

FC5292

Posted on 29.01.2024 by Steve Forward

Category: [Flight Crew \(Commercial\)](#)

Report Title RNP Approaches and mis-setting QNH

Initial Report

Recent incidents have high-lighted a latent threat in RNP approaches, namely descending IMC with an incorrect QNH sidesteps most of the safeguards against CFIT. It is only a matter of time before there is a fatal accident. The old, bold pilot's ruse of checking height/altitude against distance simply does not work. My company has been training to avoid this situation for a number of years – specifically comparing Rad Alt against distance. Good, but it doesn't work if the terrain under the approach is not flat, and approach plates do not contain much, if any, information about the underlying terrain. I repeat that Altitude v Distance checks are not good enough. Is it really beyond the wit of man to provide, on every RNP approach plate, just one verified RADALT v Distance check, to give us old, bold pilots a fighting chance?

Comment

Erroneous entry of QNH is a known problem with Baro-VNAV approaches within RNP procedures and the CAA recently published a [video](#) to highlight the issue, along with a note in April 2023 ([SN-2023/003](#) 'Risk of Controlled Flight into Terrain during 3D BARO-VNAV and 2D Approaches') that also referred to the problem. ICAO has also published material on risks related to altimeter setting during BARO-VNAV approaches in their [EUR OPS Bulletin 2023-001](#), which gives general and training recommendations. There is also an excellent [YouTube video](#) that discusses an incident at Paris Charles de Gaulle airport where a crew set the wrong QNH due to a number of factors and narrowly missed the ground.

Although *CHIRP* agrees that the introduction of a known radalt height at a specific range on the approach path is a good idea in theory, in practice there are a number of problems that might be encountered. If a specific point is chosen for the radalt 'fix' then that point would have to be protected from any subsequent erection of obstacles. Furthermore, it's not clear who would be responsible for surveying each approach and protecting that location, would this be an Airport, ANSP or NAA responsibility? Chart providers rely on the AIP of the nation concerned to publish such data and so, ultimately, it becomes a national responsibility to survey and assure the data. Whilst there might be confidence that such surveys were robust in most countries, others might not be so comprehensive or regularly updated, and getting an ICAO agreement on responsibilities and data

assurance would not be an easy prospect. Radalt does have its uses as a gross-error cross-check at a suitable part of an approach but, as the reporter comments, it must be recognised that terrain variations and the different geometric models in use in different countries mean that radalt is not always suitable as a definitive system to ensure that QNH has been set correctly.

In future, the use of QNH itself is under review as the provision of space-based GNSS altitude is being developed, but this does not solve the immediate problem. At present, the system relies on pilots making cross-checks to ensure that the correct QNH is set (such as pre-planning and corroboration by ATIS or transmissions to other aircraft). Digital ATIS upload is also available at some airports (although not widespread), and this can remove human input errors on the flight deck; although the cost to airports is quite high, if more of them were to install digital ATIS then this would provide a further safety enhancement.

Existing procedures, along with using radalt as a gross-error check, probably still offer the only realistic and robust way of ensuring that the correct QNH is set at present rather than waiting for ICAO to set standards and airports to survey, publish, certify and assure definitive radalt fix points on BARO-VNAV approaches.



