



***FDA THREAT ASSESSMENT APPLICATION
S.A.F.E. , MAY 2019***

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Manager Flight Data Services





INITIAL DEVELOPMENT GOAL

- **To identify and evaluate high risk Unstable Approaches beyond the IOSA Unstable events.**

Event Description	Flt Ops Limitation	Aerobytes Event Limitation
810 Descent Rate High between 500 and 50 ft	Descent rate \geq 1200 ft	Detect -- Descent rate > 1200 ft/min
816 Approach Speed high at \leq 500 Ft to >50 ft	+10 Kts	TARGET + 10 kts
817 Approach Speed high at 50 Ft AGL	+11 Kts	Detect -- TARGET + 11 kts
842 Late Land Flap	< 1000 ft AAL	Detect -- < 1000 ft
843 Late Land Gear	\leq 1000 ft	Detect -- \leq 1000 ft
942 Go-around	< 1000 ft	Detect -- < 1000 ft

- **Create an algorithm for the Data Analysis software that would automatically detect and assign a Risk Factor to a flight or segment of a flight.**
- **Create an application where Risk events could be reviewed evaluated and categorized for Probability and Severity.**



WHY

- **There was a need to evaluate a flight beyond the basic gates. The goal to specifically analyse the approach and landing phase to assess if a higher risk existed compared to other phases of flight existed.**
- **Accurately assess a risk of the standard gates:**
 - Late Land Flap
 - Last Flap set below 200 ft has a higher risk than 700 ft.
- **Detection of events below 50 ft for events such as:**
 - Long flare;
 - Long landing;
 - Landing crab;
 - High speed runway exit.



CONCEPT

- **Develop an algorithm that detects events starting at a 1,000 foot base and ends with the aircraft exiting the active runway;**
- **Assign a weight (value) to events relevant to their occurrence altitude;**
- **Detect a duration for all events; and**
- **Calculate an overall score for the flight sequence.**



19 EVALUATED EVENTS

- Descent rate above 500 ft;
- Descent rate below 500 ft;
- Airspeed above 500 ft;
- Airspeed below 500 ft;
- Speedbrake below 1,000 ft;
 - Airspeed low;
 - High Bank angle;
- Glideslope above 200 ft;
- Glideslope below 200 ft;
- Localizer deviation;
- Heading change;
 - GPWS;
- Low Energy Approach;
 - Auto Flight;
 - Long Flare;
 - Long Landing
 - Late Gear;
 - Late flaps;
- Depart Runway centerline:

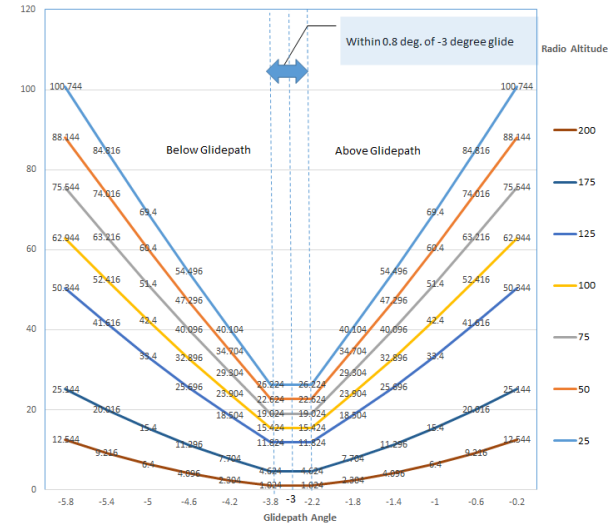


EXAMPLE OF EVENT "WEIGHT" CALCULATION

Glidepath below 200 ft

200	12.544	9.216	6.4	4.096	2.304	1.024	1.024	2.304	4.096	6.4	9.216	12.544
175	25.144	20.016	15.4	11.296	7.704	4.624	4.624	7.704	11.296	15.4	20.016	25.144
150	37.744	30.816	24.4	18.496	13.104	8.224	8.224	13.104	18.496	24.4	30.816	37.744
125	50.344	41.616	33.4	25.696	18.504	11.824	11.824	18.504	25.696	33.4	41.616	50.344
100	62.944	52.416	42.4	32.896	23.904	15.424	15.424	23.904	32.896	42.4	52.416	62.944
75	75.544	63.216	51.4	40.096	29.304	19.024	19.024	29.304	40.096	51.4	63.216	75.544
50	88.144	74.016	60.4	47.296	34.704	22.624	22.624	34.704	47.296	60.4	74.016	88.144
25	100.744	84.816	69.4	54.496	40.104	26.224	26.224	40.104	54.496	69.4	84.816	100.744
	-5.8	-5.4	-5	-4.6	-4.2	-3.8	-2.2	-1.8	-1.4	-1	-0.6	-0.2

