak travel congestion means arranging extra flights, less time is available for maintenance, etc.

The other half of the money will go to replace older, noisier and thirstier jets. There are about 2,800 of these earlier types in service, including Boeing 707s, 727s, 737s, McDonnell Douglas DC-8s, DC-9s, BAC 1-11s, Aérospatiale Caravelles, etc. Roughly half of them will be 20 years of age by 1985, old for a commercial aircraft. Already some of the earliest 707s and DC-8s have been sold for scrap; the second-hand market (mainly third-world airlines) is saturated.

Just over half the total cash will be spent by American airlines, some of which, like United, are as big as several European lines put together. For the usual good and bad reasons they will buy American. American makers will also obtain most of the orders from other areas like Canada, Mexico and Japan (each expects to account for about 4% of the total). Add in the significant proportion of sales to the increasingly important Middle East market (on the back of Ex-Im bank finance, among other things), and it is realistic to expect that (unless the Europeans or other countries close their home markets) the American aircraft industry will supply over 90% of the market, just as it has in the past ten years.

Western Europe's aircraft industry, the only other serious one, except for Russia's which is only now tentatively thinking of competing in the non-communist export markets (though not enough to exhibit at Farnborough), has failed to hold its own. Europe accounts for roughly a quarter of non-communist civil air traffic; but its aircraft makers have sold only about 8% of all civil jets sold in the past 10 years. Even in Europe itself, America's aircraft industry dominates: its share of the market, two-thirds in 1970, rose to four-fifths in 1974.

Nationalist pressures have meant that many rival European projects have been launched in competition with each other. Sales have been limited: 117 Hawker Siddeley Tridents sold (against 1,300 Boeing 727s) 170 BAC 1-11s against 750 DC-9s).

So some European governments have been encouraging their airlines and manufacturers to get together in groups to produce specifications of the sort of aircraft needed in the next 10–15 years. The hope is that the resulting joint designs might also sell outside Europe, perhaps even to the United States.

At the same time, American makers have been consulting with airlines worldwide. Boeing and McDonnell Douglas make it a practice to put forward for criticism their designers' latest brain children. (It is relatively cheap to stretch or shrink this sort of "rubber" aircraft using a computer.)

There is still much discussion about the aircraft that will emerge—even over major points like the number and size of engines and how far the different categories should be able to fly fully loaded. In these debates, the American view, backed by the clout of its home market, predominates. But, there is a clear consensus between American and European thinking on the broad divisions that will appear in the market.

Medium-haul jets: the largest part of the market, expected sales total $23 billion. Part of this total will go on medium-range versions of existing wide-bodied jets, like the TriStar, DC-10 and Airbus. But well over half will go to new medium-bodied jets (up to eight seats abreast) taking around 200 passengers some 1,500 nautical miles for European airlines, up to 2,500 miles for the American market, (enough to fly Los Angeles-New York non-stop—throughout these articles, we measure range in nautical miles of 2,000 yards—1.83km—and seating capacity to the American standard, 11% first class with the seats 38 inches apart, 89% economy—coach—34 inches apart.)

Short-haul jets: around $7 billion for aircraft able to fly anything from short inter-city hops up to 1,500-mile flights. Seating capacity up to 160, particularly for the American market, with more interest in a smaller, 130-seat aircraft in Europe.

Inside this group, about $1 billion will be for an even smaller jet of between 80–120 seats, suitable for third-world airlines and intended to replace turbo-prop aircraft like the Fokker F27 (380 in service) and the Hawker Siddeley 748 (130 in service).

Long-haul jets: around $13 billion for aircraft able to fly 3,500 miles and up, perhaps up to 7,500 miles—if crew and passengers can stand the strain of a 13–14 hour flight. Capacity, from 250 seats to 450 (the 747's present limit). This category also includes a nominal sum to cover hypothetical further sales of Concorde.

Freighters: versions of large airliners (ie, 747s and, later, DC-10s) modified to carry freight only, to a total of about $2 billion. Most freight (an increasingly important revenue earner for airlines)

will be carried in the belly of passenger aircraft on passenger flights, or in passenger aircraft which can be converted by removing the seats and internal trim, sometimes in less than an hour after finishing a passenger flight.

On offer

On paper, or in the aircraft makers' computers, there are plenty of designs being prepared to tempt airline chiefs. The hottest competition will be for the shorter-haul and the 200 seat medium-haul aircraft. There are serious candidates from Boeing, McDonnell Douglas and Airbus Industrie, as well as the joint French-American expanded-Mercure project that ruffled the industry's feathers last month. There are also some dreams: eg, Lockheed simply cannot afford to go ahead with the shortened 200 seat version of its TriStar.

For technical reasons it will not be possible to use variations of the same design to fill both these market slots. Shortening the relatively wide body of the proposed medium-range designs to give only 175 seats would produce an aircraft so dumpy that it would suffer from excessive drag.

Vice-versa, stretching a relatively narrow-bodied (six seats abreast) design to carry up to 200 people up to 2,500 miles, would produce a very long thin aircraft where the large surface area would also incur a drag penalty.

Short-haul: Mercure rising?

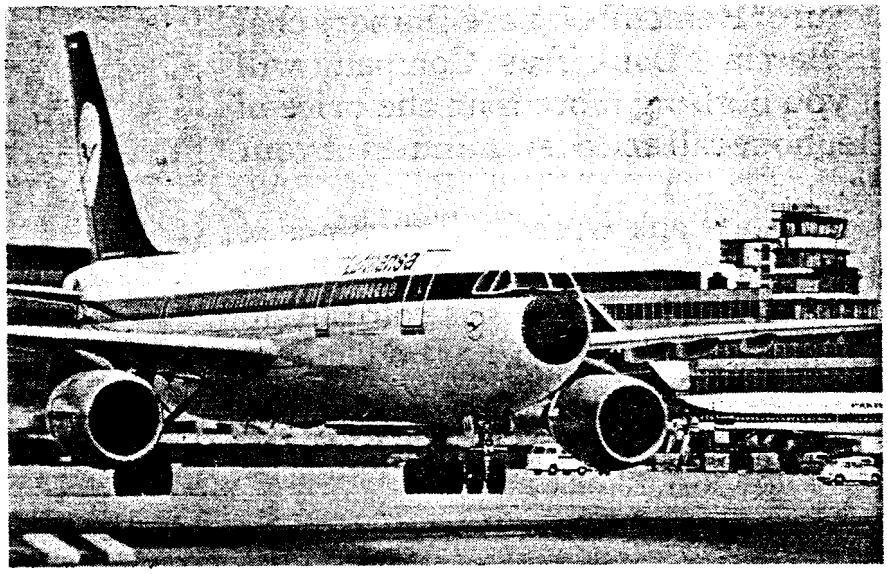
In the short-haul stakes, the French government's surprise announcement last month that it wanted to go ahead with serious negotiations with McDonnell Douglas on a developed version of the Dassault Mercure appeared to be the first serious decision anywhere on the new aircraft. But how serious? As details of the project have dribbled out, it has become clear that it is far from being either a firm commitment to build the aircraft or a firm design.

The original Mercure was a failure. As defined so far, the new Mercure 200 looks like being another one.

To American seating standards, it is said that it will have a capacity of around 160 seats—which became 174 seats when crammed together to European standards. And it is necessary to cram the seats in, to reduce the predicted seat-mile operating costs of the aircraft to a level where airlines would choose freely to consider it. But the result is likely to be too large an aircraft to be carried adequately by two of the joint French-American CFM 56 engines. The French, desperate for a home for this engine, ignore such details.

Some of the commercial details also look a bit odd. The carefully leaked selling price of $10m must be a joke. Dassault is to have design leadership, but only a 5% stake. Aérospatiale is to take 40% and get most of the French manufacturing work, which should help stave off aggro from its increasingly restless and under-employed Toulouse workers who rightly fear redundancy. Possible explanation: eventually the project might actually be based on an Aérospatiale design, variations of which (from 150-200 seats) have been under discussion for some time. Will any other European maker (or government) really stump up for any of the 40% stake nominally left open (earlier the British Aircraft Corporation and Aeritalia had been mentioned)? The French government is talking about putting up only half the predicted $250m development costs.

And what's in it for McDonnell Douglas in return for a 15% stake? Earlier discussions had included the idea that a deal would involve the French airlines buying reasonable numbers of



Technically it's marvellous

The original versions of the Airbus, the B2 and B4, were later into the market than the other medium-range wide-bodied jets, the DC-10 and TriStar, and so lost out on the main selling boom. The Airbus was also uncomfortably sized, at 260 seats, not directly competing with its rivals' 290-350, yet too big to fit the 200-seat market now opening up. This was yet another case of the Europeans fitting an aircraft to technical standards (to use two existing big fan engines) rather than to customers' needs.

