

Implications of the TAF on Operational Performance



SAWS VIII
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Tempe, Arizona

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SWA Meteorology



- 10 staffed Meteorologists provide 24/7/365 support
- Provide strategic weather support to SWA decision makers to help increase operational safety and efficiency
 - This is primarily done through four daily NOC shift briefings
 - Operational groups involved include Dispatch, Flight Ops, Maintenance, Ground Ops, Crew Scheduling, ATC Specialists, Proactive Customer Service, and Social Media
 - Weather Disruption Task Force (WDTF) is activated in for large events (Hurricanes, Major Winter Storms)
- Act as the SWA liaison to the meteorology and industry community (NWS, FAA, etc.)
- Conduct research on past weather events (turbulence cases, internal studies, etc.)
- Writing TAFs

How SWA Uses TAFs

Strategically

- Metering
- Proactive cancels
 - Holes vs reduced rates
- Swapping crews

Tactically

- Number of alternate
- Online vs offline alternates
- Mission fuel
- Purposely delaying flights
- Loss of planned alternate
 - If convection is in the forecast for airport XXX, flights arriving into airport YYY will not plan XXX as an alternate

TAF Review



- Legally binding forecast for flight plan
- More than alternate/no alternate, legal/not legal for commercial carriers
 - Drives ATC initiatives
 - Forecast ceiling height and wind direction can force airport operations into secondary runway operations causing delays and cancellations at busy airports (DEN, LAS, PHX, LAX)
 - Additional fuel and non-legally required alternates are often planned for forecasted marginal conditions

- BKN020, SCT015, 3SM BR
- VCTS, VCSH during the summer
- Several conditional statements
- Auto TAFs

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KZZZ 200520Z 2006/2106 15016KT P6SM VCTS FEW080CB SCT250
      TEMPO 2009/2010 VRB40G50KT 4SM +TSRA BKN060CB
FM201000 15015KT P6SM SCT025 BKN050
      TEMPO 2010/2014 VRB40G50KT 4SM +TSRA BKN025CB
FM201400 13016KT P6SM BKN003 OVC020
      TEMPO 2014/2015 VRB40G50KT 2SM +TSRA OVC001CB
FM201700 15016KT 6SM +SHRA VCTS SCT015CB BKN025
FM201800 15016KT P6SM SCT020 BKN045
      PROB30 2018/2021 4SM +TSRA BKN020CB BKN025 BKN030
FM202100 18023KT P6SM SCT040 BKN200
      PROB30 2103/2106 4SM TSRA OVC025CB
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- High usage from Dispatch
- Confidence and uncertainty are the best supplemental info

Predominate VFR conditions expected the next few days with daily chances of a passing shower and thunderstorm. A few strong to severe storms could track across the terminals this afternoon and early evening, and again Thursday afternoon/evening. Damaging winds and large hail are the primary threats, but an isolated tornado cannot be ruled out. Winds will generally be westerly through the Thursday, before turning northwesterly Thursday night and Friday as a cold front moves south of the terminals. Dry conditions and continued VFR expected on Friday.

VFR conditions are expected Saturday. Sub-VFR conditions then possible Saturday night into Sunday as a front moves across our area. High pressure/VFR conditions expected on Monday behind the front.

The primary forecast concerns through the period are:

- The threat of some lower MVFR CIGs for a period this morning.
- Timing of north-northeasterly wind shift later this morning.
- Timing of our next period of showers and thunderstorms expected mid to late this evening.