Chart Title

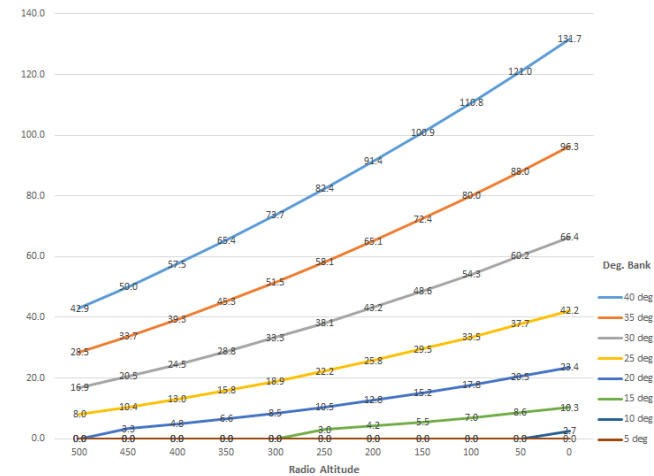


High Bank Angle below 500 ft

Alt	Bank Allowed	
500	15	15
450	14	14
400	13	13
350	12	12
300	11	11
250	10	10
200	9	9
150	8	8
100	7	7
50	6	6
0	5	5

Alt							
500	42.9	28.5	16.9	8.0	0.0	0.0	0.0
450	50.0	33.7	20.5	10.4	3.3	0.0	0.0
400	57.5	39.3	24.5	13.0	4.8	0.0	0.0
350	65.4	45.3	28.8	15.8	6.6	0.0	0.0
300	73.7	51.5	33.3	18.9	8.5	0.0	0.0
250	82.4	58.1	38.1	22.2	10.5	3.0	0.0
200	91.4	65.1	43.2	25.8	12.8	4.2	0.0
150	100.9	72.4	48.6	29.5	15.2	5.5	0.0
100	110.8	80.0	54.3	33.5	17.8	7.0	0.0
50	121.0	88.0	60.2	37.7	20.5	8.6	0.0
0	131.7	96.3	66.4	42.2	23.4	10.3	2.7
Bank	40	35	30	25	20	15	10
	5						

High Bank Angle below 500 ft



DAILY DATA REVIEW PROCESS



ANALYSIS SOFTWARE

Flight Manager - 1685 flights (6629 events) [Fleet = XAS: Airbus, Type = <all>]

Display Settings

Fleet: XAS: Airbus

Aircraft Type: <all>

After Date: 01 Jan 17

Flight Type: <all>

☒ Exclusive (ie. everything except selected Flight Type)

☐ Hide invalid events?

☐ Hide validated events?

☐ Hide non-safety events?

☐ Hide closed flights?

Auto Close never close automatically

Restrict to: show top 10000 rows

Sort Order: Replay ID then Flight ID

History: 20 Feb 07:49:06: 2 Events (status changed to Valid) Undo...

Various options are available by selecting & right-clicking items in the list below (use ctrl + click or shift + click for multiple selections)

Refresh ☐ Refresh view automatically?

Select if no events...

