

**Performance Audit Plan
Internal Service Performance
Measurement**

February 10, 2017

INTRODUCTION

The Postal Service is developing the Internal Service Performance Measurement (SPM) System to consolidate Commercial Mail and Single-Piece First-Class Mail (SPFC) measurement into a single, internal system. Internal SPM is supported by data feeds from multiple postal systems to store all of the data relevant to the measurement of Market Dominant Products.

The Postal Service has contracted a third party vendor to develop an audit approach for reviewing the Internal SPM system and processes. The Postal Service plans to procure a third party vendor to conduct the Internal SPM audit, to include these four major tasks:



Audit tasks will be performed in an iterative process, meaning audit activities within a task may be repeated as new information is made available and throughout the lifecycle of the audit. Likewise, following an audit report, it is likely that revisions may occur to the audit objectives, metrics, analysis, or reporting tasks based on the findings.

Each of the audit tasks are described in more detail below.

1. DEFINE SCOPE AND OBJECTIVES

The first step in conducting an audit is to confirm the scope and determine the objectives. A solid understanding of the audit's scope and objectives is needed to define and complete the subsequent steps of the audit.

The objectives of this audit are to evaluate the accuracy, reliability, and representativeness of the Internal SPM results. As background, the Government Accountability Office (GAO) published a report on September 30, 2015, entitled *Actions Needed to Make Delivery Performance Information More Complete, Useful and Transparent*¹. In response, the Postal Regulatory Commission issued Order No. 2491² on October 29, 2015, inviting public comment on the quality and completeness of SPM data measured by the USPS. This included a request for a description of potential deficiencies in accuracy, reliability, and representativeness of SPM data.

In PRC Order No. 3490³, published on August 26, 2016, one of the Commission's requirements is to provide information on current methodologies verifying the accuracy, reliability, and representativeness

¹ U.S. Government Accountability Office, *Actions Needed to Make Delivery Performance Information More Complete, Useful and Transparent*, 2015, <http://www.gao.gov/products/GAO-15-756>.

² Postal Regulatory Commission, *Notice Establishing Docket Concerning Service Performance Measurement Data*, 2015, <http://www.prc.gov/dockets/document/93660>.

³ Postal Regulatory Commission, *Order Enhancing Service Performance Reporting Requirements and Closing Docket*, 2016, <http://www.prc.gov/dockets/document/96994>.

of SPM data. Furthermore, Order No. 3490 cited stakeholder comments, such as the Public Representative's use of definitions from the *Handbook on Data Quality Assessment Methods and Tools*,⁴ including:

- **Accuracy** - “denotes the closeness of computations of estimates to the ‘unknown’ exact or true values”
- **Reliability** - defined as “reproducibility and stability (consistency) of the obtained measurement estimates and/or scores”
- **Representativeness** - defined as “how well the sampled data reflects the overall population.”

This audit plan addresses these concerns by framing the audit metrics to address accuracy, reliability and representativeness, as detailed below.

In terms of the scope, this audit will cover specific products, measurement phases, and major components of Internal SPM.

The audit will include review of measurement results for letters and flats for the following products:

- Domestic First-Class Mail:
 - Single-Piece letters and cards
 - Presort letters and cards
 - Single-Piece and Presort flats
- Standard Mail
 - High Density and Saturation letters
 - High Density and Saturation flats
 - Carrier Route
 - Letters
 - Flats
 - Every Door Direct Mail-Retail flats
- Periodicals
- Package Services
 - Bound Printed Matter flats

Throughout this document, Commercial Mail refers to all of the products listed above excluding Single-Piece First-Class letters, cards and flats.

⁴ Id., quoting Manfred Ehling and Thomas Körner (eds.), *Handbook on Data Quality Assessment Methods and Tools*, at 9 (Eurostat, 2007).

The audit will evaluate each of the following phases of internal measurement:

First Mile

The First Mile phase includes the time in collection and from collection of mail to initial automated processing on mail sorting equipment. For mail accepted at retail counters, First Mile is measured from acceptance of mail to initial processing. As part of the measurement process, Postal Service personnel scan mailpieces from randomly selected collection points. They also scan barcodes for pieces with Special Services to accept them at retail counters. First Mile applies only to Single-Piece First-Class Mail (SPFC), which includes Single-Piece First-Class Mail letters and cards, and the portion of First-Class Mail flats which are single-piece.