An area of surface low pressure over xxx is currently pushing a cold front across the eastern terminals. As a result, expect west-northwesterly winds to continue to set up over the area early this morning. Winds are then expected to turn north-northeasterly by early afternoon. With this cold front, there could also be some lower CIGs, possibly into the low MVFR category. **These CIGs could linger for a few hours this morning, but they should gradually improve in height throughout the morning.**

It appears the threat of showers and/or thunderstorms through the day today will remain low. There is a very small possibility that a few showers could shift into north central xx later this morning as weakening activity well to the west of the area tries to shift eastward. At this time I have left this mention out of even xxx . Otherwise, expect the next period of showers and storms to onset across the area this evening. **The best timing at this point would be a start time around 01-02 z at xxx and about 03z at the eastern terminals.** With these thunderstorms expect some periods of heavy rain. Overnight the threat of thunderstorms should begin to wane across far northern xx, but some rain may continue at the terminals. **For this reason, I ended the mention of TS by 07z Wed at most sites.**

Forecast Gone Wrong

1745z .AVIATION... Light and variable wind this morning should become more from the northeast or east late morning-early afternoon. Most models agree that a south-southwest wind will develop late this afternoon/evening. Confidence in the forecast lowers after 01Z or 02Z this evening. Convection originating in north-central [state] could bring gusty southeast winds to xxx this evening. Timing and magnitude less certain so **amendments likely needed to hone in on the event.** If outflow winds don't materialize models suggest south-southwest winds overnight. Ceilings look to stay at or above 12 kft.

2131z AVIATION... Thunderstorms should be confined to the [SE] and [NE] corridors this evening. There is a slight possibility that storms over [NE] could move toward xxxx and hold together, but confidence is too low to mention in the TAF. **There will be potential for winds from distant storms to affect the terminal area...primarily from the southeast this evening, but there is also a slight possibility wind gusts could also come in from the northeast after 06Z.** Otherwise a southeast wind component is expected through this evening followed by a south-southwest component late tonight through Sunday with only FEW-SCT clouds with bases above 12 kft.

No Aviation Forecast Discussion between 22-10z!

Forecast Gone Wrong

TAF xxxx 111737Z 1118/1224 15008G16KT P6SM FEW120 FEW200
FM120300 15012G20KT P6SM FEW120 SCT250
FM120700 20010KT P6SM SCT150 BKN250=

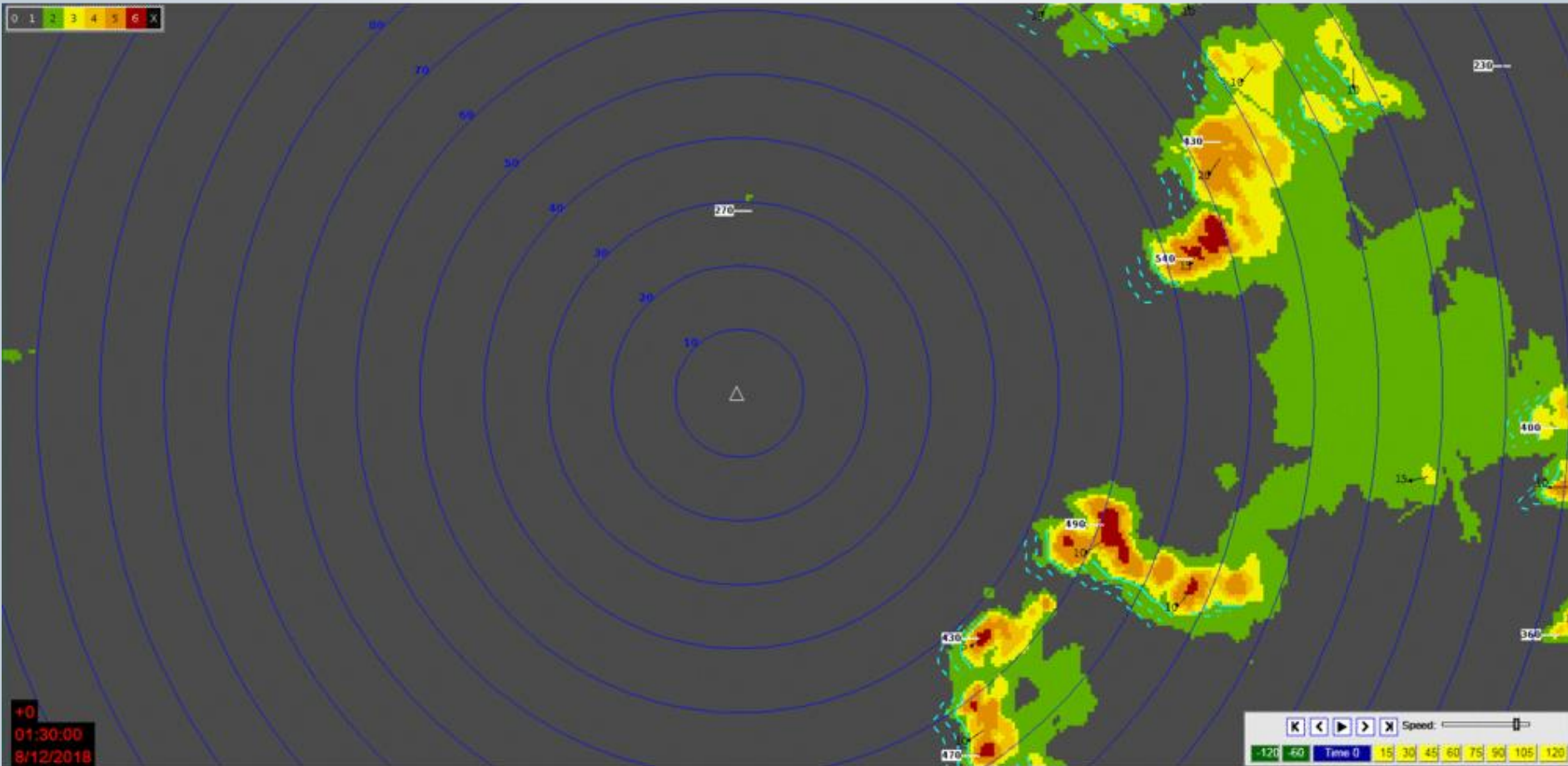
xxxx 112100Z 1121/1224 14010G18KT P6SM FEW120
FM120300 15012G20KT P6SM FEW120 SCT250
FM120700 20007KT P6SM SCT150 BKN250=