Nevertheless, the Airbus is technically the best civil aircraft currently flying. Airbus Industrie would prefer to concentrate on selling the existing types, but it has come up with a modified, 200-seat version, the B10. Its fuselage would be shorter by 23 feet, but the same wing would be used to keep development costs down to $100m. Direct operating costs would be higher than for the rival Boeing 7X7 and, now that fuel costs are such a high proportion of their costs, airlines (Lufthansa for one) say they will not risk buying cheap now and risk higher running costs later.

There is also a so-called "maximum change" B10 that would match the 7X7. But that would cost $350m to develop and the investors, the French and West German governments, are not leaping to put that much more cash into the project.

They have already put $1 billion or so into getting the A300 into the air, plus sizeable sums to finance production costs, work-in-progress and export finance. Even if—and it is wildly unlikely—350 aircraft are sold, the price on average will represent a $4m subsidy per machine. And the Airbus has not raised so much as a sniff from any American airline, let alone a major one. Without sales in America, the project will remain no more than a sizeable employment-providing money sink, that the British show no sign of wanting to rejoin.

There is not much encouragement to be gained from the nice public noises Lufthansa has been making about the performance of its first Airbuses. The German government had to grease the way before the airline would buy. There was a confidential government guarantee of DM 150m ($60m at the time) equivalent to the purchase price of three Airbuses and their spares, to be paid if the Airbus project collapses before 1981. There would also be an ongoing German government support of DM 75m to provide spares for Lufthansa if the project dies. And it is believed Air France got comparable support from its government.

existing McDonnell Douglas designs, especially the DC-9, to replace Air France's tired Caravelles. (The French government refused to let its national airline buy Boeing 737s for this purpose 18 months ago.) But buying enough DC-9s to help McDonnell Douglas (it too faces a redundancy problem) would cut off part of the only guaranteed sales for the Mercure 200. And it is hard to imagine the American aircraft company believing that it could sell to many American airlines the Mercure 200 as currently specified, with only a modified and enlarged version of the Mercure 100 wing. Is there some piece of collaboration on military aircraft yet to be revealed between fighter-makers Dassault and McDonnell?

If the French go ahead they will face at least one formidable short-haul competitor. There have been plenty of dream aircraft in this size in various computers, including the Aérospatiale design, an updated BAC 1-11, and various ideas around a new DC-9. But above all there is the Boeing 7N7, an updated 737.

This Boeing would probably be built in two sizes, one with 120-130 seats and a 160-seater. The smaller size aircraft would use the two CFM 56 engines proposed for the Mercure 200. The larger version would use the rival JT10 engine (initially of 24,500 lb thrust, but with a 27,500 lb version being worked on) which is proposed to be developed jointly by Pratt and Whitney and Rolls Royce. Or, the latest idea emerging over the past few weeks, a new smaller version of the existing big-fan engines discussed below.

Medium-haul: The X factor

What about the medium-haul aircraft? Here too McDonnell Douglas is in a slightly strange position. It has been discussing collaboration with Airbus Industrie, but also has its own 200 seat aircraft, the DC-X-200—which has had a far from happy ride within the company.

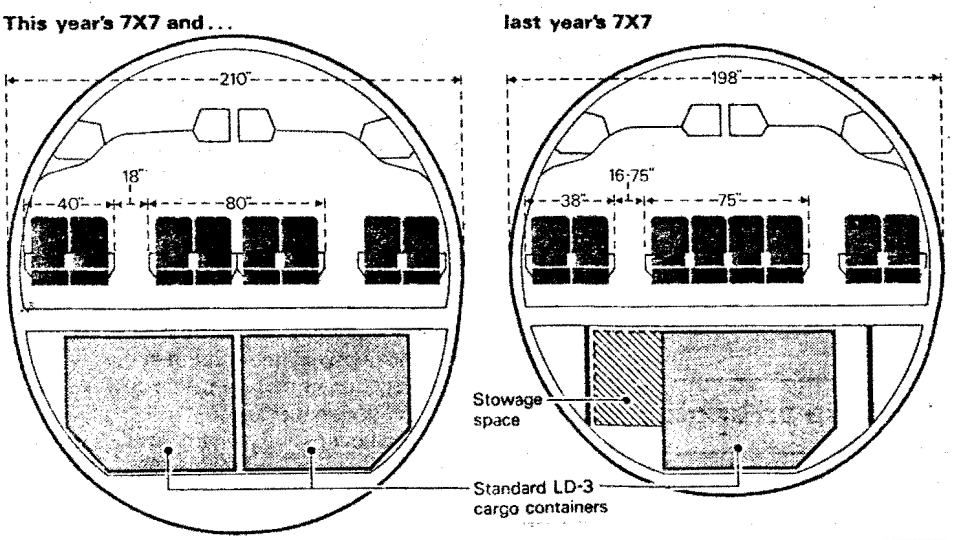
The idea of the Douglas division was to cut costs by basing the new design heavily on the existing DC-10. The fuselage was to be shortened, but the wing kept the same. This got short shrift from the McDonnell side of the business (which is king). The rethink has gone through several stages. The DC-X-200 is still based on the DC-10, but not much: the same cockpit section (though with only two engines instead of the DC-10's three, there would have to be lots of changes to the systems and electronics, etc) and, partly modified, most of the fuselage. The wings and tail section would be new. Even so, the company reckons that at $600m the development bill would be cut by at least a third.

The project is still far from reality, for all the protestations by Douglas people that it is definitely to be started.

This and the other competitors—the Airbus A300-B10 and the twin-engined version of Boeing's 7X7—are much alike, except in wing area. All three aircraft would use "derated" versions of the existing big-fan engines (discussed below), and be wide enough to carry two LD-3 cargo containers (standard in aviation freighting), side-by-side in the belly beneath the passenger compartment.

Boeing has spent more and for longer than the others on developing its various ideas for a 200-seat airliner; about four years and $60m to date. Its own inclination has been that such a large aircraft should be three-engined. But largely as a result of the technical success of the Airbus (quite a different thing from commercial success), Boeing has also designed a twin. Responding to airline requests, Boeing has also substantially changed last year's 7X7 design, which could carry only one LD-3 freight container in its belly. Now the 7X7 fuselage is large enough to carry two LD-3s side-by-side, like the Airbus.

The airlines change Boeing's mind



Shall we get together?

The French government has plumped for trans-Atlantic co-operation with McDonnell Douglas largely because this American company has shown much greater awareness of European sensitivities than Boeing has. The announcement did not show much awareness of Boeing's sensitivities: its men were due in France just a few days later to talk about co-operation on development of the Airbus.

The British industry, for all the uncertainties about its state-owned future, was quick to let Boeing know that it was keen to talk about collaboration. The Germans and Dutch, disillusioned about the money they have put into Airbus for no return and unamused by the Mercure joke, also have been making passes at Boeing.

Boeing would like international partners. It already has an agreement in principle with Aeritalia and a Japanese grouping over the 7X7 (each is nominally down to take a 20% stake). It would like other European partners, especially the British (common language, and technical ability: Hawker Siddeley's Airbus wing is the best flying), provided it is on a commercial basis.

Though it claims it could raise the $1.4 billion (at least) needed to launch both the 7X7 and 7N7 type projects simultaneously, Boeing would much prefer to spread the load. Launching the 747 Jumbo almost killed the company.

Co-operating with major European states would have other advantages for all the American makers. It would block off any European protectionism—indeed the state airlines concerned could be expected to buy the result.

Persuading the Europeans to join has been Boeing's problem. In return for a stake in what, on past performance, will be the biggest selling aircraft of the next generation—and probably would mean more work for European aircraft factories than their own projects would bring—Boeing will demand to dominate everything that matters. Otherwise it feels it might lose its leadership in the American market.

This was too much for the French; but the British might accept disguised subservience provided Britain's ability

to design and develop an airliner is nominally preserved. The British—ministers, civil servants and industry leaders—now openly question whether further co-operation within Europe even pays off politically.

Old engines for new

The biggest question mark over the design of the new aircraft is how many of which engines they will use.

Until recently it had been expected that the shorter-haul types would use two of a new generation of engines in the so-called "ten tonne" class (around 20,000 lb thrust), and the medium-haul types three of these engines. Two engines of this size have been worked on: the CFM 56 already largely developed by Snecma and General Electric; and the JT10, designed mainly by the American maker Pratt and Whitney, but to be developed jointly with Rolls-Royce.

