



U.S. Department  
Of Transportation

**Federal Highway  
Administration**

# Memorandum

6300 Georgetown Pike  
McLean, Virginia 22101

Subject: **ACTION:** LTPP Directive IMS-115  
IMS Software Release Version 2004.04

Date: May 4, 2004

From: Eric Weaver   
Long Term Pavement Performance Team

Reply to  
Attn of: HRDI-13

To: Dr. Frank Meyer, PM - LTPP North Atlantic Regional Contract  
Dr. Frank Meyer, PM - LTPP North Central Regional Contract  
Mr. Mark Gardner, PM - LTPP Southern Regional Contract  
Mr. Kevin Senn, PM - LTPP Western Regional Contract

Attached is the Long Term Pavement Performance (LTPP) Program directive IMS-115: IMS Software Release Version 2004.04. This pertains to implementation of the IMS software upgrade from version 2004.03 to 2004.04. IMS upgrade instructions are provided in attachment 1. The software change notice for this release is contained in attachment 2, which lists all the changes made since the last software release. Please ensure that all personnel involved with the IMS are aware of this new directive.

Should you have any questions or would like to discuss this directive, please do not hesitate to contact me at 202-493-3153.

Attachments (2)



## LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE



*For the Technical Direction of the LTPP Program*

**Program Area:** IMS

**Directive Number:** I-115

**Date:** May 4, 2004

**Supersedes:** I-114

**Subject:** IMS Software Release Version 2004.04

This directive authorizes implementation of the IMS software upgrade from version 2004.03 to 2004.04. Upgrade instructions are provided in attachment 1. The regions shall notify FHWA when installation of the upgrade is completed.

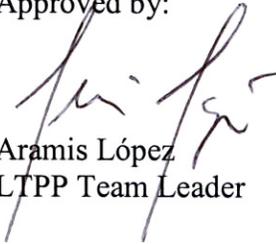
Software Change Notice (SCN) 87, contained in the attached file SCN\_87.pdf, lists changes made to the IMS software since the last software release. This notice shall be filed in the Operator's Log. This release will export several distress tables and update tables, input forms, and programs in compliance with directive I-113 – Removal of Reflection Cracking and Joint Seal Damage from the IMS. In addition, drainage tables are exported, modified to allow alphanumeric LATERAL\_ID, and re-populated, and resolutions to several other SPR's are included. Changes to the QC on the TST\_L05A table are also included. Please read the software change notice carefully to assess impacts on database operations. Several SPR's that are no longer an issue have been closed and are listed in the SCN.

Please download the Version 2004.04 of the IMS software release from the operations center portion on the LTPP.ORG web site. The following files are contained in the release:

- VR2004\_04.ZIP – A zip file with the batch file (VR2004\_04.BAT) and scripts needed to make miscellaneous updates to the database and to run other related administrative commands. Refer to the table included in Attachment 1 for a complete list and descriptions of the scripts called by this batch file.
- LTPP.ZIP - A zip file with all files to go in the LTPP area (and subdirectories) on the server.
- OracleVersions.ZIP – A zip file with listings of all Oracle files and versions loaded on the server at the central site. These are included for reference only.

Prepared by: TSSC

Approved by:

  
Aramis López  
LTPP Team Leader

# Attachment 1

## Instructions to Apply VR 2004.04 Release

1. Shutdown the Data Extraction Service.
2. Shutdown ORACLE in normal mode and backup Server.
3. Bring ORACLE up.
4. Create the subdirectory RELEASES\VR2004\_04 (the directory RELEASES should already exist).
5. After downloading and unzipping the ReleaseVR2004\_04.zip file, copy and unzip the VR2004\_04.ZIP file to the RELEASES\VR2004\_04 subdirectory created in step 4.
6. From a DOS prompt in the RELEASES\VR2004\_04 directory, type

```
VR2004_04 dbusername/dbapassword@instance
```

to begin the software update. This batch file will export several distress and all drainage tables (MON\_DIS\_AC\_REV, MON\_DIS\_PADIAS42\_AC, MON\_DIS\_PADIAS42\_CRCP, MON\_DIS\_PADIAS42\_JPCC, MON\_DRAIN\_MASTER, MON\_DRAIN\_CONDITION, MON\_DRAIN\_INSPECT). Two dump files (DISTRESS.DMP and MON\_DRAIN.DMP) and two log files (DISTRESS.LOG and MON\_DRAIN.LOG) will be created in the working directory. If the exports are successful, the batch file will then run the scripts listed in Table 1, below.

