

13 December, 2013

Ms. Margaret Gilligan
Associate Administrator for Aviation Safety
Federal Aviation Administration
800 Independence Avenue
Washington, DC 20591

Dear Peggy:

At the request of AFS-420 in Oklahoma City, the PARC PBN Criteria Working Group reviewed and discussed in detail a proposal for modification of the RNP AR approach criteria, Order 8260.52, in the area of the visual segment analysis. They had prepared a white paper proposing to remove the requirement for extending the visual segment obstacle identification surface (OIS) 5 seconds past the DA(H) when the OIS expansion does not reach the width of 1xRNP at the DA. The WG was asked to review and support or amend the proposal.

The PARC WG, after a series of web meetings, agreed with the proposal, submitting it with unanimous backing to the PARC SG for recommendation to AVS. The recommendation supported by the paper and the group is simply to: "Revise the RNP AR visual OIS area to be consistent with non-AR criteria and delete the buffer area altogether."

The recommendation is supported by the PARC SG, and the detailed recommendations are attached. PARC has retained a history of meetings and backup substantiation of conclusions on the PARC website.

Sincerely,

A handwritten signature in black ink, appearing to be 'Mark Bradley', with a long horizontal line extending to the right.

Mark Bradley
Chairman, PARC

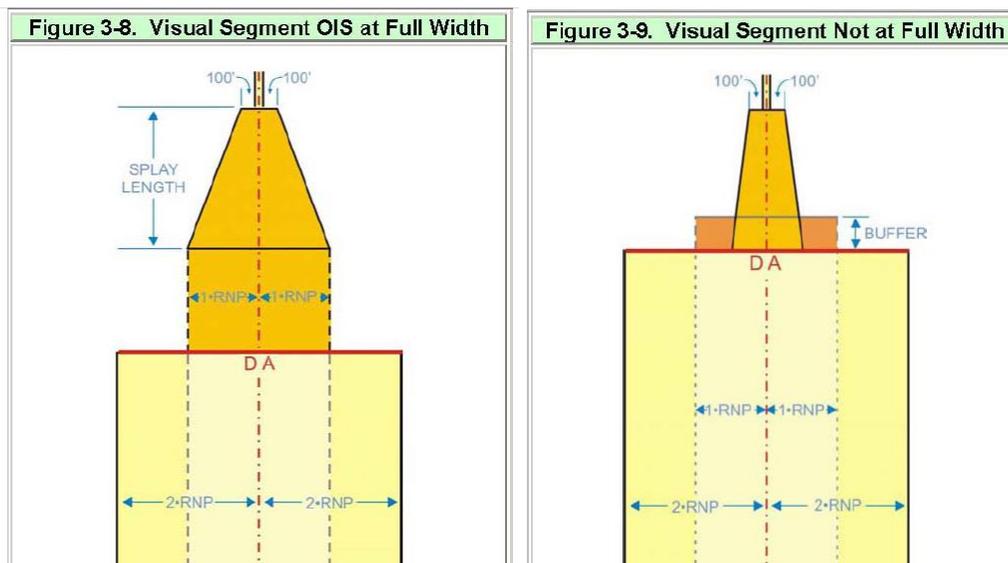
Cc: R. Dunham
M. Steinbicker
B. DeCleene
M. Cramer

