Memorandum

U.S. Department
of Transportation

**Federal Highway
Administration**

6300 Georgetown Pike
McLean, Virginia 22101

Subject: **ACTION**: LTPP Directive IMS-86
Upgrade of IMS to Version 3.0

Date: June 7, 2001

From: Jean Sexton
Long Term Pavement Performance Team

Reply to
Attn of: HRDI-13

To: Dr. Frank Meyer, PI - LTPP North Atlantic Regional Contract
Mr. Tom Wilson, PI - LTPP North Central Regional Contract
Mr. Mark Gardner, PI - LTPP Southern Regional Contract
Dr. Sirous Alavi, PI - LTPP Western Regional Contract

Attached is the Long Term Pavement Performance (LTPP) Directive IMS-86 formalizing implementation of Version 3.0 of the IMS. This directive should be transmitted to all appropriate personnel as soon as possible.

If you have any questions concerning this transmittal, please do not hesitate to call me at (202) 493-3153.

Attachments (5)

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cc:
LAW PCS
LTPP Staff
Directive File
Official File (240.20)
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Technical Support Services Contractor - c/o LAW PCS-12104 Indian Creek Ct., #A - Beltsville, MD 20705 - Tel 301-210-5105 - Fax 301-210-5032

MEMORANDUM

TO:	Jean Sexton
FROM:	Gary Elkins
DATE:	June 5, 2001
SUBJECT:	LTPP Directive I-86: Upgrade of the IMS to Version 3.0 FHWA Contract No. DTFH61-97-C-00002 LAW PCS Project No. 10900-7-0714-02-102
PAPER FILE:	IMS Development/IMS Operations/Directives
CC:	G. Rada, R. Cale, T. Thompson, R. Bhandari, C. Copeland

Enclosed is a draft version of LTPP Directive I-86 for your review. This directive implements the recently distributed IMS Version 3.0 software, which contains many changes made over the past 5 months during the DataPave 3 effort. Most significantly, it contains the new data entry procedure that completes the change to the new construction number concept.

With this directive, we have included the software change notice, installation instructions, new CN entry instructions, and update software version list. In the past these documents were transmitted separately. We would like to start including these types of notices as part of the issuing directive. This will aid future documentation retrieval and dissemination since all information is stored in a more central location.

This has been numbered as IMS Directive I-86. The draft IMS Directive I-84 on manual record status upgrade policy will be renumbered to I-85, since another draft IMS Directive I-84 on uploads already exists.

Should you have any questions or would like to discuss this directive, please do not hesitate to contact us.

Best Regards

LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE

For the Technical Direction of the LTPP Program

Program Area:	IMS	Directive Number:	I-86
Date:	May 7, 2001	Supersedes:	I-81
Subject:	Upgrade of IMS to Version 3.0		

This directive implements the upgrade of the IMS from version 2.9 to 3.0.

The installation instructions, associated software change notice, and list of current workstation software previously distributed by the Technical Support Services Contractor are included as attachments to this document for reference. The upgrade of the database software to version 3.0 shall be completed by June 8, 2001.

This release contains a listing of all of the changes made to the software during the recent DataPave processing. It also includes the new data entry procedure to allow changes to be made to EXPERIMENT_SECTION, and TST_L05* due to maintenance and rehabilitation events that cause a new CONSTRUCTION_NUMBER (CN) to be generated. The instructions for the CN data entry and edit process are included as an attachment to this directive.

Prepared by: TSSC

Approved by:

Aramis López, Jr.
LTPP Team Leader

Attachment 1

Instructions to apply VER3_0 Release

1. Shutdown the Data Extraction Service.

2. Shutdown ORACLE in normal mode, then backup the Server.

3. Bring ORACLE up.

4. Create the subdirectory RELEASES\NT3_0 (the directory RELEASES should already exist).

5. Copy the VER3_0R#.BAT, ARCHIVE_TABS.BAT, *.SQL, *.PAR, SUPPORT.ZIP, MONDISJPCCFAULTSECT#.DMP, and RUTCP#.ZIP files to the RELEASES\NT3_0 subdirectory, where # is the number of your region.