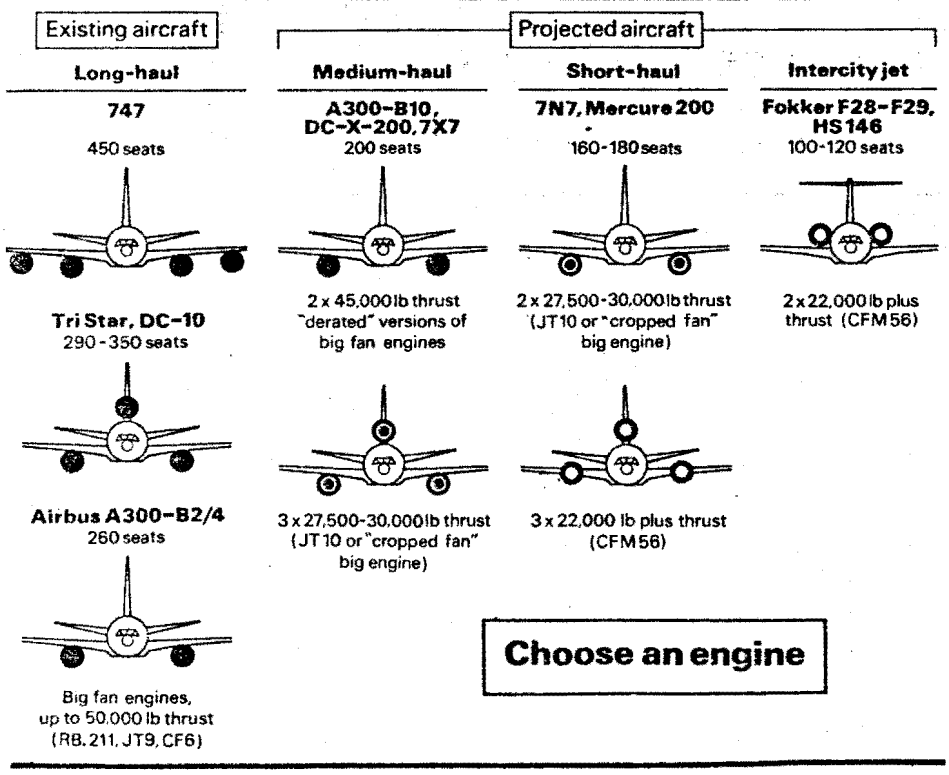
As the proposed new aircraft got bigger in response to airline requests, the CFM 56 began to look too small, at around 22,000 lb thrust. The JT10, which was begun later, started at 24,000 lb, but already 27,500 lb versions are being studied to meet a Boeing requirement for the three-engine 7X7. But two of these JT10s would be too small for the 7N7. And so a new possibility has emerged.

The proposed medium-haul 200-seat aircraft could be powered by two of the existing big-fan engines already used on today's wide-bodied jets, but "derated"—which does not mean a change in the mechanics but in the way they are operated. The shorter-haul aircraft would be fitted with two heavily modified versions of these same existing engines, called "cropped fan", because the main change would be a much smaller diameter by-pass fan; their power would be at least 27,500 lb thrust, more likely 30,000 lb thrust to match even the 180-seat 7N7.

The airlines are attracted by the idea of using existing engines (even heavily modified). They would cut maintenance costs and avoid the problems that always occur when introducing a new engine.

Using an engine well within its design limits—ie, derating—can cut its normal maintenance costs by 40%. Fewer spare engines are needed—and each costs about $1m.

Even the cropped-fan versions would offer some advantage—if they work, which is still being examined. Their development costs would be only a third those of a brand-new engine like the JT10, which was expected to cost $500m. Cropping would suit GE and Rolls Royce best: they have appropriate big-fan engines to crop. Snecma does not and Pratt and Whitney's JT9 is on the big side. The American company was negotiating with Rolls Royce at Farnborough to extend the proposed JT10 collaboration to cover the cropped-fan RB211 as well, should that prove the best bet. The final choice of engine will be whatever Boeing wants.



Wait for it

Wait a moment. Can the airlines afford to buy new aircraft, however much they may need them? Right now, they cannot. But traffic growth this year has picked up with a bang: if this is sustained, the answer will soon be "maybe".

"Afford" in this context applies mostly to American airlines—the ones that matter to aircraft makers, who also make their choices on profit. State-owned airlines usually get investment finance provided they buy what their governments want bought. And in the past American airlines have bought almost as soon as they made profits. The crescendo of profits in 1965-67, over $350m a year, led to an ordering orgy for wide-bodied 747s, DC-10s and TriStars.

Last year was the second worst in American airlines' history, with a collective loss of $84m. This year, growth has pushed profit expectations up to $200m and for next year up to perhaps $400m. But for several reasons, the airlines are expected to be more cautious about ordering than they used to be.

The first reason is caution following the post-1973 inflation. The second is uncertainty among the airlines about the rules they are supposed to work to—in America there is government pressure to increase competition (to deregulate) in what is, in world airline terms, a relatively competitive market; while internationally, the British intend (with the Japanese and others queueing in the wings) to increase control, so as to stop American airlines taking what these governments see as more than the Americans' fair share of the market. The third and most important reason for delay is the airlines' present inability to raise investment cash on the scale predicted.

Only five of the 13 major American lines have a debt/equity below 1. The rest, are overstuffed with debt or leasing arrangements—Pan American, TWA, Continental and Eastern all have long term debts totalling at least 2½ times their equity value.

The institutions in America have warned that for the moment they are not prepared to lend more to the airlines. Neither for the moment are they likely to be attracted by the sort of "equipment trust certificate" (for $60m) on offer from the Flying Tiger Line. These certificates, where the holder retains title to the equipment as security, might be all right with a profitable airline in a profitable business like Flying Tiger's freight, but not in an uncertain business like passenger airlines.

What everybody, from aircraft makers and their workers to governments and airlines, wants to know is: when will the moment be right?

Drexel Burnham & Co.
INCORPORATED

60 BROAD STREET
NEW YORK, N.Y. 10004
AREA CODE 212
TELEPHONE 480-6000
CABLE ADDRESS
COBURNHAM

OFFICES: NEW YORK/PHILADELPHIA
ATLANTA/BOSTON/CHICAGO/DALLAS
FT. LAUDERDALE/HARTFORD/LOS ANGELES
MIAMI/OAKLAND/PALO ALTO
SAN FRANCISCO/ST. LOUIS/WHITE PLAINS
TORONTO/AMSTERDAM/BRUSSELS
GENEVA/LONDON/PARIS/TOKYO

2396

BOEING (BA - $40) 8/31/76
JULY COMMERCIAL AIRCRAFT STATUS Alan Benasuli

The table on the back of this page shows Boeing's incoming orders, deliveries, and backlogs on a monthly basis for 1975, as well as the current status as of July 31,1976. Only firm announced orders are recorded in this tabulation.

As evidenced in the table, Boeing's backlog of firm announced orders seems to have bottomed out in April and is now picking up. Orders received since the end of July include 6 727's for Eastern Airlines, 6 727's for American Airlines, and 3 747's for Quantas, the Australian airline. The Aviation Week & Space Technology issue of August 16 points to the probability of an increase in the production rate of the 727 to 8-10 units per month by the end of 1977 from the current rate of 5 units per month.

The preliminary agreement reached between McDonnell Douglas and the French government to develop an advanced version of the French Mercure has, in our opinion, put pressure on Boeing to begin a new commercial aircraft program. The most likely program is a 7X7 development,in which Boeing's share will be on the order of 50-60%, with Japan and Italy and other potential foreign partners sharing the balance. It was recently reported that Boeing and the Japanese Civil Transport Development Corp. are very close to an agreement on this development. The 7X7 is conceived as a 200-passenger, widebody, medium-range (2000 miles) aircraft,incorporating a "super-critical" wing and a new engine (probably United Technologies'JT10D currently under development) with much improved fuel consumption characteristics. We would expect a go-ahead on this program in the latter part of 1977 at the latest. Our guess is that the development bill for this new aircraft will be on the order of $1-2 billion,with Boeing's share being on the order of 50-60%.

