AUTOMATING THE MAIL FORWARDING PROCESS

by Michael M. Ludeman

Summary: Prior to 1987, for the first 200 years of Post Office Department/Postal Service operations, the act of forwarding the mails was both a destination-oriented activity and a labor-intensive manual one.

(1) The First-Class Letter Mail Automated Endorsement Return-to-Sender (RTS) Program (circa 1989), described in the April 2005 newsletter, is simply an automated capability for marking the Return-to-Sender endorsement on such mail identified by other sources. In this case the responsibility for forwarding the mail lay with the destination post office.

With the introduction of the Computerized Forwarding System (CFS, 1987) and the Postal Automated Redirection System (PARS, 2003),the responsibility for forwarding the mail shifted from the destination post office to intermediate facilities such as the Processing & Distribution Centers (P&DCs) and Destination Delivery Units (DDCs).

(2) The Computerized Forwarding System (CFS) shifts part of the forwarding responsibility from the destination post office to local (near the destination city) P&DCs and DDCs. The destination post office still bears the responsibility for identifying such mail, but the P&DCs and DDCs handle the addition of the new forwarding address.

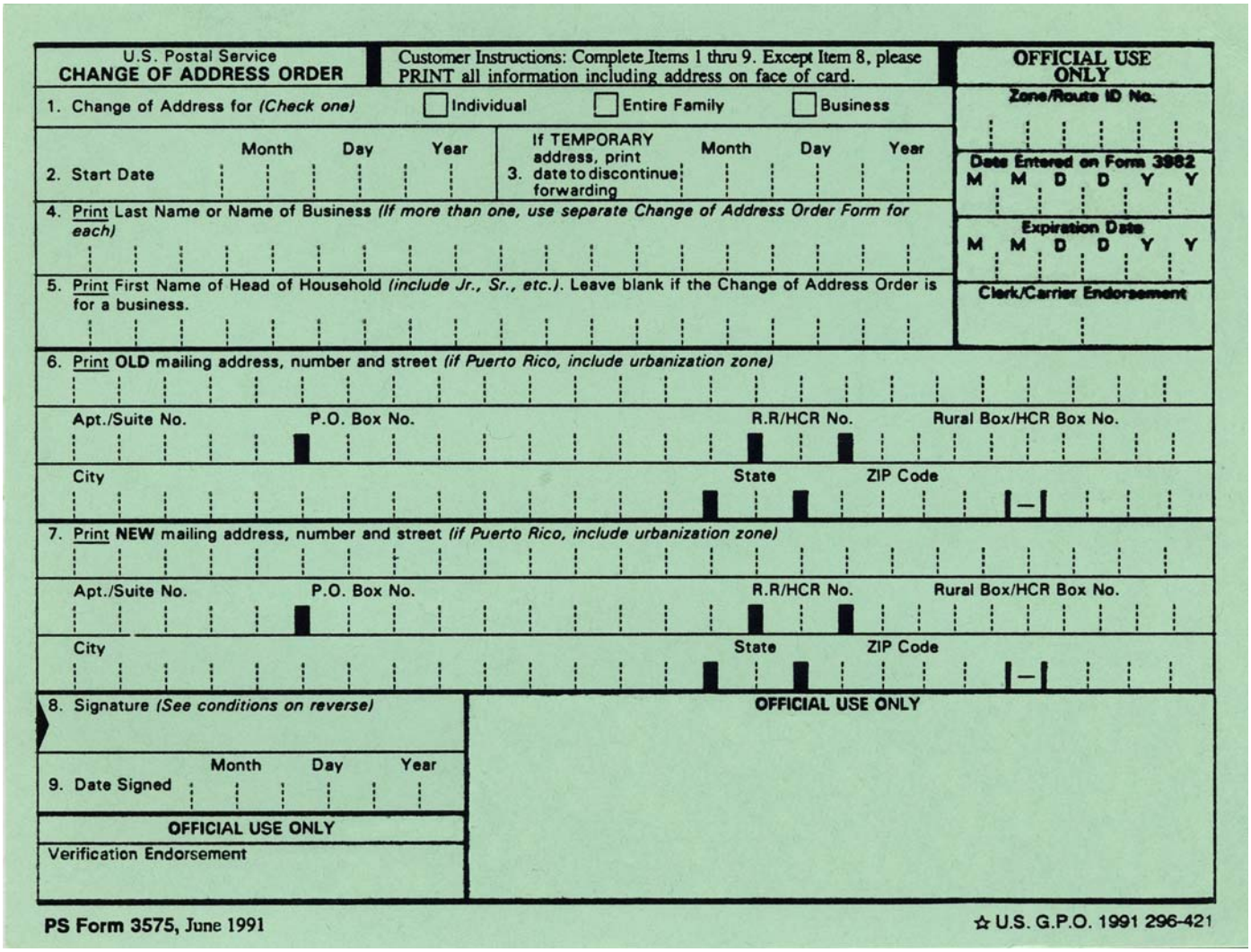
(3) Postal Automated Redirection System (PARS) shifts the responsibility for identification of mail that is to be forwarded back to the P&DC at the point of entry of the mail.