The audit will verify whether Internal SPM provides First Mile data that are accurate, reliable, and representative. This will include a review of requirements, business rules and inputs compared to sampling group inputs, collection point inventory, statistical framework, sampling targets, sampling request generation, scan requests, and actual scan results, among other components. For example, the representativeness of the sampling results will be reviewed to determine whether there are under-coverage issues and whether a bias may exist. Likewise, First Mile data will be assessed for reliability, including the manner in which samples are taken throughout each fiscal quarter and an assessment of how proxy data and imputations impact results.

Processing Duration

The Processing Duration phase begins with the determination of “start-the-clock” information for measurement. Input data are used to decide the outcome of new fields for start-the-clock, which include Induction Method, Actual Entry Time, Critical Entry Time, and the Start-the-Clock Date. For SPFC, the calculation of Processing Duration involves the processing of scan records to determine which scan records belong together to form the history of a single-piece of mail, followed by the determinations of similar critical fields required for measurement.

The audit will verify that the Internal SPM system has adequate processes in place to verify that critical fields have been accurately calculated for both Commercial Mail and SPFC. The audit will assess whether the processing duration and overall measurement processes yield representative and reliable results. For example, the audit will evaluate the representativeness of the Processing Duration data by summarizing by product and mail entry type for comparison with the population data from Revenue, Pieces and Weights (RPW). Similarly, the audit organization will determine if quality controls have been established to confirm that data are stored, associated, aggregated, and excluded according to established business rules and requirements.

Last Mile

The Last Mile phase measures the last leg of mail delivery, from the latest observed processing scan to delivery (or the initial delivery attempt). In Internal SPM, time in Last Mile is estimated by having Postal Service personnel scan mailpieces at randomly selected delivery points.

Similar to plans for First Mile, the audit organization will assess the accuracy, reliability, and representativeness of Last Mile data and processes. The audit will verify the processes to validate the quality and accuracy of calculations and data storage for delivery point coverage, sampling targets,

sampling request generation, scan request, and actual scan results, among other aspects. For example, the audit will evaluate whether carrier sampling training procedures and data collection processes provide for accurate measurement results. Likewise, by measuring the Last Mile response rate by postal administrative District, the audit will evaluate the representativeness and validate whether non-response results are immaterial or may indicate a potential bias based on what was and was not sampled.

Scoring and Reporting

The Internal SPM system calculates service performance estimates and produces reports of market dominant product performance scores.

The audit will assess whether appropriate processes have been established to produce accurate and reliable data for use in reports. Similarly, by reviewing rules and processes for data exclusions, documentation, and coverage, the audit will assess the representativeness of the data.

System Controls

Additionally, the audit will consider how business rules and administrative rights are applied within the internal SPM measurement processes, and will review the data recording and operating procedures for Postal personnel executing measurement processes. The audit will evaluate if there are potential risks of manipulation or error due to insufficient restrictions or inadequate controls and/or procedures.

2. DETERMINE METRICS TO BE MEASURED

Using the defined objectives and scope, the next step in the audit plan is to determine which metrics should be measured. There are three initial questions to frame the metrics:

- Does the Internal SPM system produce results that are accurate?
- Does the Internal SPM system produce results that are reliable?
- Does the Internal SPM system produce results that are representative?

