

**Supplemental Material Relating to IOCS Tally Analysis  
Provided in Response to Order No. 2313**

**I. PREFACE**

In its January 15, 2015 Notice regarding Partial Supplemental Information Provided in Response to Order No. 2313, the Postal Service noted that it was still conducting a supplemental analysis of IOCS tallies potentially relating to the costs for Standard Mail Flats reported in the FY2014 CRA. USPS-FY14-45 contains the results of that analysis

**II. ORGANIZATION**

In addition to this Preface, USPS-FY14-45 consists of a narrative text explanation of the analysis (a pdf of which is incorporated as an attachment to the Preface pdf), and an Excel file presenting the tally analysis and the associated cost impact tables.

## Investigation of IOCS Tallies for Standard Mail Flats

### Background

IOCS historically identified products for flat-shape Standard Mail by collecting information on the presence of required markings for pieces claiming Enhanced Carrier Route (ECR) rates (ECRLOT for ECR Basic flats; ECRWSH and ECRWSS for High Density and Saturation flats). If an ECR marking is present, the tally is assigned to the appropriate ECR product. Tallies associated with pieces marked Standard Mail without an ECR marking are assigned to Standard Flats residually.

New rules, introduced in January of 2014, for the preparation of FSS scheme bundles that allow commingling Regular and ECR flats permitted pieces in 5-digit FSS scheme bundles to claim ECR rates (rather than 5-digit presort rates) if, in the absence of FSS preparation, they could have been prepared in an ECR bundle. Other pieces in the bundle may pay non-ECR rates. Thus, FSS bundles in general could contain pieces from three CRA products: Standard Flats, Carrier Route, and High Density/Saturation flats/parcels. The particular challenge is that the pieces, regardless of product, would have optional endorsement lines identifying the packaging as 5-digit FSS scheme bundles, regardless of the specific rate(s) claimed for constituent pieces. This effectively renders the actual product classifications unobservable, but would have resulted in the costs being assigned to Standard Flats in IOCS procedures effective prior to the rule change.

Although the FSS marking was not intended to be used to identify products, out of an abundance of caution, IOCS began to record the presence of the marking on Standard Mail pieces during FY2014. When it became clear that FSS marking rules allowed pieces in the ECR product categories without ECR markings, the FSS marking was used to allocate tallies in an attempt to avoid over-allocating costs from FSS bundles to Standard Flats. For tallies where the FSS marking is observed, the dollar weight of the tallies is divided among the Standard Flats, Carrier Route, and High Density/Saturation Flats activity codes in proportion to the estimated volumes of the products prepared in FSS bundles.

Despite the reallocation of FSS-marked tallies, measured costs for Standard Flats increased anomalously in FY14. Inspecting quarterly data, the increase appeared to begin in FY14, quarter 2. Since the cost anomaly appeared to roughly coincide with the new FSS preparation rules, the IOCS data have now been reviewed to determine whether the FSS marking adjustment was effective in addressing the product costing challenge for FSS-prepared Standard Mail pieces.

The current review found evidence that the FSS marking question in IOCS allowed most, but not all, of the tallies of pieces in FSS scheme bundles to be adjusted. While it is not generally possible to identify individually all tallies that

might have been overlooked in the FSS adjustment, it is possible to estimate an overall rate at which unadjusted FSS tallies are likely to be present in the IOCS data. Based on estimates of the fraction of additional tallies (without FSS markings) that may require reallocation similar to FSS-marked tallies, FY2014 costs for Standard Flats are estimated to have been overstated by 2.5 percent in the mail processing cost component (Cost Segment 3.1) and by 1.8 percent in the city carrier in-office cost segment (Cost Segment 6).

### **Investigation of FY2014 IOCS Tallies With FSS and Other 5-Digit Scheme Markings**

As noted above, tallies of pieces in FSS scheme bundles are identified in IOCS via the “FSS” marking, usually appearing in the optional endorsement line (OEL), which would have the typical form “SCH 5-DIGIT 12345 FSS” (see DMM 708 7.1.1). The absence of an FSS marking for a Standard Regular Flat tally in an FSS zone is not anomalous in itself, as an FSS marking would not be present on pieces from bundles with presort levels from mixed ADC to 3-digit presort. However, IOCS data collectors or respondents could potentially miss the FSS marking where present, or alternatively may have encountered pieces lacking the FSS marking in the OEL.

