USPS LR-J-62

LETTER RECOGNITION ENHANCEMENT PROGRAM DECISION ANALYSIS REQUEST

Introduction

Library Reference USPS-LR-J-62 is a category 3 library reference that contains information relied upon by witness Miller (USPS-T-22). The library reference contains a redacted version of the Letter Recognition Enhancement Program Decision Analysis Request (DAR) presented to and approved by the Board of Governors during their May 2001 meeting. The letter recognition enhancement program is projected to result in an aggregate Multi Line Optical Character Reader Input Sub System/Remote Computer Read (MLOCR-ISS/RCR) finalization rate of 93.2%. This figure is relied upon in the cost models found in USPS-LR-J-60.

DECISION ANALYSIS REPORT

Letter Recognition Enhancement Program

ENGINEERING

RESTRICTED INFORMATION
February 7, 2001
Revised February 23, 2001

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1.0 Introduction

This Decision Analysis Report (DAR) recommends that the Board of Governors authorize funding of [redacted] to further enhance the handwritten and machine-print address recognition technology used in letter mail automation equipment. This request, which includes [redacted] in capital funds and [redacted] in expense funds, covers up to an 11 percentage point improvement in the system recognition rate for letter mail and an error rate reduction of up to 50 percent. At this maximum improvement, a return on investment of 53 percent is expected.

Our previous efforts at improving recognition rates of letter mail processing equipment have proven extremely successful. The Board of Governors has approved six recognition improvement efforts since March 1996, with the most recent approval occurring in June 2000 for the Recognition Improvement Program. Together, these programs will have raised the nationwide system finalization to 85.2 percent after deployment of the Recognition Improvement Program later this year. This DAR targets an additional 8 percentage point increase in the system finalization rate, which would raise it to 93.2 percent. We have requested funding to cover up to an 11 percentage point increase to encourage the contractor to exceed our current expectations.

The projected savings are based on improvements to the total system recognition capability achieved through enhancements to our existing optical character reader (OCR) equipment and/or remote computer reader (RCR) equipment. A pay for performance contract will be awarded which ensures that the selected contractor meets or exceeds designated performance goals to be compensated. Therefore, the contractor will only be paid for improvements that are actually achieved.

2.0 Background

The Postal Service's letter automation goals and strategies were first defined in our 1988 Corporate Automation Plan. This plan envisioned a national network of equipment that, with customer participation, would allow barcoding of virtually all letter mail for automated sorting. We have accomplished our letter automation goals through the use of two types of equipment: (1) equipment that produces barcodes—Multiline Optical Character Readers (MLOCRs) and the Remote Bar Coding System (including RCR); and (2) equipment that processes barcodes—Mail Processing Bar Code Sorters, Delivery Bar Code Sorters, and Carrier Sequence Bar Code Sorters.

Over the last four years, we have been continually enhancing and improving all of this equipment to increase the amount of letter mail handled by automation and thus, reduce processing costs. One of the areas in which we have had tremendous success has been improving recognition rates of our MLOCR and RCR equipment. The upgrade proposed in this report will continue this success by achieving additional system finalization rate increases on this type of equipment. As our ability to resolve addresses improves, so does productivity because mail can be sorted without the manual keying of addresses.

The success of our past recognition improvement programs has allowed the Postal Service to consolidate many of its Remote Encoding Centers (RECs). Since September

1999, we have closed 23 of the original 55 RECs, and by June 2001, we plan to close 5 additional sites. This will reduce the number of RECs still in operation to 27. There are other REC consolidation options being considered that could result in the closure of 4 additional RECs. Since manual keying is the most expensive means of barcode application, reducing the keying workload at these centers by improving address recognition capabilities continues to be a key goal for the Postal Service.

3.0 Description

The funding requested will be used to upgrade the recognition capabilities of 255 existing RCRs and existing OCR equipment (including 875 MLOCRs and 211 Delivery Bar Code Sorters with Input/Output Sub-System). It covers new software that improves address recognition technology as well as new hardware that supports additional capacity needs. We are targeting an 8 percentage point increase in the system finalization rate with this program, but we have included funding to cover up to an 11 percent improvement in case the contractor is able to perform better than expected. We are also targeting an error rate reduction of up to 50 percent. The target improvement is expected to raise the current system finalization rate from 85.2 percent to 93.2 percent with an error rate below 2 percent.

The essential elements of the proposed upgrade are:

- Early deployment of hardware upgrades will allow the OCR and RCR equipment to maintain their throughput levels.
- Incremental software releases that exploit a variety of technologies are expected to improve the system finalization rate from the baseline of 85.2 percent to 93.2 percent by February 2004.
- Performance-based contracts in which payments will be tied to demonstrated performance improvements above established baselines. Rigorous tests will be conducted by Engineering to verify performance increases.