7. The scripts make some table changes. Check that the scripts completed successfully by reviewing the \*.lis files (refer to list, below). Ignore errors about dropping non-existent objects.
8. Copy the LTPP.ZIP file into the LTPP subdirectory. Right-click on the filename and choose "Extract to Here" to unzip the file into the LTPP subdirectory. Answer "Yes to all" to overwrite existing files. Delete the LTPP.ZIP file.
9. The OracleVersions.zip file is included for reference only. Extract these files into the OracleVersions directory. It will create an OracleVersions\VR200404 subdirectory.

Table 1. Scripts run from the VR2004\_04.bat file .

<b>Script filename</b>	<b>Description</b>	<b>Output file</b>
SPR3430	Changes LATERAL_ID from number to character field.	SPR3430.lis
SPR3435	Removes reflection cracking and joint seal damage from the following distress tables: MON_DIS_AC_REV, MON_DIS_PADIAS42_AC, MON_DIS_PADIAS42_CRCP, MON_DIS_PADIAS42_JPCC.	SPR3435.lis

## Attachment 2

# Software Change Notice 87

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
<b>Administrative</b>					
3-612	2763	COMMENTS form	PCS/LAW	6/15/2000	4/2/2004
<b>Description</b>			<b>Resolution</b>		
<p>1. When one attempts to insert a comment in FORM 99 ("Section General Comments") from the deflection forms selection screen, "2000" is not a valid year for the date.</p> <p>2. Another question arises because COMMENTS_GENERAL is to be truncated and re-populated from a BROWSER export for uploads, implying that comments entered directly through the RIMS will be lost.</p>			<p>1. IMS 2.8. Corrected form to accept dates &gt; 01/01/2000.</p> <p>2. No longer an issue.</p>		
P-981	981	Time Fields	PCS/LAW	10/27/1994	4/2/2004
<b>Description</b>			<b>Resolution</b>		
Need to change how to validate length of time fields.			No longer an issue.		
<b>Drainage</b>					
3-840	3430	MON.DRAIN.01, MON.DRAIN.02	MACTEC	3/2/2004	4/8/2004
<b>Description</b>			<b>Resolution</b>		
Form MON.DRAIN.01 is used to enter data about a single lateral. However, for several sections, we have "dual" and "triple" laterals -- in other words, they are at precisely the same location, stemming from the same place, and branching in a different direction. After discussion, suggest that forms and MON_DRAIN tables be modified to allow entry of number plus an alphabetic sequence (e.g. 1A, 1B, 1C) to indicate multiple laterals at the same location.			Modified the MON_DRAIN tables to allow entry of non-numeric characters in the LATERAL_ID field. Modified drainage forms as well.		

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
<b>Falling Weight Deflectometer</b>					
1-2846	2846	FWD Data	LAW PCS	7/21/2000	4/2/2004
<b>Description</b>			<b>Resolution</b>		
<p>Sensor number 9 was turned off during some pilot testing of Edition 25 FWD software. The field in the database has a '0' instead of a "null" value. Should be changed to a null value to indicate that the sensor was not operable. Please approve SQL script to correct data in the IMS.</p>			<p>Data files are not in the correct format. A comma is missing at the end of PEAK_DEFL_8.</p> <p>This was a problem only with test data and has not occurred again. Filter will not be modified as FWD data file format will be changing again, soon.</p>		
4-402	3019	FWD_E	LAW PCS	10/29/2001	4/2/2004
<b>Description</b>			<b>Resolution</b>		
<p>We have several sections failing the FWD level E QC checks. Attached is the log file to show what is happening during the filtering and the QC output. The log states there are values which are too high, however, we have other deflection data with higher values which seem to filter with no problems.</p>			<p>Region nulled the values that were too high and re-ran QC. Records now pass QC.</p>		
<b>Ground Penetrating Radar</b>					
M-3438	3438	GPRQC Level D		3/24/2004	3/26/2004
<b>Description</b>			<b>Resolution</b>		
<p>We need to change the level D check on GPR_THICK_POINT.POINT_LOC to -30 to 335.</p>			<p>Range modified.</p>		