TAF xxxx 112320Z 1200/1306 17010G18KT P6SM FEW120
FM120300 15012G20KT P6SM FEW120 SCT250
FM120700 20007KT P6SM SCT150 BKN250
FM121900 19010G18KT P6SM FEW120=

xxxx 112331Z 1200/1306 18010G18KT P6SM FEW120
FM120300 15012G20KT P6SM FEW120 SCT250
FM120500 05015G25KT P6SM SCT120 BKN250
FM120800 20007KT P6SM SCT150 BKN250
FM121900 19010G18KT P6SM FEW120=

xxxx 120241Z 1203/1306 20011KT P6SM FEW120 SCT250
FM120345 04025G35KT P6SM SCT120 BKN250
FM120430 04012G20KT P6SM SCT120
FM120800 20007KT P6SM SCT150 BKN250
FM121900 19010G18KT P6SM FEW120=

Radar Loop



METAR and TAF



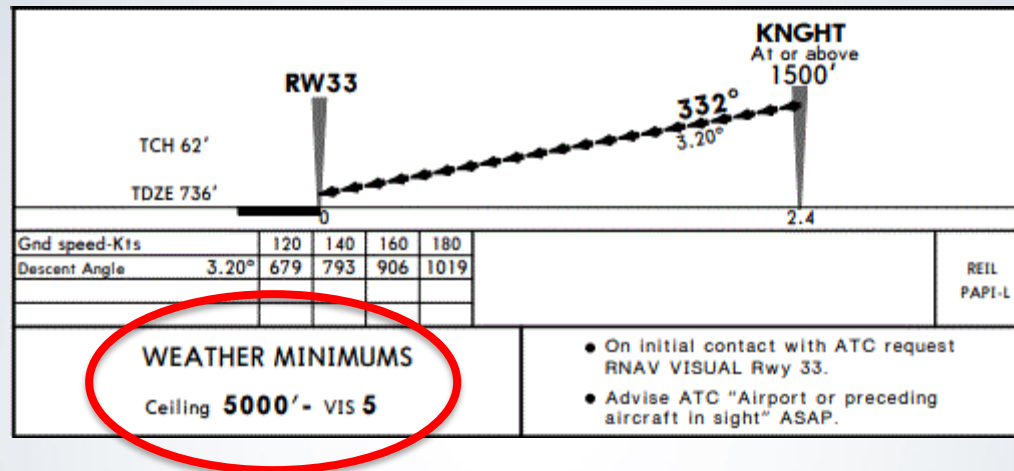
120256Z 22007KT 10SM SCT120 SCT250 39/09 A2982 RMK AO2 SLP064 HZ AND FU VC ALQDS CB DSNT NE AND SE T03890089 53003=
120343Z 07012G23KT 10SM TS FEW052 SCT110CB BKN220 38/13 A2992 RMK AO2 PRESRR OCNL LTGICCC N-E TSB40 TS N-E-S MOV SW T03830128=
120351Z 06042G53KT 4SM TS BLDU SQ FEW050 BKN100CB BKN220 32/13 A2996 RMK AO2 PK WND 07053/0345 PRESRR OCNL LTGICCC N-E TSB40 TS N-E-S MOV SW=
120356Z 06043G57KT 4SM TS BLDU FEW050 BKN100CB BKN220 30/14 A2998 RMK AO2 PK WND 06057/0356 PRESRR SLP124 OCNL LTGICCC N-E TSB40 TS N-E-S MOV SW
T03000144=
120417Z 06035G48KT 9SM -TSRA SCT025 BKN070CB OVC200 24/19 A3008 RMK AO2 PK WND 06053/0359 RAB07 OCNL LTGICCC N-E TS N-E-S MOV SW P0000 T02440189=
120439Z 10011G22KT 8SM TSRA SCT020 OVC040CB 23/19 A3007 RMK AO2 PK WND 06053/0359 WSHFT 0419 RAB07 OCNL LTGICCC OHD-S-W TS OHD MOV SW P0008
T02280194\$=
120456Z 00000KT 10SM TSRA SCT040CB BKN060 OVC100 24/19 A3008 RMK AO2 PK WND 06053/0359 WSHFT 0419 RAB07 SLP158 OCNL LTGICCC OHD-S-W TS OHD MOV
SW P0008 T02440194 \$=
120520Z 28007KT 10SM TS SCT040CB BKN060 OVC100 25/19 A3011 RMK AO2 WSHFT 0503 LTG DSNT ALQDS RAE13 FRQ LTGICCC NE AND W TS NE MOV S P0000
T02500189 \$=
120552Z VRB05KT 10SM -RA FEW060 BKN080 OVC100 27/18 A3011 RMK AO2 WSHFT 0503 LTG DSNT E-S RAE13B28 TSE52 LTG DSNT S-SW P0001 \$=
120556Z 00000KT 10SM -RA FEW060 BKN080 OVC100 27/17 A3011 RMK AO2 WSHFT 0503 LTG DSNT E-S RAE13B28 TSE52 SLP166 P0001 60009 T02720172 10417 20222
53047 \$=

xxxx 120354Z 1204/1306 04025G35KT P6SM VCTS FEW050CB SCT120 BKN250
TEMPO 1204/1205 04035G50KT 4SM TSRA BKN050CB
FM120500 04012G20KT P6SM SCT120
FM120800 20007KT P6SM SCT150 BKN250
FM121900 19010G18KT P6SM FEW120=

Operational Performance

Date	SCHED DEP	SCHED ARR	ACTL DEP	ACTL ARR	DIV	OTBD OTP	INBD OTP
8/11/18	176	176	172	170	4	68.20%	79.50%

High Minimum Airports



TERPS		STRAIGHT-IN LANDING RWY 24R			
		RNP 0.15		RNP 0.30	
		DA(H) 484' (362')		DA(H) 586' (464')	
		ALS out		ALS out	
C	RVR 40 or 3/4	RVR 60 or 1/4	RVR 60 or 1/4	1 1/2	
D					