White Paper on RNP AR Visual OIS and buffer

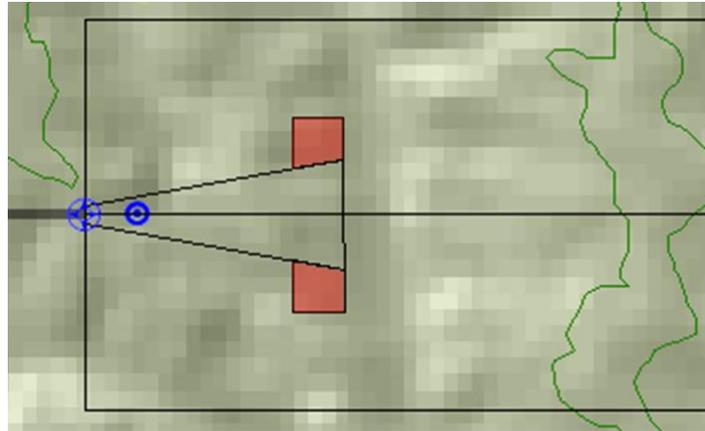
PURPOSE: The purpose of this paper is to discuss whether the RNP AR visual OIS/buffer area is a redundant requirement resulting in unnecessary effort without any added benefit.

BACKGROUND: The RNP AR visual OIS/buffer was introduced by Order 8260.52 and carried over to Order 8260.58 without substantive changes. The standard specifies “*In addition to the standard visual segment evaluation under Order 8260.3 apply an OIS that originates at the LTP/FTP and extends to the DA point at an angle of one degree less than the GPA*”. This criteria also specifies that a Visual OIS buffer area with a surface equal in height to the VEB applies when the distance from DA to LTP/FTP is less than the distance it takes for a 10 degree splay starting 100 ft from runway edge abeam runway threshold to reach 1 x RNP. For example, a typical case with a 150 ft wide runway, 3 degree GPA and 50 ft TCH, there will never be a buffer for RNP 0.1. For RNP 0.2, any HATh < 359 will have a buffer. For RNP 0.3 a buffer applies for any HATh < 540.

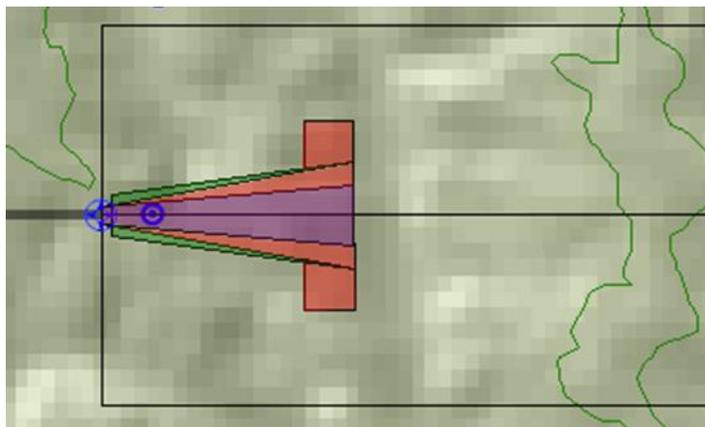
It should be noted that per Order 8260.58 paragraph 3.5 the final segment OEA also extends to the LTP/FTP at the full 2 x RNP width and the VEB OCS applies (even though this is not illustrated in the figures below).



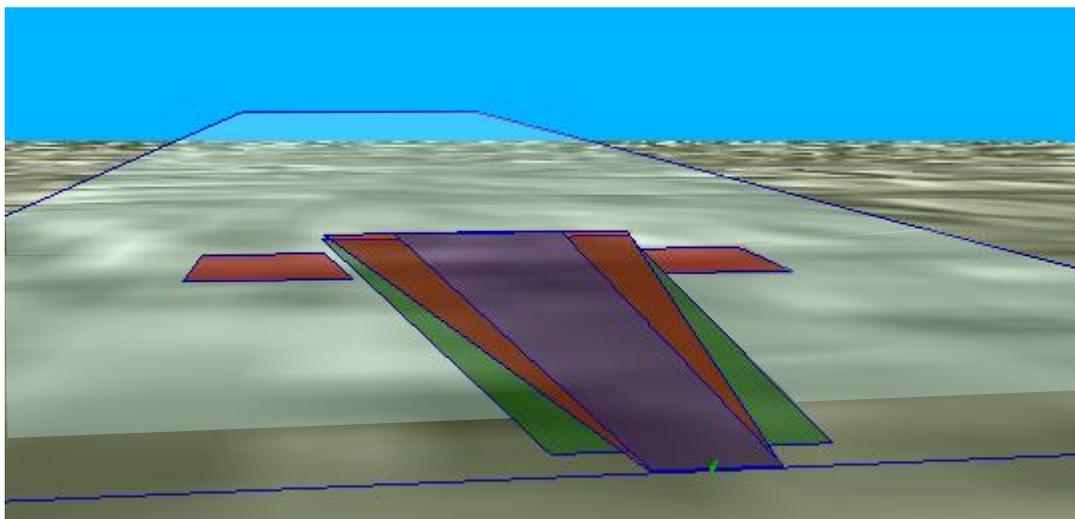
DISCUSSION: The visual OIS buffer area (highlighted in red) is equal to the height of the VEB OCS. The rest of the visual OIS is equal to 1 degree below the GPA therefore higher than the buffer surface.



