COMMERCIALIZING AIR TRAFFIC CONTROL

A NEW WINDOW OF OPPORTUNITY TO SOLVE AN OLD PROBLEM

by Robert W. Poole Jr.

THE U.S. AIR TRAFFIC CONTROL (ATC) SYSTEM, owned and operated by the Federal Aviation Administration, needs major restructuring. The system currently runs on obsolete and failure-prone equipment such as 1960s mainframe computers, equipment dependent on vacuum tubes, and radar between twenty and thirty years old. The FAA maintains safety margins by artificially increasing the spacing between flights, imposing ground holds, and using other techniques that reduce system capacity. The airlines alone waste $3 billion a year in fuel and crew time due to the delays. Wasted passenger time is estimated at several billion dollars more.

Five underlying problems produced today's dysfunctional ATC system. First, the federal procurement process is costly and cumbersome. Second, the civil service personnel system is too rigid to provide the compensation and working conditions necessary to attract enough controllers for high-stress positions. Third, although the ATC derives the majority of its revenue from aviation user taxes, its reliance on annual federal appropriations for part of its funds and its inability to borrow in capital markets makes modernization difficult. Fourth, both Congress and the executive branch micromanage and excessively supervise the system, substituting for the judgement of the agency's top management. That process wastes large amounts of the management's time. And fifth, the FAA struggles with an inherent conflict of interest. It has been charged with both regulating aviation safety and operating the ATC system.

While recent reforms have introduced some flexibility into the system, the underlying problems remain. Other countries have gotten around such problems by allowing the users, including airlines, airports, and pilots, to own and operate ATC systems. The Canadian system provides the closest and perhaps best model for American policymakers seeking to ensure greater airline safety at less cost.

RECENT REFORMS AND SETBACKS

Legislation enacted in October 1995 addressed personnel and procurement problems. Pursuant to the legislation, in March 1996, the Clinton Administration announced the creation of a new FAA personnel system that replaces a foot-high stack of civil service rules with a forty-one page document and consolidates 155,000 position descriptions into 2,000. In order to attract qualified personnel, the new system permits pay and shift differentials to reflect high-stress, high-cost locations.

The new procurement system attempts to reflect private-sector practice by exempting the FAA from a number of procurement laws. It reduces acquisition documents from 233 to less than 50 and aims to cut various procurement time periods in half. It provides for a kind of binding dispute resolution in case of a contract award protest, but still permits court appeals (which have been a major cost- and delay-inducing factor). But the potential impact of those reforms is inherently limited. Thus, the Clinton Administration in 1995 made a far more sweeping reform proposal: divesting the ATC system to a government corporation. The U.S. Air Traffic Services corporation (USATS) would have been a federally chartered, government-owned corporation, analogous to Amtrak, the Tennessee Valley Authority, and the U.S. Postal Service. It would have had a board of directors appointed by the President and confirmed by the Senate. It would have been fully supported by user fees, sans federal appropriations. Its revenue stream would have been bondable, and USATS was to have been authorized to borrow either from the Treasury or from private capital markets. The remaining FAA was to have regulated USATS at arm's length.

While airline and airport organizations and the air traffic controllers' union generally supported the USATS proposal, business aircraft and recreational aircraft organizations (referred to as general aviation or GA), along with most members of the aviation subcommittees of Congress, strongly opposed it. Several House Republicans introduced an alternative measure calling for the creation of a private, user-owned corporation. That proposal went no further than the USATS proposal had gone.

The fear of losing the huge cross subsidies built into the current user-tax method of funding ATC provided the underlying reason for the general aviation community's opposition to corporatization. While business and recreational aircraft currently pay just 3 percent of all such user taxes, they use 20 percent of all en-route ATC services and 59 percent of all control tower and approach-control (TRACON) services. Despite the Administration's proposal to permanently exempt business

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and recreational aircraft from user fees, those organizations steadfastly opposed the USATS plan.