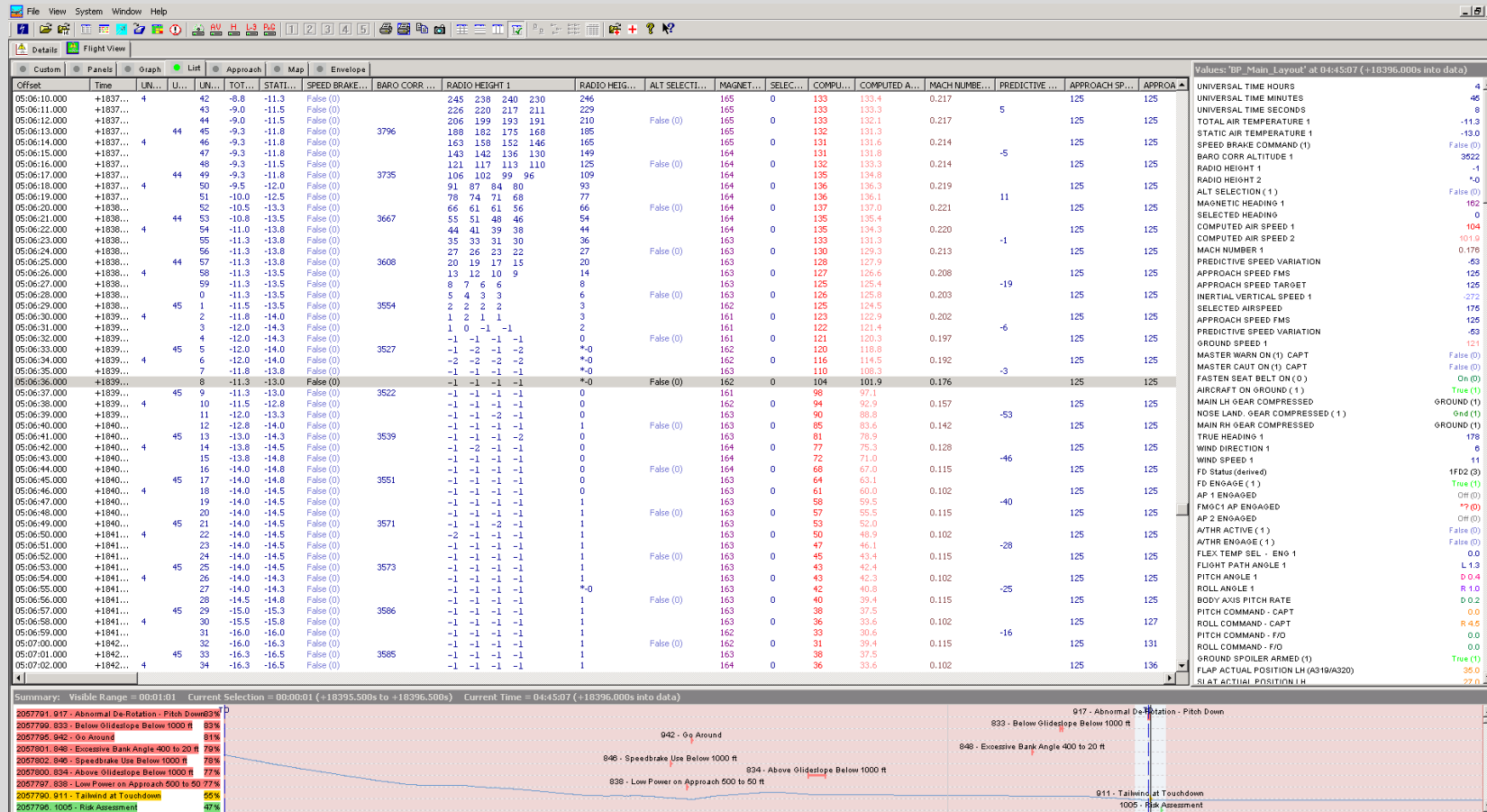
Select if all validated...