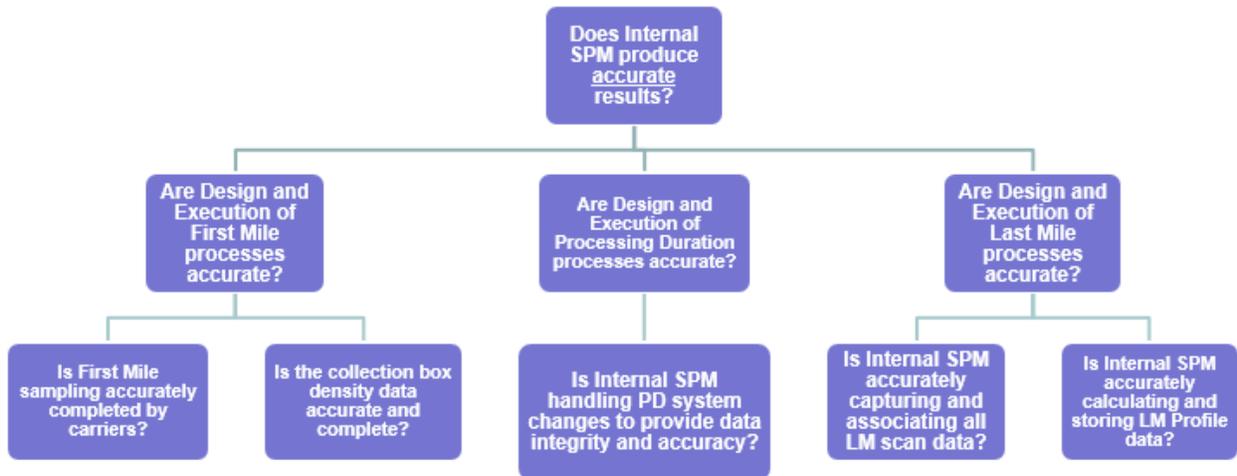
The audit organization reviewed materials from a number of organizations to develop the approach. One key input was a publication titled *Designing performance audits: setting the audit questions and criteria*⁵ developed by the International Organization of Supreme Audit Institutions (INTOSAI). INTOSAI leveraged the Minto Pyramid Principle⁶ to define relevant sub-questions and sub-sub questions. All questions were developed to align high level audit objectives with the Internal SPM phases and aspects.

The figure below shows an example of the initial accuracy question, followed by sub-questions focused on the measurement phases, followed by sample sub-sub-questions about specific Internal SPM processes to be examined. For further detail, see the Audit Measures Attachment to this document. Each question is aimed at providing support for answering the first level question of “Does the Internal SPM system produce results that are accurate?”

Example of Minto Pyramid Principle approach used to determine metrics for Internal SPM

⁵ INTOSAI, *Designing performance audits: setting the audit questions and criteria*, http://www.psc-intosai.org/media/39044/Designing-performance-audits_-setting-audit-questions.pdf

⁶ Minto, Barbara, *The Minto Pyramid Principle*, Ed. Minto International, Inc. 2003.



Following this approach for all three questions and across the phases of measurement, an initial set of audit questions was developed.

Once the questions were developed, the audit organization utilized INTOSAI’s basic design matrix model to define the following for each sub-sub question:

- **Audit criteria:** Audit criteria is the expectation or ‘yardstick’ to be used when answering the sub-sub question.
- **Audit information:** Audit information is the specific data or report to review or assess.
- **Methods:** Methods provide the high level steps the auditor will use to review information.

The figure below provides a sample from the sub-sub questions related to reliability. For further detail see the Audit Measures Attachment to this document.

Example of Audit Measures for Reliability

Does the Internal SPM System Produce Reliable First Mile Results?

Phase	Level 1	Level 2	Level 3	Audit Criteria (Yardstick)	Audit Information
First Mile	Is FM data Reliable?	Are First Mile results designed and executed to produce reliable results?	Is use of imputations for FM Profile results limited to provide FM measurement that represents the District’s performance?	All 67 Districts should have a limited amount of volume for which imputed results are used within the quarter.	Review the volume of mail for which imputations are required.
First Mile	Is FM data Reliable?	Are First Mile results designed and executed to produce reliable results?	Is use of proxy data for FM Profile results limited to provide FM measurement that represents the District’s performance?	All 67 Districts should have a limited amount of volume for which proxy results are used within the quarter.	Review the volume of mail where proxy data are used.

