Existing Product Intake Program (EPIP)

Patch LR\*5.2\*476

Remediation Plan



Department of Veterans Affairs

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**Version 3.0**

Revision History

| Date | Version | Description | Author |
| --- | --- | --- | --- |
| 03/03/2017 | 3.0 | Minor changes throughout. Updated Section 3 (Patch Description) to describe use of EXECUTE CODE file (#62.07). | EPIP Project Team |
| 12/22/2016 | 2.0 | Updated entire document | EPIP Project Team |
| 11/28/2016 | 1.0 | Initial (draft) version | EPIP Project Team |

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# Introduction

The Department of Veterans Affairs (VA) currently utilizes the Veterans Health Information Systems and Technology Architecture (VistA) suite of applications to provide clinical, financial, infrastructure, and management tools. The process of advancing “Class 3” field-developed VistA software to “Class 1” nationally-distributed status is referred to as the Existing Product Intake Program (EPIP). The VA’s goal is to supplement ongoing activities associated with evaluating and advancing field-developed software to a state that meets national standards and facilitates release for Veterans Health Administration (VHA)-wide use.

# Purpose

The purpose of this document is to fully describe the remediation plan to be used for the successful remediation and testing of the intake product code to be deployed as patch LR\*5.2\*476. This patch addresses the following NSRs:

* NSR20150801 *Print User Name - ID Number for Quality Review*

This NSR has been implemented locally at the VA Medical Center in Cleveland OH.

* NSR20090305 *LAB RESULT REPORT FUNCTION Fileman*

This NSR has been implemented locally at the following VA Medical Centers: Richmond VA (and other VISN 6 locations), Indianapolis IN, Tuscaloosa AL, Minneapolis MN, and Oklahoma City OK.

* NSR20161009 *Batch Entry of Microbiology Preliminary Comments*

This NSR has been implemented locally at the following VA Medical Centers: Los Angeles CA, Albuquerque NM, Asheville NC, and San Diego CA.

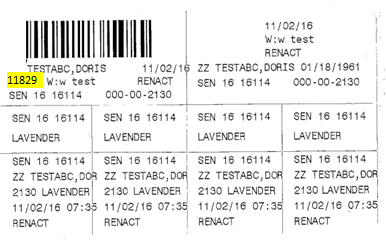
This document addresses the schedule, code remediation, testing, documentation, and delivery of this remediation effort.

# Patch Description

LR\*5.2\*476 provides the following enhancements to VistA:

* Enables tracking of users who reprint Laboratory accession labels. When a user reprints an accession label for a specimen, this enhancement adds the user’s internal number to the label for quality control purposes. This internal number is the Designated User (DUZ) from the NEW PERSON file (#200). The lab routines LRLABXOL and LRLABXT have been modified to support this enhancement.

Printing of the user’s DUZ on the label applies only to existing accessions; that is, those reprinted after the original accession was created.



**Reprinted Accession Label**

* Enables reporting on historical lab results through FileMan. This Lab Result Report Function (LRRF) enhancement consists of a FileMan report used by Pharmacy Automated Data Processing Application Coordinators (ADPACs) and lab informaticists. The report shows lab results for a specified patient, lab test, and specimen type, looking back over a specified number of days. This enhancement applies only to lab tests with verified results.

Users must be familiar with FileMan file structure and commands to run the report. Input parameters are: a) the Internal Entry Number (IEN) of the patient; b) the IEN of the lab test in the LABORATORY TEST file (#60); c) the specimen type IEN from the TOPOGRAPHY FIELD file (#61); and d) the look-back number of days. The new FileMan function LRRESULT and the new lab routine LRFRSLT are exported to support this enhancement.

* Enables batch entry of preliminary comments for designated accession numbers. When a Microbiology Technician enters preliminary comments for accessions with negative cultures, this enhancement enables the technician to enter the same comment for multiple accession numbers. For example, a site might process hundreds of urine cultures daily. Currently, the technician must enter a “No growth after 24 hours” preliminary result individually for each applicable accession. With this modification, technicians can enter the same preliminary result for all applicable accessions at once, reducing the time and effort required to make preliminary results available for clinical use.

This modification adds the following sub-fields from the LAB DATA file (#63), MICROBIOLOGY field (#5), sub-file #63.05, to the RB Results Entry (Batch) [LRMISTUF] menu option in VistA: PRELIMINARY BACT COMMENT (#1) for Bacteriology accessions; PRELIMINARY MYCOLOGY COMMENT (#20.5) for Mycology accessions; and PRELIMINARY TB COMMENT (#26.5) for Mycobacteriology accessions. For each sub-field selected, the technician enters the preliminary comment and then enters the accession numbers to be updated with that comment.

If the technician enters a preliminary comment in one of the new sub-fields, routine LRMISTF updates the corresponding BACTERIOLOGY, TB BACTERIOLOGY, or MYCOLOGY data record in the EXECUTE CODE file (#62.07), EXECUTE CODE field (#1).

## Needs and Requirements

The Needs and Requirements for the NSRs addressed in this remediation are:

NSR20150801 *Print User Name - ID Number for Quality Review:*

* NEED 619736: Identification Added To A Reprinted Lab Accession Label – As a laboratory technician/technologist/administrator I need the user name and tech identifier number added to a reprinted a lab accession label so that I can use this information for quality control purposes in identifying who reprinted the label.

NSR20090305 *LAB RESULT REPORT FUNCTION Fileman:*

* NEED 385920: LRRF Display Lab Results with Test Specimen – The ability to display lab results for a given test and specimen for a given date range.
* REQUIREMENT 392844: Display Lab Results Medication/Lab Result Pair – Provide the ability to view lab results for a medication and lab result pair for a patient or group of patients.

NSR20161009 *Batch Entry of Microbiology Preliminary Comments:*

* NEED 848797: For Microbiology Technicians who enter preliminary comments during processing of Microbiology tests, a process is needed that provides the ability to enter similar preliminary comments in batch that improves the efficiency in which Microbiology tests can be processed.

# Points of Contact

The VA Point of Contact (POC) for NSR20150801 *Print User Name - ID Number for Quality Review* is

The VA POC for NSR20090305 *LAB RESULT REPORT FUNCTION Fileman* is

The VA POC for NSR20161009 *Batch Entry of Microbiology Preliminary Comments*.