BOEING - MONTHLY COMMERCIAL AIRCRAFT STATUS
(in Units)

ORDERS

1975

	707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
JAN	2	3	5	4	14	14
FEB	-	-	-	1	1	15
MAR	-	-	2	3	5	20
APR	6*	20	7	2	35	55
MAY	-	3	4	1	8	63
JUN	0	4	10	3	17	80
JUL	0	1	0	0	1	81
AUG	-	2	7	2	11	92
SEP	1	3	-	1	5	97
OCT	0	0	0	1	1	98
NOV	0	9**	0	1	10	108
DEC	0	4	0	0	4	112
TOTAL	9	49	35	19	112	

1976

707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
-	-	3	-	3	3
-	4	-	2	6	9
-	6	7	-	13	22
-	-	-	-	-	22
-	27	1	1	29	51
2	5	9	-	16	67
1	4	5	5	15	82

DELIVERIES

1975

	707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
JAN	1	3	5	-	9	9
FEB	-	8	3	1	12	21
MAR	-	12	7	3	22	43
APR	1	8	5	1	15	58
MAY	-	13	5	3	21	79
JUN	2	8	5	2	17	96
JUL	0	3	3	2	8	104
AUG	0	5	1	3	9	113
SEP	1	5	3	-	9	122
OCT	1	10	6	2	19	141
NOV	0	6	5	1	12	153
DEC	1	9	3	3	16	
TOTAL	7	90	51	21	169	

1976

707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
0	2	6	0	8	8
1	-	2	1	4	12
-	4	5	5	14	26
-	6	4	4	14	40
-	8	3	4	15	55
2	5	4	3	14	69
1	4	5	5	15	84

BACKLOGS

1975

	707	727	737	747	MONTHLY TOTAL
JAN	15	107	39	39	200
FEB	15	99	36	39	189
MAR	15	87	31	39	172
APR	20	99	33	40	192
MAY	20	89	32	38	179
JUN	18	85	37	39	179
JUL	18	83	34	37	172
AUG	18	80	40	36	174
SEP	18	78	37	37	170
OCT	17	68	31	36	152
NOV	17	71	26	36	150
DEC	16	66	23	33	138

1976

707	727	737	747	MONTHLY TOTAL
16	64	20	33	133
15	68	18	34	135
15	70	20	29	134
15	64	16	25	120
15	83	14	22	134
15	83	19	19	136
15	81	21	22	139

* 6 for the USAF.
** 7 to be leased.

MEETING ON AIRCRAFT NOISE

Saturday, September 18, 1976

10:00 A.M.

THE PRESIDENT HAS SEEN.

President wants
more info on his
return — Cannon
to getting up

THE WHITE HOUSE
WASHINGTON

Jim Cannon

How are we coming on draft statement or speech on Bill Coleman's proposal?

THE WHITE HOUSE
WASHINGTON

Trudy:
Jim gave the
paper to Cannon
when Cannon was
in his office. This
is all that was left
on table.
E. 9/29

Sara -

Hold this per Jim Cavanaugh --

he is working further on it ---

Trudy

on 9/27 - 3:45 PM spoke to Jim Connaughton he will talk to me re Cavanaugh about it

THE WHITE HOUSE

WASHINGTON

September 17, 1976

MEETING ON AIRCRAFT NOISE

Saturday, September 18, 1976
10:00 a.m. (45 minutes)
The Cabinet Room

From: Jim Cannon

I. PURPOSE

You requested this meeting to discuss the environmental and economic aspects of Secretary Coleman's proposed aircraft noise policy.

II. BACKGROUND, PARTICIPANTS AND PRESS PLAN

A. Background

You have had three previous meetings with Secretary Coleman and others on aviation noise: Monday, September 6; Thursday, September 9; and Saturday, September 11.

At the last meeting you told Secretary Coleman that you wanted to discuss the environmental aspects of aircraft noise with Russell Train, Administrator of the Environmental Protection Agency; Russell Peterson, Administrator of the Council of Environmental Quality; and Dr. John McLucas, Administrator of the Federal Aviation Administration.

Alan Greenspan also wanted to comment further on the economics of the Coleman proposal.

You also asked for an appraisal of the likely impact of the A-300B Airbus. To date 34 A-300's have been sold, and foreign airlines have taken options on 23 additional planes. The best analysts consider that the A-300 is not at this time a serious threat to US produced aircraft (Tab A).

B. Participants

Secretary William Coleman
John McLucas (FAA)
John Busterud (CEQ)
Russell Train (EPA)
Dick Cheney
Max Freidersdorf
Alan Greenspan
Jim Lynn
Paul MacAvoy
Jack Marsh
Ed Schmults
Bill Gorog
Jim Cannon

C. Press Plan

To be announced.

III. Talking Points

A. The first objective of Bill Coleman's proposal is to alleviate problems associated with aviation noise. I have asked John McLucas, together with Russ Train and John Busterud (for Russ Peterson) to give me their assessments of the dimensions of the noise problem. Russ, would you begin?

B. Bill Coleman's proposal contains financing plan to help the airlines pay the cost of meeting any new noise standards. Alan (Greenspan), what is your assessment of the airlines' capacity to meet any new requirements without Federal help?

THE WHITE HOUSE

WASHINGTON

September 17, 1976

MEMORANDUM FOR: JIM CANNON

FROM: PAUL LEACH Paul

SUBJECT: A-300B Airbus and the Next Generation Medium Range Aircraft

Airbus

The Airbus is a multinational joint venture currently concentrating in the medium range market. Development of the first aircraft began in 1969, the first flight occurred in 1972 and the first sales began in late 1974. Two models of the A-300 are currently in production, the B2 and B4. Both are powered by two underwing General Electric CF6-50C engines. The approximate price of the aircraft is currently about $22 million.

Management and design leadership for the A-300 program is vested in the French firm Airbus Industrie. The aircraft is built by a consortium of manufacturers from four countries:

France	Aerospatiale
Germany	Deutsche Airbus (a partnership of Messerschmitt-Bolkow-Blohm and VFW-Fokker)
Netherland	Fokker
Spain	CASA

The main partners are the French and German companies.

The governments of the four participating countries have reportedly invested a total of at least $1 billion in A-300 development and production to date, which is believed to represent about 85 percent of total program investment. They may be called upon for an additional investment of $500 million in the aggregate.

To date, 34 A-300-Bs have been sold with over half already delivered and in service. The purchasers are:

AIRLINE	NUMBER
Air France	9
AirInter (France)	3
Germanair	2
Indian Air Lines	3
Korean Air Lines	6
Lufthansa	4
South African Airways	4
Transavia	1
Trans European Airways	2
	34

These airlines have options on 23 additional planes.

The A-300-B2 and A-300-B4 are currently competitive in terms of range and/or capacity with certain DC-10, L-1011 and B-727 models. The A-300-B2 has a range of 2,074 miles, and the B4 a range of about 2,417 miles, somewhat less than U.S. - made, medium-range, aircraft. Standard seating for both series is about 220 passengers in mixed-class versions and 345 passengers in a high-density, all-economy version, somewhat less than in the DC-10 and L-1011 and about one and one-half times the seating capacity of the Boeing 727.

Apparently, the A-300 is the most technologically competitive foreign commercial aircraft ever produced. Because it is a two-engine plane, the A-300 uses less fuel per passenger mile on most routes as compared to the DC-10, L-1011 and B-727. However, to date the A-300 has not been a commercial success.

The A-300 has experienced slow sales since production began. However, the American competition has sold many more of each aircraft: about 240 of the DC-10s, about 160 of the L-1011s and about 1300 of the B-727s. Of course, these are older planes and most were sold before the Airbus was in production.

The strong competitive advantages of the A-300 are its fuel economy and its immediate availability (as contrasted to about a year and a half wait for the DC-10 and L-1011). The key competitive weakness of the A-300 is the lack of customer confidence in Airbus Industrie and the lack of demonstrated after-sales service. In the past airlines have generally had bad experience with earlier planes produced in Europe and the bad taste from this experience lingers on.

There has been some discussion of new variants on the A-300 B2 and B4. The most important variation might be the A-300 -B10 which would be a smaller 200 seat airplane which would compete with the proposed B-7X7 and DC-X-200.

New Generation Aircraft

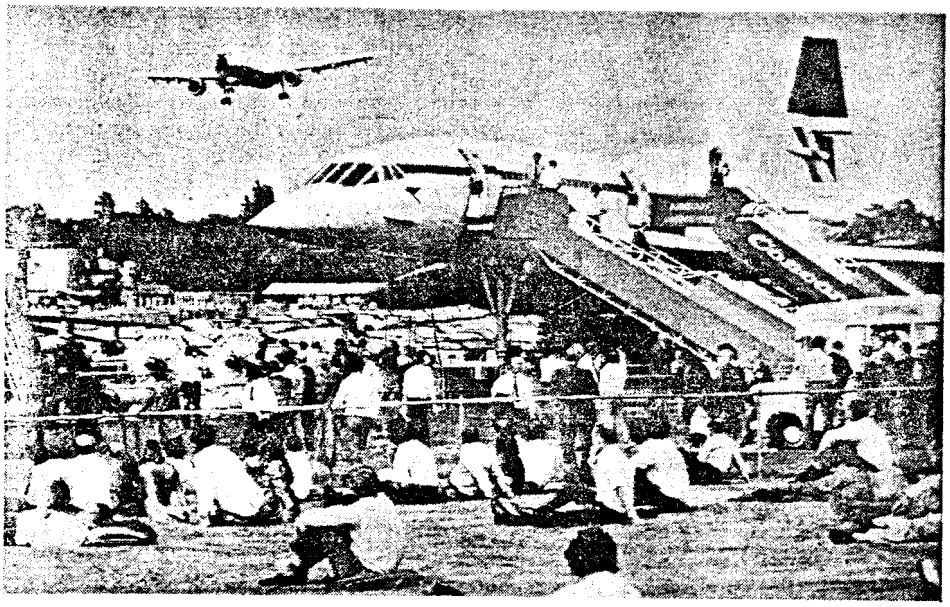
The attached article from the latest Economist is the best, current discussion of the new aircraft development situation I have found. Within the past two weeks, the major European air show took place at Farnborough, England and a two-day international conference on aircraft replacement and new developments (arranged by the Financial Times) was held in London. This Economist piece is a follow-up to those events.