In the October 25, 2004, "U.S. Notes" column in *Linn's Stamp News*, AMC member John Hotchner mentioned the U. S. Postal Service's most recent effort to automate "return-to-sender" mail. In that column Bernie Moening of the Lima, Ohio post office provided a brief description of the new Postal Automated Redirection System, or PARS, focusing on its ability to automate the markup of this "return-to-sender" mail endorsement. As a result of this column, I received an inquiry from another AMC member who wondered if PARS could be the source of the ink-jet spray marking "return-to-sender" endorsements that Nancy, Tony and I wrote about in the April 2005 issue of the *Auxiliary Markings*.

This was a good question and one which I had considered when I first read about PARS in the 2004 edition of the *Comprehensive Statement on Postal Operations*. I made some inquiries at that time and obtained some detailed information on PARS and determined that PARS and the "First Class Letter Mail Automated Endorsement Return-to-Sender Program" were distinctly different programs. However, since this question had been raised again by a second individual, it appeared that this might be a good opportunity to provide some additional descriptions of PARS and its preceding program, the Computerized Forwarding System (CFS), so that our readers would have a better understanding of how these two programs functioned and why they were different from the RTS Program.

For the first 200 years of Postal Service operations, the act of forwarding the mails was both a destination-oriented activity and a labor-intensive manual one. By destination-oriented, I am referring to the fact that the letter traveled to its destination before any forwarding actions could be taken.Upon its arrival at the original destination address, the postmaster or mail carrier would examine the letter. If it was on his list of addressees who had moved and left forwarding instructions, then he would make a notation of the new address and return the letter to the mailstream for delivery. The first effort by the USPS to automate part of this process occurred in 1987 with the introduction of the CFS. For our present interest CFS can be described in terms of three primary functions: (a) data entry of change-of-address (COA) data into a computerized database, (b) matching forwardable letter mail with the appropriate entry in the COA database and automatically correcting the destination address and (c) notification of COA's to mass mailers who desired to keep their mailing lists accurate.

CFS accomplished these functions in the following manner. Postal customers continued to fill out a "Change-of-Address" form that identified the name and old and new address of the customer. This is PS FORM 3575, June 1991, for CFS, shown in Figure1. This form is on green card stock and printed in black ink. Other variants were probably used. These cards were sent to one of about 240 centralized locations where this information was keyed by operators and placed into a local COA database on a daily basis. These local COA databases essentially reflected all of the COA data for a designated Processing & Distribution Center (P&DC). In addition, on a weekly basis, these changes were merged into a National Change-of-Address (NCOA) database. This NCOA database was not used directly in the forwarding of mail but to provide address correction and update services to mass mailers. The CFS consisted of a stand-alone system installed at each of the 280 or so P&DCs across the United States and is occasionally described as the "Redirection System." Each CFS consisted of a mail transport, a video lift station and display, an Optical Character Recognition (OCR) module, a computer, a label application



U.S. Postal Service
CHANGE OF ADDRESS ORDER

Customer Instructions: Complete Items 1 thru 9. Except Item 8, please PRINT all information including address on face of card.