# Code Remediation

Leidos will review and analyze the intake product code for compliance with coding standards, pointers, shared tables, dependencies, and any interference with VistA systems.

## Standards and Conventions

Leidos will reference the website for applicable documents and will adhere to VA standards to complete the analysis of this intake product. The output of the VA XINDEX utility will be used to analyze the MUMPS source code and document the affected routines (see Appendix A).

The MUMPS coding standards website <http://71.174.62.16/Demo/AnnoStd> will also be used to ensure that the remediated code conforms to VA standards.

## Review and Analysis

Review and analysis of this intake product involves two parts: 1) verification that the source code changes specified in this document provide the desired effect within VistA, and 2) verification that the source code changes do not adversely affect any other VistA functionality.

Testing will be performed to validate that the intended effect of these products is implemented, and that no other VistA or CPRS Graphical User Interface (GUI) functionality is adversely affected.

## Coding Changes

The coding changes required for NSR20150801 *Print User Name - ID Number for Quality Review* are in the following MUMPS routines:

**Modified routines:** LRLABXOL, LRLABXT

**New routines:** None

The coding changes required for NSR20090305 *LAB RESULT REPORT FUNCTION Fileman* are in the following MUMPS routines:

**Modified routines:** None

**New routines:** LRFRSLT

**New FileMan function:** LRRESULT (calls routine LRFRSLT)

The coding changes required for NSR20161009 *Batch Entry of Microbiology Preliminary Comments* are in the following MUMPS routines:

**Modified routines:** LRMISTF

**New routines:** None

A detailed analysis of the coding changes is provided in Appendix B.

# Testing

Leidos will perform all testing-related activities to ensure that the remediated code meets the expectations of the VA business owner.

## Test Plan

Leidos will configure the test environment, provide code modifications and end-to-end testing, and deliver applicable testing documentation, following Veteran-focused Integration Process (VIP) guidelines.

The Leidos developer will modify the software pursuant to the VA standards defined in the *Standards and Conventions* section of this document, and will conduct full unit testing of the functionality and verify performance of all software code before it is released to Leidos SQA. SQA will then perform all applicable testing types as described in the *Testing Phases* section of this document. The developer and SQA will resolve problems and address issues as they arise during testing and will document issues using the Rational Team Concert (RTC) defect tracking tool.

## Test Environment

Within five working days of approval of this Remediation Plan, the developer will configure the development/test environment on an Austin Information Technology Center (AITC) server or other VA-approved development/test environment used for this intake product and install the remediated Kernel Installation and Distribution System (KIDS) build. The environment will be restored to its original baseline state by the VistA system administrator after development testing is completed, followed by installation of the remediated software.

Upon notification from the developer of test environment readiness, SQA will commence with planned testing activities. The SQA test execution and reporting documentation will reside in the Rational Quality Manager (RQM) “EPIP” Project. In order to perform testing of this VistA modification, the following tools will be leveraged: RQM, Reflections emulator, CPRS GUI   
v31 (1.0.30.75), and SnagIt.

## Test Readiness Review

Leidos will conduct a Test Readiness Review (TRR) at the conclusion of unit testing to verify the contents of the software to be tested, the test schedule, test environments, test participants, and associated logistics. Leidos will provide an agenda prior to the TRR and written minutes after completion of the TRR, in accordance with the Performance Work Statement (PWS).

## Testing Phases

Leidos will perform development and SQA testing activities in phases, and will provide all required testing documentation.

### Unit Testing

The developer will conduct unit testing of individual units of source code to determine if they are fit for use.

### Component Integration and Systems Testing (CI/ST)

Component integration and systems testing will be conducted by SQA to ensure that connectivity to the VistA application exists and is functioning normally. SQA will record Passed/Failed outcomes and capture displayed content to document the system testing effort.

### Functional Testing

Functional testing will be performed by SQA to test the code modifications. This testing will ensure that the software functionality is in alignment with the Government Furnished Information. SQA will record Passed/Failed outcomes and capture displayed content to document the functional testing effort.

### Regression Testing

Regression Testing will be performed by SQA to ensure that the remediated code does not introduce errors to existing functionality. The regression test framework will be kept up-to-date with manual test cases and test scripts defining the inputs and expected outcomes. SQA will record Passed/Failed outcomes and capture displayed content to document the regression testing effort.

### Section 508 Compliance Testing

508 testing will be performed on VistA and CPRS code when new CPRS GUI changes are introduced by the developer. The VA-recommended Assistive Technology tool, JAWS, will be used to conduct the 508 testing. Test results and related documentation will be submitted to the VA Section 508 team in accordance with the VA 508 testing requirements. Defects found during testing will be assessed and remediated by the developer.

# Documentation Remediation

Leidos will review existing VA documentation for possible impact as a result of this remediation effort, and will make updates where applicable.

To determine the existing VA documentation that requires modification, Leidos will conduct a thorough review of the documents currently available from the VA Software Document Library (VDL) located at. Keyword searches using terms relevant to this remediation effort will be used to identify documents that might be impacted; those documents were will then be reviewed in their entirety for any needed revisions.

The following sections outline the VDL documents to be revised for this remediation.

## User Guides

The following User Guide will be updated in the VDL:

* *Laboratory User Manual*

## Installation Guides

The *National Patch Module Patch Description* document for this remediation will provide the procedure for installing KIDS packages migrated from the test environment to the VA   
Pre-Production environments. Therefore, no Installation Guides will be updated.

## Technical Manuals

The following Technical Manual will be updated in the VDL:

* *Laboratory Technical Manual*

## Operations Manuals

No Operations Manuals require revision as a result of this modification.

# Project Reporting

Leidos will provide interim progress updates during daily Scrum calls and weekly management calls with VA representatives.

# Project Schedule

Leidos will follow the Scrum Agile methodology for software development. It is anticipated that this patch will require five 2-week sprints.

# Deployment

Leidos will create a KIDS package containing the software changes necessary to fulfill the requirements for this remediation effort. A KIDS package, along with all related documentation, will be delivered to the Contracting Office Representative (COR) for acceptance. If accepted, the KIDS package can then be released for national VA consumption; otherwise, Leidos will correct any defects found and repeat the necessary remediation activities.

