The "Via" Virus: Have You Had Your Knowledge Injection?

by Matthew McDaniel

Like the common cold, we often feel a virus coming on and prepare accordingly. But occasionally, it catches us off guard and infects an otherwise stable situation with an unhealthy dose of chaos. Of course I'm not talking about our health in this instance. In aviation, the "Descend Via" and "Climb Via" clearances can be effective for a number of ills that often fester within our airspace system. Yet, as with all perceived cures, sometimes the side effects can rival the disease they strive to eradicate.

Dealing with the side effects requires knowledge of the clearances, both as stand-alone and interactive problems when combined with other factors. The negative side effects of Climb/Descend Via clearances are seemingly endless. All manner of unique situations and scenarios can arise, creating confusion and/or questions that are often not resolved until the procedure has already begun. Then, pilots find themselves performing like battlefield medics, working furiously to contain the situation before it becomes unmanageable. IFR pilots know it, the FAA knows it, and the various aviation alphabet groups know it. Thus, the recent surge of educational material made available to pilots to address the most frequently asked questions and concerns related to "Via" clearances.

Background

Descend Via clearances have been in use for several years now, but it was only on April 3, 2014 that Climb Via clearances started being issued within the United States. The decision to implement Standard Instrument Departures or SIDs (also referred to as published Departure Procedures or simply, DPs) into via clearances was not universally popular. But, in reality, it was inevitable; both to better harmonize U.S. Air Traffic Control (ATC) procedures with the international aviation community, and to address issues of radio frequency saturation in many busy terminal airspaces.

The effective date for Climb Via clearances was also a convenient and appropriate time to implement a number of modifications to the existing Descend Via phraseology associated with Standard Terminal Arrivals (STAR)s. For good measure, the FAA concurrently implemented phraseology changes associated with speed instructions. Now, as has happened so often in the past, the burden rests squarely on pilots' shoulders to educate themselves about these new rules, procedures, and phraseology in order to reap the intended benefits, while avoiding the potential pitfalls.

Definition

So, exactly what are Climb and Descend Via clearances? In basic terms, upon receipt of such a clearance, a pilot is authorized to climb or descend, at their discretion, to meet all published altitudes and comply with all published speed restrictions, while laterally navigating the course of the SID or STAR. Additionally, the pilot is authorized to climb or descend to the final altitude depicted as part of the SID or STAR (i.e., the top/bottom altitude).

Basic Phraseology

The wording used by both ATC and pilots is vital to the proper understanding of and compliance with Climb/Descend Via clearances. Anytime such a clearance is issued, a verbatim read back is mandatory. Miscommunications can be quickly created when

shortened phrases like, "climbing on the departure" or "descending on the STAR" are used. In such cases, one of the major benefits of Climb/Descend Via clearances – minimized radio transmissions – is lost. Such poor phraseology will lead to additional radio calls by ATC and responses by pilots to clarify the situation and clearance. Workload and radio chatter will be increased on both ends of the microphone.

Often, a change of frequency will be required along the SID or STAR route. In such cases, pilots should make initial contact with each new controller by advising of their current altitude, followed by, "Climbing/Descending Via [the specific procedure name]." If a specific transition or runway has been assigned, that information should conclude the initial radio call. If it is the initial call to an approach control facility, the ATIS code should also be included. When a top or bottom altitude is published, the pilot is not required to verbalize the altitude climbing/descending. That final altitude is implied within the Climb/Descend Via clearance.

Example (Descending): "Indianapolis Approach, King Air N123KA, 12,000 feet, Descending Via the DECEE FIVE Arrival, Louisville transition, Runway 23 Left, information Victor."

Example (Climbing): "Aspen Departure, King Air N123KA, 9,100 feet, Climbing Via the PITKN FOUR Departure, Meeker Transition."

Common Exceptions (see Figure 1)

Of course, the list of possible exceptions within Climb/Descend Via clearances is limitless. But, there are a number of more common ones you might expect to hear. Most often, these will involve altitude and/or speed assignments that do not coincide with the published procedure. Occasionally, the pilot may be asked to leave the published routing entirely, only to be returned to it further down the route. Regardless of the exception, change, or amendment assigned by ATC, verbatim read-backs not only remain mandatory, but become even more critical, as they cannot be backed up with published information on the corresponding chart.

