



CLEARED TO LAND

Newsletter For The Pilots of MidContinent Airlines

June 2019

View From the Top

A Message from Michael Collier / CEO

Welcome to the June issue! Due to preparing to exhibit at FSExpo, this issue will be a little shorter than previous issues.

Action Item Update

Work continues on improving our web services. The Flight Academy learning management system has been integrated and all Basic Indoc and 737 systems testing has been loaded and configured.

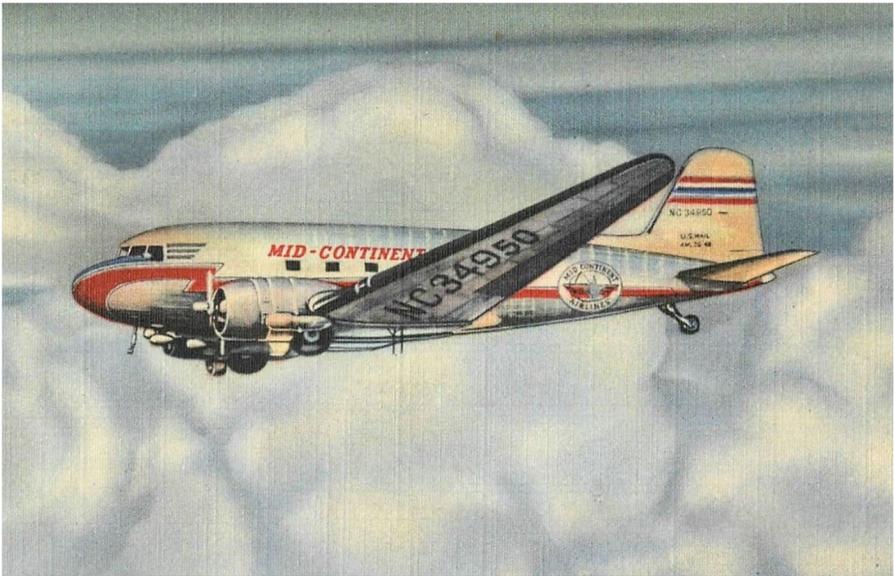
777 and 787 systems are currently being loaded.

A consultation meeting for Sim Director development of our Maneuvers Validations has been scheduled during FSExpo.



In This Issue

- View From the Top
- Center NOTAMs
- Dispatch Sector
- Training Talk
- Pilot Profile



DC3



Mark Your Calendars!

FlightSimExpo

It's Here!

MidCon will be exhibiting our operation and hopefully recruiting a new class of pilots to start filling out our seniority list. Full coverage of this event will be published in the July issue



FlightSimExpo 2019
June 7-9, 2019
Orlando Florida

On The Radar



June VATSIM ATC Events of interest

Friday June 7th:

- ◆ FNO at MCO/FSExpo

Saturday June 8th:

- ◆ FSExpo

Sunday June 9th:

- ◆ FSExpo

Friday June 14th:

- ◆ ZLA/ZOA featuring LAX, SAN, LAS, RNO

Friday June 21st:

- ◆ ZHU featuring IAH

Watch the **EVENTS** section of the VAM website for more VATSIM areas of interest for MCA!



Center NOTAMs

For those not joining us in Orlando for FSExpo, you can still attend “virtually” by flying on VATSIM Friday June 7th through Sunday June 9th in order to show some live MCA traffic to our exhibitors and provide traffic for the controllers.



Dispatch Sector

News from the Operations Control Center

In the May issue we discussed some facets of North Atlantic Planning, including ETOPS alternates.

This month we'll dive a little deeper and take a look at alternate minimums to ensure we are planning a legal alternate.

Our guidance for alternate minimums comes from Ops Spec C055.



U.S. Department of Transportation
Federal Aviation Administration
Operations Specifications
C055 Alternate Airport IFR Weather Minimums HQ Control: 12/0418
HQ Revision: 02b

a. The certificate holder is authorized to derive alternate airport weather minimums from the "Alternate Airport IFR Weather Minimums" table listed below.