Stat...	Item	Detail
valid?	Event 2057784: 308 - Take-Off Distance (Flt 260896, 258 [C-FYJI], 01 Feb 17)	308 - Take off Distance = 6625.31 ft (context = LATITUDE=N51 07.80, LONGITUDE=W113 59.80, WIND DIRECTION TRUE=246.4)
valid?	Event 2057783: 326 - Climb-Out Speed Low 500 to 1500 ft (Flt 260896, 258 [C-FYJI], 01 Feb 17)	326 - Climb Out Speed 500 to 1500 ft = 8.25 kt (context = AIRSPEED=166.1, PITCH=U 11.6, V2 SPEED=159)
valid?	Event 2057788: 824 - Path Angle High Below 1200 ft (Flt 260896, 258 [C-FYJI], 01 Feb 17)	824 - Path Angle below 1200 ft (High) = 4.3071 o (context = FLIGHT PATH ANGLE=L 4.3, ACA_RALT_MAIN=748, G/S DEV=FD 0.20)
valid?	Event 2057786: 816 - Approach Speed High 500 to 50 ft (Flt 260896, 258 [C-FYJI], 01 Feb 17)	816 - Approach Speed 500 to 50 ft (Max) = 12.5 kt (context = AIRSPEED=142.5, VAPP SPEED=130, ACA_RALT_MAIN=390)
valid?	Event 2057787: 817 - Approach Speed High - 50 ft to TD (Flt 260896, 258 [C-FYJI], 01 Feb 17)	817 - Approach Speed 50 ft to TD (Max) = 9.875 kt (context = AIRSPEED=141.5, VAPP SPEED=130, ACA_RALT_MAIN=37)
Open	Flight 260895: 258 [C-FYJI] (A319) 01 Feb 17: 23:49 YUL24L-YYC16 F/N =	17 valid event(s), worst = 83%
valid?	Event 2057792: 308 - Take-Off Distance (Flt 260895, 258 [C-FYJI], 01 Feb 17)	308 - Take off Distance = 4857.09 ft (context = LATITUDE=N45 28.03, LONGITUDE=W073 43.68, WIND DIRECTION TRUE=287.5)
valid?	Event 2057789: 004 - N1 Delta_Mx (Flt 260895, 258 [C-FYJI], 01 Feb 17)	004Mx - N1 Delta While Airborne = 2.125 % (context = THRUST LEVER #1=25, THRUST LEVER #2=25)
valid?	Event 2057794: 1008 - Unstable Before Go-around? (Flt 260895, 258 [C-FYJI], 01 Feb 17)	1008 - Unstable Before Go-around? = 1. (context =)
valid?	Event 2057802: 846 - Speedbrake Use Below 1000 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	846 - Speedbrakes Below 1000 ft = 846.875 ft (context = SPEEDBRAKE HANDLE (GATED)=True (1), AIRSPEED=145.9)
valid?	Event 2057798: 815 - Approach Speed High 1000 to 500 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	815 - Approach Speed 1000 to 500 ft (Max) = 36.5 kt (context = AIRSPEED=161.5, VAPP SPEED=132, ACA_RALT_MAIN=636)
valid?	Event 2057797: 838 - Low Power on Approach 500 to 50 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	838 - Approach Power (N1) 500 to 50 ft = 30.25 % (context = ACA_RALT_MAIN=421, N1 #1=30.3, N1 #2=30.3)
valid?	Event 2057795: 942 - Go Around (Flt 260895, 258 [C-FYJI], 01 Feb 17)	942 - Go Around = 364.25 ft (context = ACA_RALT_MAIN=364, PANELS: MASTER WARNING ON=False (0))
valid?	Event 2057793: 1005 - Risk Assessment (Flt 260895, 258 [C-FYJI], 01 Feb 17)	1005 - Risk Management = 43.689 (context =)
valid?	Event 2057800: 834 - Above Glideslope Below 1000 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	834 - Above Glideslope 1000 - 200 ft = 1.79499 d (context = G/S DEV=FD 2.27, ACA_RALT_MAIN=3663)
valid?	Event 2057801: 849 - Excessive Bank Angle 400 to 20 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	849 - Bank Angle 400 to 20 ft = 25.827 o (context = ROLL=L 25.9, ACA_RALT_MAIN=0, FLAP HANDLE (GATED)=2.0)
