



Federal Aviation Administration

Memorandum

Date: MAR 14 2008

To: Danny E. Hamilton, Manager, National Flight Procedures Group, AJW-32
J.H. Smith, for

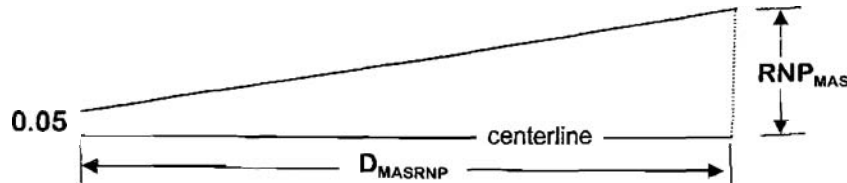
From: John W. McGraw, Manager, Flight Technologies and Procedures Division, AFS-400

Subject: Correction to Order 8260.52, U.S. Standard for Required Navigation Performance (RNP) Approach Procedures with Special Aircraft and Aircrew Authorization Required (SAAAR)

PURPOSE: An error has been discovered in formula 4-3 that calculates the maximum distance that an RNP value less than 1.0 can be carried into the missed approach. This memo provides the corrected version of the formula.

DISCUSSION: The missed approach obstacle evaluation area width is $2 \times \text{RNP}$, the required alarm limit is $1 \times \text{RNP}$ or RNP_{MAS} . Formula 4-3 calculates the distance (D_{MASRNP}) required for the aircraft inertial reference unit (IRU) to drift from centerline (which the avionics can identify within 0.05 NM until GPS updating is lost) to the RNP_{MAS} alarm limit at a drift rate of 8 nautical mile (NM) per hour. The currently published formula 4-3 only calculates the value for a category D aircraft indicated airspeed at sea level and does not include a tailwind component.

$$D_{\text{MASRNP}} = 20.625 \times \text{RNP}_{\text{MAS}} - 1.031$$



The formula derivation is: $(\text{RNP}_{\text{MAS}} - 0.05) \left(\frac{165}{8} \right)$ simplified to $D_{\text{MASRNP}} = (\text{RNP}_{\text{MAS}} - 0.05) \frac{165}{8}$

which simplified to $20.625 \times \text{RNP}_{\text{MAS}} - 1.031$. However, our intent is to calculate D_{MASRNP} using the calculated true airspeed for the HIGHEST published decision altitude (DA) plus a 10 knot tailwind component for the SLOWEST published category since the slowest aircraft would drift to the alarm limit over a shorter distance than a faster one. The distance is applied from the highest DA point.

FORMULA CORRECTION. Substitute the following formula for the currently published formula 4-3.

$$D_{\text{MASRNP}} = (\text{RNP}_{\text{MAS}} - 0.05) \frac{V_{\text{KTAS}} + 10}{8}$$

EXAMPLE

$$DA = 2213$$

$$V_{\text{KIAS}} = 90 \quad (\text{Category A published on the chart})$$

$$\text{RNP}_{\text{MAS}} = 0.5$$

$$V_{\text{KTAS}} = \frac{90 \cdot 1.71233 \cdot \sqrt{(288 + 15) - 0.00198 \cdot 2213}}{(288 - 0.00198 \cdot 2213)^{2.628}}$$

$$V_{\text{KTAS}} = 95.412$$

$$D_{\text{MASRNP}} = (0.5 - 0.05) \cdot \frac{95.412 + 10}{8}$$

$$D_{\text{MASRNP}} = 5.929$$

If you have questions, contact Jack Corman, AFS-420, at (405) 954-0012.

Formula 4-3 Max RNP<1.0 Distance		
$D_{MASRNP} = (RNP_{MAS} - 0.05) \frac{V_{KTAS} + 10}{8}$		
Where $RNP_{MAS} = MAS \text{ RNP} < 1.0$		
$V_{KTAS} = \frac{V_{KIAS} \cdot 171233 \cdot \sqrt{(288+15) - 0.00198 \cdot DA}}{(288 - 0.00198 \cdot DA)^{2.628}}$		
V_{KIAS} = Slowest Published Cat indicated airspeed DA = Highest Published decision altitude		
V_{KIAS}		Click here to Calculate
DA		
RNP_{MAS}		
D_{MASRNP}		