Forecast Gone Well

TAF KBUR 171157Z 1712/1812 32006KT P6SM SCT050

FM172000 20012KT 5SM -SHRA BR OVC025

FM180000 29015KT P6SM VCSH BKN030

FM180500 32015G22KT P6SM BKN050

FM180900 33008KT P6SM SCT050=

KBUR...Moderate confidence in the 12Z TAF. VFR conditions should prevail through much of the TAF period. However, showers are expected to move in with MVFR cigs between 20Z today and 00Z Mon. The timing of the onset of the MVFR conditions may be off by an hour or two. There is a 20-30% chance that conds may only briefly drop into the MVFR category. There is a 30% chance of W to NW winds sustained at 20 kt with gusts as high as 30 kt between 00Z and 09Z Mon.

KBUR example

TAF KBUR 171748Z 1718/1818 00000KT P6SM SKC

FM172000 20012KT 6SM -SHRA OVC035

FM180000 29015KT P6SM VCSH BKN030

FM180500 32015G22KT P6SM BKN050

FM180900 33008KT P6SM SCT050

FM181300 30005KT P6SM SKC=

KBUR...Moderate confidence in the 18Z TAF. VFR conditions should prevail through much of the TAF period. However, showers are expected to move in with possible MVFR cigs between 20Z today and 00Z Mon. The timing of the onset of the MVFR conditions may be off by an hour or two. There is a 30% chance of W to NW winds sustained at 20 kt with gusts as high as 30 kt between 00Z and 09Z Mon.

KBUR example

TAF KBUR 172343Z 1800/1824 29015KT P6SM VCSH BKN040

FM180300 32015G22KT P6SM BKN050

FM180900 34008KT P6SM SCT050

FM181900 31010KT P6SM SKC=

KBUR...Moderate confidence in the 00Z TAF. VFR conditions should prevail through much of the TAF period, however could see brief MVFR conditions if an isolated shower develops through 03z. There is a 30% chance of W to NW winds sustained at 20 kt with gusts as high as 30 kt between 01Z and 09Z.

KBUR METAR

METAR KBUR 171753Z 0000KT 10SM CLR 11/M01 A3007 RMK AO2 SLP177 T01061006 10106 20039 50006 \$=

METAR KBUR 171853Z 19005KT 10SM SCT060 OVC075 11/M01 A3007 RMK AO2 SLP175 T01111011 \$=

SPECI KBUR 171945Z 25010KT 10SM OVC049 11/01 A3004 RMK AO2 T01110006 \$=

METAR KBUR 171953Z 25009KT 10SM OVC048 11/01 A3004 RMK AO2 SLP166 T01110006 \$=

METAR KBUR 172053Z 27007KT 10SM OVC040 11/03 A3000 RMK AO2 SLP154 T01110028 58023 \$=

METAR KBUR 172153Z 16009KT 10SM OVC046 11/06 A2996 RMK AO2 SLP140 T01060056 \$=

SPECI KBUR 172250Z 26012KT 10SM BKN040 BKN047 OVC060 12/03 A2993 RMK AO2 WSHFT 2235 \$=

METAR KBUR 172253Z 25010G17KT 10SM BKN040 BKN050 OVC065 13/03 A2993 RMK AO2 WSHFT 2235 SLP130 T01280033 \$=

METAR KBUR 172353Z 26015KT 10SM FEW045 OVC055 12/02 A2991 RMK AO2 PK WND 25027/2309 SLP125 T01170022 10128 20100 56028 \$=

