



The FAA issued an InFO on Nov 19, 2018. Some may have seen my exchange with Rich Boll on the NBAA Airmail regarding same. Subsequently, APG issued a position paper on February 4th, 2019. Here is my response to their paper.

[FAA InFO 18014](#)

[APG's Position Paper](#)

As evident by their own position paper, APG does nothing for pilots meeting All Engine Operating (AEO) requirements, whereas EFB-Pro meets both AEO and One Engine Inoperative (OEI) requirements.

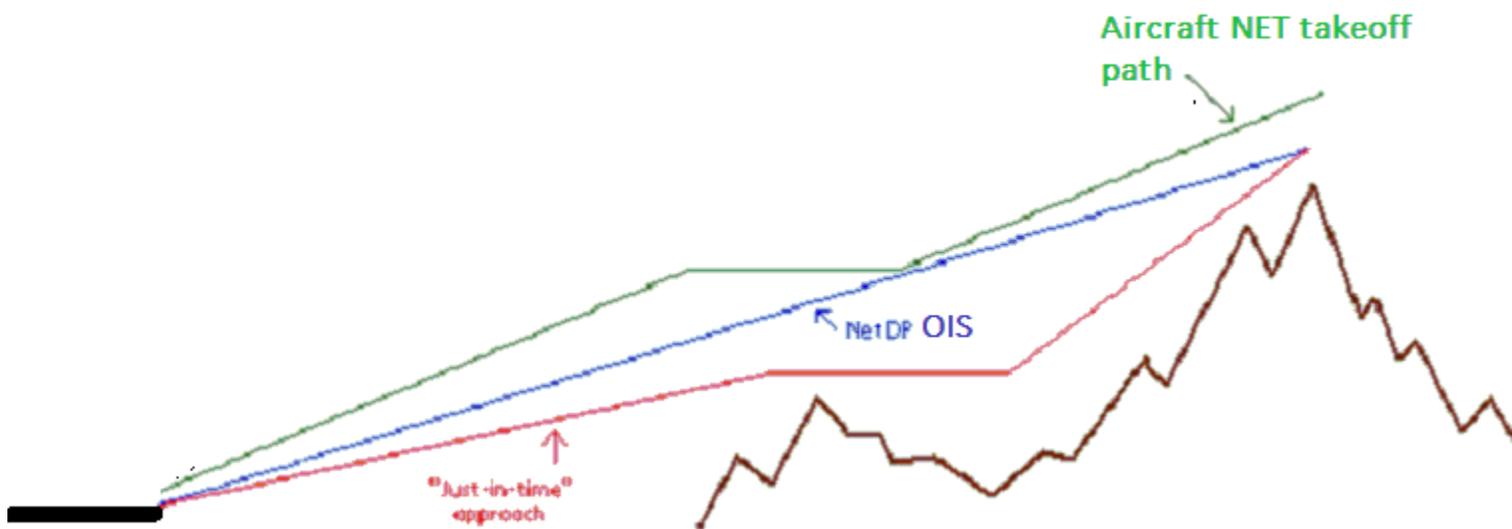
As you know, when the FAA issues a document, it means exactly, and no more, than what it states. APG has taken liberty in “extending” what TERPS, and this InFO, means with numerous erroneous presumptions, assertions and assumptions. For example, the APG paper states:

"The InFO makes clear the OEI gradients and flight path profiles should not be used to show compliance with the IFR departure procedure required minimum climb gradient".

This is not what the InFO states. It simply says that the criteria for meeting OEI requirements is different than meeting AEO requirements such as on a SID. It does not say that the SID does

not contain obstacle clearance that is useful in meeting OEI regulations. Allow me to detail this further, as you may find yourself trying to explain this to fellow pilots.

1) Meeting TERPS does not, by itself, meet OEI requirements. This is a true statement. It does, however, meet OEI requirements AFTER adjusting for close-in obstacles, the Obstacle Identification Surface and keeping the OEI takeoff net profile (green line) above the said OIS surface (blue line) even during the acceleration segment. See diagram below. Remember the OIS was the surveyed obstacle area before the SID or ODP was built on top of it.