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
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### Inventory

3-806 3344 Route Designation Data

MACTEC

6/30/2003

4/2/2004

#### Description

Two sections in Texas have officially changed route designations: 485278: US 80 is now posted as BI 20 482176: Spur 445 is now posted as BI 27 Need direction from TSSC on the appropriate means for recording this change in the database. ROUTE\_NO appears in six separate tables (SPS\_ID, INV\_ID, SPS\_INV\_INFO, TRF\_HIST\_CLASS\_MASTER, TRF\_HIST\_WEIGHT\_MASTER, and TRF\_HIST\_VOLUME\_COUNT), but these particular sections are included only in table INV\_ID. A suggestion had been made to enter both route numbers, presumably in the "Route Number" column. The column is currently limited to four characters. In addition, ROUTE\_SIGNING would also need to change in these two cases. An alternate option would be to change the ROUTE\_NUMBER and ROUTE\_SIGNING and then add the original route designation data to the "Additional Info" column. A better option would be to create a "history" table of identical structure (with perhaps an additional "Date Created" = SYSDATE column) to be populated via a "Before Update" trigger on the INV\_ID table. A copy of INV.SHEET.01 could be modified for on-line viewing of the historical data, but since forms don't exist for ALL types of data anyway, a precedence exists for requiring use of other means to view such data.

#### Resolution

Region should modify the route designation and document the change in the "Additional\_info" column.

### Longitudinal Profile

3-716 3061 PROQUAL 2002

LAW PCS

2/7/2002

4/2/2004

#### Description

Unable to process longitudinal dipstick data. After entering data and pressing the "Calculate Sums and Normalized Values" button, I receive the error message, "Access violation at address 32566B55 in module 'CCS250MT.dll'. Read of address F8F731FC".

#### Resolution

New version of ProQual (2004) has been created and will be distributed soon. If problem recurs with new version, region should submit Profile PR.

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
<b>Manual Distress</b>					
4-407	3091	MON_DIS_JPCC_FAULT	LAW PCS	3/12/2002	4/2/2004
<b>Description</b>			<b>Resolution</b>		
<p>During the DP 3.0 "emergency" effort, the decision was made to keep records in the IMS (MON_DIS_JPCC_FAULT) for which EDGE_AVG_MM and WHEELPATH_AVG_MM were both null with the QC being modified to not allow such records to reach Level E. The regions were instructed to remove partial (defined as a set of measurements that was begun but not completed) data sets from the IMS. We have instances where the measurements were not performed for cause (i.e. excessive spalling). We feel that there should at least be a discussion as to whether this would be reason for manually upgrading the record with an appropriate comment.</p>			<p>Leave partial datasets in the database to document locations of joints and cracks, but do not do a manual upgrade.</p>		
M-3435	3435	Distress Tables		3/10/2004	3/23/2004
<b>Description</b>			<b>Resolution</b>		
<p>Eric Weaver is preparing a directive instructing the TSSC to remove the reflection cracking and joint seal damage fields from some of the distress tables. The work includes the following:</p> <ol style="list-style-type: none"> <li>1. Removal of all fields in the MON_DIS_AC_REV, and MON_DIS_PADIAS42_AC tables whose name begins with REFL.</li> <li>2. In the MON_DIS_PADIAS42_CRCP table, remove the following fields: LONG_JT_SEAL_NO and LONG_JT_SEAL_DAM_L</li> <li>3. In the MON_DIS_PADIAS42_JPCC, remove the following fields: LONG_JT_SEAL_NO, LONG_JT_SEAL_DAM_L, JT_SEALED, JOINT_SEAL_TRANS_NO_L, JOINT_SEAL_TRANS_NO_M, and JOINT_SEAL_TRANS_NO_H</li> <li>4. Removal of entries in LTPPDD for the remove fields</li> <li>5. Alteration of the PADIAS42 filter program to no longer load entries in the upload file for the removed fields (upload file format to stay the same)</li> <li>6. Alteration of the input form for MON_DIS_AC_REV to remove entry of values into the removed fields</li> <li>7. Removal of checks on the removed fields in the QC programs</li> <li>8. Removal of the checks on the removed fields from the QC manual</li> </ol>			<p>All changes to distress tables and associated programs to remove indicated fields complete.</p>		