6. Unzip *.zip files before continuing.

7. From a DOS prompt in the RELEASES\NT3_0 directory, type ARCHIVE_TABS *dbausername/dbapassword@service_name* (example: ARCHIVE_TABS NARO/NARO@NARODB) to begin exporting the P07, SPS#_INTERSECTIONS, SPS#_CUT_FILL_LOCATIONS, SPS#_PROJECT_STATIONS tables. Review the log files OBSOLETE_SPS_EXP.LOG and OBSOLETE_P07_EXP.LOG, **and do not proceed if this step was not successful.**

8. From a DOS prompt in the RELEASES\NT3_0 directory, type VER3_0R# *dbausername/dbapassword@service_name,* where # is the number of your region, to begin the software update. This will run the VER3_00.SQL update script. The batch file will also import LTPPDD, SHRP_DATA_SHEETS, CODES, and CODETYPES. In addition, this batch file will load the T_PROF indices and FAULT_SECT data.

9. The VER3_0 procedure makes some table changes. Verify VER3_00.SQL completed properly by reviewing all *.LST files. In addition, review the resultant import log files to verify successful completion.

10. Copy the LTPP.ZIP file into the LTPP subdirectory. Double-click on the filename to unzip the file into the LTPP subdirectory. Delete the LTPP.ZIP file.

11. Copy the BIN.ZIP file into the LTPP\BIN subdirectory. Double-click on the filename to unzip the file into the LTPP\BIN subdirectory. Delete the BIN.ZIP file.

12. Copy the QC.ZIP file into the LTPP\QC subdirectory. Double-click on the filename to unzip the file into the LTPP\QC subdirectory. Delete the QC.ZIP file.

13. Copy the SQL.ZIP file into the LTPP\SOURCE\SQL subdirectory. Double-click on the filename to unzip the file into the LTPP\SOURCE\SQL subdirectory. Delete the SQL.ZIP file.

14. Data for the MON_DEFL_FLX_* tables will be sent later, after successful completion of QC.

Attachment 2
LTPP IMS
SOFTWARE CHANGE NOTICE NO. 75

Version 3.0 Superseding 2.9 Effective Date: June 1, 2001

1. Summary of changes to Distress module:
- Forms: Modified MOND_05B form so default values are null; modified MOND_07B and MON_DIS_PADIAS_CRCP forms to allow numbers greater than 999.9 in transverse crack fields; correct MOND_01B to correctly validate SPS9 experiment. (SPRs 2-20, 1-49, 3-647)
- QC: Corrected level D and E by revising SQL statement. Revised level D checks for SPS6. (SPRs 2-22, 2-26, 3-586)
- Faulting Data: Loaded new data into MON_DIS_JPCC_FAULT_SECT table. (SPR P-2929)
- Pad42 Filter: Modified filter to load data collected before a section went out of study. (SPR 3-621)
- Pad42 QC: Corrected Oracle error.

2. Summary of changes to EXP SECT:
- Form: Correct problem with key fields.
- QC: Corrected level E checks. (SPR 2-19, P-2781)

3. Summary of changes to Flexible Backcalc Module:
- QC: Miscellaneous changes. (SPRs P-2924, P-2925, P-2940)
- Filter and Table Structures: Modified per revised specs. (SPR S-2939)
- Table Definitions: Revised table definitions. (SPR P-2938)

4. Summary of changes to Friction Module:
- Form: Corrected form.
- QC: Changed date format. (SPR 1-75)

5. Summary of changes to FWD25 Module:
- Filter: Modified to use common CSV library.
- QC: Modified to allow lanes F4 and F5 to pass MON_DEFL_LOC_INFO-E-101 check. (SPR 2-25)
- CN SQL: Corrected CN assign script.
- RI Constraints: Added MON_DEFL_DROP_DATA foreign key constraint.