The conclusion of this article and my own investigations is that the U.S. manufacturers (probably Boeing) are likely to begin full development of next generation of medium range, 200-seat, wide-bodied aircraft by the middle or end of 1977 and that the U.S. will continue to retain its dominant position in the manufacture of commercial aircraft.

You might also be interested in the attached short report by Alan Benasuli at Drexel Burnham & Co. on Wall Street. Benasuli, who is considered the best aerospace analyst on Wall Street, indicates in this report and in a lengthy conversation we had this week that the commercial aircraft industry cycle has hit bottom and that the situation will continue to improve. He anticipates that Boeing will begin development of the new generation B-7X7 in the second half of 1977 (along with a couple of minority-interest partners from Japan and Europe) with production to remain in the U.S. and deliveries to commence in late 1981 or in 1982. He sees no appreciable competitive challenge from foreign consortia and manufacturers.

Also, the latest information on the proposed new A-300-B10 model is that Airbus has decided not to pursue development at this time (although this decision could be reversed).

Attachments



Billions and billions and billions to grab for

Aircraft and aero-engine makers were biting their nails at the Farnborough air show this week. With good reason: between now and 1985, something like $45 billion (at 1975 prices) is expected to be spent on commercial jets by non-communist airlines. And probably at least as much again in 1986-90. For once, civil aircraft projects overshadowed the more exciting world of military fighters and bombers, where there are few major decisions in the balance (see page 42). And time is short. If the airlines want (and can afford) to get new aircraft into service in 1981-82—which is when they will need them—development of the new aircraft will have to be started within the next year.

Who makes and who buys what will often depend on politics rather than economics. (What else when governments are so often paying?). But the future of a third of America's million and of Europe's 400,000 aviation industry workers who depend on civil projects, depends on the choices made. The following articles set out the background to these decisions.

More passengers, more aircraft

Why so many new aircraft? The simple answer is that more people will be flying, and flying farther, as the world gets richer. The 1973 oil price hike and the subsequent world recession pegged growth in passenger traffic to just over 1% in 1974 and 1975. That hiccup is over.

The forecasts are not for a return to the phenomenal growth rates of the 1960s, when passenger-miles went up by 15–20% a year in 1964–70 and freight ton-miles 15–28%. Charter fares apart, a large part of that rapid growth was due to the relative cheapening of air fares compared with other prices, first as a result of the increased productivity of jets—flying much faster than piston-engined aircraft—and, much later, when the new wide-bodied jets (747, TriStar, DC-10, Airbus A300) reduced seat-mile costs still further.

The developments in the offing will not reduce costs anything like so dramatically. Even so, the growth predictions are respectable, varying from Boeing's lower prediction of a 5.5% a year increase in passenger-miles in 1975–80 (Boeing's optimistic forecast is 9%), to the International Civil Aviation Organisation's fairly hopeful 10½%.

Most of the industry works on the assumption that growth will average about 7½% a year to 1985, followed by 5½–6½% in 1985–90. That would increase the number of passenger-miles flown in the non-communist world from the 400 billion last year to 825 billion in 1985 and to well over a trillion in 1990.

New designs cost more to make and less to run

It costs millions to make the simplest change to an aircraft design, let alone design a new model from scratch. So why not simply update existing types?

This is being done wherever possible. Nobody is planning a brand-new long-haul jet. McDonnell Douglas reckons that, at today's prices, it would cost at least $2 billion to develop anew the DC-10—and makers have yet to get their investment back on the existing types. So tomorrow's long-haul jets will be modified versions of 747s, DC-10s, TriStars and Airbuses (a new supersonic transport will not be developed until 1990, at the earliest). The last major decision for some time in this area was taken in August, when British Airways ordered a new long-range Lockheed TriStar (see page 86).

These existing types already have all the main advantages open to aviation. They are as wide-bodied as seems feasible. They use big fan-jet engines (the JT9, CF6 or RB211) which are cheaper on fuel than older ones, much quieter and less prone to pump out black clouds of unburnt fuel and other emissions such as carbon monoxide and nitrous oxides. These aircraft also have acceptable modern aerodynamics that would cost a lot to better for a relatively small reduction in operating costs.

But that is not so with today's small and medium-range aircraft. It is in these categories that competition will be hottest.

The most immediate pressure for the airlines to change their existing short-

haul and medium-haul fleets is going to be noise. New regulations proposed for the United States (whose lead is likely to be followed elsewhere) will mean increasingly that older and noisier aircraft will be restricted, first from night flights, later from flying at all. Already some American airports (which are legally liable for compensating local residents for airport noise) have started to limit the number of movements by noisy aircraft.

The proposed emission controls now being considered for the United States will provide another, less immediate, pressure to re-equip. Older jet engines are bad where it counts, near the ground.

But the biggest pressure will be the lower operating cost of new designs. The combined effect of high-bypass-ratio fan-jet engines, modern aerodynamics (especially new low-drag wings), lighter structures (through using composites, titanium etc), and wider bodies (six seats abreast for the short-haul jets, eight for the medium-haul types) will reduce seat-mile costs by nearly a third.

Air France has found that the Airbus A300-B4—about the most aerodynamically advanced aircraft at present flying—uses 1,800 gallons of fuel an hour to carry up to 250 people, against the 2,250 gallons an hour used by a Boeing 707 to carry up to 140 people. The comparison with newer designs than the 707 is less dramatic, but the message is clear.

And all that leaves aside the higher costs (and technical problems) of keeping ageing aircraft to airline standards.

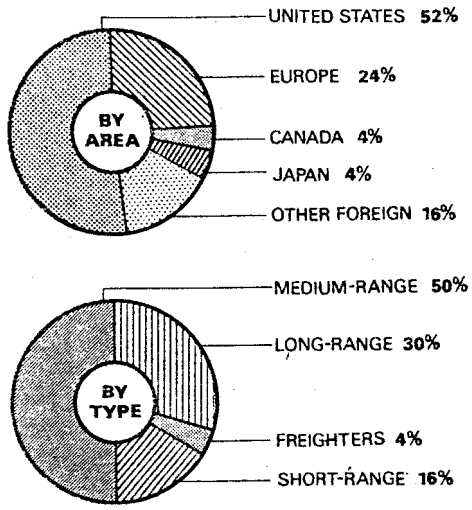
Splitting the $45-billion market

About half (ie, around $22 billion at 1975 prices) the expected spending by airlines on new aircraft between now and 1985 will be needed to cope with the expected growth in the traffic. Few airlines make money at load factors below 50% (the industry average is around 55%). They coin it once traffic exceeds their break-even point, until the average load factor reaches around 75%, expected to happen industry-wide by 1981-82. Then profits stop increasing as fast; peak travel congestion means arranging extra flights, less time is available for maintenance, etc.

The other half of the money will go to replace older, noisier and thirstier jets. There are about 2,800 of these earlier types in service, including Boeing 707s, 727s, 737s, McDonnell Douglas DC-8s, DC-9s, BAC 1-11s, Aérospatiale Caravelles, etc. Roughly half of them will be 20 years of age by 1985, old for a commercial aircraft. Already some of the earliest 707s and DC-8s have been sold for scrap; the second-hand market (mainly third-world airlines) is saturated.

Who will buy what

Non-communist market for civil jets, 1976-85 (at 1975 prices)



Just over half the total cash will be spent by American airlines, some of which, like United, are as big as several European lines put together. For the usual good and bad reasons they will buy American. American makers will also obtain most of the orders from other areas like Canada, Mexico and Japan (each expects to account for about 4% of the total). Add in the significant proportion of sales to the increasingly important Middle East market (on the back of Ex-Im bank finance, among other things), and it is realistic to expect that (unless the Europeans or other countries close their home markets) the American aircraft industry will supply over 90% of the market, just as it has in the past ten years.

Western Europe's aircraft industry, the only other serious one, except for Russia's which is only now tentatively thinking of competing in the non-communist export markets (though not enough to exhibit at Farnborough), has failed to hold its own. Europe accounts for roughly a quarter of non-communist civil air traffic; but its aircraft makers have sold only about 8% of all civil jets sold in the past 10 years. Even in Europe itself, America's aircraft industry dominates: its share of the market, two-thirds in 1970, rose to four-fifths in 1974.

