

Approaches titled 'RNAV' & 'RNP' may differ internationally, for a variety of reasons. Here's what you may see...

RNAV & RNP Approach Titles Around the World

XFLASH
Airline Systems




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Approach Title	Approach type	Remarks
RNAV (GPS) 31L	 'Standard' RNAV approach using RNP value 0.3	Common RNAV titles many pilots are familiar with, found in USA & elsewhere. Letters 'Z', 'Y', 'X', etc indicate multiple RNAV procedures for the same runway
RNAV X 31L		
RNAV (GNSS) 31L	'Standard' RNAV approach using RNP value 0.3	Found in common use outside the USA ('GPS' is a USA system, whereas 'GNSS' is a generic term)
RNP 31L	 'Standard' RNAV approach using RNP value 0.3	Newer ICAO title for a 'standard' RNAV approach. Use of this approach title may become more common
RNAV Visual 31L		
Guided Visual 31L	 Visual approach with internal FMS/FMC guidance provided. Pilot has responsibility for terrain & traffic separation	In some cases, ATC terminology may differ from the title on the approach plate, in which case the specific wording to use in your approach request will be contained in approach notes (in a chart provided by Xflash Systems)
Visual 31L		
RNAV (RNP) 31L		
RNP (AR) 31L	RNP-AR [Authorization Required] approach using RNP value 0.3 or less	Chart may also contain the note 'Authorization Required'
	RNP-AR [Authorization Required] approach using RNP value 0.3 or less	Chart may also contain the note 'Authorization Required'

ADVISORY ONLY – this table is provided for info only as a community service to pilots & operators. Refer to your chart service provider, operator & regulatory agency for current, specific references applicable to you

Xflash Systems helps you save money & increase safety through designing & producing all these approach types for airlines, government agencies & operators of all kinds.

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RNAV VISUAL CASE STUDY: In this update, I'll discuss an approach-type that's proven to be a very safe and effective at organizations and airlines I'm involved with each day. This approach design can help in areas of high terrain, and help airlines prevent landings on taxiways. in today's busiest airports. I'm talking about the RNAV Visual approach, several of which are developed by us at *Xflash Systems*.

The reason for our safe implementation of RNAV Visual approaches is this; we're careful where we implement them, and how. Each intelligently-designed and appropriately-located RNAV Visual procedure provides our pilots with helpful extra cues and guidance needed to standardize lateral and vertical paths.

In Visual Meteorological Conditions (VMC), RNAV Visual procedures are intended to take advantage of a modern aircraft's internal Flight Management System/Computer (FMS/FMC) guidance. Reducing variance in lateral and vertical flight paths. Meanwhile, allowing the pilot to rely on outside visual cues to avoid terrain.

RNAV Visual procedures are often best-applied in more remote locations of the world, where there may be special ATC or other considerations that require their use. RNAV Visual is, "another tool in the pilot's toolbox." I do not advocate the use of RNAV Visual procedures at most busy airports in North America or Europe. Because at these locations there is little benefit to be had – existing instrument approaches there typically allow controllers and pilots do a fine job of landing aircraft in a safe and efficient manner.



One example of where RNAV Visual procedures can definitely be used to advantage, is Kabul, Afghanistan. Hamid Karzai International Airport (ICAO code OAKB) is located in a high-elevation bowl, surrounded by high terrain. In many ways, the airport could be considered one runway only (Rwy 29) and the other Rwy 11, not to exist for landing because of terrain blocking a standard approach path. Due to valid concerns regarding terrain clearance during the Base and Final portions of any approach to Rwy 11, several operators are understandably cautious regarding landings on this runway.

A look at the chart below shows some of the reasons why an approach to Rwy 11 might be considered challenging from a north Downwind (south Downwind approach is not allowed by Kabul authorities, due to a security balloon [2,000ft + AGL], Palace location and other various no-fly zones).