Table 1 – Alternate Airport IFR Weather Minimums

Approach Facility Configuration	Ceiling	Visibility
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or CAT I precision approach, or, when applicable, a circling maneuver from an IAP.	Add 400 ft to MDA(H) or DA(H), as applicable.	Add 1 statute mile (sm) or 1600 m to the landing minimum

Approach Facility Configuration	Ceiling	Visibility
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or CAT I precision approach, or, when applicable, a circling maneuver from an IAP.	Add 400 ft to MDA(H) or DA(H), as applicable.	Add 1 statute mile (sm) or 1600 m to the landing minimum
For airports with at least two operational navigational facilities, each providing a straight-in approach procedure to different suitable runways.	Add 200 ft to higher DA(H) or MDA(H) of the two approaches used.	Add ½ sm or 800 m to the higher authorized landing minimum of the two approaches used.
One useable authorized CAT II ILS IAP.	300 feet.	3/4 sm (1200 m) or RVR 4000 feet (1200 m).
One useable authorized CAT III ILS IAP.	200 feet.	1/2 sm (800 m) or RVR 1800 feet (550 m).

To summarize the table:

“One-Nav Rule”

As long as we have at least **one** usable straight-in approach, we can derive alternate minimums by adding 400 feet to the published ceiling, and 1 statute mile to the published visibility from the approach plate. Example: If our desired alternate only has one ILS approach available with standard CAT I minimums at 200 and 1/2, then we would apply our additives to derive **alternate minimums of 600-1 1/2**. In order to legally plan this airport as an alternate, the TAF would need to show a ceiling of at least 600 feet and visibility at least 2 miles (rounding up) at your estimated time of arrival.

Note: The approaches do not have to be an ILS, however, non-precision approaches will yield higher alternate minimums

Dispatch Sector

News from the Operations Control Center



“Two-Nav Rule”

Provided we have at least **two** usable straight-in approaches to different suitable runways, we can derive alternate minimums by adding 200 feet to the **higher of the two** published ceilings, and 1/2 statute mile to the **higher of the two** published visibilities from the approach plate. *Note: “Different” doesn’t necessarily mean “separate”. We can have two separate ILS approaches to opposite ends of the same runway.*

Example: If our desired alternate has two ILS approaches available with standard CAT I minimums at 200 and 1/2, then we would apply our additives to derive **alternate minimums of 400-1**.

What if we have two ILS approaches, but one is published at 200-3/4, and the other is 250-1/2?

Approach Facility Configuration	Ceiling	Visibility
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or CAT I precision approach, or, when applicable, a circling maneuver from an IAP.	Add 400 ft to MDA(H) or DA(H), as applicable.	Add 1 statute mile (sm) or 1600 m to the landing minimum
For airports with at least two operational navigational facilities, each providing a straight-in approach procedure to different suitable runways.	Add 200 ft to higher DA(H) or MDA(H) of the two approaches used.	Add ½ sm or 800 m to the higher authorized landing minimum of the two approaches used.
One useable authorized CAT II ILS IAP.	300 feet.	3/4 sm (1200 m) or RVR 4000 feet (1200 m).
One useable authorized CAT III ILS IAP.	200 feet.	1/2 sm (800 m) or RVR 1800 feet (550 m).

Remember, we have to apply our additives to the **higher** ceiling/vis of the two approaches being used, so in this example we’d apply 200 feet to the 250 ceiling, and 1/2 mile to the 3/4 visibility to come up with **alternate minimums of 450-1 1/4**. We won’t see a TAF forecasting a ceiling right at 450, so we’ll need to round up to 500-1 1/4.

Moving down the table, if our desired alternate has a usable CAT II ILS approach, then we **do not have to consider any additives**. Our alternate minimums will simply be 300-3/4. If we have a usable CAT III approach our alternate minimums will be 200-1/2. With a usable CAT III our forecast could be as low as 200-1/2 at our ETA and still be legal. Certainly not ideal conditions for an alternate, but with widespread weather conditions, there may be days where “legal” is as good as it gets.

Dispatch Sector

News from the Operations Control Center



So far the discussion has been based on deriving alternate minimums based on ILS approaches.

What happens if we don't have an ILS approach available at the airport we want to use?

Ops Spec C055 provides authorization to use GPS-based approaches for all of our fleet types.

GPS-based approaches include GPS, RNAV (GPS), and RNAV (RNP).

Per Ops Spec C384: Lowest approach RNP by fleet

M/M/S	Lowest RNP
B737-800	0.11
B777-200	0.11
B787-8	0.10
B787-9	0.10

CAUTION

- ◆ **RNAV (GPS) and RNAV (RNP) minimums may only be used at the destination, or destination alternate, but not both!**
- ◆ **If utilizing an RNAV (RNP) at the alternate, plan to no lower than an RNP 0.3**

Bullet one means if the only available ILS at your destination is OTS via NOTAM and you need to plan an RNAV approach, your alternate minimums must be predicated on ground-based navigation. (ILS, VOR, etc.)