Options that ATC have to help clarify what is expected of the pilot are use of the phrases "Comply with Restrictions" and "Unrestricted." "Comply with Restrictions" is normally implied and would generally only be used to erase all ambiguity when an aircraft is joining or resuming a procedure. It would be less verbose than requiring ATC to reissue individual restrictions, which would in turn require verbatim

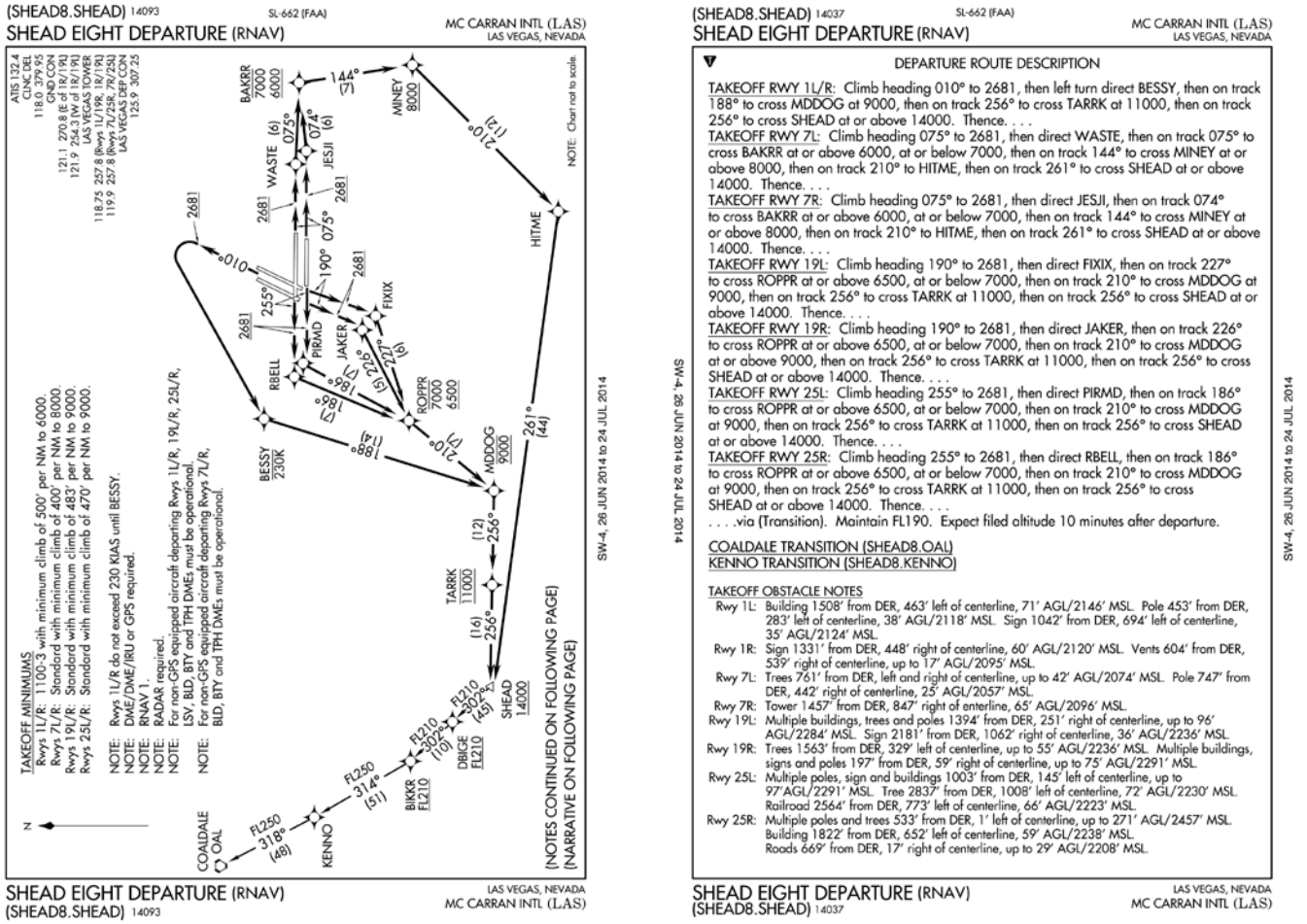

Figure 1: The SHEAD EIGHT RNAV Departure from Las Vegas, Nev. – McCarran Int'l Airport (KLAS). A good example of an active SID, often included in a "Climb Via" clearance.

read backs. "Unrestricted" is not a mandatory term for ATC clearances; however, it is common for ATC to use it for clarification purposes. It is also a minimal-verbiage way of avoiding confusion which could lead to multiple radio transmissions being required to clear up any confusion. If at any point during a Climb/Descend Via procedure, ATC issues a new clearance to "Climb/Descend *and Maintain* [specific altitude]...," the Via Clearance has been superseded and the pilot is expected to commence an unrestricted climb/descent to the newly assigned altitude. "Unrestricted" could be used to quickly clarify for the pilot that they have relief from altitude or speed restrictions within the published procedure. In the same way, a pilot could quickly clarify whether such relief exists by querying ATC as to whether the clearance is "Unrestricted."