OFFICIAL USE ONLY
Zone/Route ID No.
Date Entered on Form 3982 (M M D D Y Y)
Expiration Date (M M D D Y Y)
Clerk/Carrier Endorsement

1. Change of Address for *(Check one)* ☐ Individual ☐ Entire Family ☐ Business

2. Start Date (Month Day Year)

3. If TEMPORARY address, print date to discontinue forwarding (Month Day Year)

4. Print Last Name or Name of Business *(If more than one, use separate Change of Address Order Form for each)*

5. Print First Name of Head of Household *(include Jr., Sr., etc.)*. Leave blank if the Change of Address Order is for a business.

6. Print **OLD** mailing address, number and street *(if Puerto Rico, include urbanization zone)*

Apt./Suite No. P.O. Box No. R.R/HCR No. Rural Box/HCR Box No.

City State ZIP Code —

7. Print **NEW** mailing address, number and street *(if Puerto Rico, include urbanization zone)*

Apt./Suite No. P.O. Box No. R.R/HCR No. Rural Box/HCR Box No.

City State ZIP Code —

8. Signature *(See conditions on reverse)*

9. Date Signed (Month Day Year)

OFFICIAL USE ONLY
Verification Endorsement

OFFICIAL USE ONLY

PS Form 3575, June 1991 ☆ U.S. G.P.O. 1991 296-421

Figure 1 - PS FORM 3575 (CFS)

module with an ink-jet printer and a small number of output sortation bins.

At the post office level, the letter carriers and clerks continued to identify mail that was to be forwarded. It is my assumption at this point that each post office received summaries of the COA forms filed by their local customers from the process that integrated this COA data into the local database. When a letter to be forwarded was identified, the carrier deposited it into a CFS container which was transported to the P&DC on a daily basis, either after all of the incoming mail had been worked at the post office, or perhaps when all of the outgoing mail was transported to the P&DC for processing at the end of the work day. All of this CFS mail was consolidated and processed by the CFS. This processing consisted of the following steps. The address side of the letter was scanned and presented to the redirection clerk who extracted a code from the address which was the index key to the lookup in the local COA database. This key consisted of the first four letters of the addressee's last name and the last three numbers of the street address. This key was then used to search the local COA database, and if a match was found, a redirection label (on yellow paper) was printed with the new address, including the POSTNET barcode. The label was then attached to the envelope, and the envelope directed to the appropriate sortation bin. Figure 2 shows such a CFS label with the index key CARL077. For reasons of privacy, part of the addressee's name is erased in Fig. 2, 3, & 6.

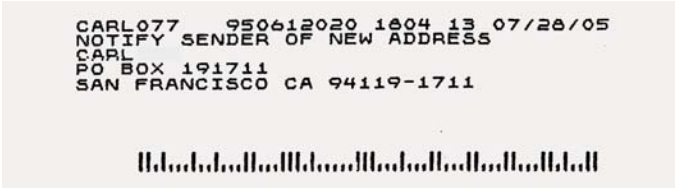


Figure 2 (CFS)

Figure 3 below, showing a PARS label, is out of order so that the reader can compare the CFS and PARS label formats here.

