United States Government Accountability Office

GAO

Report to Congressional Requesters

December 2007

AIR TRAFFIC CONTROL

FAA Reports Progress in System Acquisitions, but Changes in Performance Measurement Could Improve Usefulness of Information

GAO-08-42

December 2007

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Highlights

Highlights of GAO-08-42, a report to congressional requesters

AIR TRAFFIC CONTROL

FAA Reports Progress in System Acquisitions, but Changes in Performance Measurement Could Improve Usefulness of Information

Why GAO Did This Study

Acquiring new systems on budget and on schedule is critically important in transitioning to the Next Generation Air Transportation System (NextGen). However, air traffic control modernization has been on GAO's high-risk list since 1995, in part due to acquisitions exceeding budget and schedule targets. The Federal Aviation Administration's (FAA) Air Traffic Organization (ATO) has responsibility for managing air traffic control acquisitions. GAO was asked to examine (1) ATO's goals, performance measures, and reporting for systems acquisitions; (2) the validity of ATO's performance measures; and (3) the implications of using ATO's performance measures to assess progress in transitioning to NextGen. To address these issues, GAO compared ATO's measures with attributes of successful performance measures, interviewed agency officials, and sought perspectives of aviation experts.

What GAO Recommends

GAO recommends that FAA establish objective criteria for selecting acquisitions for performance reporting, and improve performance reporting by discussing original budgets and schedules and the implications of acquisition performance on NextGen. FAA officials said they generally concur with our recommendations and offered technical corrections which we incorporated, as appropriate.

To view the full product, including the scope and methodology, click on GAO-08-42. For more information, contact Gerald L. Dillingham, (202) 512-2834, dillinghamg@gao.gov.

What GAO Found

To be consistent with federal guidance and with targets set in the Department of Transportation's strategic plan, ATO established annual acquisition goals and performance measures that call for a high percentage of its major acquisitions to be within 10 percent of budget and on schedule. ATO identifies major acquisitions and reports performance against its goals using its most recently approved budget and schedule estimates. To measure on-budget performance, ATO calculates budget increases over an 8-month period—between January and August of each year. To measure on-schedule performance, ATO selects a minimum of two annual milestones from its major acquisitions and calculates the percentage of milestones that are on schedule.

Because ATO's acquisition performance measures lack objectivity, reliability, coverage of core activities, and clarity, and focus only on the preceding year, they may not provide a valid assessment of performance over time. On the positive side, the measures are aligned with FAA's strategic objectives, are measurable, have no overlap, and address governmentwide priorities. However, the performance measures lack objectivity because ATO has no objective criteria for designating which programs are "major" and should be selected for performance reporting. This makes it possible for subjective considerations to dominate the outcome and leaves the performance measures vulnerable to bias in the selection of programs for reporting. The lack of objective criteria for designating major programs also impairs the reliability of the measures (the ability of the measures to produce the same results each time they are applied under similar conditions) and undermines assurance that ATO managers include all core program activities in performance reporting each year. The performance measures also lack clarity in that they do not indicate that ATO measures the performance of many acquisitions against the most recently approved budget and schedule estimates rather than the original estimates.

ATO's acquisition performance measurement and reporting could mask budget increases and schedule delays that could have a negative effect on the transition to NextGen. Although ATO reported performance that exceeded its goals for fiscal years 2004 through 2006 and showed nearly steady improvement, when measured against original baselines, acquisition performance improved but was lower than reported. Going forward, the absence of original budget and schedule information on ATO's acquisitions could give the impression that the transition to NextGen is progressing more smoothly than might actually be the case. It will be important for ATO and Congress to recognize budget increases and schedule delays so that the capacity, efficiency, and safety benefits of NextGen can be realized in a cost-efficient and timely fashion.

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Abbreviations

ASR-11	Airport Surveillance Radar - Model 11
ATC	air traffic control
ATO	Air Traffic Organization
CIP	Capital Investment Plan
FAA	Federal Aviation Administration
ITWS	Integrated Terminal Weather System
JRC	Joint Resources Council
OMB	Office of Management and Budget
NAS	National Airspace System
NextGen	Next Generation Air Transportation System
STARS	Standard Terminal Automation Replacement System
WAAS	Wide Area Augmentation System

GAO

Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

December 18, 2007

Congressional Requesters

Between fiscal year 2007 and fiscal year 2011, the Federal Aviation Administration (FAA) plans to acquire more than $14 billion worth of new systems to continue operating the nation's current air traffic control (ATC) system while simultaneously transitioning to the Next Generation Air Transportation System (NextGen). The transition to NextGen involves acquiring numerous systems to support precision satellite navigation; digital, networked communications; integrated weather information; layered, adaptive security; and more. A cost-effective and timely transition to NextGen depends in large part on FAA's ability to keep these acquisitions within budget and on schedule. Historically, however, FAA has had chronic difficulties meeting budget, schedule, and performance targets for acquisitions aimed at modernizing the National Airspace System (NAS). In our previous reports on the ATC modernization program,[1] we have pointed out the potentially serious consequences of missing budget and schedule targets, including significant budget increases to maintain existing systems and delays in increasing the efficiency and safety of the NAS.

In 2003, as part of its efforts to implement more businesslike operations, FAA established annual acquisition performance goals that called for a high percentage of critical acquisition programs to be within 10 percent of budget and on schedule.[2] In 2004, as part of its effort to improve its ATC modernization program, FAA established the Air Traffic Organization (ATO) as the FAA office responsible for operating the ATC system,

[1]GAO, *National Airspace System: FAA Has Made Progress but Continues to Face Challenges in Acquiring Major Air Traffic Control Systems*, GAO-05-331 (Washington, D.C.: June 10, 2005); GAO, *Air Traffic Control: FAA's Acquisition Management Has Improved, but Policies and Oversight Need Strengthening to Help Ensure Results*, GAO-05-23 (Washington, D.C.: Nov. 12, 2004).

[2]ATO uses the words "critical" and "major" interchangeably in measuring its acquisition performance and has used both terms in its goals for system acquisitions at different points in time. In this report, we use major unless referring to or quoting ATO documents which used the term critical.

including managing the agency's ATC acquisitions.[3] For fiscal years 2004 through 2006, ATO reported exceeding its annual goals for having its major acquisitions on budget and on schedule. For fiscal year 2006, ATO reported that 100 percent of its major system acquisition investments were within 10 percent of their annual budgets and over 97 percent were on schedule.

Because of the criticality of on-budget and on-time acquisitions to the efficient transition to NextGen, you asked us to determine the status of ATO's performance in acquiring ATC systems. To meet this objective, we addressed the following research questions: (1) How did ATO establish goals and performance measures for acquiring ATC systems and how are they reported? (2) How do ATO's acquisition performance measures compare with key attributes of successful performance measures? (3) What are the implications of using ATO's existing performance measures to assess progress in the transition to NextGen?

To determine how ATO established goals and performance measures for acquiring ATC systems, we obtained and analyzed key acquisition documents and interviewed FAA and ATO officials. To determine how goals and performance are reported, we reviewed agency performance and accountability reports and discussed internal tracking and reporting methods with ATO officials. While ATO's 2006 portfolio of acquisitions contained 120 programs, we focused our analysis only on the programs determined by ATO to be major acquisitions, and thus included in ATO's performance reporting. Between 2003 and 2006, the number of major acquisitions selected for performance reporting varied from 29 to 42. To evaluate how ATO's acquisition performance measures compare with key attributes of successful performance measures, we compared ATO's performance measures with eight key attributes of successful performance measures that we identified in past GAO work.[4] We also obtained the perspectives of five aviation experts on the reasonableness of ATO's acquisition performance measures. We selected these experts from government and industry to obtain a balanced perspective. To evaluate the implications of using ATO's existing performance measures to assess

[3]In December of 2000, President Clinton issued an executive order and Congress passed supporting legislation, which together gave FAA the authority to create the performance-based ATO to control and improve FAA's management of ATC modernization.

