



September 4, 2009

DAVID E. WILLIAMS
VICE PRESIDENT, ENGINEERING

SUBJECT: Audit Report – Flats Sequencing System: First Article Retest Results
(Report Number DA-AR-09-012)

This report presents the results of our audit of the retest of the Flats Sequencing System (FSS) First Article Test (FAT). The objective of this audit was to review the FAT 2A retest results and assess compliance with the overall statement of work (SOW) requirements and performance criteria outlined in Section AA of the SOW (Project Number 09YG032DA000). The purpose of the FAT 2A retest was to determine whether FSS performance justified advancing to the field installation and acceptance test phase of the program. We will issue a second audit report after completion of the FAT 2B test. See [Appendix A](#) for additional information about this audit.

Conclusion:

Although FSS machine performance improved since the original FAT test, the system failed to meet key SOW performance parameters. See [Appendix B](#) for our detailed analysis of this topic.

The U.S. Postal Service measured several key performance parameters, including throughput, availability, and mail damage. The Postal Service attributed FSS performance shortcomings to the lack of additional hardware and software solutions that were not incorporated into the FAT 2A system. Failure to meet SOW performance requirements would reduce forecasted savings and increase operational burdens.

Although the FSS did not meet some key performance parameters, management concluded that the system's progress from the first FAT test warranted continuing with the next phase of installations and acceptance tests for production systems. However, until a system outside of the Dulles Processing and Distribution Center (P&DC) demonstrates operational stability and achieves the minimum performance requirements under field acceptance test conditions, we believe deploying FSS machines to additional sites is premature.

We recommend the Vice President, Engineering:

1. Install and test only one additional Flats Sequencing System until the system demonstrates operational stability and successfully passes the field acceptance test.

Management's Comments

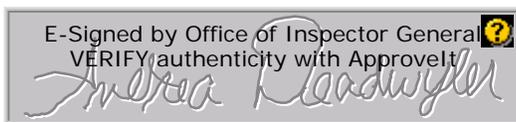
Management partially agreed with the finding and recommendation. They began to conduct an acceptance test on August 30, 2009, at the Old Columbus Postal Facility in Columbus, OH, to ensure future deployments do not adversely affect savings and operations. The contractor provided a recovery plan on August 24, 2009 to the Postal Service which is under review. Additional installations will be based on whether this plan is acceptable to the Postal Service. See [Appendix C](#) for management's comments in their entirety.

Evaluation of Management's Comments

The U.S. Postal Service Office of Inspector General (OIG) considers management's comments responsive to the recommendation and corrective actions should resolve the issue identified in the report.

The OIG considers the recommendation significant, and therefore requires OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective action is completed. This recommendation should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendation can be closed.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Miguel Castillo, Director, Engineering, or me at (703) 248-2100.



E-Signed by Office of Inspector General 
VERIFY authenticity with ApproveIt
Andrea Deadwyler

Andrea Deadwyler
Acting Deputy Assistant Inspector General
for Support Operations

cc: Don E. Crone
Aron M. Sanchez
Bill Harris

APPENDIX A: ADDITIONAL INFORMATION

BACKGROUND

In December 2006, the Postal Service approved a \$1.4 billion Phase I Decision Analysis Report (DAR) to develop, purchase, and deploy 100 FSS machines to 41 sites. The DAR stated that the FSS machines will process flats¹ from mailstreams produced by the Automated Flat Sorting Machine 100 and the Upgraded Flat Sorting Machine 1000. In addition, the FSS machines will process a significant portion of the flats that currently arrive at delivery units in mailer-prepared bundles and sacks. With a \$1.4 billion budget, the FSS program is currently the largest Postal Service mail automation investment and the agency expects it to generate operational savings of \$599.5 million annually.

The Postal Service contracted with Northrop Grumman Systems Corporation to provide 102 FSS systems to automate the delivery point sequencing of flat mail. The original FAT was conducted from November 23 to December 20, 2008. The FAT 2A test was conducted over a 12-day period beginning April 26 and ending May 9, 2009, at the Dulles P&DC.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this audit was to review FAT 2A retest results and assess compliance with the overall SOW requirements and performance criteria outlined in Section AA of the SOW. To accomplish our objective, we analyzed and reviewed FAT 2A performance data. We compared our analysis to the SOW performance requirements and discussed performance deficiencies with program management.

We conducted this performance audit from May through September 2009 in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and recommendation based on our audit objective. We discussed our observations and conclusions with management officials on July 21, 2009, and included their comments where appropriate.

¹ Flats are mailpieces that exceed one of the maximum dimensions of letter-size mail. Large envelopes, newspapers, catalogs, circulars, and magazines are examples of flats.

PRIOR AUDIT COVERAGE

Report Title	Report Number	Final Report Date	Report Results
<i>Flats Sequencing System: Program Status</i>	DA-AR-09-001	December 23, 2008	The audit determined that program management was attentive to system performance and schedule risks. However, declines in mail volume introduce a substantial new deployment risk to the program that requires management to develop a mitigation plan.
<i>Flats Sequencing System: Production First Article Testing Readiness and Quality</i>	DA-AR-08-006	June 4, 2008	The audit determined the Postal Service needed to focus more attention on workload, FAT schedule, and critical deliverables.
<i>Flat Sequencing System Risk Management</i>	DA-AR-07-003	July 31, 2007	The audit determined that Postal Service Engineering needed to focus more attention on risk management standards to ensure the significant risks associated with deployment of the FSS were adequately identified and managed.