valid?	Event 2057799: 833 - Below Glideslope Below 1000 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	833 - Below Glideslope 1000 - 200ft = -2.68356 d (context = G/S DEV=FU 2.83, ACA_RALT_MAIN=1573)
valid?	Event 2057804: 834 - Above Glideslope Below 1000 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	834 - Above Glideslope 1000 - 200 ft = 0.776336 d (context = G/S DEV=FD 0.83, ACA_RALT_MAIN=252)
valid?	Event 2057803: 816 - Approach Speed High 500 to 50 ft (Flt 260895, 258 [C-FYJI], 01 Feb 17)	816 - Approach Speed 500 to 50 ft (Max) = 11.25 kt (context = AIRSPEED=136.4, VAPP SPEED=125, ACA_RALT_MAIN=78)
valid?	Event 2057805: 916 - Long Landing (Flt 260895, 258 [C-FYJI], 01 Feb 17)	916 - Landing Distance = 2628.34 ft (context = LATITUDE=N51 08.66, LONGITUDE=W113 59.35, WIND DIRECTION TRUE=352.9)
valid?	Event 2057791: 917 - Abnormal De-Rotation - Pitch Down (Flt 260895, 258 [C-FYJI], 01 Feb 17)	917 - De-Rotation Pitch (Down) = 2 sec (context = VERTICAL G=U 0.98, WIND DIRECTION TRUE=21.8, WIND SPEED=12)
valid?	Event 2057790: 911 - Tailwind at Touchdown (Flt 260895, 258 [C-FYJI], 01 Feb 17)	911 - Wind on Landing = 11.1227 kt (context = HEADING (TRUE)=178.2, WIND SPEED=11, WIND DIRECTION TRUE=5.7)
valid?	Event 2057796: 1005 - Risk Assessment (Flt 260895, 258 [C-FYJI], 01 Feb 17)	1005 - Risk Management = 57.7159 (context =)
Open	Flight 260894: 258 [C-FYJI] (A319) 01 Feb 17: 22:00 YDOW25-YUL24R F/N =	6 valid event(s), worst = 78%
valid?	Event 2057806: 317 - Unstick Speed High (Flt 260894, 258 [C-FYJI], 01 Feb 17)	317 - Unstick Speed (Max) = 17.5 kt (context = AIRSPEED=138.5, V2 SPEED=121)
valid?	Event 2057809: 321 - Pitch Attitude Low on Initial Climb (Flt 260894, 258 [C-FYJI], 01 Feb 17)	321 - Pitch Attitude on Initial Climb (Min) = 7.90992 o (context = PITCH=U 7.9, AIRSPEED=138.5)
valid?	Event 2057807: 308 - Take-Off Distance (Flt 260894, 258 [C-FYJI], 01 Feb 17)	308 - Take off Distance = 2963.68 ft (context = LATITUDE=N45 19.18, LONGITUDE=W075 39.36, WIND DIRECTION TRUE=318.9)
valid?	Event 2057806: 409 - Early Configuration Change (Flt 260894, 258 [C-FYJI], 01 Feb 17)	409 - First Configuration Change = 1350.38 ft (context = FLAP HANDLE (GATED)=0.0, AIRSPEED=188.6)
valid?	Event 2057811: 816 - Approach Speed High 500 to 50 ft (Flt 260894, 258 [C-FYJI], 01 Feb 17)	816 - Approach Speed 500 to 50 ft (Max) = 15.75 kt (context = AIRSPEED=143.0, VAPP SPEED=127, ACA_RALT_MAIN=537)
valid?	Event 2057810: 838 - Low Power on Approach 500 to 50 ft (Flt 260894, 258 [C-FYJI], 01 Feb 17)	838 - Approach Power (N1) 500 to 50 ft = 28.1875 % (context = ACA_RALT_MAIN=354, N1 #1=28.3, N1 #2=28.2)
Open	Flight 260893: 258 [C-FYJI] (A319) 01 Feb 17: 20:21 YYZ24R-YDOW32 F/N =	2 valid event(s), worst = 39%
valid?	Event 2057813: 308 - Take-Off Distance (Flt 260893, 258 [C-FYJI], 01 Feb 17)	308 - Take off Distance = 2887.47 ft (context = LATITUDE=N43 40.47, LONGITUDE=W079 36.21, WIND DIRECTION TRUE=270.9)
valid?	Event 2057812: 004 - N1 Delta_Mx (Flt 260893, 258 [C-FYJI], 01 Feb 17)	004Mx - N1 Delta While Airborne = 6.625 % (context = THRUST LEVER #1=25, THRUST LEVER #2=25)