Bullet two means that if you are basing your alternate minimums on RNAV, they must be predicated on 0.3 minimums even if the approach has lower published minima (e.g. 0.11).

See this month's Training Talk for more discussion on RNAV approaches!

Dispatch Sector

News from the Operations Control Center



ETOPS

Advisory Circular 120-42b says

At dispatch, an en route alternate must meet ETOPS alternate weather requirements in § 121.625 and as specified in Chapter 3, paragraph 303c(5) of this AC and in the certificate holder's OpSpecs.

What does that mean? To summarize, it just means that we apply the same rules for deriving minimums at ETOPS alternates as we do for domestic alternates.

Exception: Whereas domestic operations only require forecast minimums for the ETA only, ETOPS operations require forecast minimums from *“the earliest time of landing to the latest time of landing at that airport”*

Fortunately, PFPX is able to calculate the “suitability period” so that we don’t have to do it manually.

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ETOPS ALTNS WX/NOTAM SUITABILITY PERIOD
KSFO (20:46-23:36)
PHTO (23:02-23:36)
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ETP / ETOPS ENROUTE ALTERNATE DATA
MEETS 180 MINUTE AREA OF OPERATIONS RULE
***FULL ICE 180 MIN/320 KIAS***
ETP FOR KSFO/PHTO N28 25.4 W140 10.7 0236 FROM LAX
ETP / FOB 34004 CRITICAL FUBO 29161
ENG OUT TIME FROM ETP 0237 DESC 1EO 85/310/250 CRUZ 1EOLRC FLVL 272
TO KSFO N37 37.1 W122 22.5 DIST 1051 NM WC TL013 TT 054
TO PHTO N19 43.2 W155 02.9 DIST 968 NM WC HD021 TT 241
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Remember: This is all for pre-planning/dispatch purposes. In the event you actually divert to an alternate the published landing minimums apply!

See you next month!



Training Talk

After months of pointing out the human factors and downsides of automation and technology I suppose it's time to look at the positives. One example of technological advancement that benefits we aircrews are the prevalence and accuracy of RNAV approaches. This month I'd like to look at the capabilities of the (RNP) RNAV approach and the hiccups i.e. legal limitations of such approaches. So, let's dive into the alphabet soup, shall we?

RNAV or **a**rea **NAV**igation is nothing new. LORAN-C and IRU's (inertial reference units) have been capable of this for 60 years. It is, in its simplicity, navigating amongst known points and not necessarily point to point as in NDB or VOR airway navigation. Especially useful in oceanic crossing situations. Fast forward to the digital age and the deregulation of GPS availability allowed for general aviation and commercial aviation to use such technology more readily. This gave birth to a new type of RNAV and eventually GPS approaches. While an enormous aid to navigation, using GPS for approach procedures remained just as non-precision as existing technologies. WAAS or Wide Area Augmentation System changed all that. WAAS is a type of ground based augmentation or, GBAS, (see also LAAS) that will cross check the accuracy of the IRU's, GPS's, or combination thereof. This accuracy is discussed in terms of RNP or Required Navigational Performance and ANP (Actual Navigational Performance.) The industry standard IFR certified GPS for general aviation use is capable of a RNP of .3 or 3/10 of a mile in most cases.

I tell you all of that to explain this... Our capabilities are far greater but, it doesn't mean we are authorized for all approaches. In some cases, our minimums might even be higher than some C172. Therefore, with RNAV approaches we will see several types: RNAV (GPS) and RNAV (RNP) AR or SAAAR.

RNAV routes are coded into the navigation database by ARINC 424 path-terminators. Whilst RNAV routes can be designed in such a way that the lateral path is strictly described, in general the lateral path has a quite some freedom due to floating leg types (e.g. turn at altitude, fly heading etc.) and wiggle room for the aircraft to negotiate the turns.

When the route is described only by TF (track to fix) and RF (radius to fix) path terminators, the lateral path is fully fixed. These fixed lateral paths allow procedure designers, for example, to design approaches through mountain valleys down to the runway.

RNAV defines a 95% accuracy bounds. For example, RNAV 1 requires the aircraft to be within 1 NM from the path centerline 95% of the time. The route designer will ensure a 2 NM obstacle free zone around the path in such a case.

Training Talk



Note that RNAV provides no assurance against exceeding the 2 NM zone. There is no automated system monitoring required.