COMMERCIALIZING ATC: A GLOBAL TREND

Other countries facing similar problems with ATC systems have gone even further than the Clinton administration proposed. Since 1972—and especially in the past decade—at least sixteen countries have fundamentally restructured their ATC systems (see Table 1). While several have converted their equivalent of the FAA into a free-standing corporation providing both ATC and safety regulation, the large majority have divested ATC alone, retaining safety regulation as an arm's length government function. All sixteen have shifted from tax funding to direct user fees. Those corporatizations, or "commercializations," have all been carried out to solve the same structural problems that plague the United States' ATC system.

While many of the restructurings are quite recent, some major gains have been reported in several countries. For example, in its initial year of operation (1993), the corporatized German Air Navigation Services Ltd. (DFS) reduced ATC delays by 25 percent. User charges in New Zealand have gone down by 30 percent in real, inflation-adjusted terms since corporatization in 1987. The charges are 50 percent lower than the government projected, had the system remained unchanged. Charges in Australia have gone down by 15 percent in real terms.

Substantial gains in efficiency led to lower charges. Total annual operating costs for Airways Corporation of New Zealand have declined from NZ$120 million in 1987, the year of corporatization, to NZ$80 million in 1993. No adverse effects on air safety have been observed in any of the reforming countries. Indeed, most observers expect that the technology upgrades facilitated by commercialization will improve aviation safety.

The U.K.'s outgoing Conservative government had proposed further privatizing their ATC, either via outright sale or via the grant of a long-term franchise. The new Labour government that took office in May 1997 has included NATS on its list of possible privatizations.

NAV CANADA: BEYOND GOVERNMENT OWNERSHIP

On 31 October 1996, Canada's government carried out the sale of that country's ATC system to a newly created corporation, Nav Canada. The not-for-profit, stakeholder-controlled company was incorporated in 1995 as the outgrowth of a several year process of research and consultation by the country's entire aviation community. Canada's airline ticket tax is being phased out over a two-year period, to be replaced by user fees that will provide the sole revenue source for Nav Canada.

The restructuring of ATC in Canada is a departure from previous commercializations in several ways. First, by most quantitative measures, it is the largest ATC corporatization to date (see Table 2), a system that is between one-fifth and one-eighth as large as the United States' ATC system. Second, it interacts directly with the American system, meaning that commercial airlines and private aircraft from the United States will soon be paying direct user fees on the growing volume of flights to and from Canada. Third, Nav Canada is the first ATC corporation controlled by its users and operators. Fourth, it is the first case in which a government has sold, rather than merely transferred, its ATC operations to a different corporation.

How did Canada progress, relatively smoothly, to the dramatic restructuring of ATC?

Canada faced the same underlying problems with its ATC system that the United States faces: rigid personnel and procurement systems, micromanagement, budgetary constraints, and conflict of interest. Starting in 1991, various approaches to reform were considered, including a system along the lines of New Zealand's 1987 Airways Corporation, similar to the Clinton administration's failed USATS. The proposal called for a mixed enterprise, owned partly by government and partly by users and a not-for-profit corporation.

By autumn 1994, the major aviation stakeholder groups had reached consensus that the not-for-profit private corporation was the way to go. On 23 September, they

Table 1: Overseas ATC Corporations

Country	Corp. Name	Year	Functions	ATC Funding Source
Australia[1]	CCA	1988	ATC + reg.	Mostly user fees
Austria	Austria Control	1994	ATC + reg.	60% user fees
Canada	Nav Canada	1996	ATC	100% user fees
Czech Rep.	ATC Admin.	1993	ATC	Mostly user fees
Germany	DFS	1993	ATC	100% user fees
Ireland	IAA	1994	ATC + reg.	100% user fees
Latvia	LGS	1993	ATC	100% user fees
New Zealand	Airways Corp.	1987	ATC	100% user fees
Portugal	ANA	1992	ATC + airports	100% user fees
Russia	Magadan Aero Control	1995	ATC	In transition
Singapore	CAA	n.a.	ATC + airports + reg.	100% user fees
South Africa	AT&NS Co.	1993	ATC	100% user fees
Switzerland[2]	Swiss Control	1988	ATC	100% user fees
Thailand[2]	AeroThai	1948	ATC	100% user fees
Ukraine	UK SATSE	1993	ATC	In transition
United Kingdom[3]	NATS	1972/1996	ATC	Mostly user fees

