

# Design deficiency makes Primus II transponder mitigation procedures a “vital action”

A design deficiency of transponders that are part of the Honeywell Primus-II Communications System installed *inter alia* on Embraer 135 and 145 Regional Jets, the Jetstream 41 aircraft and on many business jets came to light shortly after the Mode S transponders were installed in September 2004.

When the setting of a new Code (Squawk) on the Primus II Radio Management Unit (RMU) is not completed within five seconds (for instance due to an interruption during the selection process) the transponder reverts to the “Standby” mode. This means the symbol and associated aircraft’s data label on the air traffic controller’s radar scope will no longer be displayed. In addition, the Traffic Alert and Collision Avoidance System (TCAS) will not function.

This type of failure creates an unsafe operational situation. Until all affected aircraft had been modified Honeywell has issued a Technical Newsletter in December 2004 to correct the problem by requiring pilots to check that the transponder is not in standby mode after a code change.

Unfortunately, in a high work load environment this ‘check and recycle’ mitigation procedure is far from being effective in eliminating the problem brought about by this design deficiency.

Air Traffic Controllers report an unacceptably high level of “Loss of Transponder Track incidents”. More than five cases have occurred in one European Control Centre in a single month, including one incident where an ERJ 145 flew for 30 minutes in a high density radar environment without SSR detection or TCAS capability, another one where the result was a near miss and a third where the change to a 7700 squawk instructed by the air traffic controller during an emergency descent resulted in a loss of radar contact.

A number of civil aviation authorities are evaluating proposed airworthiness directives to mandate correcting the problem. The European Aviation Safety Agency (EASA) is expected to issue an Airworthiness Directive (AD) early in August which it says “will require operators as a matter of priority to modify their

aircraft and associated documentation”. However, this “matter of priority” allows for a deadline of 12 months from the date the AD is published. Therefore the problem is likely to persist at significant levels until early 2006, and remain present until August of next year.

IFALPA has urged EASA, JAA and Eurocontrol, in a joint letter with IFATCA and the European Cockpit Association (ECA), to take appropriate measures to eliminate this safety hazard as quickly as possible. Meanwhile, IFALPA strongly recommends that all pilots on affected aircraft apply the Honeywell recommended mitigation procedure.



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