

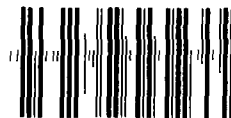
GAO

United States General Accounting Office 130441  
Report to the Chairman, Subcommittee on  
Transportation, Committee on  
Appropriations  
House of Representatives

June 1986

# AVIATION WEATHER BRIEFINGS

## FAA Should Buy Direct User Access Terminal Systems, Not Develop Them



130441

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**Resources, Community, and  
Economic Development Division****B-223286**

June 6, 1986

The Honorable William Lehman  
Chairman, Subcommittee  
on Transportation  
Committee on Appropriations  
House of Representatives

Dear Mr. Chairman:

In response to your January 8, 1986, request, we reviewed December 1985 and April 1986 versions of a Federal Aviation Administration (FAA) draft report comparing various direct user access terminal systems (DUATS). Planned as part of FAA's Flight Service Automation System program, DUATS is designed to reduce the work load of flight service station specialists by permitting pilots to obtain weather briefings and file flight plans with their own personal computers. According to data we have examined, creating a DUATS capability would enable FAA to reduce the cost of supplying each preflight weather briefing by more than two-thirds compared with existing flight service station practices.

At issue is whether DUATS will be included in FAA's existing model 2 contract<sup>1</sup> with a software manufacturer to provide the capability as part of the Flight Service Automation System program; developed as an independent, stand-alone system by FAA's Technical Center; or purchased as a service provided by commercial vendors.

In June 1985 FAA requested funding from the Department of Transportation to resume the model 2 contract, which had been suspended because of contractor delays in developing model 1 software. If approved, the resumption of model 2 funding would have put flight service automation software contracting \$48 million over the original contract estimate and 7 years behind schedule. Your subcommittee and its Senate counterpart suspended all fiscal year 1986 funding for the model 2 program pending an FAA report comparing the relative cost, performance, and availability of commercial systems and the two FAA-developed systems. The suspension of fiscal year 1986 funds will remain in effect until both appropriations committees have had an opportunity to evaluate FAA's report

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<sup>1</sup>FAA originally planned to install partially automated weather briefing capabilities for flight service station specialists (model 1) in late 1982, followed by fully automated weather briefing and flight plan filing capabilities directly accessible by users in 1983 (model 2)

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## Commercial Systems Appear to Be the Most Attractive Option

Last November we briefed your staff and the staff of the Senate Appropriations' Subcommittee on Transportation and Related Agencies about apparent deficiencies in FAA's analysis of its options and, at your request, reviewed FAA's December draft report.

We found then that FAA incorrectly attributed its preferred option of proceeding with DUATS as part of the model 2 program to a FAA special study team recommendation that, in fact, had never been made. We also found that the study team's analysis supporting a recommended option to develop FAA's Technical Center system was deficient in each of the cost, performance, and availability criteria that FAA was asked to address. (See app. I.)

In comparing the relative cost, performance, and availability of the FAA-developed and commercial systems as analyzed in FAA's December report, we found that—in contrast to both FAA's stated preference and the study team's recommendation—the commercial systems appear to be the most attractive option. The model 2 system preferred by FAA is still in the design phase; its acquisition is subject to significantly more technical, operational, and economic risks than would accompany either a commercial system or FAA's Technical Center prototype. The Technical Center system is a prototype research and development system that has never undergone operational testing and evaluation by FAA. It does not include a weather graphics display, one of the three main DUATS functions included as part of the flight service automation program. (The other two are written preflight weather briefing messages and flight plan filing.) Conversely, commercially available systems currently provide weather graphics displays (while FAA's DUATS options do not) and, according to vendor cost estimates that we obtained, would be less costly than FAA's Technical Center prototype system. (See app. I.)

Commercial vendors have provided such services to states and individuals for several years, thus reducing the technical and operational risks of contracting for a commercially supplied system, as compared with developing the model 2 system for the 1990's. For example, Minnesota and Wisconsin have entered into contracts with a vendor to provide statewide DUATS services, and several other states are considering vendor-supplied service as well. According to Minnesota officials, these services have proven highly reliable. In contrast, significant delays and

technical problems with FAA's model 1 program have already delayed model 2 for 7 years and resulted in the funding suspension.<sup>2</sup>

## FAA Draft Report Now Agrees That Commercial Systems Appear to Be the Most Attractive Option

We briefed your office on the results of our work on March 10, 1986. On March 12, at your request, we briefed FAA officials on the concerns we had with their December 1985 draft report. FAA subsequently revised its draft, and the revision now agrees with our conclusion that purchasing this service commercially is the most attractive of the options FAA is considering for a national system. The revised draft report was submitted to the Department of Transportation for approval April 9, 1986, and approval was still pending as of the end of May.

