

“Cleared for the Approach” vs “Crossing Restrictions”

The meaning of “Cleared for the Approach” is possibly the most mis-understood and misused term in General Aviation, by both pilots and controllers. Regrettably, this ambiguity resulted in the deaths of 92 people on board TWA Flight 514 which prompted the NTSB report (below) that clarified this issue, which was confirmed by AOPA (below).

Many pilots and controllers mistakenly believe that this statement authorizes the pilot to begin their descent. Such was exactly the misconception that killed all aboard TWA Flight 514

Simply put:

- (A) Pilots are NOT authorized to leave their currently assigned altitude unless/until authorized to do so by ATC.
- (B) “Cleared for the Approach” *only* authorizes a change in altitude when the aircraft is ON A PUBLISHED SECTION OF THE APPROACH (e.g., the dark line of the charts, or the areas specified on the charts such as 10-15 nm of a fix for a procedure turn on an ILS Approaches, or the TAA sometimes listed for GPS Approaches)
- (C) But “Cross (WPT) at or above ...” does give implicit authorization to descend at pilot’s discretion.

The FAR clearly states you can only descend at pilot’s discretion when “Cleared for the Approach”
“when on a published section of the Approach”

not

The moment the Controller issues the clearance

Related however is the “**Crossing Restriction**” phrase

“Cross (IF or other reference point) at or above X-thousand feet”

Which IS an implicit authorization to descend.

E.g.:

“N78HF you are cleared for the RNAV 16 Approach at HIGUH.

Cross HIGUH at or above 3,000”

The FIRST sentence by itself does NOT authorize N78HF to make any altitude change.

The SECOND sentence *does* implicitly authorize N78HF to descend at pilot’s discretion to 3,000’ enroute to HIGUH

On the following pages are:

- Wikipedia recap of the NTSB report of TWA Flight 514
 - Wikipedia is not in and of itself a reliable source, but it efficiently recaps and cites the NTSB report, saving us the trouble of reading through all of the extensive NTSB pages
- AOPA website article that confirms the summary in the Wikipedia recap of the NTSB report
- Excerpt from FAA Instrument Flying Handbook regarding Crossing Restrictions, with a commentary by Tom Turner, the Executive Director of the American Bonanza Safety Foundation.

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http://en.wikipedia.org/wiki/TWA_Flight_514

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TWA Flight 514

From Wikipedia, the free encyclopedia Coordinates: 39°04.6′N 77°52.9′W﻿ / ﻿

"Flight 514" redirects here. For the Mimika Air Crash, see Mimika Air Flight 514. For the accident at the Izhma Airport, see Airosa Mirny Air Enterprise Flight 514. For the first crash of a Boeing 707 in 1959, see American Airlines Flight 514.

TWA Flight 514, registration N54328, was a Boeing 727-231 en route from Indianapolis, Indiana, and Columbus, Ohio, to Washington Dulles International that crashed into Mount Weather, Virginia, on December 1, 1974. All 85 passengers and 7 crew members were killed.^[1]

The flight was originally destined for [Washington National Airport](#). However, the plane diverted to Dulles when high [crosswinds](#), east at 28 knots (52 km/h) and gusting to 49 knots (91 km/h), prevented safe operations on the main north-south [runway](#) at Washington National. The flight was being [vectored](#) for a non-precision instrument approach to runway 12 at Dulles. [Air traffic controllers](#) cleared the flight down to 7,000 feet (2,100 m) before clearing them for the approach while not on a published segment.

TWA Flight 514



A Trans World Airlines Boeing 727-200, similar to the one involved

The accident investigation board was split in its decision as to whether the flight crew or Air Traffic Control were responsible. The majority absolved the controllers as the plane was not on a published approach segment. The dissenting opinion was that the flight had been radar vectored. Terminology between pilots and controllers differed without either group being aware of the discrepancy. It was common practice at the time for controllers to release a flight to its own navigation with "Cleared for the approach," and flight crews commonly believed that was also authorization to descend to the altitude at which the final segment of the approach began. No clear indication had been given by controllers to Flight 514 that they were no longer on a radar vector segment and therefore responsible for their own navigation. Procedures were clarified after this accident. Controllers now state, "Maintain (specified altitude) until established on a portion of the approach," and pilots now understand that previously assigned altitudes prevail until an altitude change is authorized on the published approach segment the aircraft is currently flying. Ground proximity detection equipment was also mandated for the airlines.

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<http://www.aopa.org/News-and-Video/All-News/1998/June/1/Landmark-Accidents-Cleared-for-the-Approach>



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Landmark Accidents: Cleared for the Approach

One accident led to many changes

As the NTSB conducted research on how the pilot community interpreted the concept of radar arrivals and when pilots were responsible for terrain separation, the only thing that was clear was that there were multiple interpretations. Ironically, as early as 1970, TWA personnel were concerned about what they saw as conflicting information between the *Airman's Information Manual* and the controller's manual. Both the U.S. Air Force and TWA pointed out to the FAA that "Cleared for the approach" terminology could be misinterpreted unless a specific altitude restriction was included in the clearance.

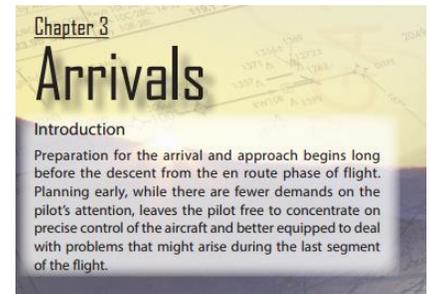
The legacy that grew out of TWA 514's loss is a staple of all IFR training and appears in the *Aeronautical Information Manual*: "When operating on an unpublished route or while being radar vectored, the pilot, when an approach clearance is received, shall, in addition to complying with the minimum altitudes for IFR operations, maintain the last assigned altitude unless a different altitude is assigned by ATC, or until the aircraft is established on a segment of a published route or IAP." It also appears in FAR Part 91.175(l).

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From Tom Turner:

“**Pilot’s discretion**” is common where there’s comparatively little traffic and the controller does not want to have to tell you precisely when to descend. You can leave your assigned altitude at any time, and level off at any intermediate altitude, but you cannot climb once you have begun the descent.

“**Cleared for the approach**” means to maintain your cleared altitude until you are on a published segment of the approach, and then (without further direction from ATC) to descend as directed on the procedure. It does *not* include “expected” altitudes on transitions or feeder routes. This only applies to portions of the approach depicted by thick black lines, not thin lines.



Crossing restrictions: It’s your job to determine when to begin a descent, and at what rate to descend, to arrive at the crossing altitude at or before the fix.

From the FAA Handbook:

A descent clearance may also include a segment where the descent is at the pilots’ discretion—such as “**cross the Joliet VOR at or above 12,000, descend and maintain 5,000.**”

This clearance authorizes pilots to descend from their current altitude whenever they choose, as long as they cross the Joliet VOR at or above 12,000 feet MSL. After that, they are expected to descend at a normal rate until they reach the assigned altitude of 5,000 feet MSL.

Check out the *Instrument Flying Handbook* Chapter 3.

https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/instrument_procedures_handbook/media/Chapter_3.pdf, beginning on page 3-8, “Descending from En Route Altitude.”

Thomas P. Turner

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