The investigation initially assessed whether there was evidence of a material set of tallies associated with FSS scheme bundles where the FSS marking was not recorded. Apart from the FSS marking, IOCS does not collect data directly on non-ECR presort endorsements, as the information has not been needed to develop product-level costs. Thus, the actual human-readable OELs are unknown. However, some OEL information is available indirectly via barcode scans collected for research purposes in the course of certain IOCS readings. For automation-compatible flats, the two-digit IMb “barcode identifier” (BI) field is required to have a value consistent with the human-readable OEL marking. For FSS scheme bundles, the BI field would have a value of 20, indicating a 5-digit or 5-digit scheme marking in the OEL.

Under IOCS data collection procedures, scans are not available for all tallies. While data collectors are equipped with scanners for tallies taken on-site, telephone readings do not provide for scanning. Additionally, IMb scans are not acquired for a minority of on-site readings for various reasons. Most significantly, phone readings are the primary data collection method for tallies for post office operations, whereas most plant tallies are conducted on site. Thus, tallies without scans have a different operation mix than tallies with scans. The IOCS scan data are stored in a separate database from the main IOCS record, linkable by a tally identifier.

The initial investigation looked for flat-shape Standard Mail tallies taken after March 1, 2014, where a scanned barcode with a 20 BI value (i.e., indicating a 5-

digit or 5-digit scheme bundle) had been obtained. Tallies were classified as destinating in FSS and non-FSS zones using the recorded destination ZIP Code on the tally and the September 2014 L006 labeling list.

The initial analysis found that a considerable majority of the tallies for pieces with 5-digit barcode identifiers and destinating in FSS zones had a recorded FSS marking, 74 percent of \$36.9 million in weighted direct tallies, but \$9.6 million in direct tallies did not have an FSS marking recorded on the tally but were prepared in 5-digit scheme bundles per the BI value. For tallies outside FSS zones, only 0.8 percent of the tallies with a 5-digit BI value had an FSS marking. See Table 1.

Table 1: Barcode Identifier 20 tallies for FSS and non-FSS zones, FY 2014

Marking	Dollar Weights (\$000)	
	FSS Zone	Not FSS Zone
FSS	27,232	238
No FSS Marking	9,637	29,135
Total	36,869	29,373
% w/ FSS Marking	73.9%	0.8%

The \$9.6 million in tallies with the 5-digit '20' BI and FSS zone destinations are candidates for being unidentified constituents of FSS bundles that may include carrier route pieces. However, the tallies would be correctly assigned to Standard Regular Flats if the actual rates for the sampled pieces paid were 5-digit presort rates (or other applicable non-carrier route presort rates). The actual rate paid for the sampled pieces cannot be determined from information contained in the tally alone. Rather, it is necessary to use the FSIMb barcode value, where available, to cross-reference full-service mailing documentation that provides the rate paid for individual pieces.

To investigate the actual rates paid, the FSIMb barcode values were obtained from the Standard Flats tallies with the '20' BI, and matches were attempted to Mail.dat files from the PostalOne eVS system. The PostalOne eVS system collects over 700,000 Mail.dat files each quarter.<sup>1</sup> To reduce computational time, these files were screened for files containing flat-shape Standard Mail as defined by the MPU Class and MPU Processing Category fields. The resulting set of files was then further screened for Mail.dat file sets that contain either a PDR or PBC file. These two file types contain the IMb information needed to look up the rate paid by a specific full-service IMb piece. Non-Full Service mailings are not required to supply PBC or PDR files. Each quarter contains roughly 80,000 Mail.dat files for flat-shape Standard Mail, and of these, roughly 60,000 have the necessary PDR or PBC files. Another file type within the Mail.dat database

<sup>1</sup> The available eVS documentation to search does not include mailings that were documented using Mail.xml or PostalWizard.

specification, called a CQT file, provides information on container makeup including the rates paid for the pieces in specific containers.

Each of the candidate PDR or PBC files is then searched for the presence of one or more of the barcode values from the set of IOCS tallies. If one of the barcodes in the file matches a barcode in the set of IOCS tally barcodes then the barcode and file name are written out to a “matched” file. When the matching process is complete for each quarter, the resulting matches are processed to identify the CQT file(s) associated with the matched pieces. The rate information for the matched pieces is extracted from the CQT file.

The matching process obtained rate information for 313 out of 488 FSIMb values for which matches were attempted (a 64 percent match rate). The matches cover 136 tallies for FSS-marked pieces in FSS zones, 40 tallies for FSS-zone pieces without the FSS marking, and 137 tallies where the ZIP Code of the sampled piece was a non-FSS zone. See Table 2.