FAA, in its April draft, estimates that a nationwide system of commercial DUATS could be created within 30 months at a cost of \$1.80-\$2.60 per user weather briefing (\$8-\$10 million per year for providing 4.4 million briefings). FAA's April draft also states that since vendors will assume the system development costs and associated risks, costs and risks to the government would be reduced. The April draft also cites the highly reliable commercial systems' operational experience, the fact that the Technical Center system software is not fully developed and therefore still involves some developmental risk, and the time advantage in that vendor systems can be implemented earlier than the model 2 system.

FAA is also planning communication links that will allow commercial vendors to offer automatic flight plan filing to pilots, thereby providing, along with existing commercial weather graphics display and written preflight weather briefing messages, the three main direct user access services planned for model 2 of the flight service automation program.

## FAA Fiscal Year 1987 Budget Request Has Not Been Revised

FAA's budget request is now inconsistent with the April draft report. FAA's fiscal year 1987 budget request includes \$2.7 million to develop the Technical Center system and also includes \$3.3 million to proceed with developing a system as a part of the model 2 program. In light of our findings and FAA's changed position that commercial systems appear

<sup>2</sup>The Department of Transportation's Office of Inspector General (OIG) also reported deficiencies in FAA's program report on its audit of the flight service automation system in Federal Aviation Administration Report No. AV-FA-6-012, Feb. 19, 1986. Specifically, OIG recommended that FAA withdraw DUATS from model 2 contracting since it can be obtained either from commercial or FAA Technical Center sources. FAA did not respond to the OIG report and it was issued without formal FAA comments.

to be the most attractive option, neither of these funding requests is now appropriate.

## Conclusions and Recommendations

Our analysis supports, and FAA now agrees, that commercial direct user access systems are operationally reliable and readily available at less cost than other options it considered. Consequently, FAA's program funding should be consistent with these findings. Therefore, we recommend that the Subcommittee

- deny funding for FAA system development as part of the model 2 flight service automation program in the 1987 Facilities and Equipment budget request and
- discontinue funding development of FAA's Technical Center system Research, Engineering and Development request.

For further development of direct user access systems, the Subcommittee should ask the Department of Transportation to provide the Subcommittee with a request for the level of funding the Department believes is needed for proceeding with a program based on commercially available systems.

## Scope and Methodology

We reviewed three analyses and supporting documentation constituting the basis for FAA's two versions of the draft report: the Technical Center system proposal, the FAA DUATS study team analysis, and the System Engineering and Integration Contractor's study team analysis. We also examined two OIG reports on flight service automation development and the COMSIS Corporation privatization report prepared for FAA.<sup>3</sup> We discussed the various analyses and reports with their authors, as well as reviewed the documentary support they provided.

To develop information for comparing FAA's options and as a basis for analyzing FAA's draft report, we obtained cost, performance, and availability data for flight service automation and DUATS from program officials at FAA headquarters in Washington, D.C., and technical staff at the FAA Technical Center in Pomona, New Jersey; System Engineering and Integration Contractor officials in Washington, D.C.; and representatives of commercial firms throughout the country that are marketing DUATS

<sup>3</sup>Flight Service Station Privatization Evaluation Report, prepared for U.S. Department of Transportation, Federal Aviation Administration, by COMSIS Corporation, Gellman Research Associates, J. Tilghman Montgomery Associates, and EXP Associates, June 1985

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We also obtained data from state transportation department officials in Arizona, Maryland, and Minnesota. Finally, we discussed user acceptance and results of FAA's flight service station automation efforts to date with the Aircraft Owners and Pilots Association in Frederick, Maryland. Our review was completed in March 1986 and was performed in accordance with generally accepted government auditing standards.

At the request of your office, we confirmed that FAA's current thinking is in accord with our conclusion and FAA's April version of the draft report favoring commercial DUATS. Also, at your request, we did not request FAA to review and comment officially on a draft of this report. As agreed with your office, we plan to make this report available to other Members of the Congress, federal agencies, and other interested parties within 7 days of this letter.

Sincerely yours,

A handwritten signature in cursive script that reads "J. Dexter Peach". The signature is written in black ink and is positioned above the typed name and title.

