McLANE®
RESEARCH LABORATORIES, INC.

Technical Support Bulletin 2020-01	**MMP and ITP** **RTC Clock Rollover Bug**	**January 08, 2020**

Alert Level: CRITICAL

Instruments: MMP and ITP

Software Versions: All MMP and ITP firmware

Hardware Version: CF2 (TT8 currently under evaluation)

Subject: Real Time Clock (RTC) Clock Rollover Bug

Summary: All MMPs and ITPs are affected by a serious bug that interpreted the year as 1940 when the Real Time Clock (RTC) advanced from 2019 to 2020. Depending on the firmware version, the MMP or ITP will be impacted in one of the following ways:

- MMP/ITP CF2 v5.34 through v5.36 will sleep indefinitely. Other than recovering the profiler, there is no way to fix the error in the field.

- We believe earlier MMP /ITP firmware versions will change the date to 1940 but continue to profile. The year 1940 will appear in the Engineering files and other unpacked files where time is represented.

- All MMPs and ITPs not currently deployed will require a firmware update.

- No other McLane instruments use this Real Time Clock. Therefore, we do not believe any other McLane instruments are affected by the RTC Clock Rollover Bug.

Technical Details: Due to an incorrect implementation of the RTC, at the rollover from 2019 to 2020, the year is interpreted by the firmware as 1940. The impact on MMP/ITP firmware differs depending on firmware version.

CF2 v5.34 through 5.36: The firmware calculates the next profile after the year rollover based on 1940. The clock correction routine then recognizes that the RTC is out of range and performs a clock reset based on (1) the CF2 clock or (2) the last known valid time written to a file for this purpose or (3) the compile date and time. Although the MMP/ITP current time and date are correct, the next profile date remains scheduled for 1940. The system will sleep indefinitely and no more inductive communications sessions will be performed.

All other MMP or ITP firmware versions: In CF2 electronics v5.00 through v5.33, the firmware recognizes the year as 1940 with the correct profile month, day and time. Users will see 1940 in the Engineering files and other unpacked files where time is represented. We are currently evaluating TT8 hardware and firmware for this bug.

Actions:
- All MMPs and ITPs will require a firmware update. McLane has a firmware fix that corrects the issue. We are currently testing this update and will release the firmware as soon as testing is completed. We do not recommend deploying an MMP or ITP without this firmware fix.

- Profiler v5.34 to v5.36: The profiler will sleep indefinitely until recovered.

- Profiler v5.00 to v5.33: After normal planned recovery, or data offload via telemetry, manually adjust the year in the Engineering files and other unpacked files where time is represented. Contact McLane if you require assistance adjusting dates. We will update this bulletin when the TT8 hardware and firmware evaluation is complete.

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