[4]GAO, *Tax Administration: IRS Needs to Further Refine Its Tax Filing Season Performance Measures*, GAO-03-143 (Washington, D.C.: Nov. 22, 2002).

progress in the transition to NextGen, we obtained and analyzed acquisition budget and schedule data for fiscal years 2003 through 2006, and drew upon our past work that determined systemic causes of budget increases and schedule delays. Through discussions with ATO officials, we determined that these data were sufficiently reliable for the purposes of our report. See appendix I for a more detailed explanation of our scope and methods. We conducted our work from January 2007 through December 2007 in accordance with generally accepted government auditing standards.

Results in Brief

ATO established its annual goals and performance measures for acquiring ATC systems to be consistent with federal guidance and with targets set in the Department of Transportation's strategic plan. For fiscal year 2003, ATO's acquisition targets were to have 80 percent of acquisition programs within 10 percent of budget and on schedule. These targets gradually increase until fiscal year 2008, when they reach and remain at 90 percent. ATO reports its performance to Congress, the President, and the American people in FAA's annual Performance and Accountability Report. Each year, ATO selects major acquisition programs and measures their performance using the acquisitions' most recently approved budget and schedule estimates. From fiscal years 2003 through 2006, the number of acquisitions selected for performance reporting varied from 29 to 42. To measure budget performance, ATO compares a selected acquisition's total budget (i.e., the budget to complete the acquisition), as estimated in August, with the total budget estimated in January of that year. ATO considers any program with budget growth of more than 10 percent during that 8-month period as not on budget for the year. To measure schedule performance, at the start of each fiscal year ATO managers select a minimum of two schedule milestones expected to occur that year for each major acquisition selected for performance reporting. Milestones could be dates to complete activities such as final installation or establishing a procurement plan. At the end of the fiscal year, ATO divides the number of selected milestones that were met by the total number of selected milestones. Using these calculations, ATO reports each year the percentage of major programs within the annual budget and schedule targets in its Performance and Accountability Report.

Because ATO's acquisition performance measures meet only four of the eight key attributes of successful performance measures that we have identified, and focus only on the preceding year, they may not provide a valid assessment of performance over time.[5] On the positive side, ATO's acquisition performance measures are aligned with FAA's strategic objectives, have measurable targets, have no overlap, and address governmentwide priorities. For example, the measures are linked with FAA's mission and agencywide goals in the strategic plan, known as the Flight Plan, which is available on FAA's Web site. Additionally, because the measures are numerical, they provide a measurable target—another key attribute. However, ATO's lack of objective criteria for selecting the programs and milestones impairs attributes of objectivity, reliability, and coverage of core program activities. Although ATO uses some general guidelines for selecting acquisitions for performance reporting, ATO has no objective criteria for designating an acquisition as major, and executive judgment was the primary basis for selecting acquisitions for performance reporting. For fiscal years 2003 through 2006, ATO designated about a quarter of its acquisitions as major. While these acquisitions accounted for about 80 percent of the value of ATO's acquisitions portfolio, the absence of objective criteria increases the potential for bias, and also impairs the key attribute of reliability. Reliable performance measures produce the same result under similar conditions. Also, the lack of objective criteria for selecting programs does not ensure that core program activities are included in the performance measure each year. Four of our five experts noted that ATO needs to improve its criteria for selecting programs for performance reporting. ATO's performance measures also lack clarity in that they do not indicate that performance of baselined acquisitions is measured against the most recently approved budget and schedule estimates. Of the 31 baselined programs that ATO has selected for acquisition performance reporting for one or more years from fiscal years 2003 through 2006, 18 have been rebaselined (i.e., have had budget or schedule estimates revised) and some of these have been rebaselined more than once. (See app. II.) ATO officials stressed that they measure and report annual performance, and stated they do not measure performance against original baselines because the agency has already determined that the original baselines cannot be met. We agree that rebaselining may be appropriate in such cases and that measuring performance against the current baseline has some value. However, annual measurements for acquisitions that have been rebaselined and span several years do not provide a complete picture of acquisition performance over time. Four of our five experts commented that the

[5]A valid measure provides an accurate representation of what is being measured.

extent of rebaselining should be identified in some form in ATO's performance reports. Additionally, ATO's on-schedule acquisition performance measure does not indicate that the reported performance is based on selected annual milestones, which could give the misleading impression that an acquisition as a whole is on schedule. Taken as a whole, the lack of objectivity, reliability, coverage of core program activities, and clarity, as well as ATO's 1-year focus, may not provide a valid reflection of acquisition performance.

ATO's acquisition performance measurement and reporting could mask budget increases and schedule delays that could negatively affect the transition to NextGen. ATO reported that for fiscal years 2004 through 2006, it substantially exceeded its on-budget and on-schedule performance goals and showed nearly steady improvement. However, when performance is measured against original baselines instead of annual budgets or milestones, acquisition performance was lower than reported, but still showed a general trend of improvement for fiscal years 2003 through 2006. In fact, even when measured against original baselines, ATO would have met its goals for budget in fiscal years 2004 through 2006. However, ATO would have met its schedule goals only in 2005. ATO's annual performance measurement and reporting could overstate the success of the transition to NextGen. For example, ATO's performance reporting does not indicate that rebaselined acquisitions, some of which are key to NextGen, have exceeded original budget and/or schedule baselines. Consequently, budget increases and delays that could impact the capacity, efficiency, and safety benefits of NextGen may not be apparent to Congress or aviation stakeholders. Including original budget and schedule baselines in ATO's performance reporting could improve the reports' usefulness by helping Congress and other stakeholders identify trends and take corrective action to ensure that the capacity, efficiency, and safety benefits of NextGen are achieved in a cost-effective and timely manner.

We are recommending that the Secretary of Transportation direct the FAA Administrator to establish objective criteria for selecting programs for annual performance reporting and improve the clarity of ATO's annual reporting of acquisition performance. We are also recommending that ATO regularly report to Congress and the public on its overall, long-term performance in acquiring ATC systems by providing original budget and schedule baselines for each rebaselined program and the reasons for the rebaselining, as well as reporting the potential effects that budget or schedule slippages could have on the transition to NextGen.

We provided a draft of this report to the Department of Transportation for comment. Senior officials from ATO's Office of Finance provided oral comments. FAA generally concurred with our recommendations and noted that they already are considering some changes to their performance measurement and reporting process for systems acquisitions and would consider additional changes based on our recommendations. Officials also provided technical comments that were incorporated throughout this report, as appropriate.

Background

Over the years, FAA has taken a number of steps to better manage its ATC modernization program. In 1995, based on the premise that FAA would be better able to manage ATC modernization if it were not constrained by federal acquisition laws, FAA requested and Congress enacted legislation that exempted the agency from most federal procurement laws and regulations and directed FAA to develop and implement a new acquisition management system that would address the unique needs of the agency.[6] In 1996, FAA implemented its Acquisition Management System, which provides high-level acquisition policy and guidance for selecting and controlling ATC system acquisitions through all phases of the acquisition life cycle. In February 2004, FAA created the performance-based ATO to control and improve FAA's investments and operations. ATO incorporated FAA's former Research and Acquisitions and Air Traffic Services organizations—essentially those that develop and acquire systems and those that operate them—into a single organization.

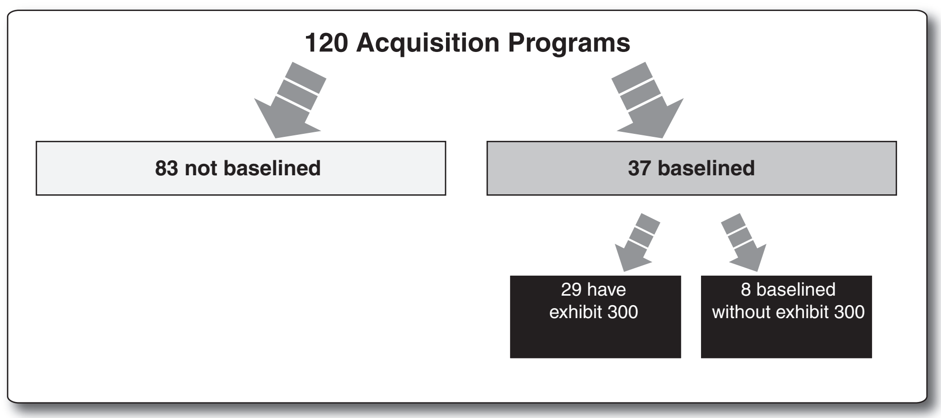
ATO catalogues its acquisition programs in its Capital Investment Plan (CIP). The fiscal year 2006 CIP contained 120 funded acquisition programs and their anticipated total budgets. The 120 acquisition programs include 37 that have had acquisition program baselines approved by FAA's Joint Resources Council (JRC).[7] These baselined programs include communications, navigation, and surveillance systems that are key to air traffic control operations. Acquisition program baselines show, among other things, executive agreement on an acquisition's estimated budget

[6] 49 U.S.C. §40110.