Example: (ATC Clearance, assuming a Runway 25R departure) "King Air N123KA, Climb Via the SHEAD EIGHT RNAV departure, Coaldale transition, to flight level one niner zero, Unrestricted."

(Pilot Read Back) "Climb Via the SHEAD EIGHT RNAV departure, Coaldale transition, to flight level one niner zero, Unrestricted. King Air N123KA."

In this case, the pilot may climb directly to FL190 without being required to level at the mandatory crossing altitudes depicted at several of the fixes (MDDOG, for instance). As long as the pilot can ensure the minimum altitudes are met, exceeding those altitudes would be acceptable (a reason for such a clearance might be a lack of inbound traffic to cause potential conflicts in the vicinity of those normally-mandatory-altitude fixes).

Another exception of giving relief from a published restriction might be (assuming a Runway 01L departure) "Climb Via the SHEAD EIGHT RNAV departure, except delete speed restriction at BESSY" (not likely to be a factor for most King Air operations anyway!). Of course, ATC could always impose stricter restrictions than published too, by assigning slower speed limits or more restrictive altitude limits or windows.

Close, but Different

Don't be confused by some similar sounding clearances:

- If you are vectored off course during a Climb/Descend Via clearance, you are no longer on the procedure laterally or vertically and, thus, the Climb/Descend Via clearance is no longer valid. If vectored back onto the procedure, a new Climb/Descend Via clearance may be issued, but it is not to be assumed without specification from ATC.
- A "Cleared Via" clearance is part of a lateral route clearance and does not imply any vertical navigation authorization, even if the lateral portions are part of a published SID or STAR.
- Many SIDs/STARs include EXPECT notations for altitudes and/or speeds. These notations are for vertical navigation and speed planning purposes only and are not mandatory unless specifically assigned by ATC. Therefore, pilots are permitted, but not required, to adhere to EXPECT restrictions even when on specific Climb/Descend Via clearances (unless voluntary adherence to an unassigned EXPECT restriction would interfere with adherence to other published, assigned, or mandatory restrictions).

More Information

- As always, the best starting point for self-educating on matters of IFR procedures is the *Aeronautical Information Manual (AIM)*. Specifically, refer to AIM revisions dated April 3, 2014 or subsequent. AIM Chapter 5, entitled "Air Traffic Procedure" discusses both Climb Via clearances (within Section 5-2, "Departure Procedures") and Descend Via clearances (within Section 5-4, "Arrival Procedures").
- Another terrific resource, which I highly recommend all IFR pilots find and read is the "Climb Via/Descend Via Speed Clearances Frequently Asked Questions," compiled by the Pilot/Controllers Procedures and System Integration Work Group (Version 1, released Feb. 14, 2014, in anticipation of the April 3 changes) [AFS-470, Performance Based Flight Systems Branch].
- An *Information for Operators (InFO)* letter was sent to various certificate holders, by the Flight Standard Service in Washington, D.C., to explain the new and modified Climb and Descend Via procedures and speed phraseology. This letter also stresses the importance of pilots understanding and proper usage of such phraseology and procedures. [See InFO Letter #12014, dated Jan. 28, 2014.]
- FAA Order 7110.65U details Descend Via phraseology and procedures.
- FAA Advisory Circular AC-90-100A, Section 11, details the pilot knowledge and training requirements.

- The *Pilot/Controller Glossary (PCG)*: In some of the sources, the FAA indicated that the PCG would be updated to include Descend Via and Climb Via phraseology, as well as, speed phraseology associated with Descend Via and Climb Via clearances.
- As this article was being prepared, the FAA was days away from releasing the latest revision to the *Instrument Procedures Handbook (IPH)* [FAA-H-8083-16]. This is the first major revision of this publication since 2007 and promises to be chocked full of new and updated information for IFR pilots of all levels.
- All of these, and many other related documents, are available online via quick web searches. Together, they form a much more exhaustive body of information than this article ever could.
- Finally, an FAA-produced guidance video is available at: *http://www.faa.gov/tv/?mediaId=507.* KA

About the Author: Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI & IGI. In 24 years of flying, he has logged nearly 14,000 hours total, over 5,000 hours of instruction-given, and over 2,500 hours in the King Air and BE-1900. As owner of Progressive Aviation Services, LLC, (*www.progaviation.com*), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he also flies the Airbus A-320 series for an international airline and holds six turbine aircraft type-ratings. Matt is one of less than three dozen instructors in the world to have earned the "Master Certified Flight Instructor" designation for six consecutive two-year terms. Mr. McDaniel can be contacted at (414) 339-4990 or *matt@progaviation.com.*