6. Summary of changes to the Inventory Module:
- Forms: Modified form INV_02 to make 1 the default LANE_NO. (SPR 1-66)
- QC: Modified to check for SPS data in the INV tables; allow null layer thickness. (SPRs P-2853, 3-644)

7. Summary of changes to the Maintenance Module:
- QC: MNT_IMP QC was completed and sent to the regions; corrected SQL in QC. (SPRs P-2866, 2-29).
- CN SQL: Added the MNT_PCC_CRACK_SEAL and MNT_IMP tables to script. (SPR 1-84)

8. MON_CATEGORY QC: Added headers to QC output for level B and C. (SPR 4-397)

9. Archived and removed old P07 tables and all relevant programs per directive. (SPR P-2843)

10. Summary of changes to P07 V2:
- Tables: Revised table structures per specifications. (SPR P-2891, S-2852)
- QC: Modified E level checks and code to correctly fetch null values; modified QC to only perform certain checks if ALL IDT_DATA_FILE_SPECIMEN_* are not null. (SPRs 1-63, P-111, P2931)
- Data: Null out certain data fields. (SPR P-2930)
- CN SQL: Added missing table.

11. Profile QC: Revised level D check. (SPR 4-382)

12. RHB QC: Modified level C check on ACO_THICK; completed modifications to RHB QC. (SPRs 1-61, P-2927)

13. Summary of changes to Rigid Backcalc:
- Tables and QC: Completed coding Rigid BackCalculation and associated filters and QC programs (SPR P-2807)
- Filter: Revised data loading program to reverse input fields. (SPR S-2844)

14. Summary of changes to SMP Module:
- Filter: Modified SMPLOAD so fields set to null if values less than 0. (SPR 4-394)
- QC: Modified to speed up processing.

15. Summary of changes to the SPS Modules:
- Forms: Resent form that allows entry of SPS5-SPS9 construction data; modified SPS_GEN, SPS_ID, and SPS9 sheets 4 and 9 to correctly validate SPS9 experiments; corrected SPS7 sheet 10; corrected form to save BEGIN_DATE. (SPRs 3-633, S-2932, 2-33, 2-24)
- Misc. QC: Modified code to expedite QC process; modified QC to not output errors when RECORD_STATUS is the same as the QC level being checked. (SPRs 1-68, 3-640, 3-642)
- QC: Added header info for SPS3_ROLLER; corrected SPS8 level E; corrected SPS9 SQL to select all SPS9* experiments; revised expanded range checks. (SPRs 3-650, 3-650, 3-637, 1-81, 1-82, 1-83)
- All QC Programs: Modified all SPS project level, section level and construction level QC to replace SPS#_CUT_FILL_LOCATIONS, SPS#_INTERSECTIONS, and SPS#_PROJECT_STATIONS with SPS_CUT_FILL_LOCATIONS, SPS_INTERSECTIONS, and SPS_PROJECT_STATIONS. (SPR 3-634)
- RIMS Application: Removed entry forms for obsolete SPS tables. (SPR 1-64)
- CN SQL: Modified scripts to use appropriate date field to assign CN; added CONSTRUCTION_NO to various tables. (SPR 1-85)
- Archived and removed combined SPS tables and all relevant programs per directive. (SPR P-2843)

16. Summary of changes to Transverse Profile Module:
- Filter: Modified for new formats. (SPR 1-50, 4-380)
- Data: Loaded recalculated indices. (SPR P-2928)
- CN SQL: Added computed parameter tables to script.
- CP Filter: Modified program to match input record specification.
- QC: Changes to level C for previously non-null fields in the CP tables, per TSSC instructions.

