Subject: Setting Aircraft Date and Time.

Overview:

The aircraft date may revert back to 1990 if there was a maintenance action of the MDC, or the MDC battery is failing or on rare occasion's maintenance of the FMC.

On power up the GPS looks for a good date and time from the aircraft which is supplied by the ARINC clock or MDC.

Details:

In installations with GPS sensors enabled for use by the FMS, the FMS time and date are automatically updated with GPS time and date; manual updates are not allowed. Also, some FMS installations automatically get time and date from the airplane clock; manual updates are not allowed. Referring to the appropriate airplane flight manuals are required to set the airplane clock

Impact on Flight Operations:

When a 4100 series MDC battery fails and reverts back to a 1980s default date the incorrect date will cause the report forms in the MDC to be incorrect.

When a 4000 series MDC battery fails all memory and software applications are gone and there will be no output from the MDC.

For aircraft that use XM, an incorrect aircraft date can inhibit proper operation. XM syncs with the GPS date and time group. When the XM date and time group is not the same as the aircraft GPS date time group it is not able to get a present position fix and the charts will not be displayed.

Recommended Action:

There are two ways to set the date and time.

1. Through the CDU Status page as long as the CDU's are in SYNC or
2. Through the MDC Set Up. Follow the instructions in the Maintenance Diagnostics Guide or Avionics System Manual (ASM) to correct the date.

Note: Do not replace the GPS or FMC when the date is incorrect. The GPS is only looking for a good aircraft date and time on start-up. The clock set operation is available only when the DCU does not receive the GPS or ARINC (ships) clock. The ARINC clock breaker and ARINC power breaker as well as GPS breakers should be pulled to set the date and time through the MDC.

If the date on the MDC or ARINC clock is wrong then the date on the GPS will become wrong also.

The DCU looks at all the possible clock/date inputs and determines which one will be used.

Note: Service Bulletin 9 for the GPS 4000A and 4000S is supposed to reduce the effect of an incorrect date on startup. After the SB fix, if the MDC is in 1990, it is possible to still confuse the GPS.

Excerpt from SB 9 Revision 1 (523-0816637):

> Current units have potential to output incorrect GPS date. This issue will not occur until after June 20, 2009. Current GPS-4000S units have a greater sensitivity to multi-path on the ground.
>
> GPS-4000A (CPN 822-1377-001) and GPS-4000S (CPN 822-2189-001) GNSS software will be updated to reduced the potential for the GNSS receiver to output the incorrect GPS date.

The best method for setting the correct date is through the MDC. Instructions to do this can be found in the Diagnostic Guide or Avionics System Manual.

The GPS breakers need to be pulled for the Set Aircraft Clock Page in the MDC to be displayed. If the GPS is still engaged then the date and time cannot be set.

Simplified Date Set instruction:
Procedure 1

1. Disengage the GPS circuit breaker so the MDC Set Aircraft Clock Page can be displayed.
2. Make sure CDU's are in sync and attempt to set the date through the STATUS page on the CDU
3. If this step doesn't work, navigate to the MDC Set Aircraft Clock Page as outlined in Procedure 2.

If the date didn't recover using the first procedure then manually set the date on the MDC as follows: (Remember the GPS and ARINC clock need to be disengaged)

Procedure 2

1. On the MFD Enter MDC Diagnostic Pages
2. MAINTENANCE MAIN MENU
3. MDC SETUP
4. SET AIRCRAFT CLOCK
5. Set the Date to current date (Example: 23 JAN 1912)
6. Press ACCEPT
7. Observe the change on the CDU STATUS page
8. Set Position Initialization on CDU
9. Re-engage GPS circuit breakers. Observe correct time and GPS RAIM.

Note: You can only change the last two digits on the date so set it to current year. Example: year 2012 would be 1912 on the MDC

Because GPS satellites didn't go on line until after 1970 the GPS should correct the date in the system when it comes on line.

If after powering down the aircraft for more than four hours or after sitting over night and the date is wrong on the next power up then send the MDC in for service. There is nothing wrong with the GPS.

Note: It takes a minimum of four hours for the non-volatile-memory (NVM) to clear in the GPS.

If the Date does not stay corrected after re-engaging the GPS it is possible the GPS may have corrupted NVM memory and may need to be serviced. This can occur in all GPS 4000 LRUs.

The GPS 4000A & 4000S does not have this problem.