APPENDIX B: DETAILED ANALYSIS

FAT 2A Results Do Not Meet SOW Requirements

As depicted in Table 1, the FAT 2A FSS improved on many SOW performance requirements from the original FAT test. However, the machine still failed to meet many of the SOW performance requirements.

Table 1 – FSS FAT 2A Results

Parameter	SOW Requirement	FAT 2A Results	FAT 1 Results
Actual Throughput Rate	16,500	12,603	10,601
Normalized Throughput Rate > 15,000	14,500	15,566	12,499
Accuracy Sort Rate	98.70%	98.40%	98.60%
Accept Rate	94.60%	94.04%	89.90%
Operational Availability Rate	95.0%	64.75%	-16.34%
Mail Damage Category 3 Rate	1/2500	2.58/2500	6.35/2500
Flyout Rates	10/10,000	36.92/10,000	66.43/10,000

The following parameters were measured during the FAT 2A retest:

- Actual Throughput Rate** – The cumulative throughput rate for all zones is determined by the total pieces fed on Pass 1 of all zones, divided by the time elapsing between first piece fed of the first zone to the time the first tray is ejected onto the full tray accumulation conveyor (FTAC) at the end of the last zone, minus non-chargeable and Postal Service times.²
- Normalized Throughput Rate** – The cumulative throughput rate for all zones is determined by using total pieces fed on Pass 1 of all zones that had greater than 15,000 mailpieces, divided by the time elapsing between first piece fed of the first zone to the time the first Rigid Captive Tray is ejected onto the FTAC at the end of the last zone, minus non-chargeable and Postal Service times.
- Accuracy Sort Rate** – The Accuracy Sort Rate is determined by the number of out-of-sequence errors, divided by the number of delivery point sequence pieces verified.
- Accept Rate** – The cumulative accept rate for all zones is determined by total pieces accepted including all machineable mail presented to the system on first pass of each zone, divided by pieces fed on first pass of each zone, minus re-fed pieces.

² Non-chargeable are incidence and associated clock time that are not charged to the supplier in order to calculate the normalization throughput rate.

- **Operational Availability Rate** – The operational availability rate is determined by using the total run time, minus total jam time, total corrective maintenance time (total time for corrective maintenance performed during preventive maintenance was not charged to operational availability), total non-chargeable time, and total Postal Service time, divided by total run time, plus total jam, and total corrective maintenance time.
- **Mail Damage Category 3 Rate** – The damage rate is determined by pieces fed on first pass of each zone, divided by the number of damaged category 3 pieces recorded. Mail damage category 3 consists of mailpieces that are so severely torn or mutilated they must be sent to the rewrap section or cannot be delivered in their current condition.
- **Flyout Rate** – The flyout rate is determined by the number of flyouts³ divided by the total flats processed on the first pass of each zone.

The Postal Service attributed FSS performance shortcomings to the lack of additional hardware and software solutions that were not incorporated into the FAT 2A system due to an aggressive testing schedule. Failure to achieve the SOW performance requirements will reduce forecasted savings and increase operational burdens.

Although the FSS did not meet some key performance parameters, Postal Service management concluded the system's progress from the first FAT test warranted continuing with the next phase of the FSS program which consists of installing and accepting 10 additional FSSs at four locations. While the FAT 2A production machine at the Dulles P&DC received hands-on support from Postal Service and supplier technicians, the 10 FSSs scheduled for field installation and acceptance will not have the same level of support. Until a system outside of the Dulles P&DC achieves the minimum performance requirements under field acceptance test conditions, we believe deploying multiple FSSs is premature. Hence, the OIG recommends the Postal Service install and test only one additional FSS until the identified system demonstrates operational stability and successfully passes the field acceptance test.

³ Flyouts are mailpieces that are ejected from mail processing equipment prior to being sorted.

APPENDIX C: MANAGEMENT'S COMMENTS

ENGINEERING



August 20, 2009

Lucine M. Willis
Director, Audit Operations
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SUBJECT: Draft Management Advisory – Flats Sequencing System: First Article Retest Results (Report Number DA-MA-09-DRAFT)

Thank you for the opportunity to review and comment on the subject draft audit report.

Overall, we share your interests in ensuring that this system operates in the most effective and efficient manner. In particular, as the FAT 2A test report notes, we agree that the Flats Sequencing System (FSS) did not meet the key contract performance requirements.

However, an FSS brings significant benefits to the Postal Service and our customers in both cost savings and service improvements by automating the delivery point sequencing of flat mail. When fully deployed, the expected annual FSS savings are \$600 million. As such, it is in the best interest of the Postal Service to take advantage of every available opportunity to sustain the deployment while ensuring that it does not adversely affect the forecasted savings and/or increase operational burdens.

Following is the response to the recommendation:

Recommendation 1

We recommend the Vice President, Engineering

1. Install and test only one additional FSS until the system demonstrates operational stability and successfully passes the field acceptance test.

Response:

The Postal Service partially agrees with this recommendation. Accordingly, the plan is to conduct an acceptance test on August 30 – September 11 at

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Columbus. However, we plan to take advantage of every available opportunity to sustain the deployment while ensuring that it does not adversely affect the forecasted savings and/or increase operational burdens. In that regard, prior to permitting additional installations, the supplier must provide a recovery plan that is acceptable to the Postal Service. The recovery plan is due August 24. If it is acceptable, the plan is to resume additional installations starting September 12.



David E. Williams
Acting Vice President

cc: Mr. Forte
Ms. Banks
Mr. Harris
Mr. Sanchez
Mr. Crone