[7] A baseline is a formal, management-approved document that details, among other things, an acquisition's estimated budget and schedule. The JRC is an executive body consisting of associate and assistant administrators, acquisition executives, the chief financial officer, the chief information officer, and legal counsel. The JRC makes corporate-level decisions, including those that determine whether an acquisition meets a mission need and should proceed.

and schedule. The JRC also approves rebaselining, through which the agency documents and approves changes to a program's budget and schedule. Of the 37 baselined programs, 29 also have an exhibit 300, a document prepared for the Office of Management and Budget (OMB) that provides investment justification and management plans for major ATC acquisitions. OMB requires agencies to submit exhibit 300s for major investments, such as those that require special management attention due to the investment's importance to the agency, have significant program or policy implications, or that the agency defines as major. Figure 1 provides a breakout of the programs in the fiscal year 2006 CIP.

Figure 1: Breakout of ATO's Funded CIP Programs for Fiscal Year 2006



Source: GAO analysis of FAA (data).

The 83 programs that are not baselined include facilities and infrastructure programs; a variety of mission support programs such as training, information technology services, contractual services, and ancillary systems; and systems that are commercially available and ready for ATO to use without modification.

FAA's annual goals and measures for performance reporting, including the two for performance in managing acquisitions, are described in the agency's annual strategic plan, known as the FAA Flight Plan.[8] The Flight Plan, which FAA began publishing in 2004, sets forth goals, objectives, strategies, initiatives, and specific performance targets for the agency. The

[8]FAA, *2007-2011 FAA Flight Plan: Charting the Path for the Next Generation* (Washington, D.C.).

Government Performance and Results Act of 1993 requires each agency to prepare and submit to the President and Congress annual reports on program performance for the previous fiscal year. As an administration within the Department of Transportation, FAA is not required to prepare a separate report, but has elected to do so following the statutory framework and guidance for federal agencies. Each year, FAA reports its level of success in meeting its two acquisition performance targets, as well as its other performance targets, in its Performance and Accountability Report. The full suite of FAA's performance measures for fiscal year 2006 is listed in appendix III.

In our past work, we identified nine key attributes of successful performance measures used to evaluate agencies' performance goals and measures.[9] We determined that eight of these were applicable to our study of ATO's on-budget and on-schedule acquisition goals and performance measures.[10] See appendix I for more information on our methods. The eight key attributes to which we compared ATO's acquisition performance measures are as follows:

1. *Linkage*. Measure is aligned with division- and agencywide goals and mission and clearly communicated throughout the organization.

2. *Measurable target*. Measure has a numerical goal.

3. *Limited overlap*. Measure provides new information beyond that provided by other measures.

4. *Governmentwide priorities*. Each measure covers a priority such as quality, timeliness, and cost of service.

5. *Objectivity*. Measure is reasonably free from significant bias or manipulation.

[9] GAO-03-143.

[10] The ninth key attribute is balance, which exists when a suite of measures ensures that an organization's various priorities are covered. ATO has other performance measures that it applies to its acquisitions, but which are not reported in its annual Performance and Accountability Report. In this report, we focus on the two acquisition performance measures that ATO includes in its reporting—the percentage of major acquisitions on budget and the percentage of major acquisitions on schedule. Because we are not examining ATO's full suite of performance measures for acquisitions, we did not consider the key attribute of balance.

6. *Reliability*. Measure produces the same result under similar conditions.

7. *Core program activities*. Measure covers the activities that an entity is expected to perform to support the intent of the program.

8. *Clarity*. Measure is clearly stated and the name and definition are consistent with the methodology used to calculate it.

ATO Established Annual Performance Measures to Be Consistent with Federal Guidance and Selects Major Programs for Measuring and Reporting

ATO developed its performance targets to be consistent with targets set in the Department of Transportation's strategic plan, OMB guidance,[11] and the Federal Acquisition Streamlining Act of 1994, which call for other federal agencies to establish cost and schedule goals for acquisitions and to achieve at least 90 percent of those goals.[12] In FAA's latest Flight Plan, covering fiscal years 2008 through 2012, the performance targets for acquisitions are stated as follows:

- In fiscal year 2008, 90 percent of major system acquisition investments are within 10 percent of annual budget and maintain through fiscal year 2012.
- In fiscal year 2008, 90 percent of major system acquisition investments are on schedule and maintain through fiscal year 2012.

FAA began using the basic structure of its current annual acquisition performance measures in 2003 when FAA sought to achieve 80 percent of designated milestones and maintain 80 percent of critical program costs within 10 percent of the total budget as published in the CIP. In 2005, ATO split the measure into separate targets for budget and schedule. ATO's acquisitions targets gradually increased to 90 percent within 10 percent of budget and 90 percent on schedule by fiscal year 2008.

Although ATO measures performance of all acquisitions, it reports performance only on major acquisitions in its annual Performance and Accountability Report. At the beginning of each fiscal year, ATO managers

[11] OMB Circular A-11, Part 7, Section 300.

[12] Under 49 U.S.C. § 40110(d)(2)(C), the Federal Acquisition Streamlining Act of 1994 (Public Law 103-355), except for section 315, does not apply to the acquisition management system developed by FAA. However, FAA is required to terminate or consider terminating ATC modernization acquisition programs that exceed established baselines by specific percentages. 49 U.S.C. § 40121.

identify major acquisitions for performance reporting. According to ATO officials, their selections are based on a number of program characteristics; key among these is an acquisition's criticality to the NAS. ATO officials told us that judging a program as critical could be based on a number of factors, such as the program having an OMB exhibit 300 or a baseline document. In addition, officials stated that the selected acquisitions were meant to represent a cross section of ATC system acquisitions within ATO. From fiscal years 2003 through 2006, the number of acquisition programs selected for annual performance reporting varied between 29 and 42, or roughly a quarter of ATO's total acquisitions portfolio each year.

ATO measures budget and schedule performance against selected acquisitions' most recently approved estimates. To measure on-budget performance, ATO compares the total amount budgeted for each selected acquisition (i.e., the estimated budget to complete an acquisition) reported in the January CIP with the corresponding amount reported in the August CIP.[13] ATO considers any program with budget growth of more than 10 percent in this 8-month time frame as not on budget. At the end of the fiscal year, ATO divides the number of selected acquisitions that are considered on-budget by the total number of selected acquisitions and then reports the result as the percentage of major acquisitions within 10 percent of annual budget. To measure schedule performance, at the start of each fiscal year ATO managers select a minimum of two schedule milestones from each major acquisition selected for performance reporting that year. Milestones could be dates to complete activities such as a final installation or establishing a procurement plan. At the end of the fiscal year, ATO divides the number of selected milestones that were met by the total number of selected milestones. ATO reports the result as the percentage of major programs that are on schedule.

[13]ATO uses the January and August CIPs to coincide with the timing of key events in the federal budget cycle. The January CIP will normally reflect the current year's appropriation, while the August CIP contains budget targets for future years provided by OMB.

ATO's Acquisition Performance Measures' Lack of Certain Successful Attributes and 1-Year Focus Impairs Validity of Performance Reporting

ATO's acquisition performance measures meet four of eight key attributes for successful performance measures that we have identified, but the lack of objective criteria for selecting programs for performance measurement reduces objectivity, reliability, and assurance that core programs are included; the clarity of the performance measures could also be improved. Taken together, the lack of successful attributes, combined with the 1-year focus of the performance measures, may not provide a valid measure of ATO's acquisition performance.