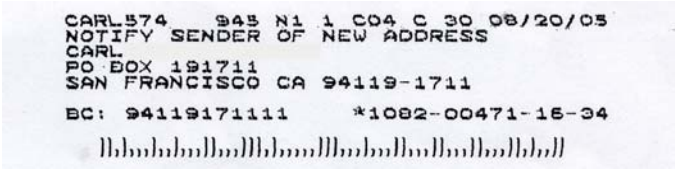
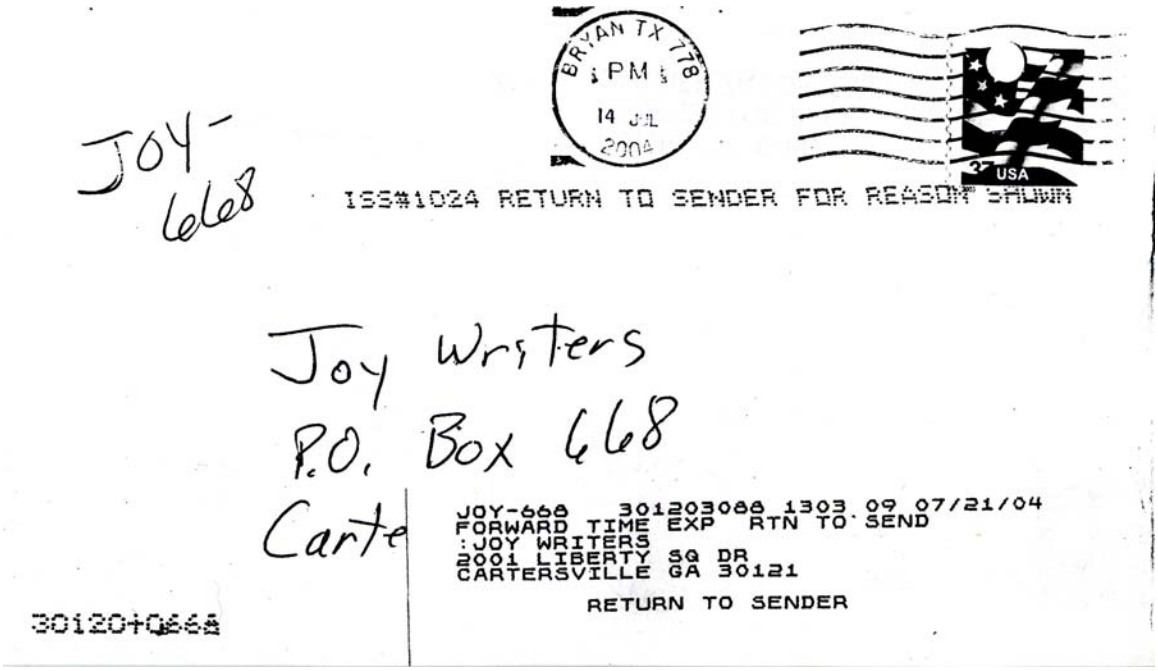


Figure 3 (PARS)

The PARS label in Figure 3 can be compared with the CFS label in Figure 2. The best way to distinguish the two is that most PARS labels have both the 7 character COA database key (e.g., CARL574) and the BC (barcode) line while the CFS label has only the 7 character COA database key (e.g., CARL077). Exceptions do exist, usually where there is too little room on the label

for the "BC" line.

In the CFS system, there were several other events which could happen. The USPS forwards mail for 12 months, then for the next 6 months the mail is returned to the sender with the new address printed on the yellow label. The COA data is maintained for a longer period of time. When a match is made after this 18 month period has been exceeded, a different message is printed on the label advising the sender that the forwarding order has expired. Also, in this instance, the words "RETURN TO SENDER" are usually placed on the yellow label. An example of this type of label from CFS is provided in Figure 4. Incidentally, note the "RETURN TO SENDER FOR REASON SHOWN" ink-jet marking of the RTS process on the envelope.



JOY-668 301203068 1303 09 07/21/04
FORWARD TIME EXP RTN TO SEND
:JOY WRITERS
2001 LIBERTY SQ DR
CARTERSVILLE GA 30121
RETURN TO SENDER

Figure 4 (CFS)

Theoretically, a key derived from the address could fail to match an entry in the local COA database. What happens in this situation is unclear and not covered in my information. My speculation is that the CFS prints a label to the effect: "UNABLE TO FORWARD/NO FORWARDING ORDER ON FILE/RETURN TO SENDER." The letter would then be returned to a clerk for final verification.