3. OBTAIN INFORMATION AND REVIEW RESULTS

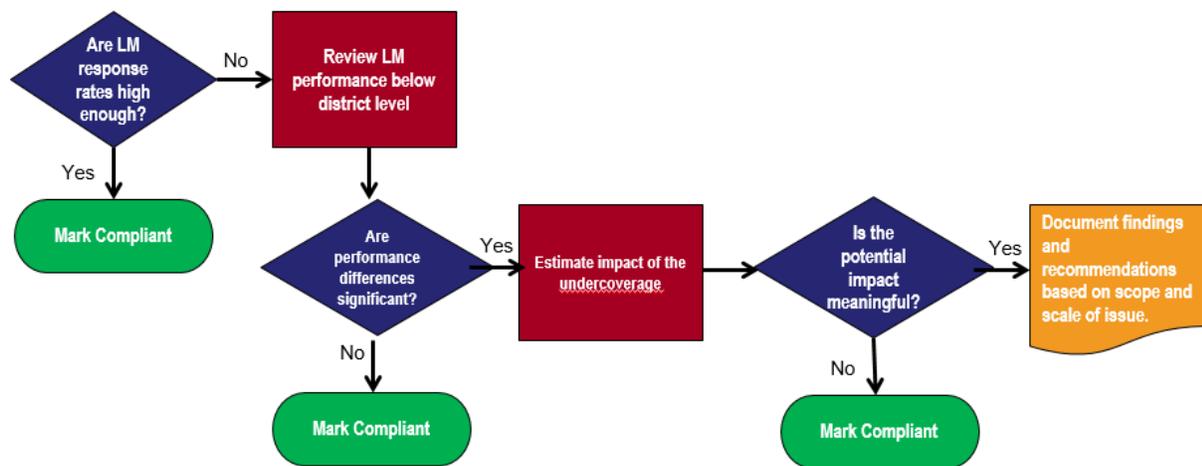
The next step in the audit plan after the measures are established is to obtain information and review results. To gather information, the audit organization will use the Quality and Audit computing environment to collect and analyze data. This includes:

- Taking snapshots of key system tables for analysis
- Pulling samples of data from very large system tables for review
- Compiling data aggregates to summarize data for review and/or analysis
- Producing reports and files needed for information.

In addition, information may be gathered by conducting interviews or reviewing available reports and other documents.

Once the information is obtained, the audit organization will review the information and compare it to the audit criteria. This includes organizing all of the measures, audit criteria, audit information, and methods into a logical, analytical flow or decision tree. The audit organization will use this process to review data for the highest level question and answer the initial question. If the quarterly data indicates possible issues with accuracy, reliability, or representativeness, additional information will then be gathered and reviewed as needed. Throughout this portion of the audit, results will be documented and potential issues will be flagged. Likewise, the audit organization will quantify the impact or potential impact of issues flagged for accuracy, reliability, and representativeness concerns whenever possible. When the review is complete, next steps will be determined. See the example below for a decision tree flow regarding Last Mile response rates which may impact the representativeness of the results.

Decision Tree Example



4. REPORT FINDINGS AND RECOMMENDATIONS

The final step in conducting the audit is to report findings and recommendations. This will include a high level summary of compliant and non-compliant metrics. A dashboard using stoplight metrics will likely be one high level visual to pinpoint the severity of issues and the level of risk and impact associated with any non-compliant results.

Example of Stoplight Metrics Ratings for a Dashboard Compliance Report

Rating	Description
Compliant	Measures marked in green would indicate no issues were identified with the accuracy, reliability or representativeness for that measure.
Possible Compliance Issues	Yellow measures would indicate potential risks that should be looked into as soon as feasible.
Non-Compliant	Measures marked in red would indicate major concerns which need to be reviewed and addressed promptly.

There will also be a more detailed report of the findings which will provide information about what was measured and what the results were. The audit report may also include recommendations to improve Internal SPM, such as refining business rules or methodology if issues are identified. Recommendations could also result in change requests for system and process modifications. Likewise, the audit report may include recommendations for changes to the audit process itself, including alterations to scope, objectives, metrics, information collection, or reporting.

The audit will consider the feasibility and necessity of change request recommendations. For example, in FY16 Q4, the Caribbean District had a margin of error of 10.2 percent for Standard Mail High Density and Saturation Flats 5-Day and above based on 1,389 pieces. Although this margin of error significantly exceeded the Standard Mail margin of error target, the cost of obtaining more mail samples may outweigh the benefit of improved statistical precision.

The audit report will be provided to the USPS on a quarterly basis. The quarterly audit results will feed into an annual audit summary report for USPS leadership. If the SPM system is approved as the basis for reporting market-dominant product service performance to the Commission, information from the audit report may also be used to support reporting requirements in the Annual Compliance Report (ACR).