Nationalist pressures have meant that many rival European projects have been launched in competition with each other. Sales have been limited: 117 Hawker Siddeley Tridents sold (against 1,300 Boeing 727s) 170 BAC 1-11s against 750 DC-9s).

So some European governments have been encouraging their airlines and manufacturers to get together in groups to produce specifications of the sort of aircraft needed in the next 10–15 years. The hope is that the resulting joint designs might also sell outside Europe, perhaps even to the United States.

At the same time, American makers have been consulting with airlines worldwide. Boeing and McDonnell Douglas make it a practice to put forward for criticism their designers' latest brain children. (It is relatively cheap to stretch or shrink this sort of "rubber" aircraft using a computer.)

There is still much discussion about the aircraft that will emerge—even over major points like the number and size of engines and how far the different categories should be able to fly fully loaded. In these debates, the American view, backed by the clout of its home market, predominates. But, there is a clear consensus between American and European thinking on the broad divisions that will appear in the market.

Medium-haul jets: the largest part of the market, expected sales total $23 billion. Part of this total will go on medium-range versions of existing wide-bodied jets, like the TriStar, DC-10 and Airbus. But well over half will go to new medium-bodied jets (up to eight seats abreast) taking around 200 passengers some 1,500 nautical miles for European airlines, up to 2,500 miles for the American market, (enough to fly Los Angeles-New York non-stop—throughout these articles, we measure range in nautical miles of 2,000 yards—1.83km—and seating capacity to the American standard, 11% first class with the seats 38 inches apart, 89% economy—coach—34 inches apart.)

Short-haul jets: around $7 billion for aircraft able to fly anything from short inter-city hops up to 1,500-mile flights. Seating capacity up to 160, particularly for the American market, with more interest in a smaller, 130-seat aircraft in Europe.

Inside this group, about $1 billion will be for an even smaller jet of between 80–120 seats, suitable for third-world airlines and intended to replace turbo-prop aircraft like the Fokker F27 (380 in service) and the Hawker Siddeley 748 (130 in service).

Long-haul jets: around $13 billion for aircraft able to fly 3,500 miles and up, perhaps up to 7,500 miles—if crew and passengers can stand the strain of a 13–14 hour flight. Capacity, from 250 seats to 450 (the 747's present limit). This category also includes a nominal sum to cover hypothetical further sales of Concorde.

Freighters: versions of large airliners (ie, 747s and, later, DC-10s) modified to carry freight only, to a total of about $2 billion. Most freight (an increasingly important revenue earner for airlines)

will be carried in the belly of passenger aircraft on passenger flights, or in passenger aircraft which can be converted by removing the seats and internal trim, sometimes in less than an hour after finishing a passenger flight.

On offer

On paper, or in the aircraft makers' computers, there are plenty of designs being prepared to tempt airline chiefs. The hottest competition will be for the shorter-haul and the 200 seat medium-haul aircraft. There are serious candidates from Boeing, McDonnell Douglas and Airbus Industrie, as well as the joint French-American expanded-Mercure project that ruffled the industry's feathers last month. There are also some dreams: eg, Lockheed simply cannot afford to go ahead with the shortened 200 seat version of its TriStar.

For technical reasons it will not be possible to use variations of the same design to fill both these market slots. Shortening the relatively wide body of the proposed medium-range designs to give only 175 seats would produce an aircraft so dumpy that it would suffer from excessive drag.

Vice-versa, stretching a relatively narrow-bodied (six seats abreast) design to carry up to 200 people up to 2,500 miles, would produce a very long thin aircraft where the large surface area would also incur a drag penalty.

Short-haul: Mercure rising?

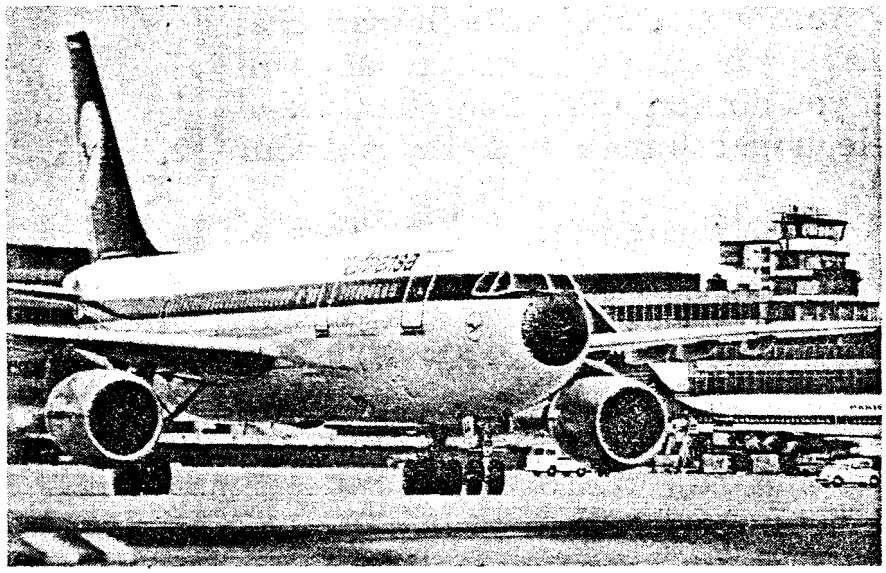
In the short-haul stakes, the French government's surprise announcement last month that it wanted to go ahead with serious negotiations with McDonnell Douglas on a developed version of the Dassault Mercure appeared to be the first serious decision anywhere on the new aircraft. But how serious? As details of the project have dribbled out, it has become clear that it is far from being either a firm commitment to build the aircraft or a firm design.

The original Mercure was a failure. As defined so far, the new Mercure 200 looks like being another one.

To American seating standards, it is said that it will have a capacity of around 160 seats—which became 174 seats when crammed together to European standards. And it is necessary to cram the seats in, to reduce the predicted seat-mile operating costs of the aircraft to a level where airlines would choose freely to consider it. But the result is likely to be too large an aircraft to be carried adequately by two of the joint French-American CFM 56 engines. The French, desperate for a home for this engine, ignore such details.

Some of the commercial details also look a bit odd. The carefully leaked selling price of $10m must be a joke. Dassault is to have design leadership, but only a 5% stake. Aérospatiale is to take 40% and get most of the French manufacturing work, which should help stave off aggro from its increasingly restless and under-employed Toulouse workers who rightly fear redundancy. Possible explanation: eventually the project might actually be based on an Aérospatiale design, variations of which (from 150-200 seats) have been under discussion for some time. Will any other European maker (or government) really stump up for any of the 40% stake nominally left open (earlier the British Aircraft Corporation and Aeritalia had been mentioned)? The French government is talking about putting up only half the predicted $250m development costs.

And what's in it for McDonnell Douglas in return for a 15% stake? Earlier discussions had included the idea that a deal would involve the French airlines buying reasonable numbers of



Technically it's marvellous

The original versions of the Airbus, the B2 and B4, were later into the market than the other medium-range wide-bodied jets, the DC-10 and TriStar, and so lost out on the main selling boom. The Airbus was also uncomfortably sized, at 260 seats, not directly competing with its rivals' 290-350, yet too big to fit the 200-seat market now opening up. This was yet another case of the Europeans fitting an aircraft to technical standards (to use two existing big fan engines) rather than to customers' needs.

Nevertheless, the Airbus is technically the best civil aircraft currently flying. Airbus Industrie would prefer to concentrate on selling the existing types, but it has come up with a modified, 200-seat version, the B10. Its fuselage would be shorter by 23 feet, but the same wing would be used to keep development costs down to $100m. Direct operating costs would be higher than for the rival Boeing 7X7 and, now that fuel costs are such a high proportion of their costs, airlines (Lufthansa for one) say they will not risk buying cheap now and risk higher running costs later.

There is also a so-called "maximum change" B10 that would match the 7X7. But that would cost $350m to develop and the investors, the French and West German governments, are not leaping to put that much more cash into the project.

They have already put $1 billion or so into getting the A300 into the air, plus sizeable sums to finance production costs, work-in-progress and export finance. Even if—and it is wildly unlikely—350 aircraft are sold, the price on average will represent a $4m subsidy per machine. And the Airbus has not raised so much as a sniff from any American airline, let alone a major one. Without sales in America, the project will remain no more than a sizeable employment-providing money sink, that the British show no sign of wanting to rejoin.