1. Considering spin-off of ATC as separate corporation.
2. Partial user ownership.
3. Considering sale of NATS.

Table 2: Comparison of U.S. and Overseas Air Traffic Control Organizations

	United States	Canada	Australia	Germany	United Kingdom	Switzerland	New Zealand
Independent of Government	No	Yes	Yes	Yes	Yes	Yes	Yes
Starting Date	N/a	1996	1988	1993	1972	1988	1987
Govt. Safety Oversight	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1994 Revenue ($)	4,275	429	432	913	778	143	59
1994 Expenses ($ millions)	6,190	572	388	913	697	59	52
Air Traffic Controllers	17,300	2,060	1,140	2,000	1,630	300	300
1994 Aircraft Movements (millions)	38	7.4	3.6	2	1.5	1.5	1.2
Commercial Aircraft	18,440	5,680	260	680	3,120	n/a	130
Commercial Pilots	117,430	20,500	8,700	9,000	12,540	n/a	2,960
General Aviation Aircraft	184,430	21,850	7,900	20,340	4,270	n/a	3,100
General Aviation Pilots	654,090	59,990	22,500	100,000	27,530	n/a	4,190
Weekly Domestic Departures	142,930	16,950	5,500	15,000	4,840	n/a	3,670
Weekly International Departures	8,240	2,660	670	15,000	6,030	n/a	530

Source: General Accounting Office

delivered a position paper to the government firmly stating their opposition to a government corporation like USATS. The report identified the following drawbacks: continued political control and micromanagement; board appointments by politicians, not users/stakeholders; corporate culture more like that of government than private enterprise; and major modernization decisions subject to political influence.

By contrast, a not-for-profit private corporation would function as an entrepreneurial enterprise, avoid conflict of interest with regulatory authority, be responsive to its users, and apply "best business" practices. The paper also set forth a mission statement and suggested a board of directors made up of stakeholders. And it called for 100 percent funding by user charges, based on "fair and equitable allocation of costs to all users." The heads of the airline trade group, the airline pilots' union, the air traffic controllers' union, the business aircraft association, and the private pilots' association signed the remarkable document.

With the government's blessing, those groups drew up articles of incorporation and created Nav Canada in mid-1995. They selected an investment bank, RBC Dominion Securities, to develop the plan for financing the company's acquisition of the ATC system from Transport Canada. The legislation was enacted in mid-1996, and the sale took place, for $1.1 billion, on 31 October 1996.

The government agreed to provide generous severance payments to all sixty-four hundred ATC employees, and Nav Canada agreed to accept the existing union contracts until they expire at the end of 1997 or 1998.

Although Nav Canada now owns the former Transport Canada ATC system assets, it is a "non-share capital corporation," i.e., there is no equity ownership. Its financing is entirely via debt. Without shareholders, it will not seek to make a profit, it will only seek to cover its costs, and—in the interests of its stakeholders—to keep those costs to a minimum. That structure is designed to avoid the need for explicit government regulation of the monopoly service of air traffic control. Without the drive to earn profits, and with users' having a major say in running the organization, the classic rationale for government regulation of a monopoly (protecting consumers from monopoly exploitation) disappears.

Nav Canada's corporate charter calls for a fifteen-member board of directors to include all relevant stakeholders. Four are appointed by the airlines, one by the business aircraft association, and three by the government—in its role as a significant user of ATC services. The unions appoint two members, and another member is the CEO who is appointed by the board. The board appoints the four remaining members as independent directors. The members serve for staggered three-year terms, to a maximum of nine years, except for the CEO. Elected officials, government employees, and employees or directors of any significant supplier, user, or client of the corporation are ineligible to serve as directors.

Despite the careful balance of stakeholder interests on the board, additional provisions protect users. Nav Canada is required to consult with appropriate parties prior to proposing any increases in fees and charges or reductions in facilities or services, and must give a sixty-day notice of changes. Also, an advisory committee will consist of persons "interested in aeronautics and furthering the objects of the Corporation."