# Sustainment Requirements

Leidos will provide maintenance support for 60 days to the VA to support the final Class 1 product after it is nationally released.

# Maintenance and Knowledge Transfer

To facilitate continuous process improvement, Leidos will deliver *Sprint Review and Retrospective* slides and a *Lessons Learned* *Report* to VA upon completion of the final sprint.

XINDEX Listing for MUMPS Code Changes

The XINDEX tool is the standard tool used by the VA to analyze MUMPS source code. Following is a listing of the results of the XINDEX analysis of the affected routines.

VISTAS1:VISTA>D ^XINDEX

V. A. C R O S S R E F E R E N C E R 7.3

[2008 VA Standards & Conventions]

UCI: VISTA CPU: ROU Dec 14, 2016@08:15:49

All Routines? No => No

Routine:

0 routines

Select BUILD NAME: LR\*5.2\*476

Include the compiled template routines: N//

Print more than compiled errors and warnings? YES//

Print summary only? NO//

Print routines? YES//N

Print the DDs, Functions, and Options? YES//

Print errors and warnings with each routine? YES//

Save parameters in ROUTINE file? NO//

Index all called routines? NO//

DEVICE: ;80;9999 HOME (CRT)

V. A. C R O S S R E F E R E N C E R 7.3

[2008 VA Standards & Conventions]

UCI: VISTA CPU: ROU Dec 14, 2016@08:15:49

The BUILD file Data Dictionaries are being processed.

The option and function files are being processed.

Routines are being processed.

Routines: 4 Faux Routines: 1

LRFRSLT LRLABXOL LRLABXT LRMISTF

Data Dictionaries

|func

--- CROSS REFERENCING ---

Compiled list of Errors and Warnings Dec 14, 2016@08:15:49 page 1

No errors or warnings to report

Source Code Changes

This appendix displays the VistA code before and after the updates required for this code modification were implemented. The following routines and FileMan function were affected:

**Modified routines:** LRLABXOL, LRLABXT, LRMISTF

**New routines:** LRFRSLT

**New FileMan function:** LRRESULT (calls routine LRFRSLT)

**LRLABXOL**

**Before:**

LRLABXOL \* \* 57 LINES, (total 1830, comments 276) BYTES Page 1

RSUM: old 2794683, new 5111104

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVNOV 18,2016@14:13

1 LRLABXOL --

;RVAMC/PLS/DALISC/FHS - REPRINT ACCESSION LABELS FOR ENTIRE ORDER ; 5/19/93 07:40

2 ;;5.2;LAB SERVICE;\*\*11,121,161\*\*;Sep 27, 1994

3 ; Will print all the required labels for a entire order.

4 EN K ZTSK

5 D IOCHK^LRLABXT G END:'$D(LRLABLIO)

6 D PSET^LRLABLD

7 S LRHDR="Select Order Number: "

8 1 U IO(0)

9 W !!,LRHDR R LRORD:DTIME G:'$T END G:(LRORD="")!(LRORD="^") END I LRORD?.AP!(LRORD<1) W !,"Enter a whole number for the

order number." G 1

10 S LRORD=+LRORD

11 S LRODT=$O(^LRO(69,"C",LRORD,0))

12 I +LRODT<1 W " ORDER NUMBER NOT FOUND" G 1

13 I '$$GOT^LROE(LRORD,LRODT) W !!,"All tests for this order have been canceled." H 1 G 1

14 I $D(LRLABLIO("Q")) D G END

15 . S ZTIO=LRLABLIO,ZTRTN="QUE^LRLABXOL",ZTDESC="LAB ORDER LABELS",ZTSAVE("LR\*")=""

16 . D ^%ZTLOAD

17 . W !,"Labels have been tasked to print ",!

18 D QUE

19 K LRORD

20 U IO(0) W !?10,"Label(s) Printed",! S LRHDR="Another Order Number: "

21 G 1

22 ;

23 QUE ;

24 S LRODT=0

25 F S LRODT=$O(^LRO(69,"C",LRORD,LRODT)) Q:LRODT<1 D 2,PRINT

26 I $D(ZTQUEUED) S ZTREQ="@"

27 Q

28 ;

29 2 ;

30 S LRSN=0

31 F S LRSN=+$O(^LRO(69,"C",LRORD,LRODT,LRSN)) Q:LRSN<1 D SQ

32 Q

33 ;

34 SQ ; Search for accession numbers and build LRORD array 'ORD #(SEQ #,ACC AREA,ACC DATE, ACC #)=""'

35 Q:'$D(^LRO(69,LRODT,1,LRSN,2,0))

36 S SEQ=0

37 F S SEQ=+$O(^LRO(69,LRODT,1,LRSN,2,SEQ)) Q:SEQ<1 D

38 . S X=$G(^LRO(69,LRODT,1,LRSN,2,SEQ,0)),LRAD=$P(X,U,3),LRAA=$P(X,U,4),LRAN=$P(X,U,5)

39 . I LRAA,LRAD,LRAN S LRORD(LRSN,LRAA,LRAD,LRAN)=""

40 Q

41 ;

42 PRINT ; Loop thru array and print labels.

43 U IO

44 S LRAA=""

45 F S LRX=$Q(LRORD) Q:LRX="" Q:$QS(LRX,0)'="LRORD" D

46 . S LRSN=$QS(LRX,1)

47 . I LRAA'=$QS(LRX,2) S LRAA=$QS(LRX,2) D LBLTYP^LRLABLD

48 . S LRAD=$QS(LRX,3),LRAN=$QS(LRX,4)

49 . K LRORD(LRSN,LRAA,LRAD,LRAN)

50 . N LRORD,LRX

51 . D PRINT^LRLABXT

52 Q

53 ;

54 END ;

55 K LRHDR,LRORD,SEQ,ZTSK

56 D K^LRLABXT

57 Q

======================================================================

**After:**

LRLABXOL \* \* 60 LINES, (total 1961, comments 369) BYTES Page 1

RSUM: old 2821279, new 5338976

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVNOV 18,2016@13:49

1 LRLABXOL --

;RVAMC/PLS/DALISC/FHS - REPRINT ACCESSION LABELS FOR ENTIRE ORDER ; 10/24/16 3:40pm

2 ;;5.2;LAB SERVICE;\*\*11,121,161,476\*\*;Sep 27, 1994

3 ; Will print all the required labels for a entire order.