As software advances are made during the deployment cycle, previously deployed sites will receive the most current software updates.

4.0 Economic Analysis

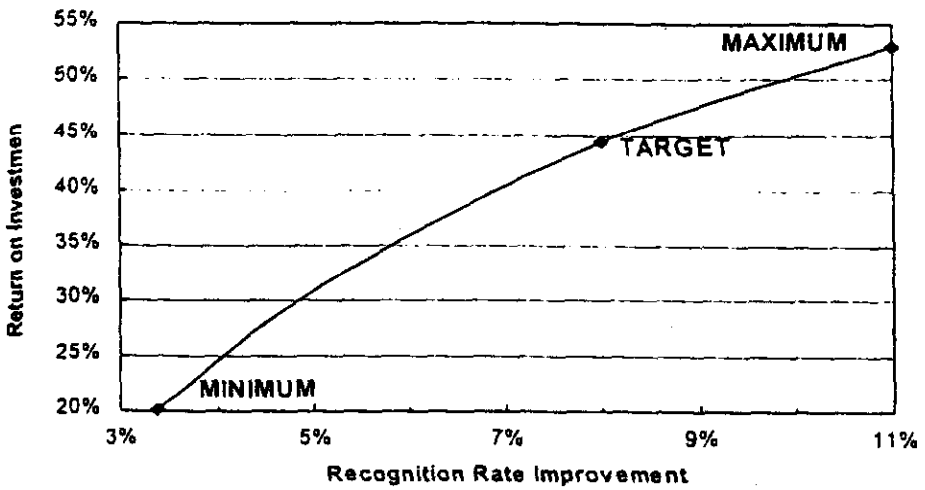
4.1 Basis of Savings

The primary benefit from a higher system finalization rate is a reduction in keying work hours required at RECs. This reduction will begin in FY 2002 and ramp up through FY 2004. Savings expected from this program at the target scenario are about $92.5 million in FY 2005, which is the first full year of savings. A two-month lag in capturing savings from the time an upgrade is fully deployed has been included in return on investment projections to allow for attrition of personnel at RECs.

Actual performance improvements will be measured through formal tests using a large representative sample of address images collected at numerous sites to verify the performance improvements and compliance with existing throughput and error rate values. Exhibit 4 lists the major assumptions used in this analysis and Exhibit 5 contains a sensitivity analysis that shows varying degrees of recognition improvement

and their associated return on investment expectations as illustrated in the following chart.

Return on Investment Expectations
at varying System Finalization Rate Improvements



4.2 Financial Summary

The [redacted] investment requested in this report include[redacted] as an additional incentive to pay the contractor if system finalization rate increases are achieved above the 8 percent target amount. This request also includes [redacted] to cover reductions in error rates associated with finalized mail pieces. Following is a summary of the required investment and expected savings from this program.

LETTER RECOGNITION ENHANCEMENT PROGRAM
INVESTMENT SUMMARY

Capital Investment	[redacted]
Error Reduction Incentive	
Total Capital Investment for Target Scenario	
Total Expense Investment for Target Scenario	
Total Investment for Target Scenario	
Above 8% Target Performance Capital Contingency	[redacted]
Total Investment Requested for Approval	

	Target Scenario	Maximum Scenario
Operating Variances	[redacted]	[redacted]
Net Present Value @ 11% discount rate	$182,554,919	$280,932,134
Return on Investment	44.4%	53.0%

Exhibits 1 and 2 contain the cash flows for the target and maximum scenarios, respectively. The target scenario assumes an 8 percent increase in system finalization rate over the baseline system, while the maximum scenario reflects an above target improvement of 11 percent. Exhibit 3 has descriptions of the cash flow line items.

5.0 Risk

The technical, operational, and financial risks associated with this program are low since incentive-based, pay-for-performance contracts will be awarded. Funding is included to cover additional design modifications and supplemental hardware that may be needed to sustain current Remote Bar Coding System performance levels, especially during heavy volume periods. Also, any hardware used for the upgrades will be standard computer equipment. Finally, the software will be based on proven concepts and will be thoroughly tested and verified for performance.