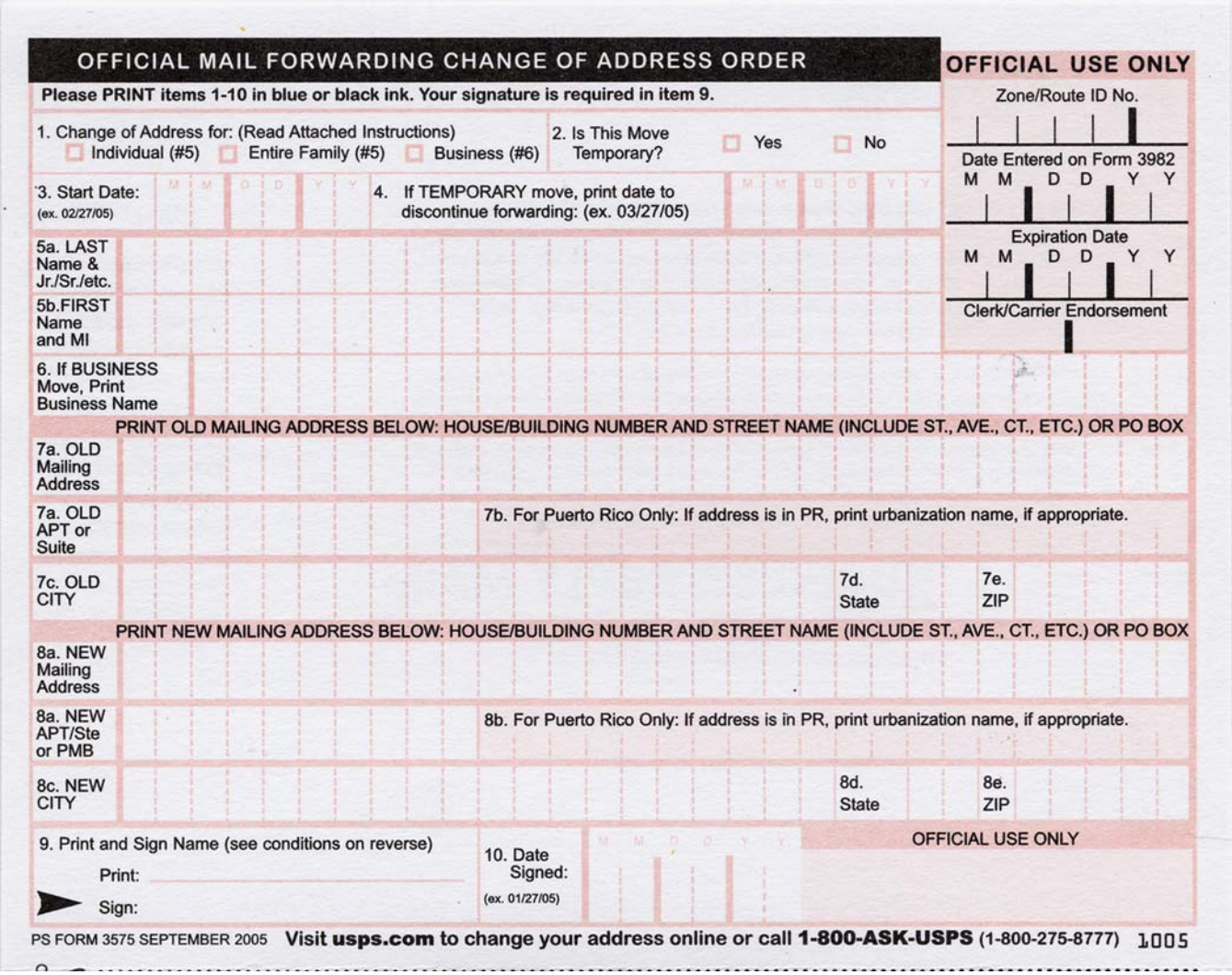
After processing by the CFS, these letters are placed back in the outgoing mailstream where they are sorted along with regular mail and sent onward to their new destination.

During the CFS processing, the redirection operator also was required to watch for and flag those forwarded letters which had ancillary service endorsements such as "Address Correction Requested," Do Not Forward" or "Do Not Return." These letters were diverted from the CFS mail stream for additional handling. Those with "Address Correction Requested" were placed on a template and a photocopy of the letter and correction label was made for delivery to the sender. Those with other endorsements also received appropriate handling.

Introduced in 2003, the Postal Automated Redirection System (PARS) represents a major shift in the philosophy of how mail should be forwarded, as it further automates the forwarding process and shifts the responsibility for identification of mail that is to be forwarded back to the point of entry of the mail. The advances in computer technology and database management made it practical to consider a single National Change of Address (NCOA) database which could be used to match forwardable mail with its new address. At the same time the forwarding problem had grown as well - which created a massive disruption to the mail processing process. The USPS estimated in 2002 that 20% of the population moved and changed address each year. During fiscal year 2005, over 51 million COA cards were submitted and processed.