ATO's Acquisition Performance Measures Meet Four of Eight Key Attributes of Successful Performance Measures

We determined that eight key attributes of successful performance measures were applicable to our study of ATO's two acquisition performance measures. Our analysis determined that ATO met half of these key attributes, as detailed in table 1.

Table 1: Comparison of Key Attributes of Successful Performance Measures with ATO's Acquisition Performance Measures

Key attributes of successful performance measures	ATO's measure has attribute	Attributes of ATO's acquisition performance measures
Linkage. Measure is aligned with division- and agencywide goals and mission and clearly communicated throughout the organization.	√	ATO's acquisition performance measures are aligned with the annual goals set forth in the agency's strategic plan, known as the Flight Plan, which is available on FAA's Web site.
Measurable target. Measure has a numerical goal.	√	ATO's acquisition performance measures have numerical budget and schedule targets.
Limited overlap. Measure provides new information beyond that provided by other measures.	√	ATO's acquisition performance measures encompass 2 of 30 metrics listed in the Performance and Accountability Report. These two measures are specifically for the purpose of measuring annual performance in managing major ATC acquisitions.
Governmentwide priorities. Each measure covers a priority such as quality, timeliness, and cost of service.	√	ATO's acquisition performance measures are consistent with governmentwide priorities that set numerical cost and schedule performance standards for acquisitions, specifically 49 U.S.C. § 40121(a) and (b), and the Federal Acquisition Streamlining Act of 1994 (Public Law 103-355).
Objectivity. Measure is reasonably free from significant bias or manipulation.		ATO measures acquisition performance for "major" programs but has no objective definition for major programs.
Reliability. Measure produces the same result under similar conditions.		ATO uses the same methodology to measure the performance of its selected acquisition programs each year, but the lack of objective criteria for selecting programs for performance reporting reduces the likelihood of producing the same results under similar conditions.

Key attributes of successful performance measures	ATO's measure has attribute	Attributes of ATO's acquisition performance measures
Core program activities. Measure covers the activities that an entity is expected to perform to support the intent of the program.		ATO managers select for performance reporting the acquisition programs they consider most critical to the NAS, but the lack of objective criteria for selecting programs for performance reporting reduces the chances that core program activities are included each year.
Clarity. Measure is clearly stated and the name and definition are consistent with the methodology used to calculate it.		ATO does not clearly state that its basis of measurement for baselined programs is the most current estimate of budget and schedule, which may have changed significantly since the start of an acquisition. ATO also does not make clear that on-schedule performance means only that a program has met selected annual milestones.

Source: GAO.

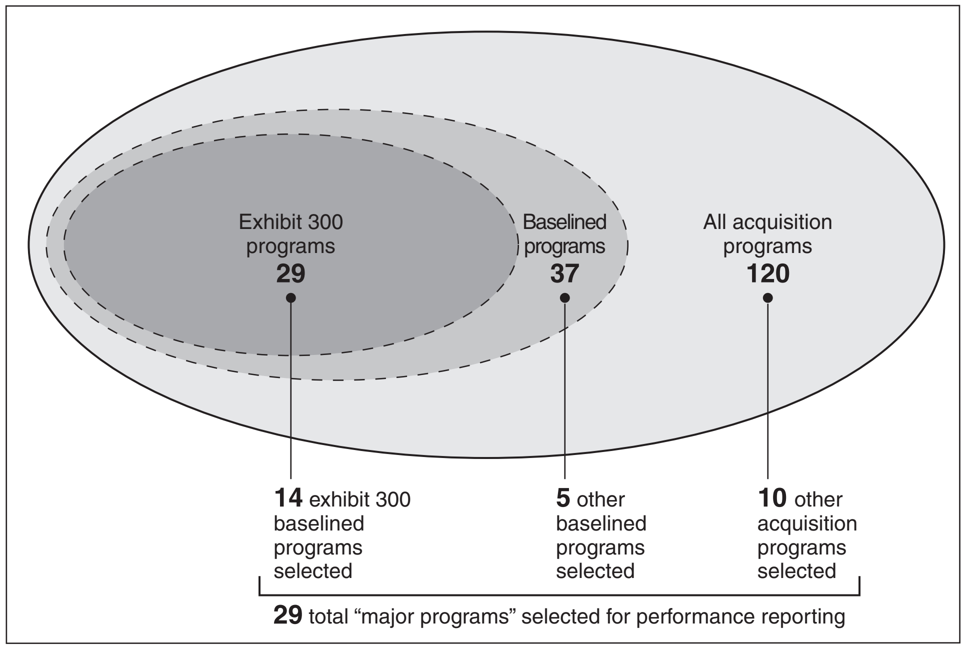
ATO's Performance Measures Lack Objectivity, Reliability, and Assurance That Core Programs Are Included

Although ATO provides some general guidance for selecting acquisitions for performance reporting, executive judgment was the primary basis for ATO's selections. ATO described the scope of its performance measure for managing acquisitions in its Portfolio of Goals for fiscal year 2006 as follows: "FAA's Air Traffic Organization (ATO) Service Units select specific programs that are determined to provide a capital asset to the NAS. For FY06, 31 acquisition programs will be tracked and monitored.[14] Most of the programs selected are considered 'major' and must submit an exhibit 300. Those that do not provide exhibit 300s are included because they contribute an asset to the NAS with a useful life of more than two years. The designation of 'critical acquisition programs' in the title of this performance target expresses the critical value of the program to the NAS."

As this description illustrates, ATO's guidance in designating programs as major allows for a significant amount of professional judgment and does not clearly define which programs should be included or excluded for performance reporting. Figure 2 illustrates the types of acquisitions that ATO selected for performance reporting in fiscal year 2006.

[14]In fiscal year 2006, ATO reported on the performance of only 29 programs.

Figure 2: Types of Acquisition Programs Selected for Performance Reporting, Fiscal Year 2006



Source: GAO analysis of ATO data.

ATO’s guidance lacks objectivity in that it does not indicate specifically what is to be observed and in which population or conditions. Contrary to ATO’s statement in the Portfolio of Goals that most of the programs selected are considered major and must have an OMB exhibit 300 prepared, only 14 of the 29 programs selected that year actually had an OMB exhibit 300. Additionally, about half of the programs with an OMB exhibit 300 were not selected for performance reporting. For example, the System Approach for Safety Oversight program and the Aviation Safety Knowledge Management Environment program each have an OMB exhibit 300, but, according to ATO officials, these programs are considered “non-NAS” and are therefore not selected for performance reporting. Likewise, the Facilities Security Risk Management program has an approved baseline but is not selected. ATO officials told us that facilities and mission support programs such as this are generally not selected for acquisition performance reporting; however, ATO has no written guidance on this policy, and has included mission support programs in its performance reporting in the past.

Between 2003 and 2006, the number of major acquisitions selected for performance reporting varied from 29 to 42, and represented about a quarter of all acquisitions each year. ATO officials told us that the variation in the number of programs selected from year to year occurred because of decisions to report performance on specific acquisitions, or changes in acquisitions' status from year to year, such as the introduction of new acquisitions, the completion or cancellation of acquisitions, or lapses in funding for a fiscal year. Although ATO reports performance on about 25 percent of the acquisitions portfolio, ATO officials pointed out that the selected acquisitions have represented between 76 and 84 percent of the value of that portfolio. Nevertheless, because ATO has no objective criteria for designating major programs, its performance measure is vulnerable to bias and the possibility that important or troubled programs could be excluded from performance reporting.

Objective performance measures should not allow subjective considerations or judgments to dominate the outcome of the measurement. Objectivity is important in selecting acquisitions for performance reporting. OMB guidance allows an agency to define major investment in its capital planning and investment control process.[15] For example, the Department of Defense defines a major acquisition program as one requiring an estimated total expenditure for research, development, testing, and evaluation of more than $365 million, or an estimated total procurement expenditure of more than $2.2 billion in fiscal year 2000.[16] However, the department also allows for professional judgment as the Secretary of Defense can designate as major any programs below the dollar thresholds, but determined to be important.