Table 2. Match summary for Standard Mail flat tallies with '20' Barcode Identifier (unweighted)

1. Destinating ZIP is FSS Zone				
Marking	Matched	Not Matched	Total	Match Rate
FSS	136	88	224	61%
None	40	21	61	66%
Total	176	109	285	62%
2. Destinating ZIP is non-FSS Zone				
Marking	Matched	Not Matched	Total	Match Rate
FSS		1	1	0%
None	137	65	202	68%
Total	137	66	203	67%
Grand Total	313	175	488	64%

The match results exhibit two main features. First, matched tallies with the '20' BI in FSS zones had similar product mixes regardless of whether the FSS marking was recorded in the tally. In particular, the actual rate paid was a carrier route rate for a majority of the matched tallies in both cases. Second, none of the 137 matched pieces destinating in non-FSS zones paid a carrier route rate—the sampled pieces for those tallies predominantly paid 5-digit presort rates and were correctly assigned to Standard Regular Flats. Table 3 shows the rate mix for the match results.

Table 3. Summary of matched IOCS tallies by rate paid, Standard Flats with '20' Barcode Identifier

Marking	Rate Category	Dollar Weights (\$000)		Percent by Marking	
		FSS Zone	Non-FSS Zone	FSS Zone	Non-FSS Zone
FSS Marking	3 Digit	596	0	4%	n/a
	5 Digit	4,665	0	32%	n/a
	Carrier Route	8,554	0	59%	n/a
	High Density	757	0	5%	n/a
	Subtotal FSS Marking	14,571	0	100%	n/a
No FSS Markings	3 Digit	96	0	2%	0%
	5 Digit	2,035	15,344	39%	100%
	Carrier Route	3,023	0	59%	0%
	Subtotal No FSS Marking	5,154	15,344	100%	100%

The high fraction of carrier route in tallies with 5-digit barcode identifiers strongly suggests that the matched tallies for pieces without recorded FSS markings but destinating in an FSS zone actually were prepared in FSS bundles. Whether due to data collector error or lack of a marking on a piece, FSS bundles appear to have been under-identified in IOCS. Without the recorded FSS marking, the tallies were assigned to Standard Regular flats, though they actually (though otherwise unobservably) were of pieces paying Carrier Route rates. Accordingly a portion of the costs for those tallies was incorrectly assigned to the Standard Regular Flats product.

The matches indicate that the reallocation of a portion of the weight of FSS-marked tallies was necessary and effective at preventing those tallies from being over-assigned to Standard Regular Flats. However, the adjustment for FSS-marked tallies appears to have been insufficient as there are additional tallies for which a similar adjustment appears to be warranted.

### **Estimating the Total Over-Allocation of IOCS Direct Tallies to Standard Regular Flats and Cost Impacts**

Given the limitations of the data, determining the full set of tallies currently assigned to Standard Regular Flats for which a reallocation might be warranted necessarily involves some degrees of conjecture. Beyond the tallies that were matched to eVS Mail.dat records, two other sets of tallies are candidates for inclusion in a further cost reallocation.

First, there are unmatched tallies for pieces in FSS zones for which a barcode with a 5-digit identifier was scanned, but without recorded FSS markings. These include tallies with FSIMb values that could not be found in the Mail.dat files, as well as basic IMb tallies without piece-level documentation. There is little reason

to believe that FSIMb matching success is systematically related to the actual rates paid for the sampled pieces. By rule, these should have been prepared as 5-digit FSS scheme bundles, and the various flat-shape Standard Mail products could have been commingled in the bundles.

Second, there are Standard Flats tallies for which no barcode was recorded. These include tallies taken by an on-site data collector where a scan was not obtained, and phone tallies where respondents do not scan the pieces. It is possible that pieces from FSS scheme bundles could have been observed (but not recorded with an FSS marking) in either case. However, this set of tallies is likely to include a substantial number of tallies correctly classified as Standard Flats—notably, pieces at presort levels from mixed ADC to 3-digit. Since phone readings also have a much different operation mix than on-site readings from which the barcode scans are taken, it is not appropriate to assume that the barcode and no-barcode tallies will have the same presort mix (as indicated by the BI for tallies with scans, for instance). It is more reasonable to assume that barcode and no-barcode tallies reflect similar propensities to under-identify FSS tallies.