Through further automation, PARS provides significant improvements in the processing of mail to be forwarded in all of the three areas mentioned earlier for CFS. The entry of data into the new National Change of Address database was automated by redesigning the old COA form so that the data submitted by the postal customer could be extracted and read by OCR rather than manually keyed by an operator. This redesigned form, shown in Figure 5, is designated as "PS FORM 3575 SEPTEMBER 2005." Earlier examples, of course, exist as the tests began in 2003. This form is printed in black on white paper, with a pink shaded background delineating where each printed character is to be written by the addressee. Instructions are to complete using only "blue or black ink." The color of the form and ink are critical, since the form will be processed using an OCR. These scanners operate in the infra-red spectrum and can not "see" the color red or pink. The pink outline around the boxes that contain the characters are not "seen" by the OCR and thus do not interfere with the lines of the printed character. Hence the addressee can easily see where to place the characters on the form, but the OCR sees only the characters and NOT the form background.

These forms are sent to one of 86 scanning sites nationwide where they are scanned and the resulting digital image is sent to one of four specially designated Remote Encoding Centers (RECs) that are charged with validating this data and preparing it for inclusion in the NCOA database. An OCR first decodes as much information as it can from this digital image, and then the image and decoded information are presented to an operator at a video terminal who completes extracting the data from the form. Both the image and the extracted data are then presented to a second operator for verification of the initial OCR and operator-keyed data. The accuracy of the data at this point is very important. The OCR is the key for reducing costs in this phase of the system; the



OFFICIAL MAIL FORWARDING CHANGE OF ADDRESS ORDER

Please PRINT items 1-10 in blue or black ink. Your signature is required in item 9.

1. Change of Address for: (Read Attached Instructions) ☐ Individual (#5) ☐ Entire Family (#5) ☐ Business (#6)

2. Is This Move Temporary? ☐ Yes ☐ No

3. Start Date: (ex. 02/27/05) M M D D Y Y

4. If TEMPORARY move, print date to discontinue forwarding: (ex. 03/27/05) M M D D Y Y

5a. LAST Name & Jr./Sr./etc.

5b. FIRST Name and MI

6. If BUSINESS Move, Print Business Name

PRINT OLD MAILING ADDRESS BELOW: HOUSE/BUILDING NUMBER AND STREET NAME (INCLUDE ST., AVE., CT., ETC.) OR PO BOX

7a. OLD Mailing Address

7a. OLD APT or Suite

7b. For Puerto Rico Only: If address is in PR, print urbanization name, if appropriate.

7c. OLD CITY

7d. State

7e. ZIP

PRINT NEW MAILING ADDRESS BELOW: HOUSE/BUILDING NUMBER AND STREET NAME (INCLUDE ST., AVE., CT., ETC.) OR PO BOX

8a. NEW Mailing Address

8a. NEW APT/Ste or PMB

8b. For Puerto Rico Only: If address is in PR, print urbanization name, if appropriate.

8c. NEW CITY

8d. State

8e. ZIP

9. Print and Sign Name (see conditions on reverse)

Print:

Sign:

10. Date Signed: (ex. 01/27/05) M M D D Y Y

OFFICIAL USE ONLY

OFFICIAL USE ONLY

Zone/Route ID No.

Date Entered on Form 3982 M M D D Y Y

Expiration Date M M D D Y Y

Clerk/Carrier Endorsement

PS FORM 3575 SEPTEMBER 2005 Visit **usps.com** to change your address online or call **1-800-ASK-USPS** (1-800-275-8777) 1005

Figure 5 - PS FORM 3575 (PARS)

previous CFS required the operators to perform all of the data entry and verification for the COA forms.

The postal customer may also submit this COA information via the Internet (ICOA). To minimize the possibility of a fraudulently submitted ICOA, the customer is charged a $1.00 fee that can be paid only by a credit card in the customer's name AND registered by the same address(es). In 2002 only 2% of the COA data for the CFS was submitted via the Internet, but by FY 2005, this number had increased to 6 million of the 51 million submitted, or a little over 12%.