In addition to selecting major programs for performance reporting, ATO managers select two or more schedule milestones from each selected program, and use these to measure schedule performance. ATO's guidance allows managers wide latitude to select milestones for performance measurement and provides no guidance regarding the significance of the milestones that managers should select. Because this provides managers the opportunity to exclude milestones that they do not expect to meet during the coming fiscal year, it further weakens the objectivity of the

[15]OMB, *Circular No. A-11, Part 7: Planning, Budgeting, Acquisition, and Management of Capital Assets* (Washington, D.C.: July 2003).

[16]This amount is reported in constant dollars. Using constant dollars removes the effects of inflation and shows all dollars at the value they would have in a selected base year.

measure. Four of our five experts commented that ATO's lack of criteria for selecting milestones or the ability to pick and choose milestones for performance measurement was a shortcoming of ATO's performance measurement.

The lack of objective criteria for designating major programs also impairs the key attribute of reliability and the assurance that the measures include core program activities. Performance measures possess the key attribute of reliability when they produce the same results each time they are applied under the same conditions. We have reported that judgmental evaluations can impair reliability and introduce inconsistencies, which can affect the outcome of performance measurement. With executive judgment serving as the primary determinant of which programs and milestones are selected and measured, different managers could select different programs each year, resulting in different performance results. Likewise, the lack of objective criteria does not ensure that ATO managers include all core program activities in performance measurement each year. We found that ATO eliminated some acquisitions from performance reporting for 1 or more years and then resumed reporting these acquisitions in a subsequent year, although ATO provided reasonable explanations for these occurrences. Nevertheless, reliability and the inclusion of core program activities would be better assured if executive judgment was grounded in written and objective criteria. Four of the five experts who advised us during our review agreed that ATO needs to improve its criteria for determining which programs are major and consequently are included in performance reporting.

ATO's Performance Measures Do Not Clearly Indicate the Use of Rebaselined Budget Estimates or Annual Schedule Milestones

ATO's acquisition performance measures also lack a fourth key attribute of successful performance measures: clarity. A performance measure that is not clearly stated (i.e., contains extraneous or omits key data elements) or that has a name or definition that is inconsistent with the way it is calculated can confuse users and could cause managers or other stakeholders to think that performance was better or worse than it actually was.

ATO's On-Budget Performance Measure Does Not Clearly Indicate the Use of Revised Budget Estimates

ATO's on-budget acquisition performance measure lacks clarity in reporting because ATO does not indicate that the acquisition performance of baselined programs is measured using the most recently approved budget estimates, as reflected in the January CIP.[17] While ATO does present Congress with valuable information about a program's most recent budget performance by comparing the August budget estimate against the January budget estimate, this provides only one perspective on performance because rebaselining resets the measurement of budget or schedule variances to zero. Of the 31 baselined programs that ATO selected for acquisition performance reporting in 1 or more years from fiscal year 2003 through fiscal year 2006, the agency has rebaselined 18, and has rebaselined some of these more than once. (See app. II.) For example, the Standard Terminal Automation Replacement System (STARS) was originally budgeted at $940.2 million, but has been rebaselined twice and is now budgeted at almost $2.8 billion. However, because ATO measures budget performance for an 8-month timeframe against the most recently approved budget estimate, STARS was considered on budget for fiscal years 2003 through 2006. Other acquisitions had exceeded original budgets by between $9 million and $159 million by March 2007, the date of the most recently rebaselined acquisition. This information is not disclosed in ATO's performance reporting.[18] (See app. II.)

ATO officials emphasized that they measure and report on annual performance and stated they do not measure performance against original baselines because the agency has already determined that the original baselines cannot be met. One of the experts who advised us pointed out that it serves no purpose to continually call a program over budget and behind schedule if it has been successfully managed for a significant period of time. We agree that when original baselines cannot be met, rebaselining can be appropriate. We also agree that measuring annual progress against the current program baseline has some value, but using annual measurement as the sole basis for acquisitions that have been rebaselined does not provide a complete picture of performance over time. Four of our five experts commented that disclosure of rebaselining was

[17] According to ATO officials, the January CIP reflects each program's most current estimated budget at completion, as stated in the program's most recent baseline document.

[18] In addition, the Wide Area Augmentation System (WAAS) exceeded its original budget estimate by $2.3 billion primarily because the original estimate included only acquisition costs, and not total life cycle costs.

important in some form, and suggestions ranged from disclosing rebaselining in a footnote to clearly reporting all rebaselining. The absence of this information on rebaselining in ATO's performance reporting could cause managers and other stakeholders, including Congress, to think that performance was better than it actually was.

ATO's On-Schedule Performance Measure Does Not Clearly Indicate That It Reflects Only the Achievement of Selected Milestones within a Given Fiscal Year

ATO reports meeting its schedule performance goal when at least a specified percentage "of major system acquisition investments are on schedule…." This same wording is how the goal is reported in FAA's 2006 Performance and Accountability Report, where the agency noted on-schedule performance of 97.44 percent. However, ATO is actually basing its schedule performance measurement on two or more schedule milestones within a selected program. Thus, the wording of the target and the performance reporting gives the misleading impression that the entire acquisition is on schedule when the reported performance is based only on selected milestones. For example, ATO reported that the $286 million Integrated Terminal Weather System (ITWS) acquisition was on schedule in fiscal year 2006 because it hit its selected milestones for that year. However, the ITWS acquisition (which began in 1997) has encountered funding reductions, requirements growth and unplanned work, and greater-than-expected software complexity. ITWS is now scheduled for completion in October 2009. ATO's annual reporting based on milestones simply notes ITWS as on-schedule and does not make clear that the program was originally scheduled for completion 6 years earlier, in July 2003.

Because ATO's performance measures lack several attributes of successful performance measures, and are focused on 1-year snapshots of performance, they may not provide a valid assessment of acquisition performance over time. A valid measure provides an accurate representation of what is being measured. Many of ATO's acquisitions span several years and, as the next section shows, measuring performance against original baselines provides a different perspective on acquisition performance than that reported by ATO over the past 4 years.

ATO's Performance Measurement Could Mask Budget Increases and Delays in the Transition to NextGen

When measured against original baselines, ATO shows improvement in its managing of acquisitions, but its performance is lower than indicated in FAA's annual Performance and Accountability Report. The lack of original baseline information in ATO's performance reporting could provide Congress and the American people with the impression that the transition to NextGen is progressing more smoothly than might actually be the case.

Against Original Baselines, ATO's Acquisition Performance Has Improved, but Was Lower Than Reported

Comparing the current status of ATO's major ATC system acquisitions (i.e., those that ATO selected each year for performance reporting) with the budgets and schedules in these acquisitions' original baselines yields lower performance results than those reported to Congress and the American people. According to ATO's performance reports, the organization showed nearly steady improvement in fiscal years 2003 through 2006 and substantially exceeded its targets for those years, twice hitting 100 percent. (See table 2.) However, when performance is measured against original baselines instead of annual budgets or milestones, acquisition performance was lower than reported, but still showed a general trend of improvement for fiscal years 2003 through 2006. In fact, even when measured against original baselines, ATO would have met its goals for budget in fiscal years 2004 through 2006. However, ATO did not perform as well in meeting schedules when measured against original baselines. ATO would have met its schedule goal only in 2005.

Table 2: Annual Performance Targets, Performance of ATO's Selected Major Acquisitions Measured against Annual Targets and Original Baselines, Fiscal Years 2003-2012

		Major acquisitions on budget		Major acquisitions on schedule	
Fiscal year	Performance targets	Reported performance measured using annual budgets	Performance measured using original budget baselines	Reported performance measured using annual milestones	Performance measured using original schedule baselines
2003	80%	88%	76%	77%	70%
2004	80%	100%	83%	91.5%	79%
2005	80%	97%	91%	92%	83%
2006	85%	100%	90%	97.44%	76%
2007	87.5%	TBD	TBD	TBD	TBD
2008-2012	90%	TBD	TBD	TBD	TBD

Source: GAO analysis of ATO data.