Potentially causes of deviations between the path intended by the procedure designer and the actual flown path can be grouped into three categories:

- ◆ First, there is the Path Definition Error. This is caused by database coding mismatch with the original path design.
- ◆ Second, there is the Path Steering Error, caused by the combination of display inaccuracies on the Navigation Display and the inability of the pilot or the autoflight system to stay exactly on path (Flight Technical Error).
- ◆ Third, there is Position Estimation Error, which is the difference between the position of the aircraft estimated by the navigation system and the true position.

It is not unthinkable that while normally (95% of the time) the aircraft will fly within e.g. 1 NM of the intended center line, there are cases that the aircraft will exceed the 1NM by far, possibly even busting the 2 NM obstacle free zone. That could potentially ruin your day if it happens in a mountain valley.

This is where RNP comes in. RNP (Required Navigation Performance) is basically RNAV with added protection. For example, RNP 1 again defines a 1NM accuracy for 95% of the time, but it also offers 99.999% assurance that it will not exceed the 2NM. It will raise an alert if the 2 NM value will potentially be exceeded. So, in addition to what RNAV offers, it includes a system monitoring function that will detect navigation errors and alerts for them.

The RNP value always gives the 95% accuracy, the 99.999% assurance (integrity) limit is always at twice that value. So RNP 0.3 means that the aircraft has to stay within 0.3 NM of the designed path centerline 95% of the time. And if it exceeds the 0.6 NM threshold, an alert will be raised with 99.999% certainty. RNP systems therefore require a system monitoring function.

To ensure that the RNP values are met, each of the three error sources mentioned earlier must be under control. For RNP values down to 1 NM that is not much of a challenge. Standard procedures and equipment are deemed to be sufficient here. (of course the required RNP values must be met by the Actual Navigation Performance)

The TSO on our equipment carrying 2 ADIRUs and 2 GPS supplement units with dual flight management computers allows for approach RNP's of .1 or 1/10 of a mile, as well as precision enroute of +/- 1 nm. Is this all the authorization we require? In short, NO. The operations must be blessed by the FAA in our Operating Specifications and maintained by demonstration and training.

Training Talk



Let's look at some examples starting with RNAV (RNP) Z 19L at KMCI, an AR approach:

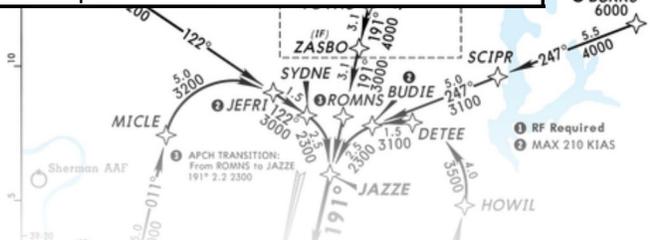
The notes begin with **AUTHORIZATION REQUIRED**.

So, are we authorized? Let's check the airport advisory pages...

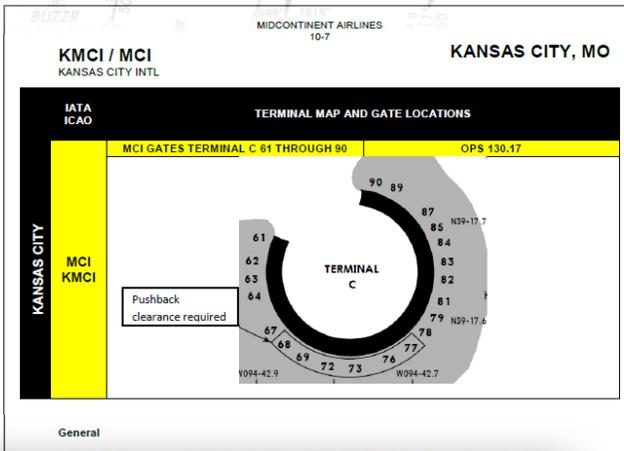
KMCI/MCI KANSAS CITY INTL		JEPPESEN 15 AUG 14 (42-23)		KANSAS CITY, MO RNAV (RNP) Z Rwy 19L	
D-ATIS	KANSAS CITY Approach (R)	INTERNATIONAL Tower	Ground		
128.37	120.95	128.2	121.8		
RNAV	Final Apch Crs 191°	Minimum Alt JAZZE 2300' (1306')	RNP 0.20 DA(H) 1306' (312')	Appt Elev 1026'	TDZE 994'

Alt Set: INCHES Trans level: FL 180 Trans alt: 18000'

1. AUTHORIZATION REQUIRED. 2. GPS and Radar Required. 3. For uncompensated Baro-VNAV systems, procedure not authorized below -20°C (-4°F) or above 54°C (130°F). 4. Simultaneous approach authorized with Rwy 19R, except for arrivals at NOAHS, FARMS, BUKKS, and SLABB. 5. Use of Flight Director or Autopilot providing RNAV track guidance required during simultaneous operations.