In order to ensure commercial independence, Nav Canada will be funded entirely by fees and charges paid by users. Needless to say, with a large general aviation community in Canada, the fees and charges raised the same kinds of concerns as in the United States. While the issue is not yet settled,

all parties have agreed that the benefits of shifting ATC to a stakeholder-controlled organization are worth the difficulties of devising a fair and equitable fee structure. As Transport Canada's first discussion paper, *The Study of the Commercialization of the Air Navigation System in Canada* pointed out in 1994, "with user pay should come greater user say."

Transport Canada's research on ATC user fees found considerable uniformity in the charging methods of countries that have commercialized ATC. Virtually all employ two principal types of charges: "en route charges" and "landing charges." En route charges are generally based on the distance flown multiplied by a factor based on the aircraft's weight. Landing charges are generally based on some measure of the aircraft's maximum takeoff weight.

WHILE THE ISSUE IS NOT YET SETTLED, ALL PARTIES HAVE AGREED THAT THE BENEFITS OF SHIFTING ATC TO A STAKEHOLDER-CONTROLLED ORGANIZATION ARE WORTH THE DIFFICULTIES OF DEVISING A FAIR AND EQUITABLE FEE STRUCTURE.

Canada is phasing out its ticket tax and replacing it with a similar weight-related measure. The approach is a departure from strict allocation of charges according to system costs; after all, it costs the ATC system about the same amount of money to guide a small Beech Baron as a giant Boeing 747. The net result of pricing according to the relative value of the service, charging what the market will bear, is to keep the charges relatively low for smaller aircraft.

Another principle incorporated in most commercialized ATC charging systems is to not charge directly for preflight information services to GA users. Flight service stations (FSS) assist GA pilots with flight plan filing and weather briefings. If direct fees were charged for those services, some users might forgo using them, with detrimental safety consequences. Hence, the costs of FSS operations are assumed to be covered out of the terminal and en-route charges paid by all users.

Since Nav Canada does not have equity owners, the purchase price was financed in the commercial debt market. The initial capital was raised as bank loans (bridge financing), which are being replaced, over time, with commercial paper and revenue bonds.

In contrast to a government agency like Transport Canada, which must pay for major modernization out of annual appropriations a year at a time, a commercialized ATC corporation can finance modernization by issuing debt, to be repaid out of its user-fee revenue stream.

SEEKING CONSENSUS ON AMERICAN RESTRUCTURING

Major ATC reform in the United States has been stymied by opposition from two quarters, GA and the congressional aviation subcommittees. While the subcommittees will likely remain reluctant to yield their turf, a unified call for ATC commercialization from aviation stakeholders, as occurred in Canada, might suffice to overcome the reluctance.

To airlines in the United States, such an approach offers essentially all the advantages of the corporatization proposals they have supported in the past. The controllers' union supported the Administration's USATS plan but opposed "privatization," meaning a for-profit company. Assuming that their pay and benefits are protected in a transition to a not-for-profit corporation (NFPC), as in Canada, they are likely to support that approach. Many congressional Republicans were skeptical of creating another government corporation, some terming it a "flying Amtrak." They should be more receptive to a user-controlled nongovernmental corporation. And the Administration should welcome an alternative way of achieving its aims via the NFPC approach.

The major question mark is the GA community, composed of two principal groups: commercial GA, represented by the National Business Aircraft Association (NBAA), and recreational GA, represented by the Aircraft Owners & Pilots Association (AOPA). The former group flies business jets, turboprops, and multiengine piston aircraft. The latter group flies mostly single-engine piston aircraft. Despite a provision in the USATS measure that exempted GA from user fees, those groups feared that a cost-based system of user fees would eventually be applied to them, drastically increasing their cost of flying.

Two key factors might secure GA support for a Canadian-type system. The first is a guaranteed seat on the board for both GA groups. The 1995 USATS proposal offered GA groups a single board member, chosen not by them but by the president. The second is a user fee system based more on ability to pay than on allocated costs.