ATO officials told us they use a number of methods to measure the performance of all of the acquisitions contained in the CIP. They have implemented earned value management on all new major acquisitions as a way to prevent, detect, report, and correct problems in acquiring major systems and to ensure that major programs are within budget and schedule targets.[19] ATO officials also noted that they have monthly meetings on the status of acquisitions and that management is constantly apprised of program performance. In addition, officials stated that significant changes in acquisition status, such as rebaselining, must go through high-level agency and OMB review, and FAA reports to Congress any program that exceeds its baseline costs by more than 50 percent.[20] While ATO has reported acquisitions' variances against original baselines to Congress on an ad hoc basis in response to questions for the record, the only systematic reporting of ATO's acquisitions performance to the Congress and the American people is FAA's annual Performance and Accountability Report.

ATO's establishment of annual goals and subsequent annual reporting of performance are appropriate actions aimed at improving ATO's performance in managing ATC system acquisitions. Annual goals are used throughout government to keep programs on track. We have noted that such goals illustrate a commitment to achieving immediate, concrete, and measurable results in the near term. However, it also is important to provide decision makers and stakeholders with an overall understanding of program performance in a more holistic sense. We first noted the shortcomings of annual performance goals for acquisitions in 2005, after ATO reported that it met its acquisition performance goals for the first time. We cautioned that, while meeting a 1-year goal was a positive step, annual performance targets should continue to be viewed in the broader context of acquisitions' original and revised baselines.[21] The 18 rebaselined

[19]Earned value management compares the actual work performed at certain stages of a job to its actual costs—rather than comparing budgeted and actual costs, the traditional management approach to assessing progress. By measuring the value of the work that has been completed at certain stages in a job, earned value management can alert program managers, contractors, and administrators to potential cost growth and schedule delays before they occur and to problems that need correcting before they worsen. We have begun work examining FAA's implementation of earned value management.

[20]49 U.S.C. §40121 states that an agency must report to Congress when any program exceeds costs by more than 50 percent and is not terminated.

[21]GAO, *National Airspace System: Transformation Will Require Cultural Change, Balanced Funding Priorities, and Use of All Available Management Tools*, GAO-06-154 (Washington, D.C.: Oct. 14, 2005).

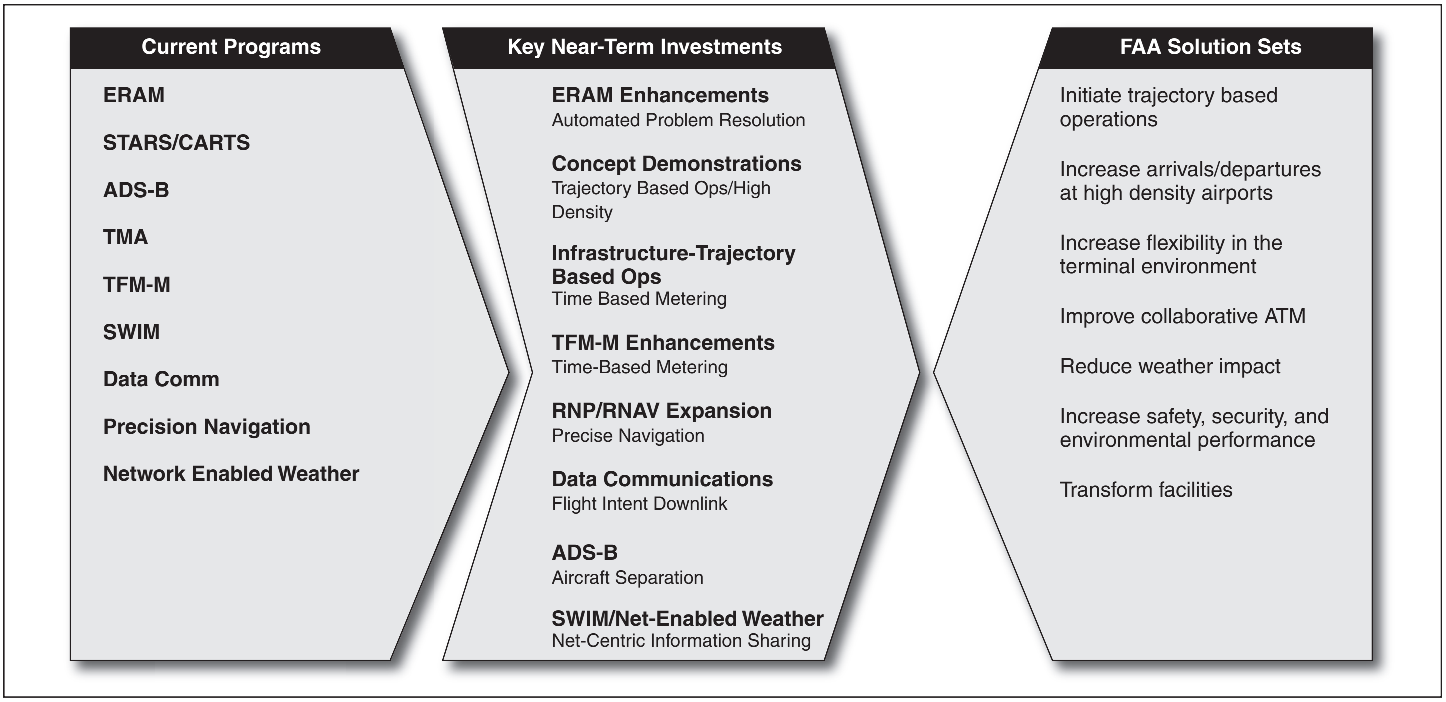
acquisitions on which ATO reported performance from fiscal year 2003 through 2006 have collectively exceeded their original budget estimates by approximately $4.4 billion, or 66 percent; however, over 95 percent of this increase occurred in the Standard Terminal Automation Replacement System and in WAAS. The 18 rebaselined acquisitions have experienced schedule slippages between 1 and 10 years.

ATO's Performance Measurement Could Overstate the Success of the Transition to NextGen

Because some of FAA's current acquisitions form the basic building blocks for NextGen, delays and budget increases in these acquisitions could have significant implications for the transition to NextGen. Figure 3 illustrates the planned transition from current systems to future systems and the anticipated benefits. For example, STARS, discussed previously, is listed as a current program leading to the transition to NextGen in figure 3. Our research disclosed that the near tripling of the acquisition's budget resulted from insufficient involvement of stakeholders and requirements growth—two systemic factors that we found led to acquisitions missing their budget and schedule targets.[22] However, the budget increases that STARS experienced are not discussed in Performance and Accountability Reports or in any other regular reporting to Congress.

[22] GAO-05-331.

Figure 3: The Transition to NextGen



Source: Joint Planning and Development Office.

Note: Abbreviations used above are spelled out as follows:

ERAM: En Route Automation Modernization

STARS: Standard Terminal Automation Replacement System

CARTS: Common Automated Radar Terminal System

ADS-B: Automatic Dependent Surveillance – Broadcast

TMA: Traffic Management Advisor

SWIM: System Wide Information Management

Data Comm: data communications

Ops: operations

TFM-M: Traffic Flow Management – Modernization

RNP: Required Navigation Performance

RNAV: Area Navigation

ATM: air traffic management

Another example is the Airport Surveillance Radar - Model 11 (ASR-11), which is an integrated digital system intended to replace aging analog radars. NextGen's plans call for the ASR-11 to provide aircraft and weather surveillance in terminal areas of small and medium-sized airports, which also may serve as a part of the back-up surveillance system in case the primary satellite-based ATC system fails. However, the ASR-11 has encountered a 59-percent increase in budget per deployed system and its completion date has been delayed from 2005 to 2009, in part due to requirements growth. As with STARS, the budget increases and schedule delays experienced in the ASR-11 acquisition are not discussed in ATO's Performance and Accountability Reports or in any routine report to Congress.