The verified COA Data is integrated into a local COA database on a daily basis and then into the NCOA. With CFS the NCOA database was updated weekly. With PARS it is probably (my data did not specify frequency) updated on a daily basis. This single NCOA database is used by PARS at all installed locations.

PARS, unlike CFS, takes the forwarding process out of the destination-oriented mode and moves it to a very early stage of the letter-processing cycle. To appreciate how PARS does this, it will be helpful to briefly describe the processing steps encountered by a letter entering the mail delivery system at a P&DC. The initial processing step for all stamped first-class letter mail is the Advanced Facer Canceller System (AFCS) where each letter is faced, cancelled and separated into mail that is machine (OCR) readable, prebarcoded, script or declared a reject (requiring manual processing). Machine readable mail procedes to the Multiline OCR (MLOCR) system which reads the address information (street or post office box, city, state and ZIP) and resolves this information into an 11-digit ZIP code. This ZIP code and the equivalent POSTNET bar code are then sprayed along the bottom edge of the envelope. Over 90% of the mail is processed by automation at this stage. The balance, mail to the addresses that are not machine readable, are sent to the Remote Bar Coding System (RBCS) where an operator works in conjunction with the OCR to determine the ZIP code, which is then sprayed on the envelope.

The next step is to use the 3-digit ZIP code component to begin sorting mail to the P&DC that serves the final destination of the letter. Prior to PARS, this step would have been performed using a version of the Delivery Bar Code System (DBCS), which consists of a POSTNET bar code reader and between 190 and 220 sortation bins. The implementation for PARS utilizes a specially modified DBCS called the Combined Input/Output Subsystem (CIOSS), which consists of a 25 foot long module added to a standard DBCS and which includes two high speed labelers, an ink-jet printer, double envelope detectors, OCR, and a computer interface to the NCOA database. Each mailpiece is processed on the CIOSS in the following manner. First the 11-digit ZIP code from the mailpiece is read using the POSTNET bar code, and this 11-digit ZIP code is compared with the NCOA database. If a match is found, the OCR module must read the name of the addressee, and a check is made to determine if the addressee is the individual at that address who has moved. If both conditions are sat-

isfied, then a yellow label with the corrected address and POSTNET bar code is applied to the envelope. The letter is then passed to the proper sortation bin for the new POSTNET bar code/ZIP code. All nonpresort letter mail outbound from a P&DC must undergo two or three of these sort steps. Since PARS has already identified and corrected any forwardable mail on this initial pass through the CIOSS, these subsequent steps can be performed on any standard (unmodified) DBCS.

Figure 6 shows a typical PARS label where the letter was forwarded to its new destination.

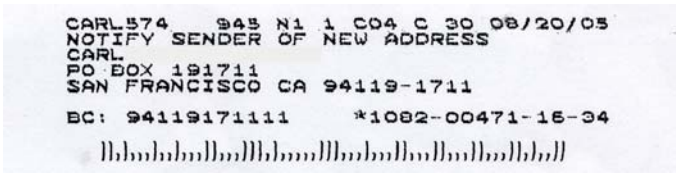


Figure 6 (PARS)

This letter was mailed near Ft. Worth and was processed by a PARS at that facility. The two lines at the bottom edge of this label are unique to the PARS. The first line, which begins with the letters "BC:", reflects the new destination 11-digit ZIP code. The second group of figures on the right side of the line are the RBCS-ID tracking number, which is the same as the one sprayed by the RBCS on the reverse of the envelope in red/red-orange ink either by the AFCS or the MLOCR units.

This RBCS-ID codes may be interpreted as follows:

aaxx-bbbbb-cc-dd

aa - facility machine ID number
xx - site code (82 is Ft. Worth)
bbbbb - an incrementing sequence number that is reset at the beginning of each 30 minute processing interval
cc - the day of the month the letter was processed, in the present case, the 16th
dd - the time code identifying which 30 minute interval. These begin with 00 = 0000 (midnight) to 0030 am. 24 = 1200 (noon) to 1230 pm, so that 34 = 1700 (5 pm) to 1730, etc.

The bar code at the bottom (second line of PARS code) is the POSTNET code for the new forwarding address, which is applied to the label directly, thus making it unnecessary to reprocess the letter and spray it again. The barcoded PARS label also covers the existing POSTNET code to the old address (preventing loop mail).