But would the monopolistic nature of an ATC corporation combined with the absence of a profit motive provide insufficient incentive for the NFPC to develop a commercial corporate culture? The National Performance Review's Wayne Leiss addressed that issue at the Air Traffic Control Association Annual Meeting on 26 October 1993: "A competitive joint venture achieves the same efficiency as competition, but in a monopoly market. The fee-paying customers work through the board of directors. They have the same incentive to reduce costs as owners trying to make a profit." As Leiss notes, "The key is the election of the board of directors by the fee-paying customers. They are the only ones with incentives for efficiency, since they are the ones paying for any inefficiency. Politically appointed directors, while earnest in their intentions, do not share in these incentives." A board-membership structure might consist of the following: four seats for air carriers; one seat for airline pilots; one seat for business/commercial GA; one seat for recreational GA; one seat for air traffic controllers; one seat for airports; two seats for the U.S. government.

Those eleven seats would represent all the major users (commercial airlines, GA, government), the two major aviation employee groups (airline pilots and controllers), and airport operators; in other words, all the major ATC stakeholders. As in Nav Canada, airlines would not have a numerical majority and therefore could not impose their version of user fees or

other policies upon the GA segment. The board would select the CEO, who would also be a director, and together, they would select three independent directors, for a total of fifteen board members. A board structured in that way is intended to foster the search for consensus on fee structures and other policies.

With policy guidance from the other board members, the CEO would hire the top management team, most likely leading to the creation of a largely new top level of management for ATC. It would draw the best available people from the private sector and compensate them accordingly. Competitive management pay scales are especially critical since the company's not-for-profit status means that no form of compensation based on stock or stock options would be available.

USER FEES

In exchange for two board seats, GA users would be expected to contribute towards the cost of the corporation's operations. It is clearly in the GA community's long-term interest to be a paying member, thereby guaranteeing itself influence in the corporate board's policy decisions. The GA communities in Canada, New Zealand, and other countries where user fees have been introduced as part of ATC corporatization, have accepted that principle. Concerning the USATS proposal, Kenneth M. Mead of the General Accounting Office testified on 9 March 1995 before the House Transportation Subcommittee, "A corporation—created and charged to operate like a business—may have little incentive to provide equipment and services to users of the system whose financial contributions to the system are proportionately less than the value they receive." Since GA operations account for over half of all control tower operations and some 20 percent of en-route center operations (see Figure 1), it is only fair that they pay some sort of fees for those considerable portions of the ATC system's workload.

The question then becomes: How can a user fee system be constructed that realistically reflects GA usage of ATC services but (1) does not unrealistically burden GA with crippling cost increases and (2) does not have perverse effects on safety, such as tempting some private pilots to forego weather briefings in order to avoid paying a fee? Other countries with corporatized ATC systems solve those problems by setting rates based on the relative value of the service rather than strictly on the underlying cost and by avoiding direct charges for safety-related information services.

The first of the above points adopts a variant of the internationally accepted practice of basing both terminal and en-route charges on the weight of the aircraft, rather than on the proportion of system costs allocated to each type of user. Basing charges on weight will lead to much lower charges for smaller, lighter aircraft than would a fee system based on cost allocation. (Such variable pricing is similar to pricing of rail services. See Cunningham and Jenkins, "Railing at 'Open Access'," *Regulation* No. 2, 1997.) The second point means not charging directly for Flight Service Station activities. Instead, the corporation's costs of providing those services will be recovered from all users, as part of the cost base to be recovered from en-route and terminal charges.

In a 1996 Reason Foundation policy study, Viggo Butler and I developed a hypothetical ATC user fee system based on those principles. Table 3 summarizes the results for a representative set of general aviation and commercial aircraft, along with assumptions about their annual flight operations. For example, the Lear 35, a business jet, would have total annual ATC charges of $23,696, based on a typical annual level of flight activity. That represents about 2.2 percent of its total operating cost or 5.5 percent of its direct operating cost.

Table 4 compares the user fee costs with the present user tax payments for the same set of aircraft as in Table 3. As can be seen, the net impact of adding user charges and eliminating fuel taxes (for GA) and ticket taxes (for airlines) varies according to the type of plane and the assumed flight activity.