METAR KBUR 180053Z 26019G23KT 10SM -RA BKN043 OVC055 12/02 A2990 RMK AO2 RAB46 SLP120 P0000 T01170022 \$=

METAR KBUR 180153Z 27013G21KT 10SM BKN042 11/02 A2992 RMK AO2 RAE10 SLP127 P0000 T01060022 \$=

METAR KBUR 180253Z 28008KT 10SM CLR 09/03 A2993 RMK AO2 SLP132 60000 T00940028 53006 \$=

Operational Performance



Date	SCHED DEP	SCHED ARR	ACTL DEP	ACTL ARR	DIV	OTBD OTP	INBD OTP
2/17/19	50	50	32	33	0	56.0%	46.0%

Well Forecasted TAFs

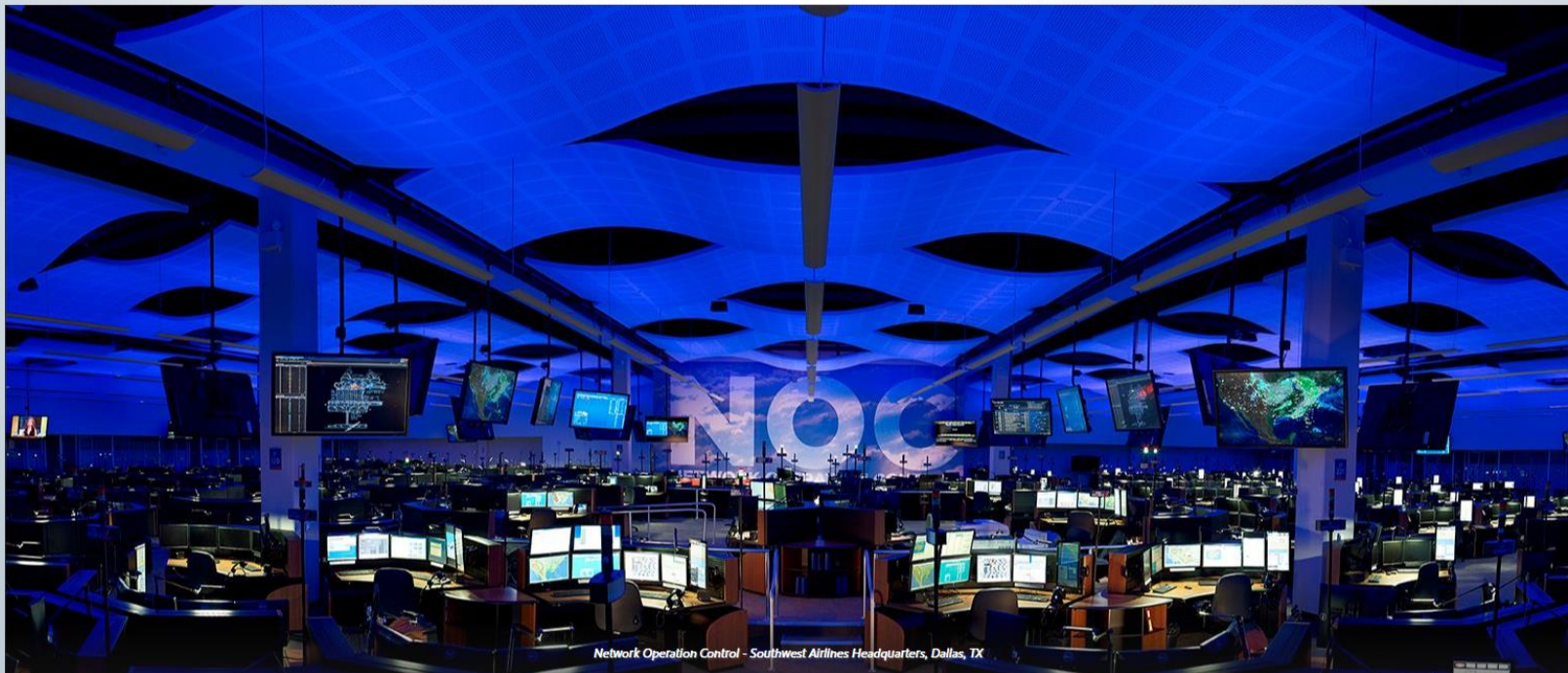


- Operational performance numbers only show cancellations
 - Delays
 - Crew scheduling
 - Aircraft routing
 - Ground operations
 - Passengers

How SWA Uses TAFs: The Future



- EWINS
 - Offline TAFs
 - International TAFs
- ETOPS



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Questions?



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