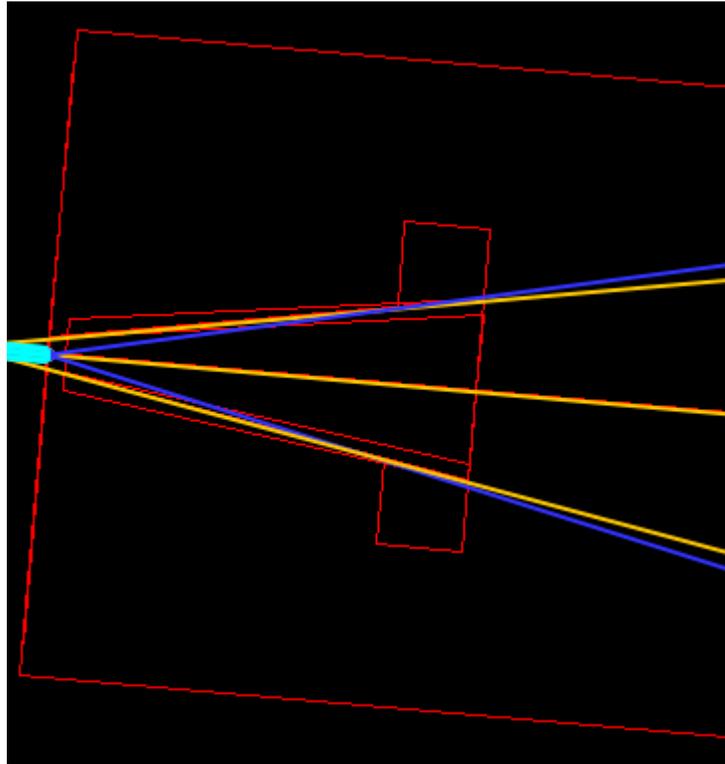
The full visual OIS plus buffer (in red) compared to the visual areas common to non-AR approaches to include the GQS (purple) and the 8260.3B visual area (green) .



A three-dimensional view illustrates the relationship between the RNP AR visual OIS, the common visual surfaces, and the VEB surface. Note that the 8260.3B visual area is the lower surface.



Compare below the visual OIS/buffer (red) to the typical PAPI (yellow) and MALSF lateral coverage areas (blue). It doesn't seem practical that a pilot with an undetected cross-track error at DA would be able to acquire the visual references and continue to the runway from any point in the buffer.



ISSUE: From January 1, 2012 to May 1, 2013, AFS-460 processed 25 approval requests relating to the visual OIS/buffer. Of the 25, four were in the buffer area only. All were approved except one, which was denied because the runway didn't qualify for a vertically-guided approach due to a GQS penetration. The consensus among subject-matter experts is that this rate is somewhat higher than average, but estimate that approximately 30 - 40 % of all RNP AR procedures ever produced have required AFS approval due to penetrations of the visual OIS.

PROPOSAL: Revise the RNP AR visual OIS area to be consistent with non-AR criteria and delete buffer area altogether.