



Federal Aviation Administration

CTOP Awareness Items for Flight Operators

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Introduction

This document was developed to highlight some of the behaviors of the Collaborative Trajectory Options Program (CTOP). The following awareness items examine how the CTOP automation will handle the various TMI interactions.

Historical Route processing through a CTOP, TOS submission after CTOP Implementation

No TOS, Multiple FCAs in CTOP, Flight Plan is filed after the CTOP is issued

When a flight plan is submitted after CTOP implementation, several factors determine how the TFMS automation will process the new trajectory information. When there is NO TOS, multiple Flow Constrained Areas (FCAs) as part of the CTOP, and the flight plan is filed after the CTOP is issued, the replacement of the historical route by the flight plan will occur the following ways.

Example 1:

- CTOP has three FCAs, the historical route of flight is through FCA001, and the flight receives an EDCT to meet the slot time at FCA001
- The flight operator supplies a flight plan that matches the historical route through FCA001; the flight will keep its assigned EDCT

Example 2:

- CTOP has three FCAs, the historical route of flight is through FCA001, and the flight receives an EDCT to meet the slot time at FCA001
- The flight operator supplies a flight plan that goes through FCA002, and the flight will receive a new EDCT based on available capacity through FCA002

This flight in example 2 is not considered a pop-up flight because the historical route was used to create an EDCT for the flight; therefore, the flight is not subject to the Max Delay Limit set in the program. If the program is at a low rate with a large amount of demand, the flight could be pushed to a time past the end of the program.

Note: The historical route used is viewable in the Route Monitor on the TSD. No Required route is visible for a flight in a CTOP with only a historical route.

No TOS, Multiple FCAs in CTOP, TOS is provided after the CTOP is issued

When a TOS is submitted after CTOP implementation, several factors determine how the TFMS automation will process the new TOS information. When there is flight plan, multiple Flow Constrained Areas (FCAs) as part of the CTOP, and the TOS is supplied after the CTOP is issued, the replacement of the historical route by the TOS will occur the following ways.

Example 1 – The historical route causes the flight to be included in the CTOP TMI:

- CTOP has three FCAs, the historical route of flight is through FCA001, and the flight receives an EDCT to meet the slot time at FCA001.

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- The flight operator supplies a TOS that contains a route option that matches the historical route through FCA001.
 - All TOS options will be evaluated against available capacity, including the slot the flight previously “owned” in FCA001.
 - The flight will not receive an assignment with an adjusted cost that is greater than the adjusted cost of the option through FCA001 using the previously assigned EDCT.
 - If no lower adjusted cost solution is available, the flight will keep its EDCT, route assignment through FCA001 and its FCA001 slot.

Example 2 – The historical route causes flight to be included in the CTOP TMI:

- CTOP has three FCAs, the historical route of flight is through FCA001, and the flight receives an EDCT to meet the slot time at FCA001.
- Flight operator supplies a TOS that **does not** contain a route option that matches the historical route through FCA001.
 - All TOS options will be evaluated against available capacity, including the slot it “owned” in FCA001.
 - The flight will receive an assignment (and EDCT, if needed) that has the lowest adjusted cost.
 - If the flight does not have an option that can use the previously assigned FCA001 slot (and associated EDCT) and there are no other slots available due to high demand, the flight will be assigned to either an option that avoids the controlled time periods of all of the CTOP’s FCAs or an option through one of the CTOP’s FCAs and a delay so that the flight crosses the FCA after the end its controlled time period

Note: In the latter case, since the flight was already in the CTOP, it is not considered a pop-up, so its delay is not limited to the pop-up maximum delay.

Example 3 – The historical route **does not** cause the flight to be included in the CTOP TMI:

- CTOP has three FCAs, the historical route of flight does not intersect the controlled time periods of any of the CTOP’s FCAs, and the flight is not included in the CTOP TMI.
- The flight operator supplies a TOS that contains at least one option that intersects the controlled time period of one of the CTOP’s FCAs.
 - The flight is treated as a pop-up. All TOS options will be evaluated against available capacity.
 - The flight will be assigned to either of the following options:
 - The lowest adjusted cost option if the flight’s delay using that option is less than the maximum pop-up delay
 - The least cost option with an EDCT that includes the maximum pop-up delay

In the latter case, the pop-up does not receive a slot assignment; it cannot be subbed until it receives a slot assignment during the next revision of the program.

Note: If a flight becomes a “pop-up” too close to its departure time, its Initial Arrival

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Time (IAT) may be assessed a pop-up penalty. A flight's IAT is used to determine the flight's position in the order of selection for assignment during subsequent program revisions.

Submitting a replacement TOS after CTOP has been issued

When a TOS is replaced (or updated) by the flight operator, the existing TOS is erased. The new TOS is evaluated against the current demand on the CTOP and the adjusted costs are calculated for each option. This will generate a new EDCT and awarded/assigned route.

To prevent getting a new EDCT and route award/assignment worse than what the flight currently has, the flight operator should include the currently awarded/assigned route as part of the replacement TOS. The CTOP automation will not award a route/EDCT worse than the current route since the flight already owns this slot through the FCA. If there is a better option for the flight, it would award the new route/EDCT.

CTOP interaction with other Traffic Management Initiatives (TMI)

CTOP program in place, GDP program implemented for all flights

- Control shifts from CTOP to GDP.
- A new EDCT is determined by GDP.
 - The flight, which was controlled by CTOP, will be in Q2 of GDP.
- **Note:** This is the same behavior as an AFP followed by a GDP.
- The flight will retain its current CTOP assigned route until the next CTOP revision.
 - Flights with a TOS will be assigned the least cost option route by CTOP for those included in GDP.
 - Flights without a TOS will be assigned their flight planned route.
- The protected route segment for each flight will be applied by the CTOP program.
Note: If a flight operator does not desire a route change from the current assigned route when a GDP is issued, the TOS should be updated to a single line TOS with the current assigned route.

GDP program in place, CTOP implemented

- All flights that go through the CTOP to the GDP will have a route assignment.
 - Those with a TOS will receive the least cost option
 - Those without a TOS will be assigned their flight planned route
- The protected route segment for each flight will be applied by the CTOP program
- GDP-controlled flights will be assigned the least cost TOS option by the CTOP program
- GDP flights will be exempt in CTOP; they will use available capacity and could exceed CTOP capacity.
- Flight Operators are required to file CTOP assigned route.

CTOP and Required Route by DCC Advisory

- CTOP will only award from the provided TOS. If the required route is not part of the

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TOS, the flight will not receive an award/assignment that is conformant to the required route.

- Route Monitor will show both the CTOP and required route, measuring conformance against both.
- An ATCSCC Specialist can override the CTOP assigned route and apply the Required Route.
 - This will make the flight ineligible for other TOS options in a CTOP revision
 - The NTMS at ATCSCC would have to remove the override status during a revision of the CTOP to allow for TOS option consideration.
 - A new TOS will not trigger an evaluation of the options due to the override status.
 - Flight is still eligible for substitutions in the CTOP.