Figure 1

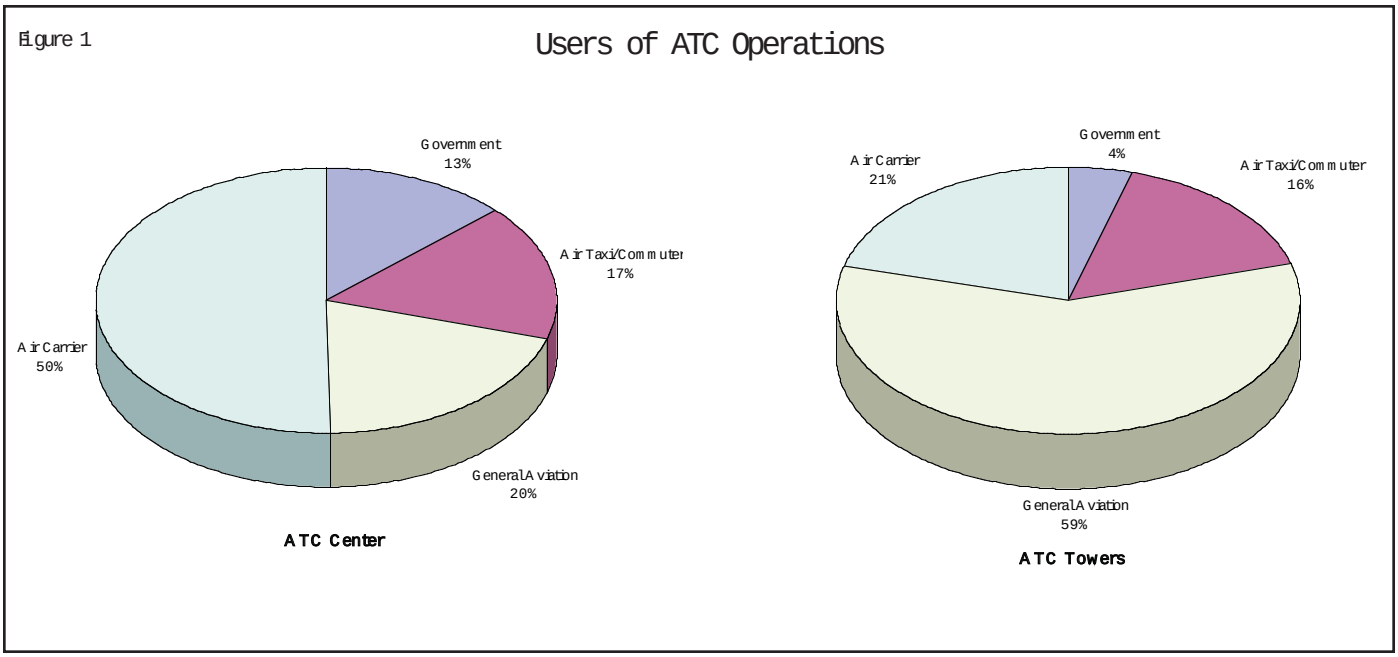

Table 3: Conceptual ATC Charges for Proposed System

Aircraft	Max T.O. Wt. (lbs.)	Landings/ Year	Average Distance (miles)	Terminal Charge ($)	Enroute Charge ($)	Annual Enroute Cost ($)	Annual Terminal Cost ($)	Total Cost
Falcon 50	38,800	300	1,050	17.73	173.76	52,126.83	5,319.48	57,446.31
Falcon 20-5	29,100	321	750	13.30	93.08	29,879.84	4,268.88	34,148.73
Lear 35	18,300	462	550	8.36	42.93	19,832.38	3,863.75	23,696.13
Lear 24	13,500	346	550	6.17	31.67	10,957.00	2,134.65	13,091.65
King Air20	12,500	500	400	5.71	21.33	10,662.50	2,856.25	13,518.75
Baron	5,400	267	250	2.47	5.76	1,537.32	658.90	2,196.22
B747	776,000	700	2,500	354.63	8,274.10	5,791,870.00	248,242.40	6,040,112.40
B737	121,440	2,954	521	55.50	269.85	797,129.73	163,941.33	961,071.06
B757	332,000	1,400	1,500	151.72	2,123.97	2,973,558.00	212,413.60	3,185,971.60

Direct user charges for those GA flights filing flight plans (terminal charges) and flying IFR (en-route charges) would replace GA fuel taxes. No other types of GA operations would pay any charges or any fuel taxes. Even those types of corporate aircraft that would end up paying more would still pay only a small percentage of the total annual cost of ownership and operation. The largest of these planes, the Falcon 50, would pay only 3.2 percent of its total annual cost in user fees, compared to 2.2 percent today. Table 5 looks more closely at the impact on general aviation.