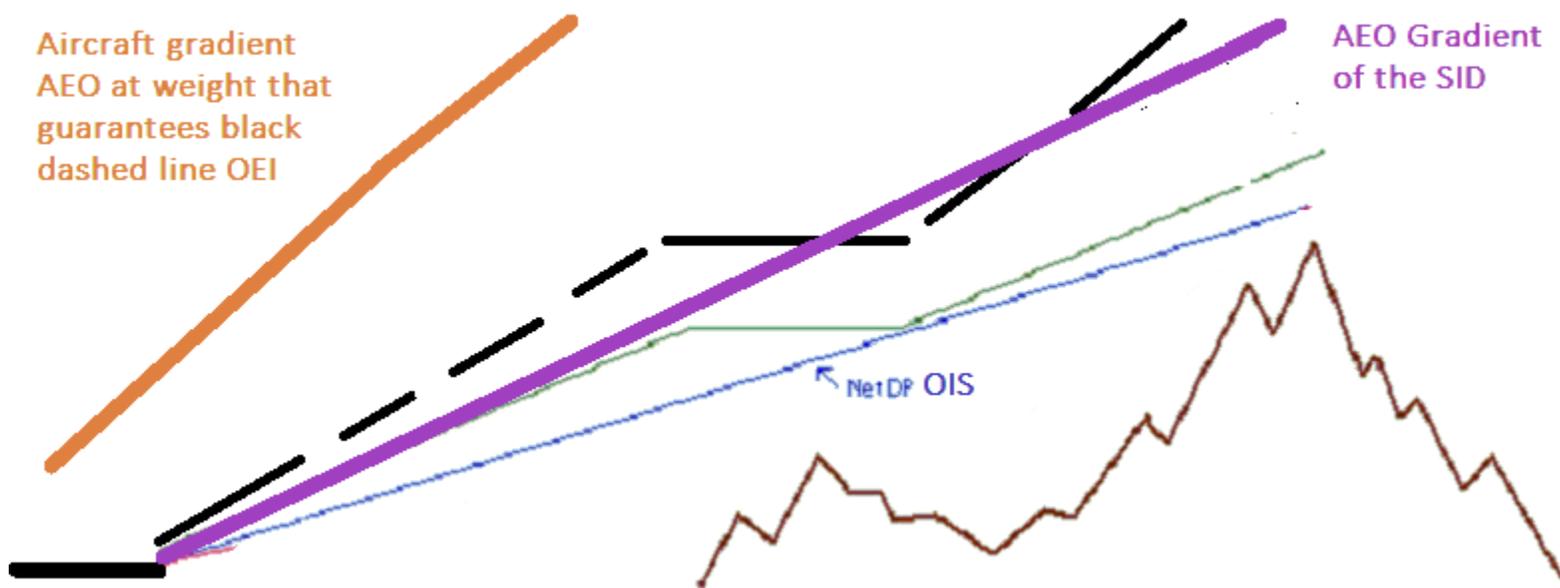
2) Meeting regulatory requirements for OEI obstacle clearance ALONE does not meet AEO SID requirements. This is also a true statement and the main reason why APG can offer nothing to

operators with their product. The reason for this is that APG is “disconnected” from the Obstacle Identification Surface that defines the SID/ODP/DP . They are literally just clearing individual obstacles by 35 feet (red line above). An operator could do that (to meet OEI regulatory requirements) but that proves nothing in meeting the SID climb gradient (purple line below) even when the ground path is the same as the SID, which many times it is not. Their own position paper acknowledges that their “acceleration” segment would penetrate the Obstacle Identification Surface. This is why runway analysis procedures always rely on a holding pattern somewhere upon reaching 1500 feet, so that the level-off will not penetrate any surface.

Notice that APG does not offer any assistance in this matter, simply stating that it is up to “the pilot to determine the required climb gradient”. Since the APG departure is “disconnected” from the All Engine DP (purple line below) the crew is left trying to establish a minimum climb rate (ft/minute) that would assure clearance of the SID. As most AFMs do not provide that info, the pilot is left guessing.

EFB-Pro, on the other hand, is intimately “connected” to the Obstacle Identification Surface of the SID/ODP/DP (blue line). This OIS is a mathematical derivative of the SID or ODP. The entire NET Takeoff Path profile (green line), INCLUDING the acceleration segment, is maintained above that OIS surface. Keep in mind this green line represents the derated (NET) OEI performance based on the number of engines. The actual aircraft path (black dashed line) is above this green Net path and approximates the purple SID/ODP gradient. We can calculate this because the black dashed line is a function of the green line. It is very important to remember that both the black dashed line and

the green line may penetrate or be entirely below the SID gradient. This is acceptable as we are calculating only OEI requirements at this point; which requires that the green line (Net path) remain above obstacles (or the blue OIS gradient). This is accomplished with one engine inop. With all engines, operating at the weight that guarantees the black dashed line (OEI) performance, the aircraft will cross the end of the runway considerably higher than 35 ft, the climb rate will zoom past the OEI climb rate and there is no true "level-off" as the aircraft is reconfigured while in a climb. Thus, if the OIS can be met with One Engine Inop (a NET path) even with a level-off segment, then the All Engine operation (orange line) will easily meet the SID requirement.



It must be restated, APG can not provide this assurance as their departure procedure is not related to the published and flight tested SID/ODP or DP. Your assigned/cleared all engine

operating departure procedure may differ radically from runway analysis by both vertical clearance and path. Using APG, if your engine does NOT fail, you have no assurance that you can meet the SID.

One further adjustment must be met to fully conform with the regulations, which is accounting for close-in obstacles.

EFB-Pro does that as well, therefore both regulatory OEI obstacle clearance and All Engine DP climb requirements are met. We have often held that EFB-Pro is by far a more practical and safer solution for both OEI and AEO operations.