6.0 Procurement and Deployment Plans

Significant recognition improvement has been made using competitive acquisition procedures. Based on the results of these competitions and in order to achieve the fullest potential for further improvement, image arbitration and technical considerations will require the selection of a single firm to act as an integrator for our systems through which the market will provide further enhancements. A single firm approach would provide that offered system enhancements as well as our program savings are captured at the earliest time. However, for purposes of the economics of this DAR, the projected savings herein are based on a more conservative competitive approach. In either case, the selected contractor will be paid for each percentage point of improvement in the system finalization rate achieved through their OCR/RCR enhancements. They will only be paid after the Postal Service has verified these recognition improvements, as is being done in the current contract.

The contract will specify that (1) the OCR and RCR equipment throughput rates at each site may not decrease below current levels; (2) Finest Depth of Sort may not decrease below current levels; and (3) error rates cannot increase above the current level. There will also be an incentive provision rewarding the contractor for error rate reductions beyond current levels. They will be compensated for each one-tenth of a point improvement in error rate achieved in relation to the baseline error rate in the equipment and software deployed at that time provided they do not lower the finest sort rate, finalization rate, and throughputs of the system. Funding is included to cover up to a 50% reduction in current error rates.

Several software releases are expected during the course of the contract. As with previous recognition improvements, tests will be conducted by the Postal Service, using a large representative national sample of letter mail images, to verify performance improvements and compliance with throughput and error rate parameters. Contract award is expected in August 2001. Associated hardware is expected to be deployed from February 2002 – June 2002 and incremental software releases are expected during February 2002 – February 2004. A program schedule is included as Exhibit 6.

7.0 Recommendation

It is recommended tha[redacted]n capital funds and[redacted]n expense funds, for a total investment o[redacted]be approved for additional hardware and software improvements to existing OCR and RCR equipment. This amount will cover up to an 11 percentage point improvement in system finalization rates for letter mail.

Exhibit 1

Letter Recognition System Enhancement Program
Target Cash Flow

REDACTED

Exhibit 2

Letter Recognition System Enhancement Program
Maximum Cash Flow

REDACTED

Exhibit 3

Description of Cash Flow Line Items

REDACTED

11

Exhibit 4
Major Assumptions

Volumes

- Total Candidate Volume is 43.326 billion pieces per year (FY 2000)
  - Candidate FY 2000 volume that enters the recognition system via the MLOCR or DIOSS equipment is 33.161 billion letters per year
  - Candidate FY 2000 volume that flows to RCR directly from AFCS is 10.165 billion letters per year
- Annual Volume Growth (Decrease) Factors : FY2001 = (3.33%); FY2002 = (2.3%); FY2003 = (3.35%); FY2004 = (2.58%); FY2005 = (3.56%); FY2006 = (3.23%); FY 2007 = (4.05%); FY 2008 = (2.49%); FY 2009 = (3.95%)
- 286 processing days per year

Remote Encoding Center (REC) Performance

- Effective Productivity: 605 images per workhour
- DAR assumes no supervision savings

System Performance Improvement & Savings

Assumption	Target Scenario	Maximum Scenario
System Recognition Improvement	8%	11%
REC Site Capture Rate	90%	90%
ROI	44.4%	53.0%

- Savings result from reduced keying workhours at REC sites
- Savings will begin 2 months after deployment

Economic Factors

- REC 70/30 composite labor rate: $18.73 per hour (FY 2001)
- Maintenance ET-9 labor rate: $37.17 per hour (FY 2001)
- Postal labor escalation factor: 2.8% per year
- Non-Postal labor escalation factor: 3.8% per year
- All other costs escalation factor: 1.7% per year
- Cost of capital: 6.5%
- Generative project risk factor: 4.5%
- Total discount rate used for present value calculations: 11%

Exhibit 5
Sensitivity Analysis
(Investment vs. Improvement)

(1) System Finalization Improvement	[redacted]	(3) Annual Workhour Savings	(4) Net Present Value	(5) Return on Investment
11%		6,853,606	$280,932,134	53.0%
Target Scenario 8%		4,984,441	$182,554,919	44.4%
5%		3,115,275	$84,177,704	31.0%
Minimum Scenario 3.4%		2,118,387	$31,709,856	20.1%

NOTES:

(1) Improvement in system finalization rate over current baseline of 85.2%; this baseline includes RCR version 7.5.1 and the soon-to-be-deployed Recognition Improvement Program OCR upgrade (RIP-2C)

(2) Combined capital and expense investment; includes maximum incentive contract payments for improvement of finalization rate and error rate over baseline