As noted previously in the section for CFS, the USPS currently forwards first-class mail for a period of 12 months. PARS also identifies forwardable mail for which the forwarding order has expired and will apply a label with an appropriate message to letters that meet this criteria. These labels would also include the endorsement "RETURN TO SENDER." Figure 7 illustrates such a label that was on a letter returned because it had an invalid address - the number 752 is a 3-digit ID of the CIOSS machine that labeled this mailpiece.

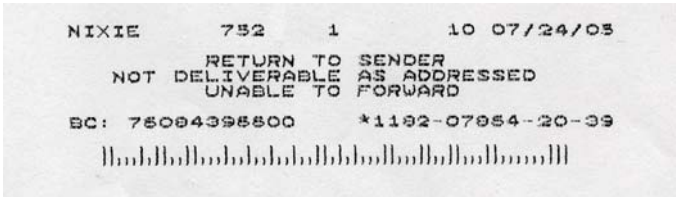


Figure 7 (PARS)

In the event that PARS does not correctly identify a letter as one that requires COA processing, the mail carrier at the destination post office will then receive the letter for delivery to the original address, and he will then mark it up for forwarding and put it back into the PARS mailstream for final delivery.

PARS also automates some of the processing required for a customer requested Automated Correction Service (ACS). At the same time that the CIOSS checks for a COA record, it also examines the front of the envelope for any ancillary service endorsements such as "Address Correction Requested," "Do Not Forward," "Do Not Return," etc. When the "Address Correction Requested Service" is detected, the scanned image of the original envelope along with the relevant COA data are formatted into an image of the Form 3547, which is then sent electronically to the National Customer Service Center in Nashville, TN. These image forms are collated daily by mailer, printed and mailed to the customers who had requested this service. These customers may also receive this COA information electronically via Form 3547.

As an example of this process, Figure 8 shows a label from a newsletter mailed as a Standard A item endorsed "ADDRESS SERVICE REQUESTED." It had been mailed with a discounted rate by permit. It was then returned, since it was undeliverable (NOT DELIVERABLE AS ADDRESSED), and the Standard Mail A weighted fee was charged. This was the factor 2.472 x the 37¢ first-class rate for less than 1 ounce or 91.464¢ which was correctly rounded up to 92¢, and this weighted fee was accessed. See the article "The Weighted Standard A (Third-Class) Undeliverable Mail/Address Correction Fee" from the April 2004 *Auxiliary Markings* for more details about this fee.

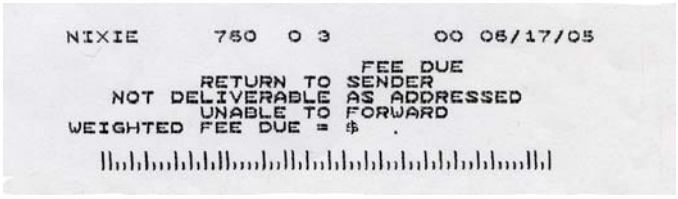


Figure 8 (PARS)

Note that this is a PARS label without the "BC" line, presumably because of space limitations.

The PARS is presently in the early stages of deployment and testing. This is clear from the fact that CFS uses are found concomitant with PARS uses (Figure 2). During the Phase I deployment between September 2003 and July 2004, CIOSS were installed at 53 P&DCs around the United States. Phase II deployment began in August 2005 and is expected to be completed in September 2007, and will result in at least one CIOSS at each of the remaining PD&Cs.

It is hoped that with the above descriptions of CFS and PARS and the earlier description of the First Class Letter Mail Automated Endorsement Return-to-Sender Program described in the April 2005 newsletter, our readers will better understand the difference between these three automated postal systems. Both CFS and PARS are primarily concerned with the processing of forwardable mail, and only certain mail not meeting the forwardable criteria is processed and identified as Return-to-Sender Mail. On the other hand, the RTS Program is simply an automated capability for marking the Return-to-Sender endorsement on such mail identified by other sources. The cover shown in Figure 4 earlier is an example of a letter with both the yellow label from CFS with a "RETURN TO SENDER" endorsement and a similar endorsement from the RTS Program.