The absence of original budget and schedule estimates in ATO's performance reporting could give the impression to Congress and the American people that ATO's acquisitions and the transition to NextGen are progressing more smoothly than is actually the case. Including original budget and schedule baselines in ATO's performance reporting could improve the reports' usefulness by helping Congress and other stakeholders identify trends and take corrective action to ensure that the capacity, efficiency, and safety benefits of NextGen are achieved in a cost-effective and timely manner.

Conclusions

Although ATO's acquisition performance measures meet some of the key attributes of successful performance measures, the attributes that the measures lack are significant and, considered together, raise serious questions about the measures' validity. While a 1-year focus may be appropriate for some performance measures, it may not provide a valid assessment of performance over time for major ATC acquisitions that span a number of years. Moreover, ATO's use of subjective criteria to pick a subset of acquisitions and milestones for performance measurement and its lack of disclosure regarding rebaselining may not provide Congress, aviation stakeholders, and the public with a complete picture of ATO's ability to deliver major ATC acquisitions on budget and on time. Such reporting could also make budget increases and schedule delays more difficult to identify. These issues are critical as ATO begins acquiring new systems with a goal of completing the transition to NextGen by 2025. Recognizing impending budget increases and schedule delays and taking corrective action will be necessary to keep the overall NextGen effort on track. The more quickly ATO can transition to NextGen, the more quickly the nation will realize the increased efficiencies and safety benefits of new systems and technologies, and avoid the costs and inefficiencies of maintaining existing systems. By presenting the most accurate and complete assessment possible when reporting its performance in acquiring ATC systems, FAA will better facilitate congressional understanding and oversight of FAA's progress in implementing NextGen.

Recommendations for Executive Action

Because of the importance of ensuring that key administration and congressional decision makers and stakeholders have complete information on the budget and schedule performance of FAA's critical ATC acquisition programs—both for the most recent fiscal year and since their inception—we are recommending that the Secretary of Transportation direct the FAA Administrator to take the following four actions:

1. Improve the objectivity, reliability, and inclusion of core programs in ATO's acquisition performance measures by establishing written, objective criteria and guidance for managers to use in determining which programs are major—and thus selected for performance reporting—and in selecting schedule milestones.

2. Improve the clarity of ATO's annual acquisition performance measurement process by disclosing in its Performance and Accountability Reports that the measurement for on-budget performance covers 8 months and is measured against the most recently approved budget baselines. Similarly, improve the wording of the target and reporting for on-schedule acquisitions to disclose that this measures 1 year of performance against selected program milestones.

3. Identify or establish a vehicle for regularly reporting to Congress and the public on ATO's overall, long-term performance in acquiring ATC systems by providing original budget and schedule baselines for each rebaselined program and the reasons for the rebaselining. If this information is not added to FAA's annual Performance and Accountability Report, then the Performance and Accountability Report should reference where this information can be found.

4. Improve the usefulness of ATO's acquisition performance reporting by including information (in the Performance and Accountability Report or elsewhere) on the potential effects that any budget or schedule slippages could have on the overall transition to NextGen. This also could include information concerning any mitigation plans ATO has developed to lessen the effects of program slippages on the implementation of NextGen systems.

Agency Comments

We provided a draft of this report to the Department of Transportation for comment. Senior officials from ATO's Office of Finance provided oral comments. ATO officials generally concurred with our recommendations and noted that they already are considering some changes to their performance measurement and reporting process for system acquisitions. In view of the standards discussed in the report, ATO officials agreed to review current selection criteria of programs included for annual reporting to address concerns over objectivity. ATO agreed to clarify wording in the Flight Plan and future Performance and Accountability Reports to ensure that readers understand that the report reflects agency performance for the prior fiscal year only. In our draft report, we recommended that ATO endeavor to report on the overall, long-term status of its acquisitions in its annual Performance and Accountability Report. ATO officials felt strongly that the Performance and Accountability Report is meant to reflect performance for a single fiscal year and would not be the proper vehicle for reporting on long-term performance. In response, we modified our recommendation to be less prescriptive about where this information appears, as long as it is publicly reported. ATO officials said they would consider other reporting methods to provide Congress with longer-term status information about the organization's performance in acquiring ATC systems. ATO officials also provided technical comments that were incorporated throughout this report, as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Transportation, and the FAA Administrator. We will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staffs have any questions about this report, please contact me at (202) 512-2834 or dillinghamg@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.

Gerald L. Dillingham

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Director, Physical Infrastructure Issues

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Appendix I: Objectives, Scope, and Methodology

We examined (1) how the Air Traffic Organization (ATO) establishes goals and performance measures for acquiring air traffic control (ATC) systems and how they are reported; (2) how ATO's acquisition performance measures compare with key attributes of successful performance measures; and (3) the implications of using ATO's existing performance measures to assess progress in the transition to the Next Generation Air Transportation System (NextGen).

To determine how ATO established acquisition goals and performance measures for acquiring ATC systems, we reviewed Federal Aviation Administration's (FAA) Flight Plans and Acquisition Management System policy and obtained historical budget and schedule data from ATO's finance office on the acquisitions for which ATO reported performance from fiscal years 2003 through 2006. To ensure that these data were consistent with documents obtained in previous GAO work, we noted potential discrepancies and obtained clarifying documents from ATO's finance office. We also discussed ATO's acquisition goals and performance measurement process with ATO officials. To determine how performance is reported, we reviewed agency performance and accountability reports and discussed ATO's criteria for selecting acquisitions for performance reporting with ATO officials.

To determine how ATO's acquisition performance measures compare with key attributes of successful performance measures, we used eight key attributes of successful performance measures that were previously identified by GAO[1] as criteria for comparison against ATO's acquisition performance measures. The eight key attributes are:

1. *Linkage*. Measure is aligned with division- and agencywide goals and mission and clearly communicated throughout the organization.

2. *Measurable target*. Measure has a numerical goal.

3. *Limited overlap*. Measure provides new information beyond that provided by other measures.

4. *Governmentwide priorities*. Each measure covers a priority such as quality, timeliness, and cost of service.

[1]GAO, *Tax Administration: IRS Needs To Further Refine its Tax Filing Season Performance Measures*, GAO-03-143 (Washington, D.C.: Nov. 22, 2002).

5. *Objectivity*. Measure is reasonably free from significant bias or manipulation.

6. *Reliability*. Measure produces the same result under similar conditions.

7. *Core program activities*. Measure covers the activities that an entity is expected to perform to support the intent of the program.

8. *Clarity*. Measure is clearly stated and the name and definition are consistent with the methodology used to calculate it.

There was a ninth key attribute identified by GAO that we determined was not applicable to our study of ATO's acquisition performance measures. This ninth attribute is balance, which exists when a suite of measures ensures that an organization's various priorities are covered. Although ATO has other performance measures that it applies to its acquisitions, in this report we focused only on the two that FAA uses to report its performance—the percentages of acquisitions on budget and acquisitions on schedule. Because we did not examine ATO's full suite of performance measures for acquisitions, we did not consider the key attribute of balance.

We compared attributes of ATO's acquisition performance measures against each of the eight key attributes to determine whether and how ATO's process met each attribute. We reviewed past GAO reports on FAA's management of the ATC modernization program,[2] FAA's management of major acquisition programs,[3] and the Department of Defense's acquisition management and reporting.[4] We identified acquisition programs whose targets and milestones were revised or rebaselined to determine validity and consistency in program performance reporting. We also interviewed ATO officials. Additionally, we obtained the perspectives of five aviation experts on the reasonableness of ATO's

[2]GAO, *National Airspace System: Transformation Will Require Cultural Change, Balanced Funding Priorities, and Use of All Available Management Tools*, GAO-06-154 (Washington, D.C.: Oct. 14, 2005).

[3]GAO, *National Airspace System: FAA Has Made Progress but Continues to Face Challenges in Acquiring Major Air Traffic Control Systems*, GAO-05-331 (Washington, D.C.: June 10, 2005).