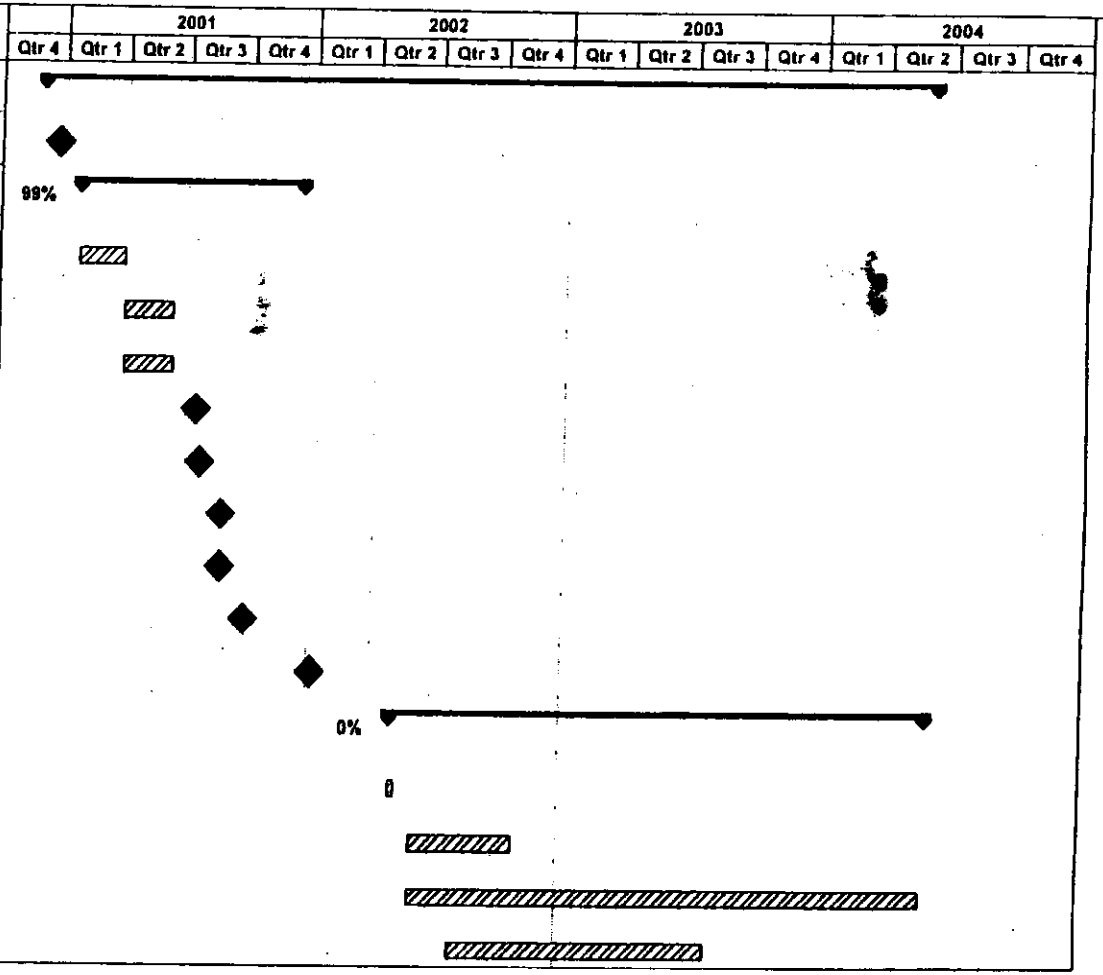
(3) REC site savings due to reduced keying workload

(4) Over 5 year period, discounted at 11%

(5) Over a 5 year estimated life

Exhibit 6
Letter Recognition Enhancement Program

Program Status	Plan Start	Plan Finish
Letter Recognition Enhancement Program	08/01/2000	02/01/2004
Project Inception	08/01/2000	08/01/2000
Pre-Deployment Activities	**09/25/2000**	**08/15/2001**
DAR preparation	09/25/2000	11/30/2000
DAR submission & finalization	11/30/2000	02/09/2001
Finance review & validation	11/30/2000	02/09/2001
CIC review	02/22/2001	02/22/2001
PMG review	03/01/2001	03/01/2001
CPC review and recommendation	04/02/2001	04/02/2001
CPC report to BOG	04/02/2001	04/02/2001
BOG approval and funding	05/08/2001	05/08/2001
Contract award	08/15/2001	08/15/2001
Deployment Activities	**01/01/2002**	**02/01/2004**
First article acceptance test	01/01/2002	01/08/2002
Hardware Deployment	02/01/2002	06/30/2002
Software Deployment (multiple releases)	02/01/2002	02/01/2004
First Year Savings	04/01/2002	04/01/2003



Project: Letter RecognitionEnhancement Program
Date: February 6, 2001

Task
Summary
External Tasks
Project Summary
Split
Rolled Up Split