17. Summary of changes to Traffic Module:
- Forms: Programmed and made corrections to data sheets 2 & 10 and related QC; date ranges restricted on entry forms 2 & 10. (SPRs S-2878, 3-2888, 4-395)
- QC: Corrected QC and data. (SPRs 1-76, 1-77, 1-80, P-112)
- Tables: Created two new tables (TRF_HIST_EST_ESAL, TRF_MON_EST_ESAL) from the TRF_EST_ANL_TOT_LTPP table. (SPR P-2872)

- Filter: (TRF_SPS_DAT) Modified to reference the new SPS combined tables; (EST_TRF) modified to use common CSV library. (SPR 3-634)

18. Summary of changes to the Materials Testing Module:
- Forms: Corrected SDS08 form; modified RIMS to list form for TST_AE02. (SPRs 3-326, 3-592, 3-643, 3-657, 3-658)
- QC: Corrected QC; increased ranges in level D; removed level E checks that are no longer applicable; added code 5 for TEST_NO codetype to level D; and added material codes for interlayers; corrected level C. (SPR 1-70, 1-71, 1-72, 1-73, 1-74, 3-132, 3-140, 3-578, 3-635, 3-645, 4-365, 4-366)
- P46 QC: Corrected ORA-01405 error. (SPR 2-30)

19. CODES, CODETYPES, LTPPDD, and SHRP_DATA_SHEETS Tables: Updated entries are provided with additions and revisions per revised specifications. (SPRs P-2896, P-2923, P-2936, P-2941)

20. Section Maintenance: Modified program to reference SPS_PROJECT_STATIONS instead of SPS#_PROJECT_STATIONS. (SPR 3-634)

21. CN Processing: Completed all forms and QC revisions for new CN process. (SPR P-2934)

22. RIMS: SHRPRIMS form revised for new version number.

Attachment 3

LTPP IMS Current Versions for Workstation Software
6/02/2001

3.3.1.0.0C	Oracle Installer
2.3.4.0.0	Oracle TCP/IP Protocol Adapter
8.0.5.0.0	Oracle TCP/IP Protocol Adapter
8.0.5.1.1	Oracle8 Utilities
7.3.4.1.1	Required Support Files
8.0.5.0.0	Required Support Files
2.3.4.0.2	SQL*Net Client
8.0.5.0.0	Oracle Net8 Client
8.0.5.0.0	SQL*Plus
8.0.5.0.0	Oracle Net8 Assistant
8.0.5.0.0	Oracle Documentation
8.0.5.0.0	Oracle8 Performance Utility
1.6.0.0.0	Oracle Software Manager
8.0.5.0.0	Oracle Call Interface
8.0.5.0.0	Oracle8 ODBC Driver
1.6.0.0.0	Oracle Enterprise Manager
1.6.0.0.0	Oracle Administrator Toolbar
1.6.0.0.0	Oracle Enterprise Manager DB Admin Applications
1.6.0.0.0	Oracle Enterprise Manager Repository Manager
2.1.0.0.0	System Support Files
2.5.6.25.0	GUI COMMON Files
3.0.3.11.0D	Tools Utilities
5.0.6.8.0	Forms API
5.0.6.8.0	Forms Runtime
3.0.5.8.0	Reports Runtime
8.0.5.0.0	Assistant Common Files

Attachment 4

Instructions for New CN Change Data Entry and Edit Process

A. Note that for changes to records in EXPERIMENT_SECTION with CN = 1, information must be entered into the IMS via SQL script approved and provided by TSSC. All changes to EXPERIMENT_SECTION must be approved by the TSSC using the IMS Form-1.