4 EN K ZTSK

5 D IOCHK^LRLABXT G END:'$D(LRLABLIO)

6 D PSET^LRLABLD

7 S LRHDR="Select Order Number: "

8 1 U IO(0)

9 W !!,LRHDR R LRORD:DTIME G:'$T END G:(LRORD="")!(LRORD="^") END I LRORD?.AP!(LRORD<1) W !,"Enter a whole number for the

order number." G 1

10 S LRORD=+LRORD

11 S LRODT=$O(^LRO(69,"C",LRORD,0))

12 I +LRODT<1 W " ORDER NUMBER NOT FOUND" G 1

13 I '$$GOT^LROE(LRORD,LRODT) W !!,"All tests for this order have been canceled." H 1 G 1

14 ; LR\*5.2\*476/CR - 10/24/16, capture who is reprinting a label

15 N LRPRTDUZ S LRPRTDUZ=DUZ

16 I $D(LRLABLIO("Q")) D G END

17 . S ZTIO=LRLABLIO,ZTRTN="QUE^LRLABXOL",ZTDESC="LAB ORDER LABELS",ZTSAVE("LR\*")=""

18 . D ^%ZTLOAD

19 . W !,"Labels have been tasked to print ",!

20 ; end changes for label reprint

21 D QUE

22 K LRORD

23 U IO(0) W !?10,"Label(s) Printed",! S LRHDR="Another Order Number: "

24 G 1

25 ;

26 QUE ;

27 S LRODT=0

28 F S LRODT=$O(^LRO(69,"C",LRORD,LRODT)) Q:LRODT<1 D 2,PRINT

29 I $D(ZTQUEUED) S ZTREQ="@"

30 Q

31 ;

32 2 ;

33 S LRSN=0

34 F S LRSN=+$O(^LRO(69,"C",LRORD,LRODT,LRSN)) Q:LRSN<1 D SQ

35 Q

36 ;

37 SQ ; Search for accession numbers and build LRORD array 'ORD #(SEQ #,ACC AREA,ACC DATE, ACC #)=""'

38 Q:'$D(^LRO(69,LRODT,1,LRSN,2,0))

39 S SEQ=0

40 F S SEQ=+$O(^LRO(69,LRODT,1,LRSN,2,SEQ)) Q:SEQ<1 D

41 . S X=$G(^LRO(69,LRODT,1,LRSN,2,SEQ,0)),LRAD=$P(X,U,3),LRAA=$P(X,U,4),LRAN=$P(X,U,5)

42 . I LRAA,LRAD,LRAN S LRORD(LRSN,LRAA,LRAD,LRAN)=""

43 Q

44 ;

45 PRINT ; Loop thru array and print labels.

46 U IO

47 S LRAA=""

48 F S LRX=$Q(LRORD) Q:LRX="" Q:$QS(LRX,0)'="LRORD" D

49 . S LRSN=$QS(LRX,1)

50 . I LRAA'=$QS(LRX,2) S LRAA=$QS(LRX,2) D LBLTYP^LRLABLD

51 . S LRAD=$QS(LRX,3),LRAN=$QS(LRX,4)

52 . K LRORD(LRSN,LRAA,LRAD,LRAN)

53 . N LRORD,LRX

54 . D PRINT^LRLABXT

55 Q

56 ;

57 END ;

58 K LRHDR,LRORD,SEQ,ZTSK

59 D K^LRLABXT

60 Q

====================================================================

**LRLABXT**

**Before:**

LRLABXT \* \* 100 LINES, (total 3454, comments 322) BYTES Page 1

RSUM: old 6060326, new 16292452

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVNOV 18,2016@14:13

1 LRLABXT ;SLC/TGA - REPRINTS DEMAND LABELS ; 12/8/15 6:11pm

2 ;;5.2;LAB SERVICE;\*\*80,161\*\*;Sep 27, 1994

3 ;

4 EN ; Reprint labels

5 D IOCHK

6 I '$D(LRLABLIO) D K Q

7 D OPEN^%ZISUTL("LRHOME","HOME") ; Setup handle for user's "HOME" device.

8 D USE^%ZISUTL("LRHOME")

9 K DIR,DIRUT,DTOUT,DUOUT,X,Y

10 S DIR(0)="SO^1:Range of Accessions;2:Selected Accessions",DIR("A")="Selection Method",DIR("B")=1

11 D ^DIR

12 I $D(DIRUT) D K Q

13 S LRTYPE=+Y

14 ASK ;

15 D USE^%ZISUTL("LRHOME")

16 S (LRACC,LREXMPT)=1,(LRCNT,LRQUIT)=0

17 K ^TMP("LRLABXT",$J)

18 I LRTYPE=1 D

19 . D ^LRWU4

20 . I LRAN<1 S LRQUIT=1 Q ; User aborted selection.

21 . S FIRST=LRAN,X=$O(^LRO(68,LRAA,1,LRAD,1,":"),-1)

22 . W !

23 . S DIR(0)="NO^"\_LRAN\_":"\_X\_":0",DIR("A")="Reprint from "\_LRAN\_" to",DIR("B")=LRAN

24 . D ^DIR K DIR

25 . I $D(DIRUT) S LRQUIT=1 Q

26 . W !

27 . S LRAN=FIRST-1,LAST=Y

28 . F S LRAN=$O(^LRO(68,LRAA,1,LRAD,1,LRAN)) Q:'LRAN!(LRAN>LAST) D

29 . . W:$X>(IOM-1) ! W "." ; Let user know we're looking.

30 . . D SETTMP

31 I LRTYPE=2 F D Q:LRQUIT!(LRAN<1)

32 . D ^LRWU4

33 . I $D(DTOUT)!($D(DUOUT)) S LRQUIT=1 Q

34 . I LRAN<1 S:'$D(^TMP("LRLABXT",$J)) LRQUIT=1 Q

35 . D SETTMP

36 I 'LRQUIT,LRCNT>10 D

37 . N DIR,DIRUT,DTOUT,DUOUT,X,Y

38 . S DIR(0)="YO",DIR("A",1)="Reprinting labels for "\_LRCNT\_" accessions!",DIR("A")="Are you sure",DIR("B")="NO"

39 . D ^DIR

40 . I Y<1!($D(DIRUT)) S LRQUIT=1 Q

41 I LRQUIT D K Q

42 I $D(LRLABLIO("Q")) D G ASK

43 . S ZTIO=LRLABLIO,ZTRTN="LOAD^LRLABXT",ZTDESC="Reprint Lab Accession Labels"

44 . S ZTSAVE("^TMP(""LRLABXT"",$J,")=""

45 . D ^%ZTLOAD

46 . W !,"Labels ",$S($G(ZTSK):"queued to "\_$P(LRLABLIO,";")\_" Task #"\_ZTSK,1:"NOT queued"),!

