Memorandum

U.S. Department
of Transportation

6300 Georgetown Pike
McLean, Virginia 22101-2296

Federal Highway
Administration

Subject: ACTION:LTPP Directive P-18
Upgrade of PROQUAL Software to Version 2.07

Date: November 14, 1997

From: Antonio Nieves Torres
Pavement Performance Division

Reply to
Attn. of: HNR-30

To: Mr. Bill Phang, LTPP Regional PI (NA)
Mr. Brent Rauhut, LTPP Regional PI (S)
Mr. Mike Darter, LTPP Regional PI (NC)
Mr. Dennis Morian, LTPP Regional PI (W)

Attached is the Long-Term Pavement Performance (LTPP) Program Directive P-18 that transmits the "Upgrade of PROQUAL Software to Version 2.07". The upgrade of the PROQUAL Software to Version 2.07 will replace the current version.

Please make sure that all office personnel involved in the use of the Profiler are aware that this new software is available.

If you have any questions concerning this transmittal, please do not hesitate to call me at 703-285-2526.

Antonio Nieves Torres

Attachment

FHWA:HNR-30:anieves:ant:285-2526:11/14/97
File: c:\mpesut\wp\nieves\covdir8.doc
cc:
Gonzalo Rada (PCS/LAW)
Gary Elkins(PCS/LAW)
Monte Symons
Directive File
LTPP Team
Official File
Chron

LONG TERM PAVEMENT PERFORMANCE
PROGRAM DIRECTIVE

For The Technical Direction Of The LTPP Program

LTPP

Program Area: Monitoring	**Directive Number:**
Date: November 21, 1997	**Supersedes:**

Subject: Upgrade of PROQUAL Software to Version 2.07

Effective immediately, processing of profile data shall be performed using Version 2.07 of the PROQUAL software, which is being transmitted with this directive. This new version of the software incorporates modifications made to address errors or problems identified in earlier versions of the PROQUAL software. Major modifications to the software include:

- Correction of problem that existed with the running average data file in providing the elevation interval for location 0.000 and obtaining the correct length for a 152.4 m section. Various versions of PROQUAL 2, prior to Version 2.06, either input a Ø elevation at the 0.000 location, or the first running average point (150 mm) was input at 0.000. PROQUAL Version 2.06 was modified to extract the first elevation point from the binary file for the 0.000 location. This point is not consistent with the other points in the data set, that are a product of the running average, but results in the first 150 mm data point being at its correct location based on distance traveled.

Correction of problem that existed with the sub-sectioning module of PROQUAL Versions 2.01 through 2.05 that could potentially provide sections lengths that are not 152.4 m in length. PROQUAL Version 2.06 was modified to check that the start/end point selected provides the correct section length. If the user selects a start/end location that is not consistent with the running average data points, a "recommended value" start/end location is provided based on the closest evaluation point. If the user provides a start, but not an end location, the section length input is used to determine the end location. This ensures the section limits will match the required length for data processing.

Correction of problem that existed with the IRI coefficient indices in PROQUAL 2 for the 150 and 300 mm sample/record interval. The VEHSIMU.DBF files in PROQUAL Versions 2.01 through 2.06 contain values for 152.4 (150-mm sample) and 304.8 (300-mm sample). Reprocessing of the data with the correct coefficients for 150 mm (i.e., with PROQUAL Version 2.07) will provide results in the range of 1% or less than presently produced using PROQUAL Versions 2.01 through 2.06.

The new PROQUAL Version 2.07 software shall be installed on all computers being used to process LTPP profiler data, replacing any older versions. The installation instructions are as follows:

> Three (3) diskettes containing the PROQUAL Version 2.07 software are enclosed with this directive. Prior to installing the PROQUAL version 2.07 software, a back-up of the history files (HIST*.*) is required. Copy these files to a temporary directory on the root drive. Before installing the software, delete all files in the PROF2 directory or remove the PROF2 directory. Do not attempt to overwrite the existing files. From A:\ or the floppy drive the disks are loaded to, type "install". A c:\PROF2 directory will be created, if it does not already exist, and the program and support files will load to this directory. If you wish the program to reside on another directory, you will need to move the directory and files. At the completion of this step, you need to create a KJL_SYST directory with at least the FHWACN.DAT file, if it does not already exist. The FHWACN.DAT file is available in the PROF2 directory. Copy the history files (HIST*.*) as previously saved to the PROF2 directory. If you want to start with a new history file, copy the HIST*.* files from the PROF2/HIST directory to the PROF2 directory. To execute the program, type "PROF2" while in the PROF2 directory. The menu options will appear and you may proceed as usual. Do not forget to update the parameter file for serial number, model number, manufacturer, etc. It is advisable to print the parameter file for future reference.