There is not much encouragement to be gained from the nice public noises Lufthansa has been making about the performance of its first Airbuses. The German government had to grease the way before the airline would buy. There was a confidential government guarantee of DM 150m ($60m at the time) equivalent to the purchase price of three Airbuses and their spares, to be paid if the Airbus project collapses before 1981. There would also be an ongoing German government support of DM 75m to provide spares for Lufthansa if the project dies. And it is believed Air France got comparable support from its government.

existing McDonnell Douglas designs, especially the DC-9, to replace Air France's tired Caravelles. (The French government refused to let its national airline buy Boeing 737s for this purpose 18 months ago.) But buying enough DC-9s to help McDonnell Douglas (it too faces a redundancy problem) would cut off part of the only guaranteed sales for the Mercure 200. And it is hard to imagine the American aircraft company believing that it could sell to many American airlines the Mercure 200 as currently specified, with only a modified and enlarged version of the Mercure 100 wing. Is there some piece of collaboration on military aircraft yet to be revealed between fighter-makers Dassault and McDonnell?

If the French go ahead they will face at least one formidable short-haul competitor. There have been plenty of dream aircraft in this size in various computers, including the Aérospatiale design, an updated BAC 1-11, and various ideas around a new DC-9. But above all there is the Boeing 7N7, an updated 737.

This Boeing would probably be built in two sizes, one with 120-130 seats and a 160-seater. The smaller size aircraft would use the two CFM 56 engines proposed for the Mercure 200. The larger version would use the rival JT10 engine (initially of 24,500 lb thrust, but with a 27,500 lb version being worked on) which is proposed to be developed jointly by Pratt and Whitney and Rolls Royce. Or, the latest idea emerging over the past few weeks, a new smaller version of the existing big-fan engines discussed below.

Medium-haul: The X factor

What about the medium-haul aircraft? Here too McDonnell Douglas is in a slightly strange position. It has been discussing collaboration with Airbus Industrie, but also has its own 200 seat aircraft, the DC-X-200—which has had a far from happy ride within the company.

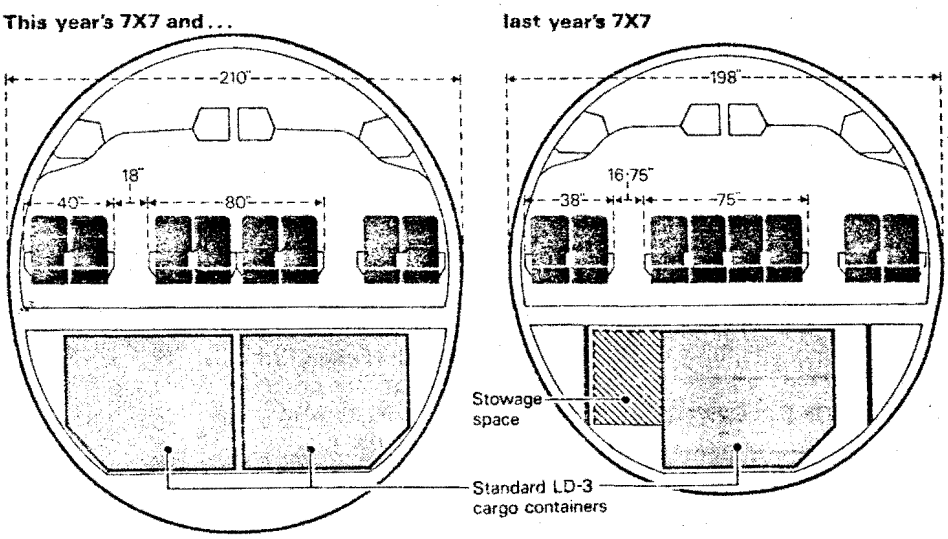
The idea of the Douglas division was to cut costs by basing the new design heavily on the existing DC-10. The fuselage was to be shortened, but the wing kept the same. This got short shrift from the McDonnell side of the business (which is king). The rethink has gone through several stages. The DC-X-200 is still based on the DC-10, but not much: the same cockpit section (though with only two engines instead of the DC-10's three, there would have to be lots of changes to the systems and electronics, etc) and, partly modified, most of the fuselage. The wings and tail section would be new. Even so, the company reckons that at $600m the development bill would be cut by at least a third.

The project is still far from reality, for all the protestations by Douglas people that it is definitely to be started.

This and the other competitors—the Airbus A300-B10 and the twin-engined version of Boeing's 7X7—are much alike, except in wing area. All three aircraft would use "derated" versions of the existing big-fan engines (discussed below), and be wide enough to carry two LD-3 cargo containers (standard in aviation freighting), side-by-side in the belly beneath the passenger compartment.

Boeing has spent more and for longer than the others on developing its various ideas for a 200-seat airliner; about four years and $60m to date. Its own inclination has been that such a large aircraft should be three-engined. But largely as a result of the technical success of the Airbus (quite a different thing from commercial success), Boeing has also designed a twin. Responding to airline requests, Boeing has also substantially changed last year's 7X7 design, which could carry only one LD-3 freight container in its belly. Now the 7X7 fuselage is large enough to carry two LD-3s side-by-side, like the Airbus.

The airlines change Boeing's mind



Shall we get together?

The French government has plumped for trans-Atlantic co-operation with McDonnell Douglas largely because this American company has shown much greater awareness of European sensitivities than Boeing has. The announcement did not show much awareness of Boeing's sensitivities: its men were due in France just a few days later to talk about co-operation on development of the Airbus.

The British industry, for all the uncertainties about its state-owned future, was quick to let Boeing know that it was keen to talk about collaboration. The Germans and Dutch, disillusioned about the money they have put into Airbus for no return and unamused by the Mercure joke, also have been making passes at Boeing.

Boeing would like international partners. It already has an agreement in principle with Aeritalia and a Japanese grouping over the 7X7 (each is nominally down to take a 20% stake). It would like other European partners, especially the British (common language, and technical ability: Hawker Siddeley's Airbus wing is the best flying), provided it is on a commercial basis.

Though it claims it could raise the $1.4 billion (at least) needed to launch both the 7X7 and 7N7 type projects simultaneously, Boeing would much prefer to spread the load. Launching the 747 Jumbo almost killed the company.

Co-operating with major European states would have other advantages for all the American makers. It would block off any European protectionism—indeed the state airlines concerned could be expected to buy the result.

Persuading the Europeans to join has been Boeing's problem. In return for a stake in what, on past performance, will be the biggest selling aircraft of the next generation—and probably would mean more work for European aircraft factories than their own projects would bring—Boeing will demand to dominate everything that matters. Otherwise it feels it might lose its leadership in the American market.

This was too much for the French; but the British might accept disguised subservience provided Britain's ability

to design and develop an airliner is nominally preserved. The British—ministers, civil servants and industry leaders—now openly question whether further co-operation within Europe even pays off politically.

Old engines for new

The biggest question mark over the design of the new aircraft is how many of which engines they will use.

Until recently it had been expected that the shorter-haul types would use two of a new generation of engines in the so-called "ten tonne" class (around 20,000 lb thrust), and the medium-haul types three of these engines. Two engines of this size have been worked on: the CFM 56 already largely developed by Snecma and General Electric; and the JT10, designed mainly by the American maker Pratt and Whitney, but to be developed jointly with Rolls-Royce.

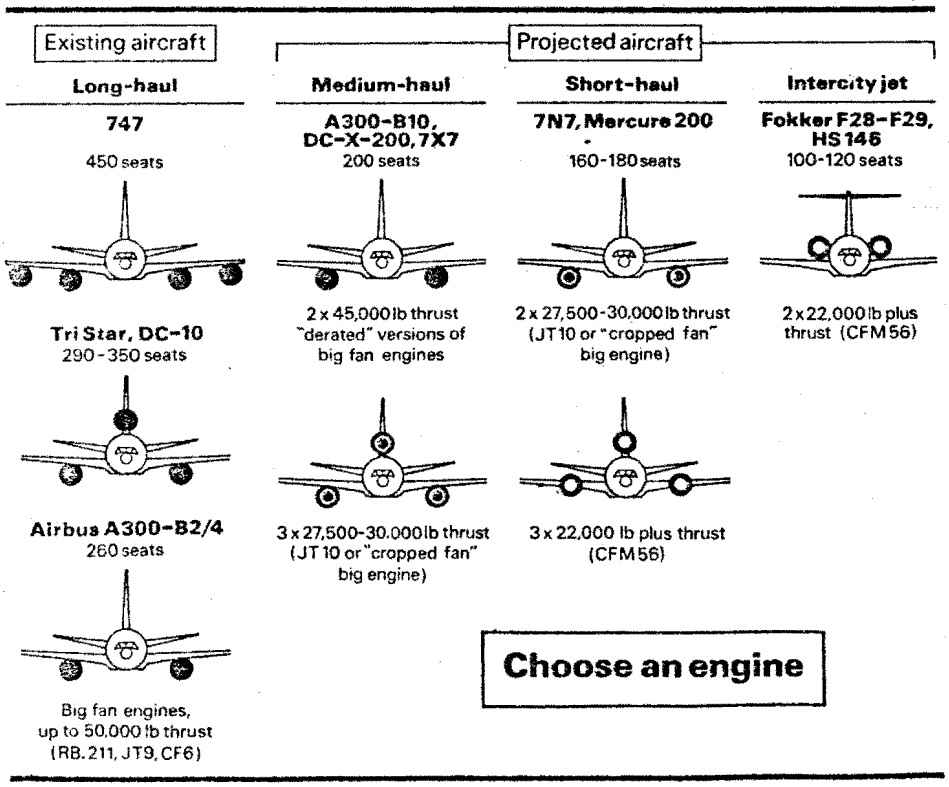
As the proposed new aircraft got bigger in response to airline requests, the CFM 56 began to look too small, at around 22,000 lb thrust. The JT10, which was begun later, started at 24,000 lb, but already 27,500 lb versions are being studied to meet a Boeing requirement for the three-engine 7X7. But two of these JT10s would be too small for the 7N7. And so a new possibility has emerged.