47 . K ZTSK,ZTRTN,ZTIO,ZTDESC,ZTSAVE

48 W !!,"Printing labels on ",$P(LRLABLIO,";"),!

49 D USE^%ZISUTL("LRLABEL")

50 LOAD ; Tasked entry point and from above.

51 D PSET^LRLABLD

52 F S LRLABX=$Q(^TMP("LRLABXT",$J)) Q:LRLABX="" Q:$QS(LRLABX,1)'="LRLABXT"!($QS(LRLABX,2)'=$J) D

53 . S LRAA=$QS(LRLABX,3),LRAD=$QS(LRLABX,4),LRAN=$QS(LRLABX,5)

54 . D LBLTYP^LRLABLD

55 . D PRINT

56 . K @LRLABX

57 I $D(ZTQUEUED) D K Q

58 G ASK

59 ;

60 PRINT ;

61 ; Called by above, LRLABXOL

62 Q:'$D(^LRO(68,LRAA,1,LRAD,1,LRAN,0))

63 S X=^LRO(68,LRAA,1,LRAD,1,LRAN,0),LRSN=+$P(X,U,5),LRODT=+$P(X,U,4),LRLLOC=$P(X,U,7)

64 S LRCE=$P($G(^LRO(68,LRAA,1,LRAD,1,LRAN,.1)),"^")

65 S LRACC=$P($G(^LRO(68,LRAA,1,LRAD,1,LRAN,.2)),"^")

66 S LRRB=0

67 D LRBAR^LRLABLD

68 D GO^LRLABLD

69 Q

70 ;

71 IOCHK ; Select and check label printer.

72 ; Called from above, LRLABXOL

73 I '$D(LRLABLIO) D

74 . D ^LRLABLIO

75 . ; Time delay - allow port to be reopened if closed in call to LRLABLIO

76 . I $D(LRLABLIO),'$D(IO("Q")) H 2

77 I '$D(LRLABLIO) Q

78 I '$D(LRLABLIO("Q")) D

79 . N %ZIS,IOP

80 . S %ZIS="",IOP=LRLABLIO

81 . D OPEN^%ZISUTL("LRLABEL",IOP,.%ZIS) ; Setup handle for user's LABEL device.

82 . I POP D

83 . . W !,$C(7),"Unable to open device"

84 . . K LRLABLIO

85 Q

86 ;

87 SETTMP ; Setup TMP global with accession to reprint.

88 S LRCNT=LRCNT+1,^TMP("LRLABXT",$J,LRAA,LRAD,LRAN)=""

89 Q

90 ;

91 K ; Cleanup

92 I $D(ZTQUEUED) S ZTREQ="@"

93 E D CLOSE^%ZISUTL("LRLABEL"),CLOSE^%ZISUTL("LRHOME"),PKILL^%ZISP

94 D KVAR^LRX

95 K %,IO("Q"),A,B,DIC,I,I1,IOP,J,K,L,LAST,N,POP,R,S1,S2,T,X,Y,Z

96 K LRAA,LRACC,LRAD,LRAN,LRCE,LRCNT,LRDAT,LRDPF,LREXMPT,LRINFW,LRLABEL,LRLF,LRDFN,LRODT,LRPREF,LRSSP

97 K LRNOLABL,LRPRAC,LRTJ,LRTJDATA,LRLABX,LRQUIT,LRTOP,LRTS,LRTYPE,LRTV,LRTVOL,LRTXT,LRVOL,LRLABLIO,LRFN,LRAD,LRLLOC,LRNN,L

RRB,LRSN

98 K LRX,LRXL,LRBAR,LRBAR1,LRBAR0,LRBARID,LRUID,LRURG,LRURG0,LRURGA

99 K ^TMP("LRLABXT",$J)

100 Q

====================================================================

**After:**

LRLABXT \* \* 102 LINES, (total 3568, comments 384) BYTES Page 1

RSUM: old 6132861, new 16727986

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVNOV 18,2016@13:50

1 LRLABXT ;SLC/TGA - REPRINTS DEMAND LABELS ; 10/24/16 3:46pm

2 ;;5.2;LAB SERVICE;\*\*80,161,476\*\*;Sep 27, 1994

3 ;

4 EN ; Reprint labels

5 D IOCHK

6 I '$D(LRLABLIO) D K Q

7 D OPEN^%ZISUTL("LRHOME","HOME") ; Setup handle for user's "HOME" device.

8 D USE^%ZISUTL("LRHOME")

9 K DIR,DIRUT,DTOUT,DUOUT,X,Y

10 S DIR(0)="SO^1:Range of Accessions;2:Selected Accessions",DIR("A")="Selection Method",DIR("B")=1

11 D ^DIR

12 I $D(DIRUT) D K Q

13 S LRTYPE=+Y

14 ASK ;

15 D USE^%ZISUTL("LRHOME")

16 S (LRACC,LREXMPT)=1,(LRCNT,LRQUIT)=0

17 K ^TMP("LRLABXT",$J)

18 I LRTYPE=1 D

19 . D ^LRWU4

20 . I LRAN<1 S LRQUIT=1 Q ; User aborted selection.

21 . S FIRST=LRAN,X=$O(^LRO(68,LRAA,1,LRAD,1,":"),-1)

22 . W !

23 . S DIR(0)="NO^"\_LRAN\_":"\_X\_":0",DIR("A")="Reprint from "\_LRAN\_" to",DIR("B")=LRAN

24 . D ^DIR K DIR

25 . I $D(DIRUT) S LRQUIT=1 Q

26 . W !