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
<b>Materials Testing</b>					
3-567	3126	TST_SS02_UG03, etc.	PCS/LAW	8/30/1999	4/2/2004
<b>Description</b>			<b>Resolution</b>		
<p>1. Data files include decimals for fields w no decimals in the IMS. These are truncated not rounded when loading. 2. Location numbers are consistently entered with 0's preceding a single digit number. 3. Hygroscopic moisture content appears to be missing from data files. (SPR filed under number S-2656, duplicate number)</p>			<p>This problem was related to data coming from a particular laboratory. We no longer receive data from this lab, so issue is moot.</p>		
3-837	3424	TST_D.exe, TST_AC01		2/23/2004	3/18/2004
<b>Description</b>			<b>Resolution</b>		
<p>According to QC manual, range for CORE_AVG_THICKNESS is 0.1 to 30. Newly edited rows in this table now fail QC, apparently because of the CORE_AVG_THICKNESS value (see attached report excerpt). It seems likely that the actual lower bound of the range check is 1.</p>			<p>Added GPS_SPS and EXPERIMENT_NO fields to select statement for TST_AC01 to allow records to be categorized correctly.</p>		
M-3428	3428	TST_L05A QC		3/2/2004	3/25/2004
<b>Description</b>			<b>Resolution</b>		
<p>There are a few changes that need to be made to the TEST_L05A QC. These are not critical changes, but they do need to be addressed eventually. The following TST_L05A checks (all listed on page 3-72 of the august 03 guide) need to be modified:</p> <ul style="list-style-type: none"> <li>• If MEASURE_TYPE_1_STATION0 = 8, then LAYER_THICK_STATION0 and MATL_CODE_STATION0 must be null</li> <li>• If MEASURE_TYPE_1_WITHIN = 8, then LAYER_THICK_WITHIN and MATL_CODE_WITHIN must be null</li> <li>• If MEASURE_TYPE_1_STATION5 = 8, then LAYER_THICK_STATION5 and MATL_CODE_STATION5 must be null</li> <li>• If MEASURE_TYPE_1_STATION0 ? 8, then LAYER_THICK_STATION0 or MATL_CODE_STATION0 (at least one of the two) must be non-null</li> </ul>			<p>Modified QC checks.</p>		

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
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- If MEASURE\_TYPE\_1\_WITHIN ? 8, then LAYER\_THICK\_WITHIN or MATL\_CODE\_WITHIN (at least one of the two) must be non-null

- If MEASURE\_TYPE\_1\_STATION5 ? 8, then LAYER\_THICK\_STATION5 and/or

MATL\_CODE\_STATION5 (at least one of the two) must be non null

I think that in reality, the inequality checks also allow a measure type of 5; though this is not captured in the QC manual (I think the change was made after the guide was sent out).

In each instance, the check on MATL\_CODE\_\* needs to be removed, because the checked relationship between the fields is not valid. According to all the documentation I can find, MEASURE\_TYPE is a code used to indicate the type of measurement used for the thickness measurement. MATL\_CODE does not necessarily come from the same place as the thickness measurement, and so should not be tied to any particular measurement type code.

The checks should be changed to the following:

- If MEASURE\_TYPE\_1\_STATION0 = 8, then LAYER\_THICK\_STATION0 must be null

- If MEASURE\_TYPE\_1\_WITHIN = 8, then LAYER\_THICK\_WITHIN must be null

- If MEASURE\_TYPE\_1\_STATION5 = 8, then LAYER\_THICK\_STATION5 must be null

- If MEASURE\_TYPE\_1\_STATION0 ? 8, then LAYER\_THICK\_STATION0 must be non-null

- If MEASURE\_TYPE\_1\_WITHIN ? 8, then LAYER\_THICK\_WITHIN must be non-null

- If MEASURE\_TYPE\_1\_STATION5 ? 8, then LAYER\_THICK\_STATION5 must be non null

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
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If the current QC also allows 5 to be null (I think it does) then that should not be changed. The only change I am looking for here is the removal of the MATL\_CODE\_\* fields from the checks.