B. Append new CN to existing Section

1. Add record in Experiment Section screen
   a. Start RIMS application and go to the Data Entry/Edit Screen
   b. Select number '10' for "CN Entry/Edit Screens".
   c. Select 'ES' for "EXPERIMENT SECTION".
   d. Bring up section to be changed on Experiment Section screen.
   e. Use mouse or arrow keys to navigate to the first blank record.
   f. Enter information for new CN. Entry will stop after the Supplemental Indicator field. Populate DEASSIGN_DATE for previous records as appropriate. (Automated DEASSIGN_DATE entry and validation is planned for the next release of this form.)
   g. Upon leaving the Experiment Section form, the L05A/B tables will be populated with the layer structure from the previous CN.
2. Revise TST_L05A/B records, if necessary. (If the layer structure is the same for the new CN as the previous CN, no changes should be necessary.)
   a. From Experiment Section screen, the user may enter "L05A" or "L05B" into the "Next Sheet" field. Alternately, the user may enter a "0" into the "Next Sheet" field to go back to the menu where all L05* screens are listed. From the Next Sheet field, press ENTER to go to the selected screen.
   b. Make necessary changes.
   c. Use the menu or the "Next Test" field to go to other necessary L05 screens.
   d. Make necessary changes.
   e. Enter "0" in "Next Test" field to go back to the menu, or use CNTL-Q to back out of forms. Note: The caps lock must not be toggled on for CNTL-Q to work.
3. Go to appropriate MNT or RHB forms to enter improvement data, begin with MNT_IMP or RHB_IMP.
4. Run CN assign scripts to update affected CNs throughout the database.

C. Insert new CN between existing CN records

1. Print existing CN records and associated layers for CNs that are greater than or equal to the number of the new CN
   a. See steps B.1.a – B.1.c, above.
   b. Bring up section to be changed on Experiment Section screen
   c. Select menu item "Action" and "Print Screen" to document existing CN info
   d. Navigate to the appropriate L05* screens and print layer structure for CNs greater than or equal to the new CN.
2. Delete existing CN records that are greater than or equal to the new CN.

   a. Return to the Experiment Section screen.
   b. Use mouse or arrow keys to navigate to the last CN record.
   c. Delete the last CN record (use Shft-F6) and any other CN records greater than or equal to the new CN to be added. Delete the CN records in backward order to ensure no orphan records in related L05* tables. As CN records are deleted, associated groups of layer records will be deleted from the L05* tables.
3. Append new CN record as described in B.1 and B.2, above. Revise L05* records before entering succeeding CN records so that any changes will propagate to later CN layer structures.
4. Append deleted CN record(s) using the printouts and procedures in B.1 and B.2, above. Revise L05* records for each CN before entering succeeding CN records so that any changes will propagate to later CN layer structures.
5. Go to appropriate MNT or RHB forms to enter improvement data, beginning with MNT_IMP or RHB_IMP.
6. Run CN assign scripts to update affected CNs throughout the database.

D. Delete an existing CN record and associated data from IMS

1. Use System-Wide Section Maintenance utility from DBA menu.
   a. From the Main Menu in RIMS, select option "3. Data Base Administration".
   b. From the RIMS DBA Menu, select option "1. System-Wide Section Maintenance"
   c. Follow delete instructions on this screen.

E. Modify Improvement Codes in existing record in Experiment Section

1. Modify CN_CHANGE_REASON field from the Experiment Section form.
   a. See steps B.1.a – B.1.c, above.
   b. Bring up section to be changed.
   c. Use arrow keys, tab key, or mouse to navigate to CN_CHANGE_REASON field.
   d. Enter/Edit improvement codes as necessary.
2. Modify L05* records as necessary.
   a. Proceed to the L05* screens as described in B.2.a, above.
   b. Modify records as necessary.
3. Go to appropriate MNT or RHB forms to enter improvement data, beginning with MNT_IMP or RHB_IMP.

F. Modify MNT or RHB data that is already in the database

1. Use RIMS to enter/edit MNT or RHB data.
   a. Start RIMS application and go to the Data Entry/Edit Screen.
   b. Select 3 for MNT data or 5 for RHB data.
   c. Select 1 from either menu to enter/edit improvement data.