27 . S LRAN=FIRST-1,LAST=Y

28 . F S LRAN=$O(^LRO(68,LRAA,1,LRAD,1,LRAN)) Q:'LRAN!(LRAN>LAST) D

29 . . W:$X>(IOM-1) ! W "." ; Let user know we're looking.

30 . . D SETTMP

31 I LRTYPE=2 F D Q:LRQUIT!(LRAN<1)

32 . D ^LRWU4

33 . I $D(DTOUT)!($D(DUOUT)) S LRQUIT=1 Q

34 . I LRAN<1 S:'$D(^TMP("LRLABXT",$J)) LRQUIT=1 Q

35 . D SETTMP

36 I 'LRQUIT,LRCNT>10 D

37 . N DIR,DIRUT,DTOUT,DUOUT,X,Y

38 . S DIR(0)="YO",DIR("A",1)="Reprinting labels for "\_LRCNT\_" accessions!",DIR("A")="Are you sure",DIR("B")="NO"

39 . D ^DIR

40 . I Y<1!($D(DIRUT)) S LRQUIT=1 Q

41 I LRQUIT D K Q

42 ; LR\*5.2\*476/CR - 10/24/16, capture who is reprinting a label

43 N LRPRTDUZ S LRPRTDUZ=DUZ

44 I $D(LRLABLIO("Q")) D G ASK

45 . S ZTIO=LRLABLIO,ZTRTN="LOAD^LRLABXT",ZTDESC="Reprint Lab Accession Labels"

46 . S ZTSAVE("^TMP(""LRLABXT"",$J,")="",ZTSAVE("LR\*")=""

47 . D ^%ZTLOAD

48 . W !,"Labels ",$S($G(ZTSK):"queued to "\_$P(LRLABLIO,";")\_" Task #"\_ZTSK,1:"NOT queued"),!

49 . K ZTSK,ZTRTN,ZTIO,ZTDESC,ZTSAVE

50 W !!,"Printing labels on ",$P(LRLABLIO,";"),!

51 D USE^%ZISUTL("LRLABEL")

52 LOAD ; Tasked entry point and from above.

53 D PSET^LRLABLD

54 F S LRLABX=$Q(^TMP("LRLABXT",$J)) Q:LRLABX="" Q:$QS(LRLABX,1)'="LRLABXT"!($QS(LRLABX,2)'=$J) D

55 . S LRAA=$QS(LRLABX,3),LRAD=$QS(LRLABX,4),LRAN=$QS(LRLABX,5)

56 . D LBLTYP^LRLABLD

57 . D PRINT

58 . K @LRLABX

59 I $D(ZTQUEUED) D K Q

60 G ASK

61 ;

62 PRINT ;

63 ; Called by above, LRLABXOL

64 Q:'$D(^LRO(68,LRAA,1,LRAD,1,LRAN,0))

65 S X=^LRO(68,LRAA,1,LRAD,1,LRAN,0),LRSN=+$P(X,U,5),LRODT=+$P(X,U,4),LRLLOC=$P(X,U,7)

66 S LRCE=$P($G(^LRO(68,LRAA,1,LRAD,1,LRAN,.1)),"^")

67 S LRACC=$P($G(^LRO(68,LRAA,1,LRAD,1,LRAN,.2)),"^")

68 S LRRB=0

69 D LRBAR^LRLABLD

70 D GO^LRLABLD

71 Q

72 ;

73 IOCHK ; Select and check label printer.

74 ; Called from above, LRLABXOL

75 I '$D(LRLABLIO) D

76 . D ^LRLABLIO

77 . ; Time delay - allow port to be reopened if closed in call to LRLABLIO

78 . I $D(LRLABLIO),'$D(IO("Q")) H 2

79 I '$D(LRLABLIO) Q

80 I '$D(LRLABLIO("Q")) D

81 . N %ZIS,IOP

82 . S %ZIS="",IOP=LRLABLIO

83 . D OPEN^%ZISUTL("LRLABEL",IOP,.%ZIS) ; Setup handle for user's LABEL device.

84 . I POP D

85 . . W !,$C(7),"Unable to open device"

86 . . K LRLABLIO

87 Q

88 ;

89 SETTMP ; Setup TMP global with accession to reprint.

90 S LRCNT=LRCNT+1,^TMP("LRLABXT",$J,LRAA,LRAD,LRAN)=""

91 Q

92 ;

93 K ; Cleanup

94 I $D(ZTQUEUED) S ZTREQ="@"

95 E D CLOSE^%ZISUTL("LRLABEL"),CLOSE^%ZISUTL("LRHOME"),PKILL^%ZISP

96 D KVAR^LRX

97 K %,IO("Q"),A,B,DIC,I,I1,IOP,J,K,L,LAST,N,POP,R,S1,S2,T,X,Y,Z

98 K LRAA,LRACC,LRAD,LRAN,LRCE,LRCNT,LRDAT,LRDPF,LREXMPT,LRINFW,LRLABEL,LRLF,LRDFN,LRODT,LRPREF,LRSSP

99 K LRNOLABL,LRPRAC,LRTJ,LRTJDATA,LRLABX,LRQUIT,LRTOP,LRTS,LRTYPE,LRTV,LRTVOL,LRTXT,LRVOL,LRLABLIO,LRFN,LRAD,LRLLOC,LRNN,L

RRB,LRSN

100 K LRX,LRXL,LRBAR,LRBAR1,LRBAR0,LRBARID,LRUID,LRURG,LRURG0,LRURGA

101 K ^TMP("LRLABXT",$J)

102 Q

=================================================

**LRMISTF**

**Before:**

LRMISTF \* \* 32 LINES, (total 2619, comments 84) BYTES Page 1

RSUM: old 10961987, new 13980655

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVDEC 14,2016@09:23

1 LRMISTF ;SLC/CJS/BA - MASS DATA ENTRY INTO FILE 63.05 ;4/24/89 14:40 ;

2 ;;5.2;LAB SERVICE;\*\*153\*\*;Sep 27, 1994

3 ;from option LRMISTUF

4 ACCESS I '$D(^XUSEC("LRVERIFY",DUZ)) W !,"You're not cleared for this option. You must have the LRVERIFY Key." Q

5 BEGIN D ^LRPARAM Q:$G(LREND) S LREND=0,LRVT="RE",LRSBS="13^11.6^11.57^11.58^17^15.51^21^19.6^27^24^37",(Z(13),Z(11.6),Z(11.57