Because of deficiencies detected in earlier versions of the PROQUAL software, all data that have been collected with the K.J. Law T6600 profiler should be reprocessed and/or uploaded to the IMS using the PROQUAL Version 2.07 software, as described below.

Data Processed with PROQUAL Versions 2.00 through 2.05

All data processed with PROQUAL Versions 2.0 through 2.05 need to be reprocessed, starting with the binary *.P* files. The recommended procedure is as follows:

1.   Restore profile data sets for profile data processed using PROQUAL Versions 2.0 through 2.05.

2.   Delete the following PROQUAL processing files for each site data set.

> *.Sum - Summary file to store interval IRI results
> *.HDD - Database version of the header file
> *.D## - Database Profilometer elevations
> *.IDX, *.DDX, *.SDX - Index files
> *._LM - Subsectioning information/limits
> *.EVN - Event marks file
> *.FPT - Database file

3.   Starting with the binary *.P* files, reprocess profile data using the existing PROFCHK hardcopies as a guideline for a) incorporating operator/analyst comments, b) sub-sectioning data file (if required), c) editing header/elevation data (if required), and d) selecting five (5) runs to be uploaded to the IMS.

4. Instructions for selecting/generating ASCII files for upload to the IMS are provided in Section 4.5.4 (page 34) of the PROQUAL 2.06 User Documentation. The existing profile tables in the IMS database have to be deleted prior to filtering reprocessed profile data; please refer to first note at the end of this directive for IMS upload instructions.

Reprocessing of the data in question with PROQUAL Version 2.07 will result in the correct location for elevation data points, the correct file length, and corrected IRI values.

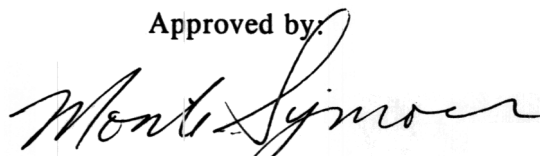## Data Processed with PROQUAL Version 2.06

Data processed using PROQUAL Version 2.06 will require a re-analysis of the IRI indices using the correct 150 mm coefficients as provided in Version 2.07. The re-analysis of IRI indices can be accomplished using the "batch" process described in Section 4.3.9 (page 30) of the PROQUAL Version 2.06 User Documentation. The user can select either files or directories to process; only the IRI indices require re-analysis. Again, instructions for selecting/generating the ASCII files for upload to the IMS are provided in Section 4.5.4 (page 34) of the PROQUAL 2.06 User Documentation. The existing profile tables in the IMS database have to be deleted prior to filtering the reprocessed profile data; please refer to the first note in this directive for IMS upload instructions.

Notes: (1) Elevation data points that are logically deleted (i.e. Spikes)during processing with PROQUAL are not presently identified so in the IMS. As a result, the IMS **MON_PROFILE_DATA** table is being modified to include a data field for flagging those data points that have been marked as spikes (referred previously as "Logically Deleted") in PROQUAL. Consequently, the regions are NOT to upload profile elevation data to the IMS until that change has been implemented. Furthermore, the regions are NOT to upload the **MON_PROFILE_MASTER** and **MON_PROFILE_DATA** tables to the IMS until notified via a LTPP IMS Directive.

(2): PROQUAL Version 2.07 contains a new version of SPIKE.EXE as part of the FHWACN program. The old SPIKE program was not able to process data files having large amounts of spikes. This problem has been fixed in the new SPIKE program.

Any questions concerning this directive or its implementation should be addressed to Antonio Nieves of the FHWA LTPP Team. If there are any problems with the software, please submit a profiler problem report (PROFPR) form in accordance with LTPP Monitoring Directive P-3.

Prepared for: Antonio Nieves

Approved by:

Monte Symons
Team Leader, LTPP Operations