J. Dexter Peach  
Director

# Deficiencies in FAA Study Team's Preselection Analysis of a DUATS Option Are Addressed by FAA April Draft

Our review of the FAA study team's analysis cited in FAA's December draft report showed a number of deficiencies with respect to each of the three criteria FAA was asked to address. FAA's April version contains new conclusions and findings for each of the criteria, which appear responsive to the concerns we expressed to the agency and to the Chairman's office last March.

## Cost Data Were Incomplete and Noncomparable

The study team's comparisons of the DUATS options did not use comparable costs. Vendors were not asked to provide estimated costs for an FAA-wide system with standard communications specifications, comparable to the cost study made by the Technical Center for its prototype system providing 4.4 million annual weather briefings, adjusted by the study team to account for inflation and additional communication costs. The team also did not consider volume operations in its cost evaluation of the commercial systems. Estimated costs for an FAA-wide commercial DUATS were based on modifications of costs contained in one vendor's unsolicited proposal and the retail costs of five other existing commercial systems. As a result, the study estimated that the first-year cost of commercial systems ranged between \$13 and \$22 million, compared with \$10 million for the Technical Center DUATS.

Our contacts with commercial vendors suggest that their costs could be much less than estimated by the study team. As the following table shows, we estimate that the first-year cost for providing 4.4 million weather briefings using vendor cost estimates ranges from \$3.5 to \$15.8 million, with an average cost of \$8.8 million. Only one of the six vendors FAA considered had average costs per briefing greater than the Technical Center's DUATS prototype system.



**Appendix I  
Deficiencies in FAA Study Team's  
Preselection Analysis of a DUATS Option Are  
Addressed by FAA April Draft**

**Table 1.: Comparison of FAA and Vendor Costs for 4.4 Million Weather Briefings**

Company	Cost per FAA standard preflight weather briefing		Total cost Dollars in millions	
	FAA	Vendor	FAA	Vendor
A	\$5.00	\$2.00	\$22.0	\$8.8
B	5.00	2.00	22.0	8.8
C <sup>a</sup>	3.00	1.75	13.0	7.7
D	5.00	3.60	22.0	15.8
E	5.00	.80	22.0	3.5
F	5.00	2.00	22.0	8.8
Tech Center	2.28		10.0	

<sup>a</sup>unsolicited proposal

Source: Commercial vendors and FAA study team report. Commercial vendor estimates were divided by 4.4 million weather briefings to derive costs.

FAA's April version of the report draft now estimates that commercial DUATS cost \$8-\$10 million per year.

**Analysis of DUATS Performance Contained Inappropriate Assumptions**

DUATS performance analysis was based on assumptions about technical risk that understated existing vendor capabilities. The Technical Center's prototype DUATS was considered no less risky to build and operate than the vendor systems, some of which have been commercially available for up to 5 years. Yet the Technical Center's preflight weather briefing system had never undergone operational testing and evaluation, such as that required for a major system acquisition, and its graphics display capabilities have not been developed. The study team analysis concluded that the Technical Center's system and the commercial systems were comparable but that neither system met all the planned model 2 DUATS requirements the team used as criteria for measuring performance. We pointed out these deficiencies in our briefing of FAA officials.

FAA's April version, however, now acknowledges that the Technical Center DUATS still involves some technical risk compared to "highly reliable" commercial DUATS.

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## Analysis of DUATS Availability Used Unrealistic Time Frames

The study team's analysis of DUATS availability assumed that the Technical Center could complete required operational testing and evaluation functions in less time than could a vendor. The team estimated it would take 15 months from the date of the contract award until the date of implementation for commercial vendors to develop an operational DUATS, 5 months for software development, and 10 more months for operational testing and evaluation of the entire system. In contrast, the team said the Technical Center DUATS would require only 3 months for operational testing and evaluation (of the preflight weather message briefing function) and 8 months for development of its own operational weather graphics display capability. However, the team did not allow time for operational testing and evaluation of either the Technical Center DUATS graphics display capability or for the entire Technical Center system. The team concluded that about the same amount of time was necessary to implement either the Technical Center or commercial vendors' DUATS by fiscal year 1987 and recommended either rather than waiting another 3 years for model 2 DUATS development in 1991. In our FAA briefing we pointed out this inconsistent approach to testing and evaluation.

FAA's April draft reduced the commercial DUATS operational testing period to 6 months, compared to the study team's estimate of 11 months for testing and implementing a Technical Center DUATS. However, the April version adds 10 months to the study team's estimate of contractor development time and also assumes 9 months will be necessary to develop a request for contractor proposals, doubling the amount of time estimated by the study team for achieving a commercial system from 15 to 30 months. The amount of time FAA now estimates is required to prepare and evaluate request for proposals may be excessive.

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