),Z(11.58))=1,(Z(17),Z(15.51))=5,(Z(21),Z(19.6))=8,(Z(27),Z(24))=11,Z(37)=16

6 S LRMIMASS=1

7 D ASK

8 I $D(LRCSQ),$O(^XTMP("LRCAP",LRCSQ,DUZ,0)) D STD^LRCAPV

9 END D ANN^LRMIEDZ,^LRGVK

10 K %,AGE,DA,D1,DFN,DIC,DIE,DLAYGO,DOB,DQ,DR,H9,I,J,K,LRAA,LRAD,LRAN,LRCDT,LRCO,LRDFN,LRDPF,LRECODE,LREND,LRIDT,LRLLOC,LRM

F,LRMODE,LROK,LRNOP,LRPF,LRSB,LRSBCNT,LRSBS,LRSCREEN,LRTEST,LRWRD,LRVT,POP,PNM,R,SEX,SSN,X,X1,X2,Y,Z

11 K LRMIMASS

12 Q

13 ASK D LRAA^LRMIUT Q:LRAA<1 S LRSS=$P(^LRO(68,LRAA,0),U,2)

14 I LRSS="" W !?5,"Accession Area LR SUBSCRIPT is misssing.",! Q

15 I $P(LRPARAM,U,14) D ^LRCAPV G:LREND ANN^LRMIEDZ

16 S %DT="AE",%DT("A")="Micro Accession Year: ("\_$E(DT,2,3)\_")//" D ^%DT K %DT("A") Q:X[U S:X="" Y=$E(DT,1,3) S LRAD=$E(Y,

1,3)\_"0000"

17 S DIC="^LAB(60,",DIC("A")="Select MICROBIOLOGY TEST: ",DIC(0)="AEMOQ",DIC("S")="I $P(^(0),U,4)=""MI"",$L($P(^(0),U,14))"

D ^DIC K DIC Q:Y<1 S LRTEST=+Y

18 S LRECODE=$P(^LAB(60,LRTEST,0),U,14),LRECODE=$S($D(^LAB(62.07,LRECODE,.1)):^(.1),1:"")

19 K LRSB S LRSBCNT=0 F LRSB=1:1 S X=$P(LRSBS,U,LRSB) Q:'X S X1=""""\_X,X2=";"\_X I LRECODE[X,LRECODE[X1!(LRECODE[X2) S LRSB

(X)="",LRSBCNT=LRSBCNT+1

20 I 'LRSBCNT W "Test does not have an appropriate entry in the EDIT CODE" Q

21 F I=0:0 R !,"Preliminary or Final: ",X:DTIME Q:'$T!(X[U)!(X="P")!(X="F") W !,"Enter ""P"" or ""F""."

22 Q:'$T!(X[U) S LRPF=X

23 I LRSBCNT=1 S H9=$O(LRSB(0)),LRSB=Z(H9),LRMF=$P(^DD(63.05,H9,0),U) W !,LRMF K DIC

24 I LRSBCNT'=1 S DIC("A")="Enter the field to edit: ",DIC(0)="AE",DIC("S")="I $D(LRSB(+Y))",DIC="^DD(63.05," D ^DIC K DIC

Q:Y<1 S H9=+Y,LRSB=Z(H9),LRMF=$P(^DD(63.05,H9,0),U)

25 F I=0:0 R !,"1 Automatically enter your entry.",!,"2 Prompt with your entry.",!,"3 Just Prompt.",!,"Choice: ",X:DTIME

Q:X=""!(X[U)!(X<4&(X>0)&(X?1N)) D INFO

26 Q:X=""!(X[U) S LRMODE=X

27 S:LRMODE<3 LRSCREEN=$S(H9=13:"KM",H9=11.6:"KG",H9=11.58:"KY",H9=17:"KP",H9=15.51:"KW",H9=21:"KF",H9=19.6:"KW",H9=27:"KT"

,H9=24:"KW",H9=37:"KV",1:"")

28 D ^LRMISTF1

29 Q

30 INFO W !,"Enter a number between 1 and 3.",!,"1. Automatically enters the result you specify. You cannot change the entries."

31 W !,"2. Automatically enters the result you specify, you can see and change entries",!,"3. Prompts with the field name.

Does not automatically enter data.",!!

32 Q

====================================================================

**After:**

LRMISTF \* \* 33 LINES, (total 2727, comments 152) BYTES Page 1

RSUM: old 11348365, new 14531968

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVDEC 14,2016@09:18

1 LRMISTF ;SLC/CJS/BA - MASS DATA ENTRY INTO FILE 63.05 ;4/24/89 14:40 ;

2 ;;5.2;LAB SERVICE;\*\*153,476\*\*;Sep 27, 1994

3 ;from option LRMISTUF

4 ACCESS I '$D(^XUSEC("LRVERIFY",DUZ)) W !,"You're not cleared for this option. You must have the LRVERIFY Key." Q

5 ; LR\*5.2\*476 - CR; added codes #1, #20.5, and #26.5 per NSR 20161009

6 BEGIN D ^LRPARAM Q:$G(LREND) S LREND=0,LRVT="RE",LRSBS="1^13^11.6^11.57^11.58^17^15.51^21^19.6^20.5^26.5^27^24^37",(Z(1),Z(13

),Z(11.6),Z(11.57),Z(11.58))=1,(Z(17),Z(15.51))=5,(Z(21),Z(19.6),Z(20.5))=8,(Z(27),Z(24),Z(26.5))=11,Z(37)=16

7 S LRMIMASS=1

8 D ASK

9 I $D(LRCSQ),$O(^XTMP("LRCAP",LRCSQ,DUZ,0)) D STD^LRCAPV

10 END D ANN^LRMIEDZ,^LRGVK

11 K %,AGE,DA,D1,DFN,DIC,DIE,DLAYGO,DOB,DQ,DR,H9,I,J,K,LRAA,LRAD,LRAN,LRCDT,LRCO,LRDFN,LRDPF,LRECODE,LREND,LRIDT,LRLLOC,LRM