The Postal Service's estimate of the Standard Flats tallies without barcode scans potentially affected by the FSS marking issues (in the mail processing and carrier in-office components) assumes the 74 percent rate of FSS marking for tallies with scanned BI values of 20 from Table 1 is the overall rate of FSS marking identification for Standard Flats tallies in FSS zones without barcode scans. It is not possible to identify specific tallies that might require reallocation, since pieces prepared in 5-digit scheme bundles are not observable in the absence of a barcode scan. Table 4 shows the estimated impacts on Standard Flats tallies for Mail Processing and City Carrier In-Office activities under these assumptions.

Table 4. Calculation of impact of FSS marking under-identification on Mail Processing and City Carrier In-Office dollar-weighted tallies (amounts in \$000)

1. Mail Processing		Amount	Source
1	FSS Zone Tallies with Barcode Identifier 20, No FSS Marking	9,637	Table 1
2	FSS Zone Tallies with FSS Marking, No Barcode	12,454	IOCS
3	FSS Marking Identification Rate	73.9%	Table 1
4	Estimated FSS-Prepared Tallies, No Barcode	16,862	R2÷R3
5	Estimated FSS-Prepared Tallies, No Barcode or Marking	4,407	R4-R2
6	Total Direct Tallies to Adjust	14,044	R1+R5
7	FY2014 Direct Tallies for Standard Flats Before Adjustment	411,941	IOCS, activity code 2340
8	Tallies to Adjust as % of FY2014 Standard Flats	3.4%	R6÷R7
2. City Carrier In-Office		Amount	Source
9	FSS Zone Tallies with FSS Marking	14,953	IOCS
10	FSS Marking Identification Rate	73.9%	Table 1
11	Estimated FSS-Prepared Tallies, No Barcode	20,245	R9÷R10
12	Total Direct Tallies to Adjust	5,291	R11-R9
13	FY2014 Direct Tallies for Standard Flats Before Adjustment	218,260	IOCS, activity code 2340
14	Tallies to Adjust as % of FY2014 Standard Flats	2.4%	R12÷R13

The estimated impact on piggybacked costs assumes that the effect of the additional IOCS tally reallocation on the costs is the same as the effect on the Standard Flats direct tallies. As noted above, the adjustment cannot be applied to specific tallies without scanned barcodes. Thus, it is likely that reallocating weights for individual tallies (e.g., by randomly recoding tallies at an appropriate rate, or reallocating a fraction of the weight for all such tallies), and rerunning the mail processing cost models based on a revised IOCS data set, would likely shift costs inappropriately in some cost pools, even if the overall adjustment is accurate. In any event, while changes in direct tallies will not necessarily result in equal changes in costs in the Mail Processing and City Carrier In-Office cost models, the change in direct tallies is a reasonable estimate of the effect on costs, particularly given the uncertainties in the analysis. Table 5 shows the reallocation of costs based on the percentages of direct tallies.

Table 5. Calculation of impact of FSS marking under-identification on costs (amounts in \$000)

	Original Attributable Costs, Piggybacked	Mail Processing	City Carrier In-Office	Total Attributable Costs
1	Carrier Route (basic)	562,765	431,928	1,695,115
2	HD/Saturation Flats/Parcels	132,181	106,159	853,516
3	Standard Regular Flats	1,417,802	493,503	2,497,007
4	Percentage of Std Reg flats to be split	3.4%	2.4%	
5	Amount of Std Reg flats to split	48,336	11,964	60,300
	Split to:			
6	Carrier Route (basic)	32,195	7,969	40,164
7	HD/Saturation Flats/Parcels	3,538	876	4,413
8	Standard Regular Flats	12,603	3,120	15,723
	Total	48,336	11,964	60,300
	Adjusted Costs, Piggybacked			
9	Carrier Route (basic)	594,960	439,897	1,735,279
10	HD/Saturation Flats/Parcels	135,719	107,035	857,930
11	Standard Regular Flats	1,382,069	484,658	2,452,429
	Percentage adjustment			
12	Carrier Route (basic)	5.7%	1.8%	2.4%
13	HD/Saturation Flats/Parcels	2.7%	0.8%	0.5%
14	Standard Regular Flats	-2.5%	-1.8%	-1.8%
	Sources:			
1-3	Piggybacked costs for mail processing and for city carrier, in-office only, from USPS-FY14-24;			
	Total Attributable Costs from USPS-FY14-2			
4	From Table 4			
6-8	Split according to volumes in FSS bundles, from PostalOne			