[4]GAO, *Defense Acquisitions: Information for Congress on Performance of Major Programs Can Be More Complete, Timely, and Accessible*, GAO-05-182 (Washington, D.C.: Mar. 28, 2005).

acquisition performance measures. To ensure that we collectively received a balanced and unbiased perspective, we selected experts with varying government and industry experience. We asked each expert to address the same set of questions relating to the reasonableness of ATO's acquisition performance measurement process.

To determine the implications of using ATO's existing performance measures to assess progress in the transition to NextGen, we analyzed the trends for budget and schedule outcomes between the original baselines and current budget and schedule baselines for the acquisitions that ATO selected for performance reporting and monitoring between fiscal years 2003 and 2006. We also drew upon past work in which we undertook detailed reviews of the status of ATC acquisition programs, and obtained updated information as necessary from FAA by reviewing documents and interviewing agency officials. Through discussions with ATO officials, we determined that these data were sufficiently reliable for the purposes of our report. We did not conduct an individual or in-depth review of the effectiveness of the specific programs selected for performance reporting. We also did not identify a comprehensive list of programs that were excluded from acquisition performance reporting. This was beyond the scope and intent of this study.

We conducted our work from January 2007 through December 2007 in accordance with generally accepted government auditing standards.

Appendix II: Baseline History for Programs Selected for Acquisition Performance Measurement

Table 3: Budget and Schedule Baseline History for Baselined Programs Selected for Acquisition Performance Measurement for 1 or More Years, Fiscal Years 2003 through 2006

Program[a]	Original start date	Original completion date	Original budget[b]	New APB[c] date	Revised completion date	Revised budget	New APB date	Revised completion date	Revised budget
STARS	Feb-96	Oct-05	$940.2	Oct-99	Sept-08	$1,402.6	May-04	Dec-07	$2,769.5
NEXCOM	Sept-98	Sept-08	$407.6	May-00	Sept-10	$318.4	Dec-05	Sept-13	$324.7
OASIS	Dec-96	Aug-01	$174.7	Mar-00	May-05	$249.5	Feb-05	July-04	$169.0
ITWS	June-97	July-03	$276.1	Aug-01	Oct-03	$282.3	June-04	Apr-09	$286.1
WAAS	Jan-98	Aug-99	$1,000.6	Dec-99	Dec-06	$2,978.0	May-04	Dec-08	$3,339.7
FTI	July-99	Dec-08	$205.7	Dec-04	Dec-07	$310.2	Aug-06	Dec-08	$318.8
ASWON	Oct-99	Apr-02	$350.9	Aug-01	Sept-09	$403.8	June-06	Sept-12	$384.3
NIMS II	May-00	Sept-05	$172.9	Mar-06	Sept-06	$90.2	Mar-07	Nov-07	$90.2
WARP	Dec-96	Feb-00	$126.4	Oct-99	Feb-01	$143.6			
RCE	Oct-98	Dec-01	$260.4	N/A	Sept-03	$260.4			
ATCBI	Aug-97	Sept-04	$282.9	Jan-02	Jan-06	$282.9			
ASR-11	Nov-97	Sept-05	$743.3	Sept-05	Sept-09	$696.5			
LAAS	Jan-98	Dec-06	$536.1	Dec-99	Oct-11	$696.0			
HOCSR	Mar-98	Sept-08	$424.1	May-03	June-04	$368.5			
AMASS	Oct-98	Aug-00	$74.1	Mar-00	Sept-02	$151.7			
LLWAS	Oct-98	Oct-01	$43.5	May-01	June-04	$52.6			
ASDE-X	Sept-01	Jan-07	$505.2[d]	Sept-05	May-11	$550.1			
UHF Replace	Nov-02	Sept-10	$85.1	Dec-05	Sept-13	$85.1			
CPDLC	Mar-99	Dec-05	$166.7						
BUEC	Mar-00	Apr-04	$54.1						
ATOP	May-01	Mar-06	$548.2						
PRM	Dec-01	Dec-05	$145.8						
ECG	Mar-02	Dec-05	$315.1						
URET	June-02	Sept-06	$285.3						
TMA	June-02	Sept-07	$135.5						
ERAM	June-03	Dec-10	$2,154.6						
En Route System Mod	Aug-03	May-09	$201.9						
TFM-I	Aug-05	Apr-10	$398.1						
VRRP Next Generation	Mar-06	May-13	$48.1						

Program[a]	Original start date	Original completion date	Original budget[b]	New APB[c] date	Revised completion date	Revised budget	New APB date	Revised completion date	Revised budget
WSP Tech Refresh	Mar-06	Feb-09	$6.1						
VSCS Tech Refresh Phase 2	Aug-06	June-12	$83.6						

Source: GAO based on ATO data.

[a]The full name of the acquisition programs listed above are as follows:

STARS: Standard Terminal Automation Replacement System

NEXCOM: Next Generation Air-to-Ground Communication System

OASIS: Operational and Supportability Implementation System

ITWS: Integrated Terminal Weather System

WAAS: Wide Area Augmentation System

FTI: FAA Telecommunications Infrastructure

ASWON: Aviation Surface Weather Observation Network

NIMS II: National Airspace System Infrastructure Management System-Phase 2

WARP: Weather and Radar Processor

RCE: Radio Control Equipment

ATCBI: Air Traffic Control Beacon Interrogator Replacement

ASR-11: Airport Surveillance Radar - Model 11

LAAS: Local Area Augmentation System

HOCSR: HOST/Oceanic Computer System Replacement

AMASS: Airport Movement Area Safety System

LLWAS: Low Level Wind-shear Alert System

ASDE-X: Airport Surface Detection Equipment – Model X

UHF Replace: Ultra High Frequency Replacement

CPDLC: Controller-Pilot Data Link Communications

BUEC: Back-Up Emergency Communications

ATOP: Advanced Technologies and Oceanic Procedures

PRM: Precision Runway Monitor

ECG: En Route Communication Gateway

URET: User Request Evaluation Tool

TMA: Traffic Management Advisor

ERAM: En Route Automation Modernization

En Route System Mod: En Route Control Center System Modernization

TFM-I: Traffic Flow Management-Infrastructure

VRRP Next Generation: Voice Recorder Replacement Program Next Generation

WSP Tech Refresh: Weather Systems Processor Tech Refresh

VSCS Tech Refresh Phase 2: Voice Switching and Control System Tech Refresh Phase 2

[b]All figures are expressed in millions of nominal dollars.

[c]APB: acquisition program baseline

[d]Includes $80.9 million for the ASDE-3X baseline approved in June 2002, which added ASDE-X capabilities to seven ASDE-3 sites. The ASDE-X and ASDE-3X acquisitions were combined in the September 2005 rebaselining.

Appendix III: Performance Measures from the FAA's Fiscal Year 2006 Performance and Accountability Report

1. Commercial air carrier fatal accident rate
2. General aviation fatal accidents
3. General aviation Alaska accidents
4. Runway incursions (rate)
5. Commercial space launch accidents
6. Operational errors (rate)
7. Safety risk management (number of changes)
8. Average daily airport capacity (35 Operational Evolution Plan[1] (OEP) airports)
9. Average daily airport capacity (eight metropolitan areas)
10. Annual service volume
11. Adjusted operational availability (35 OEP airports)
12. National airspace system on-time arrivals
13. Noise exposure
14. Aviation fuel efficiency
15. Aviation safety leadership
16. Bilateral safety agreements
17. External funding
18. Global positioning system-based technologies
19. Employee attitude survey (cumulative percent increase)
20. Cost control (number of activities per organization)
21. Critical acquisitions on budget
22. Critical acquisitions on schedule
23. Information security
24. Customer satisfaction (American Customer Satisfaction Index)
25. Cost-reimbursable contracts
26. Mission-critical positions
27. Reducing workplace injuries
28. Clean audit with no material weaknesses
29. Grievance processing time
30. Air traffic controller hiring plan (within 5 percent of plan)

[1]The OEP is now called the Operational Evolution Partnership.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

In addition to the contact named above, key contributors to this report were Faye Morrison (Assistant Director), David Best, Elizabeth Curda, Elizabeth Eisenstadt, David Hooper, Edmond Menoche, Sara Ann Moessbauer, Colleen Phillips, and Taylor Reeves.

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