F,LRMODE,LROK,LRNOP,LRPF,LRSB,LRSBCNT,LRSBS,LRSCREEN,LRTEST,LRWRD,LRVT,POP,PNM,R,SEX,SSN,X,X1,X2,Y,Z

12 K LRMIMASS

13 Q

14 ASK D LRAA^LRMIUT Q:LRAA<1 S LRSS=$P(^LRO(68,LRAA,0),U,2)

15 I LRSS="" W !?5,"Accession Area LR SUBSCRIPT is misssing.",! Q

16 I $P(LRPARAM,U,14) D ^LRCAPV G:LREND ANN^LRMIEDZ

17 S %DT="AE",%DT("A")="Micro Accession Year: ("\_$E(DT,2,3)\_")//" D ^%DT K %DT("A") Q:X[U S:X="" Y=$E(DT,1,3) S LRAD=$E(Y,

1,3)\_"0000"

18 S DIC="^LAB(60,",DIC("A")="Select MICROBIOLOGY TEST: ",DIC(0)="AEMOQ",DIC("S")="I $P(^(0),U,4)=""MI"",$L($P(^(0),U,14))"

D ^DIC K DIC Q:Y<1 S LRTEST=+Y

19 S LRECODE=$P(^LAB(60,LRTEST,0),U,14),LRECODE=$S($D(^LAB(62.07,LRECODE,.1)):^(.1),1:"")

20 K LRSB S LRSBCNT=0 F LRSB=1:1 S X=$P(LRSBS,U,LRSB) Q:'X S X1=""""\_X,X2=";"\_X I LRECODE[X,LRECODE[X1!(LRECODE[X2) S LRSB

(X)="",LRSBCNT=LRSBCNT+1

21 I 'LRSBCNT W "Test does not have an appropriate entry in the EDIT CODE" Q

22 F I=0:0 R !,"Preliminary or Final: ",X:DTIME Q:'$T!(X[U)!(X="P")!(X="F") W !,"Enter ""P"" or ""F""."

23 Q:'$T!(X[U) S LRPF=X

24 I LRSBCNT=1 S H9=$O(LRSB(0)),LRSB=Z(H9),LRMF=$P(^DD(63.05,H9,0),U) W !,LRMF K DIC

25 I LRSBCNT'=1 S DIC("A")="Enter the field to edit: ",DIC(0)="AE",DIC("S")="I $D(LRSB(+Y))",DIC="^DD(63.05," D ^DIC K DIC

Q:Y<1 S H9=+Y,LRSB=Z(H9),LRMF=$P(^DD(63.05,H9,0),U)

26 F I=0:0 R !,"1 Automatically enter your entry.",!,"2 Prompt with your entry.",!,"3 Just Prompt.",!,"Choice: ",X:DTIME

Q:X=""!(X[U)!(X<4&(X>0)&(X?1N)) D INFO

27 Q:X=""!(X[U) S LRMODE=X

28 S:LRMODE<3 LRSCREEN=$S(H9=13:"KM",H9=11.6:"KG",H9=11.58:"KY",H9=17:"KP",H9=15.51:"KW",H9=21:"KF",H9=19.6:"KW",H9=27:"KT"

,H9=24:"KW",H9=37:"KV",1:"")

29 D ^LRMISTF1

30 Q

31 INFO W !,"Enter a number between 1 and 3.",!,"1. Automatically enters the result you specify. You cannot change the entries."

32 W !,"2. Automatically enters the result you specify, you can see and change entries",!,"3. Prompts with the field name.

Does not automatically enter data.",!!

33 Q

====================================================================

**LRFRLST (New)**

LRFRSLT \* \* 32 LINES, (total 1164, comments 426) BYTES Page 1

RSUM: old 829641, new 1675070

UCI: VISTA,ROU Site: TEST.CHEYENNE.MED.VA.GOVNOV 18,2016@13:35

1 LRFRSLT ;AITC/CR - LAB DATA FUNCTION API WRAPPER ;11/04/16 2:45 PM

2 ;;5.2;LAB SERVICE;\*\*476\*\*;Sep 27, 1994

3 ; This routine is used by the FileMan function LRRESULT to generate a

4 ; report of verified lab tests for multiple patients over a given

5 ; date range

6 ;

7 GETLAB(MDAYS,TEST,SPEC,DFN) --

; Custom lab lookup API for results

8 ; MDAYS = # of days to look back for verified lab test results

9 ; TEST = IEN for a given lab test, file #60

10 ; SPEC = IEN for a given specimen, file #61

11 ; DFN = IEN for patient, file #2

12 ;

13 N LRBGDT,RESULT,LDATE,UNITS

14 N X,X1,X2

15 Q:'+$G(TEST) ""

16 Q:'+$G(DFN) ""

17 S MDAYS=$G(MDAYS,365)

18 S X1=DT,X2=-$G(MDAYS) D C^%DTC

19 S LRBGDT=$S(X<DT:X,1:0)

20 D RR^LR7OR1(DFN,,LRBGDT,DT,,TEST,,1,$G(SPEC))

21 D FORMAT

22 I $G(RESULT)']"" Q "NONE FOUND IN LAST "\_+$S(+MDAYS:MDAYS,1:365)\_" DAYS"

23 Q RESULT\_" "\_UNITS\_";"\_$$FMTE^XLFDT(LDATE,2)

24 ;

25 FORMAT N IDT,LOC,NODE

26 S IDT=0 F S IDT=$O(^TMP("LRRR",$J,DFN,"CH",IDT)) Q:'+IDT D

27 . S LOC=0 F S LOC=$O(^TMP("LRRR",$J,DFN,"CH",IDT,LOC)) Q:'+LOC D

28 .. S NODE=$G(^TMP("LRRR",$J,DFN,"CH",IDT,LOC))

29 .. S RESULT=$P(NODE,U,2)

30 .. S UNITS=$P(NODE,U,4)

31 .. S LDATE=9999999-IDT

32 Q

====================================================================

**LRRESULT – New FileMan Function that calls the routine LRFRSLT**

NUMBER: 247 NAME: LRRESULT

MUMPS CODE: S X=$$GETLAB^LRFRSLT(X,X1,X2,X3)

NUMBER OF ARGUMENTS: 4

EXPLANATION: Lab result retriever -- used with the format of LRFRSLT(a,b,c,d)

where a is referenced as INTERNAL(PATIENT), b is the lab file 60 test IEN, c is

the specimen file 61 IEN and d is the number of days to search back