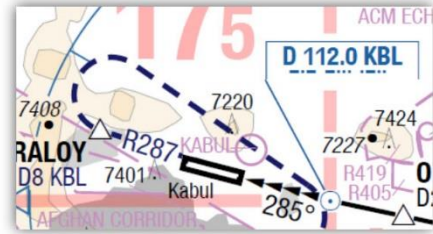
The blue-dashed line on the chart below represents an approximate ground track a visual approach to Rwy 11 at Kabul might look like, without additional lateral and vertical guidance being provided to the pilot.

As you can see, the Base leg, might be cause for concern as the ground track takes the aircraft over high terrain, during the required descent on Base.

In addition, there is little room for maneuver on Final approach to Rwy 11, due terrain to the west on an extended Final, and to the south for previously-mentioned security reasons.

Any pilot of a large aircraft attempting to land on Rwy 11 has little room to play with. There is no existing instrument approach to Rwy 11 because of the same terrain constraints, although an RNP-AR approach to Rwy 11 is being investigated (as well as RNP-AR approach Rwy 29 to deliver a lower slope than the existing 3.5 degrees). However, these instrument approaches may take quite some time to develop – as liaison with Air Traffic Control (ATC), authorities and the design work are properly required.

In the meantime, I've participated in design of an RNAV Visual approach procedure to Rwy 11 at Kabul which takes advantage of our aircrafts' FMS guidance to reduce variance in lateral and vertical paths (thereby increasing predictability). We are able to deliver designs such as these rapidly because the pilot in command retains full responsibility for obstacle clearance while flying an RNAV Visual procedure.



By earlier examining digital terrain data and exploration in the simulator (with an accurate representation of Kabul terrain) we determined potential FMS waypoints that were operationally safe and effective. With additional proper text guidance to pilots provided on well-designed chart we're now ready to proceed with implementing a safe and effective RNAV Visual procedure to Rwy 11.

Fast & Efficient Delivery Total time from inception to delivery of the new approach; less than 8-weeks. After performing necessary training to ensure the procedure is accurately understood by line crew, line operations will begin. This, compared to a typical approach development time which can be two years or more.

Our new RNAV Visual procedure at Kabul has already successfully been used by a major international airline (in actual wind conditions that would have prohibited a landing on Rwy 29 at Kabul) to land safely and effectively on Rwy 11.

It's important to note that prior to our work at Kabul, the only alternative for pilots, was a completely visual procedure to Rwy 11 (with the pilot relying 100% on outside cues for lateral and vertical positioning to avoid terrain). In my experience as an Air Force pilot, Captain and RNAV Project Pilot for a major international airline, having zero internal aircraft FMS guidance in such situations is detrimental to safety. With the new RNAV Visual procedure to Rwy 11 at Kabul our aircraft will be enabled to land in a consistently safer, more stable and effective manner than before.

Providing no internal guidance whatsoever to the pilot cannot reasonably be considered better than having positive guidance throughout the approach. Used with the appropriate care, in appropriate locations, RNAV Visual procedures are inherently safer than no guidance at all.

And it's in cases where there is no existing instrument approach procedure in place (which means a 100% visual procedure the only alternative for the pilot) an RNAV Visual procedure should be considered as an option by airlines, governments and military.

It's up to industry-leading airlines in an increasingly RNAV and RNP-AR navigation world, to choose locations carefully and perform diligent development work, in tandem with forward-thinking aviation authorities. We've done so with government agencies in Afghanistan, Nice (France), Cyprus and others.

Value & Safety Our RNAV Visual results prove their high value each day – with thousands of approaches flown. Kabul now joins our existing RNAV Visual network at locations we've chosen carefully. Locations where aviation safety and effectiveness are raised by delivering flexible, advanced navigation procedures modern technology can provide, and today's flying public demands.

Roger Hall is the founder & Operations Director of XFLASH Systems and Captain/RNAV Project Pilot for Emirates Airline in Dubai. He has designed & implemented a number of special, high-level ACARS-related communications systems as well as conceived several RNAV/RNP-AR procedures used daily in operations by major airlines in the Middle East & Africa. If you or your company require assistance implementing airline communications monitoring, airline security or advanced navigation, [please visit my page on LinkedIn](#) to see how XFLASH Systems can help you and your aviation organization monitor your fleet airborne, maintain regulatory compliance & more.