The under-$1 billion annual cost of the FAA's remaining safety regulation activities should continue to be collected from general federal revenues, as are the costs of other safety regulatory agencies such as the FDA and OSHA. The airport grant program—if continued—could be funded either by general revenues or by reduced air cargo and passenger ticket taxes at about one quarter of previous levels—i.e., a passenger ticket tax of 2 percent. Table 6 looks more closely at the impact on airlines of ATC fees with and without a 2 percent ticket tax. With the tax, some aircraft will pay more, and others will pay less; again, depending on the actual amounts and types of flight activity. Without the 2 percent ticket tax, all types of airliners would clearly pay less than they do today.

Table 4: Current vs. Proposed User Costs

Aircraft	Current Annual User Tax ($)*	Proposed User Fees ($)	Proposed User Tax ($)	Difference in Annual Cost ($)
Falcon 50	39,812	57,446	0	17,634
Falcon 20-5	29,356	34,149	0	4,793
Lear 35	22,575	23,696	0	1,121
Lear 24	18,506	13,092	0	(4,964)
King Air	6,188	13,519	0	7,331
Baron	1,500	2,196	0	696
B747	10,416,000	6,040,112	0	(4,375,888)
B737	1,189,000	961,071	0	(227,929)
B757	3,906,000	3,185,972	0	(720,028)

* Fuel tax for business aircraft, ticket tax for airlines.

PURCHASE PRICE

The administration's USATS proposal assumed that the FAA's ATC assets would be transferred to the new corporation at no charge. The proposal was based on the premise that the assets had already been paid for by users via the aviation user taxes deposited in the Aviation Trust Fund and on the implicit grounds that USATS would continue to be owned by the U.S. government, which would be paying itself if the assets were to be purchased. By contrast, Nav Canada purchased the ATC assets from Transport Canada for over $1 billion. Should a new ATC corporation purchase the ATC assets from the federal government?

First, although user taxes have paid for a majority of FAA capital and operating costs, there is still approximately $2 billion per year of general-fund support for FAA's $8 billion to $9 billion budget. Hence, one could argue that its users have actually paid for only three-fourths of the cost of the system. Second, the new corporation and its stakeholders would be gaining something of great value in the transfer of ATC to themselves: control over the future of this essential system, something they do not have today. What they have "paid for" via user taxes is a dysfunctional system which they do not control. What they would be getting, via the corporation, is a (potentially) modernized system that they control. That ought to be worth paying for.

How much are the FAA's ATC assets worth? According to the Administration's April 1995 briefing on the USATS proposal, the ATC book value (net of accumulated depreciation) as of that date was $5.9 bil-

lion. Since a large fraction of those assets (radar, computers, landing aids, etc.) needs to be replaced within a few years, their real value is far less than the book value (as the established telephone companies have discovered concerning their assets, since the advent of competition).

A third party would have to estimate the market value of the ATC system's assets. Presumably, most of the real estate, control towers, and en-route centers would be valued at or above book value, in contrast to most of the electronic equipment. The net value probably will be in the $3 billion-4 billion range, that is, substantially less than a single year's ATC corporation operating revenue and a sum readily financed in the capital markets, as was done with Nav Canada.

FINANCING THE ATC CORPORATION

There are two key questions to address with regard to financing a stand-alone ATC corporation. First, can a brand new corporate entity without any operating history raise the capital to make a multi-billion-dollar purchase of the existing assets? And second, can such a corporation finance a multiyear modernization program? The answer to both questions is yes.