The proposed medium-haul 200-seat aircraft could be powered by two of the existing big-fan engines already used on today's wide-bodied jets, but "derated" —which does not mean a change in the mechanics but in the way they are operated. The shorter-haul aircraft would be fitted with two heavily modified versions of these same existing engines, called "cropped fan", because the main change would be a much smaller diameter by-pass fan; their power would be at least 27,500 lb thrust, more likely 30,000 lb thrust to match even the 180-seat 7N7.

The airlines are attracted by the idea of using existing engines (even heavily modified). They would cut maintenance costs and avoid the problems that always occur when introducing a new engine.

Using an engine well within its design limits—ie, derating—can cut its normal maintenance costs by 40%. Fewer spare engines are needed—and each costs about $1m.

Even the cropped-fan versions would offer some advantage—if they work, which is still being examined. Their development costs would be only a third those of a brand-new engine like the JT10, which was expected to cost $500m. Cropping would suit GE and Rolls Royce best: they have appropriate big-fan engines to crop. Snecma does not and Pratt and Whitney's JT9 is on the big side. The American company was negotiating with Rolls Royce at Farnborough to extend the proposed JT10 collaboration to cover the cropped-fan RB211 as well, should that prove the best bet. The final choice of engine will be whatever Boeing wants.



Wait for it

Wait a moment. Can the airlines afford to buy new aircraft, however much they may need them? Right now, they cannot. But traffic growth this year has picked up with a bang: if this is sustained, the answer will soon be "maybe".

"Afford" in this context applies mostly to American airlines—the ones that matter to aircraft makers, who also make their choices on profit. State-owned airlines usually get investment finance provided they buy what their governments want bought. And in the past American airlines have bought almost as soon as they made profits. The crescendo of profits in 1965-67, over $350m a year, led to an ordering orgy for wide-bodied 747s, DC-10s and TriStars.

Last year was the second worst in American airlines' history, with a collective loss of $84m. This year, growth has pushed profit expectations up to $200m and for next year up to perhaps $400m. But for several reasons, the airlines are expected to be more cautious about ordering than they used to be.

The first reason is caution following the post-1973 inflation. The second is uncertainty among the airlines about the rules they are supposed to work to—in America there is government pressure to increase competition (to deregulate) in what is, in world airline terms, a relatively competitive market; while internationally, the British intend (with the Japanese and others queueing in the wings) to increase control, so as to stop American airlines taking what these governments see as more than the Americans' fair share of the market. The third and most important reason for delay is the airlines' present inability to raise investment cash on the scale predicted.

Only five of the 13 major American lines have a debt/equity below 1. The rest, are overstuffed with debt or leasing arrangements—Pan American, TWA, Continental and Eastern all have long term debts totalling at least 2½ times their equity value.

The institutions in America have warned that for the moment they are not prepared to lend more to the airlines. Neither for the moment are they likely to be attracted by the sort of "equipment trust certificate" (for $60m) on offer from the Flying Tiger Line. These certificates, where the holder retains title to the equipment as security, might be all right with a profitable airline in a profitable business like Flying Tiger's freight, but not in an uncertain business like passenger airlines.

What everybody, from aircraft makers and their workers to governments and airlines, wants to know is: when will the moment be right?

Drexel Burnham & Co.
INCORPORATED
NEW YORK, N.Y. 10004
AREA CODE 212
TELEPHONE 480-6000
CABLE ADDRESS
COBURNHAM
ATLANTA/BOSTON/CHICAGO/DALLAS
FT. LAUDERDALE/HARTFORD/LOS ANGELES
MIAMI/OAKLAND/PALO ALTO
SAN FRANCISCO/ST. LOUIS/WHITE PLAINS
TORONTO/AMSTERDAM/BRUSSELS
GENEVA/LONDON/PARIS/TOKYO

2396

BOEING (BA - $40) 8/31/76
JULY COMMERCIAL AIRCRAFT STATUS Alan Benasuli

The table on the back of this page shows Boeing's incoming orders, deliveries, and backlogs on a monthly basis for 1975, as well as the current status as of July 31,1976. Only firm announced orders are recorded in this tabulation.

As evidenced in the table, Boeing's backlog of firm announced orders seems to have bottomed out in April and is now picking up. Orders received since the end of July include 6 727's for Eastern Airlines, 6 727's for American Airlines, and 3 747's for Quantas, the Australian airline. The Aviation Week & Space Technology issue of August 16 points to the probability of an increase in the production rate of the 727 to 8-10 units per month by the end of 1977 from the current rate of 5 units per month.

The preliminary agreement reached between McDonnell Douglas and the French government to develop an advanced version of the French Mercure has, in our opinion, put pressure on Boeing to begin a new commercial aircraft program. The most likely program is a 7X7 development, in which Boeing's share will be on the order of 50-60%, with Japan and Italy and other potential foreign partners sharing the balance. It was recently reported that Boeing and the Japanese Civil Transport Development Corp. are very close to an agreement on this development. The 7X7 is conceived as a 200-passenger, widebody, medium-range (2000 miles) aircraft, incorporating a "super-critical" wing and a new engine (probably United Technologies' JT10D currently under development) with much improved fuel consumption characteristics. We would expect a go-ahead on this program in the latter part of 1977 at the latest. Our guess is that the development bill for this new aircraft will be on the order of $1-2 billion, with Boeing's share being on the order of 50-60%.

BOEING - MONTHLY COMMERCIAL AIRCRAFT STATUS
(in Units)

ORDERS

1975

	707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
JAN	2	3	5	4	14	14
FEB	-	-	-	1	1	15
MAR	-	-	2	3	5	20
APR	6*	20	7	2	35	55
MAY	-	3	4	1	8	63
JUN	0	4	10	3	17	80
JUL	0	1	0	0	1	81
AUG	-	2	7	2	11	92
SEP	1	3	-	1	5	97
OCT	0	0	0	1	1	98
NOV	0	9**	0	1	10	108
DEC	0	4	0	0	4	112
TOTAL	9	49	35	19	112	

1976

707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
-	-	3	-	3	3
-	4	-	2	6	9
-	6	7	-	13	22
-	-	-	-	-	22
-	27	1	1	29	51
2	5	9	-	16	67
1	4	5	5	15	82

DELIVERIES

1975

	707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
JAN	1	3	5	-	9	9
FEB	-	8	3	1	12	21
MAR	-	12	7	3	22	43
APR	1	8	5	1	15	58
MAY	-	13	5	3	21	79
JUN	2	8	5	2	17	96
JUL	0	3	3	2	8	104
AUG	0	5	1	3	9	113
SEP	1	5	3	-	9	122
OCT	1	10	6	2	19	141
NOV	0	6	5	1	12	153
DEC	1	9	3	3	16	
TOTAL	7	90	51	21	169	

1976

707	727	737	747	MONTHLY TOTAL	CUMULATIVE TOTAL
0	2	6	0	8	8
1	-	2	1	4	12
-	4	5	5	14	26
-	6	4	4	14	40
-	8	3	4	15	55
2	5	4	3	14	69
1	4	5	5	15	84

BACKLOGS

1975

	707	727	737	747	MONTHLY TOTAL
JAN	15	107	39	39	200
FEB	15	99	36	39	189
MAR	15	87	31	39	172
APR	20	99	33	40	192
MAY	20	89	32	38	179
JUN	18	85	37	39	179
JUL	18	83	34	37	172
AUG	18	80	40	36	174
SEP	18	78	37	37	170
OCT	17	68	31	36	152
NOV	17	71	26	36	150
DEC	16	66	23	33	138

1976

707	727	737	747	MONTHLY TOTAL
16	64	20	33	133
15	68	18	34	135
15	70	20	29	134
15	64	16	25	120
15	83	14	22	134
15	83	19	19	136
15	81	21	22	139

* 6 for the USAF.
** 7 to be leased.