And yes, sure enough we are.



Authorized RNAV RNP Approach Procedures

Procedure	737	777	787
RNAV RNP Z RWY 01L	X	X	X
RNAV RNP Z RWY 01R	X	X	X
RNAV RNP Z RWY 09	X	X	X
RNAV RNP Z RWY 19L	X	X	X
RNAV RNP Z RWY 19R	X	X	X
RNAV RNP Z RWY 27	X	X	X

Training Talk



The next note says, "RADAR AND GPS REQUIRED."

We more than likely have both, assuming the GPS is not on MEL and there are no NOTAMs for radar outage, so moving on we check the minimums.

KMCI/MCI KANSAS CITY INTL		JEPPESEN 15 AUG 14 (42-23)		KANSAS CITY, MO RNAV (RNP) Z Rwy 19L	
D-ATIS 128.37	KANSAS CITY Approach (R) 120.95	INTERNATIONAL Tower 128.2		Ground 121.8	
RNAV	Final Apch Crs 191°	Minimum Alt JAZZE 2300' (1306')	RNP 0.20 DA(H) 1306' (312')	Apt Elev 1026' TDZE 994'	

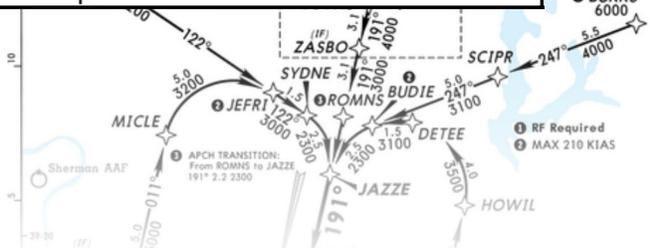
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You'll notice 2 sets.

One for RNP of 0.20 and one for 0.30

How do we know if we have that?



TERPS	STRAIGHT-IN LANDING RWY 19L					
	RNP 0.20		RNP 0.30			
	DA(H) 1306' (312')		DA(H) 1361' (367')			
	RAIL out	ALS out	RAIL out	ALS out		
A						
B						
C	RVR 26 or 1/2	RVR 40 or 3/4	RVR 50 or 1	RVR 35 or 5/8	RVR 40 or 3/4	RVR 60 or 1 1/8
D						

Training Talk



There are several ways on our Boeing equipment, but the standard way is the POS SHIFT page of the FMC, which will take data from the IRU's, Nav Radios, and GPS to determine its position.

The ANP (actual navigation performance) will be displayed next to the RNP (required navigation performance) for the current segment you are flying.

In short, the ANP should always be less than the RNP.

Note: Ops Spec C384 authorizes the 737-800 for RNAV RNP approaches with minimums of 0.11

M/M/S	Lowest RNP
B737-800	0.11
B777-200	0.11
B787-8	0.10
B787-9	0.10



TERPS		STRAIGHT-IN LANDING RWY 19L			
		RNP 0.20		RNP 0.30	
		DA(H) 1306' (312')		DA(H) 1361' (367')	
		RAIL out	ALS out	RAIL out	ALS out
A					
B					
C	RVR 26 or 1/2	RVR 40 or 3/4	RVR 50 or 1	RVR 35 or 5/8	RVR 40 or 3/4
D					RVR 60 or 1 1/8