**PG Binder**

3-763	3239	PGBinderQC, Level B&C
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**Description**

QC output for levels B & C contain no information beyond report headers (see enclosed). M. Pitz indicated that at these QC levels no actual checks are performed - the programs move the data from level A -B-C. This process seems off standard, or at least confusing.

MACTEC	1/17/2003	3/26/2004
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**Resolution**

This problem no longer exists - each level of QC now indicates how many rows were updated by the QC program.

3-832	3409	PGBinder Data/Forms
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**Description**

While researching outstanding PGBinder data problems, encountered SP02 data that we were unable to retrieve using the data form. After the block 1 data was entered, the TST\_ID displayed did not match the TST\_ID of the record we were trying to edit. We ran a check for situations where more than one test id exists for the same sample number. There's not a lot, but in all cases, only the data for the lowest/first TST\_ID can be retrieved and edited (see attached spreadsheet and screen shots). The TST\_IDs should be the same, but there is, or was, some circumstance that's causing multiple test ids to be created -- possibly an artifact of prior form/table problems that have already been fixed.

MACTEC	12/29/2003	4/2/2004
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**Resolution**

Modified TST\_AE08 to prevent TST\_ID from being assigned with any null key fields - also reverted back to previous form layout which users preferred. The reported problem cannot be replicated. Region should re-submit SPR if problem recurs.

**Rehabilitation**

3-838	3425	RHB.SHEET.65
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**Description**

This form allows entry and saving of records for invalid sections by using the mouse to click out of the offending field (see attached screenshot).

	3/23/2004	3/18/2004
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**Resolution**

Added POST\_CHANGE trigger to SHRP\_ID field so value is checked anytime it is changed.

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
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**Resilient Modulus**

2-72      3431      P07\_D.exe

**Description**

The level D checks have a range limit on the TEST\_NO field of 1-3. With the latest data filtered into the IMS we have values greater than 1-3. Please increase the range for all TEST\_NO fields in the P07 tables to accept values 1-20.

MACTEC

3/3/2004

3/23/2004

**Resolution**

The new codes created for the P07 data are essentially replicates of the previous codes 1-5. In this case, where 1-3 was previously allowed, now 6-8 and 11-13 should also be allowed.

Status: Code modified to allow the following values for TEST\_NO:  
 (TEST\_NO -1)mod 5 +1 >= 1 AND  
 (TEST\_NO -1)mod 5 +1 <= 3.

4-458      3393      P07\_D and P07\_E QC Checks

**Description**

Records that were upgraded previously using Browser in the TST\_ACO7\_V2\_MR\_SUM table are listed as failing the Level D and Level E QC checks while they are already at Level E. The attached files contain list files and sample records with record status in the database (300124 for Level D and 040261 for Level E).

MACTEC

11/13/2003

3/22/2004

**Resolution**

Check only records between begin and end status rather than all records. Modified the select statement (cursor) used for all levels of QC checks.

**Seasonal Monitoring Program**

3-712      3042      SMP QC

**Description**

We have over 6000 cases where SMP data that has passed SMPCHECK fails the IMS QC, apparently because the QC parameters are different, or because a specific test is not applied in SMPCHECK. Most of these are in SMP\_MRCTEMP\_AUTO\_DAY\_STATS, where one can see that max or min temps have been removed by the SMPCHECK operator. I suggest that the two programs be made consistent.

LAW PCS

12/11/2001

4/2/2004

**Resolution**

SMP QC is correct and requires no changes.

REG #	SAIC #	Program Name	Referred To	Date Rec	Date Comp
SPSM					
3-601	2741	SPS FACT Sheet	NARCO	4/24/2000	4/2/2004
<b>Description</b>			<b>Resolution</b>		
Multiple problems with SPS FACTSheet			Not an IMS issue.		