Last fall, capital markets provided nearly $2 billion to finance Nav Canada. The initial funds were provided in the form of relatively short-term bank loans, to be replaced over time with longer-term commercial paper and revenue bonds. Although the United States' ATC system is five to ten times larger than Canada's system, its revenue stream is about ten times as large. In both cases, the new corporate entity would have either a de facto or a de jure exclusive franchise for providing essential ATC services and the ability to set rates that ensure professional operations. Assuming it is well run, it should be what the capital markets refer to as a good credit risk.

As for financing a modernization program, the Department of Transportation commissioned a detailed financial feasibility analysis of its USATS proposal from Gellman Research Associates and Arthur Andersen & Co. The May 1995 report of the Department of Transportation's Executive Oversight Committee concluded that, "In all scenarios examined, USATS is financially viable with revenues sufficient to cover operating and investment costs." In addition, "USATS is also able to fund a portion of capital investment by using long-term debt which would be repaid when the benefits of those investments are realized by users. The accelerated investments [would] reduce USATS's ATC operating costs by $0.9 billion. In addition, those investments would provide over $10 billion in safety, delay reduction, and operating cost savings to users over the 1996 to 2005 time period." The financial assumptions for a nongovernmental, nonprofit ATC corporation would be virtually the same as those used in the feasibility studies. Hence, its conclusions would apply equally to the proposed corporation.

Table 5: GA Cost Impact Comparison

	Current Taxes		User Fees (Proposed System)	
Aircraft	Percent D.O.C.	Percent T.O.C.	Percent D.O.C.	Percent T.O.C.
Falcon 50	5.83	2.19	8.42	3.16
Falcon 20-5	6.02	2.09	6.70	2.43
Lear 35	5.23	2.09	5.49	2.19
Lear 24	4.84	2.28	3.42	1.62
King Air	2.81	1.18	6.14	2.59
Baron	2.50	1.07	3.66	1.57

WINDOW OF OPPORTUNITY

Continuing squeezes on "discretionary" federal spending, and the FAA's continued inability to manage major upgrades, almost guarantee that ATC modernization will not occur without major restructuring, including restructuring of ATC's financing. In 1996, Congress authorized two major studies on that issue. Coopers & Lybrand completed the first in February 1997; the second will be released by the National Civil Aviation Review Commission (NCARC) in October 1997.

Those studies were prompted in part by the lapsing of the 10 percent airline ticket tax and GA fuel taxes at the end of 1995, due to the congressional shutdown of the federal government. With the ticket tax in abeyance for nine months of 1996, the major airlines found that more passengers were flying, so they began lobbying for elimination of the tax, to be replaced by user fees. Unfortunately for the ATC commercialization cause, seven of the largest airlines proposed a complex ATC user fee system, based on seats, passengers, and origin-destination distance, as opposed to actual miles flown, that would have greatly increased the amount paid by Southwest and other low-fare airlines. That ill-conceived proposal came under harsh criticism by the General Accounting Office and many members of Congress, and died in 1996.

NCARC now is expected to develop a proposal for a new funding system able to satisfy both large and small carriers. The lessons of how Canada and other countries have dealt with user fees and with charges to GA users can help NCARC

Table 6: Airline Cost Impact of a 2 Percent Ticket Tax

Aircraft	Current 10 percent Tax	Proposed User Fee	Proposed 2 percent Tax	Difference with 2 percent	Difference without 2 percent
B747	$10,416,000	6,040,112	2,083,200	(2,292,688)	(4,375,888)
B737	1,189,000	961,071	237,800	9,871	(227,929)
B757	3,906,000	3,185,972	787,200	67,172	(720,028)

develop a workable plan.

Everyone who travels by air understands the need for a safe, effective, and efficient ATC system. Today's information processing technology and satellite-based navigation systems offer the prospect of greatly increased safety and significantly lower costs that would dramatically reduce billions of dollars in delays suffered by travelers each year due to the ATC system's obsolete technology.

Commercializing air traffic control is achievable. It has already been done in sixteen other countries in response to the same problems that plague America's ATC system. Adapting their experience to the United States can produce a safer and more cost-effective American system.

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