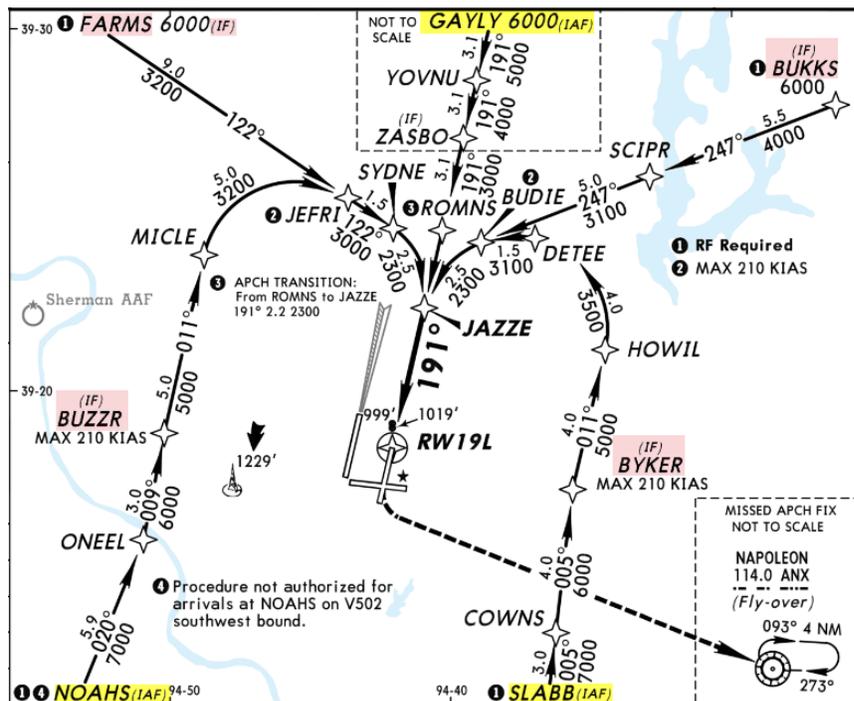
Training Talk



Continuing to examine the plan view you will notice that there are several initial approach fixes and intermediate fixes sprinkled throughout the TAA.

The TAA or Terminal Arrival Area is a group of sectors and feeder routes meant to seamlessly transition aircraft from arrival procedure to approach procedure. This is almost exclusively the intention for RNAV capable aircraft. All these extra fixes are also the reason radar is still required. While GPS is clearly required for the approach segment, ATC can and will (at your request) reference or vector you to the appropriate initial approach fix (IAF) or intermediate fix (IF).

It is worth noting that for training and checking the FAA still considers these approaches non-precision and they DO NOT meet the ICAO standards for precision approaches.



Continuing with requirements lets look at SAAAR. **Special Aircraft and Aircrew Authorization Required**, now re-named to RNP AR (RNP Authorization Required). RNP AR routes only make use of TF and RF leg types to fully fix the lateral path. RF legs are not supported by all navigation systems by default.

To get authorization for RNP AR, the aircraft needs to comply with the applicable functional and performance requirements, the crew needs to be trained and lots of documentation must be maintained. Basically, proof must be provided that all of the three error terms are under strict control. In a sense it is somewhat similar to ILS CAT II and III approval.

For specific requirements I will refer you to the Company Ops Specs appropriate to your equipment and FAA AC 90-101A change 1, 90-105A.

As always, these articles are meant to inspire you to dig a bit deeper into the manuals. If you have any question you can always email or reach me via our new online forums.

Questions? Doors always open.

"Clear left, I'll have the chicken..."

Capt. Eric Hill Director of Training/ 737 Fleet Captain

ehill@midconair.net

Pilot Profile

Don Van Wormer

P457

US Navy, retired. Served in P-3C, A-6E/KA-6D, CH-46 and F/A-18C squadrons. Based overseas in Iceland, Sicily and Guam. Deployed aboard USS Enterprise (CVN65) and USS George Washington (CVN73). Stationed state-side at facilities in Florida, Washington state, Michigan and California.

Started flight simulation with the early releases of MSFS. Interest in flying the heavies began with SubLogic's ATP. Today flying is limited to Prepar3D and X-plane 11. Past flying has included MS Combat FS, Jane's FA-18 Hornet, Falcon 4 and the Hornet mod, MSFS, F-14 Fleet Defender, F-15 Strike Eagle and many others.



Before landing at MidCon, ATP career included time with Meridian Virtual (HR Director), West Coast Air (LAS Hub Manager), Globe Cargo, Corporate Air America and American Flight Airways.

Introduction to MidCon included taking the AVSIM Challenge at the 2006 AVSIM-Dulles convention. The challenge was administered after having a few beers, with the MidCon President/CEO acting as First Officer and the MidCon Chief Pilot standing behind them grading the applicants' performance. No pressure, right?

Working in the hospitality field means a VERY fluid work schedule, which has impacted participation in flying.

Working with the CEO to develop process to meet the scheduling challenges, a return to the flight schedule is expected very soon!

In attending FlightSimCon 2019, this will be the fourth convention/meeting representing MidContinent.