- Every 24 hours, data captured through PCMCIA card or via wireless means is processed and approximately 125 events are analyzed, including the new **Threat Assessment** event. Same severity protocol (Low, Medium and High) is utilized to indicate any flights of interest.



DATA DRILL-DOWN



- As with most FDM programs, flights of interest are validated by our analysts for data corruption. Should a flight trigger a “Threat Assessment” event, it is reviewed and a threat value is assigned.



FLIGHT SEGMENT EVALUATION

Approach Assessment

OverallDetails

Commit

id

fin

date

260895

258 (C-FYJL)

Feb. 1, 2017, 11:38 p.m.

takeoff

touchdown

ap

ap

rwyl

rwyl

len

len

cat

cat

YUL

YYC

24L

16

9600

12675

1

1

Factor	Score	Valid	Updated Score
1005 - Risk Management	58		<input type="text" value="100.0"/>
High Descent Rate @ < 500 ft	30	<input checked="" type="checkbox"/>	
High Speed @ < 500 ft	20	<input checked="" type="checkbox"/>	
Glide slope @ > 200 ft	14	<input checked="" type="checkbox"/>	
Risk Duration	4	<input checked="" type="checkbox"/>	

Code	Name	Value	Context	Duration	Severity
004	004 - N1 Delta_MX	2.13	THRUST LEVER #1=25, THRUST LEVER #2=25	2.0	25
911	911 - Tailwind at Touchdown	11.12	HEADING (TRUE)=178.2, WIND SPEED=11, WIND DIRECTION TRUE=5.7	0.0	55
917	917 - Abnormal De-Rotation - Pitch Down	2.00	VERTICAL G=U 0.98, WIND DIRECTION TRUE=21.8, WIND SPEED=12	2.0	83
308	308 - Take-Off Distance	4857.09	LATITUDE=N45 28.03, LONGITUDE=W073 43.68, WIND DIRECTION TRUE=287.5	0.0	37
1005	1005 - Risk Assessment	43.69		0.0	29
1008	1008 - Unstable Before Go-around?	1.00		0.0	25
942	942 - Go Around	364.25	ACA_RALT_MAIN=364, PANELS: MASTER WARNING ON=False (0)	0.0	81
1005	1005 - Risk Assessment	57.72		0.0	47
838	838 - Low Power on Approach 500 to 50 ft	30.25	ACA_RALT_MAIN=421, N1 #1=30.3, N1 #2=30.3	0.0	77
815	815 - Approach Speed High 1000 to 500 ft	36.50	AIRSPD=161.5, VAPP SPD=132, ACA_RALT_MAIN=636	0.0	28
833	833 - Below Glide slope Below 1000 ft	-2.68	G/S DEV=FU 2.83, ACA_RALT_MAIN=1573	5.0	83
834	834 - Above Glide slope Below 1000 ft	1.79	G/S DEV=FD 2.27, ACA_RALT_MAIN=2663	33.0	77
848	848 - Excessive Bank Angle 400 to 20 ft	25.93	ROLL=L 25.9, ACA_RALT_MAIN=0, FLAP HANDLE (GATED)=2.0	0.0	79
846	846 - Speedbrake Use Below 1000 ft	846.88	SPEEDBRAKE HANDLE (GATED)=True (1), AIRSPD=145.9	0.0	78
816	816 - Approach Speed High 500 to 50 ft	11.25	AIRSPD=136.4, VAPP SPD=125, ACA_RALT_MAIN=78	2.0	31
834	834 - Above Glide slope Below 1000 ft	0.78	G/S DEV=FD 0.83, ACA_RALT_MAIN=252	5.0	38
916	916 - Long Landing	2628.34	LATITUDE=N51 08.66, LONGITUDE=W113 59.35, WIND DIRECTION TRUE=352.9	11.0	31

- Our initial application was dedicated solely to Unstable Approaches
- In conjunction with the list and trace, the analyst used this work page that indicated both the normal regular flight events as well as the new Unstable Approach Threat Severity.

- **Severity:**
- **Probability:**
- **Risk Airport:**
- **Unstable:**
- **Go Around Required:**
- **Go Around Carried Out:**
- **Comments (as required):**
- **Status:**
 - Not reviewed
 - For analyst review
 - For GK review
 - Complete
- **ASR Submitted:**



Approach Assessment Overall Details Root-Cause/HFACS Commit

id	fn	date	takeoff				touchdown			
			ap	rw	len	cat	ap	rw	len	cat
545958	220 (C-FKCK)	March 2, 2019, 9:59 p.m.	YYZ	05	11120	1	YYC	16	12675	1

Second

Severity: Unassigned

Probability: Unassigned

Risk Factor: 0.0

Risk Airport: YYC

Unstable: ☐

Go Around Required: ☐

Go Around Carried Out: ☐

Comments:

Status: not reviewed

ASR Submitted: ☐

Severity	Category: Measure	Likelihood (Probability)				
		Remote	Unlikely	Moderate	Likely	Almost Certain
		Every 10 years	Every 6 months	Every month	Every week	More than once/day
Critical	Hull loss or AOC suspension	2.0	4.0	8.0	16	100
High	System or procedure followed by incorrect response resulting in increased threat, aggressive or prolonged avoidance maneuver, loss of primary system with no redundant system available, uncommanded flight control inputs that is difficult to control. Willful violation of SOP, company policies, or intentional violation of regulation that affect safety.	1.6	3.2	6.4	12.8	64
Medium	System or procedure followed by incorrect crew action which did not result in increase threat, a required avoidance action, loss of multiple primary systems with redundant system available, commanded flight control input that is controlled. Occurrence or hazard that affects the configuration/performance of a system essential for flight. Violation of standard operating procedures, company policies, regulations that affect safety.	1.0	2.0	4.0	8.0	32
Low	Activation of system or procedure with correct crew response, an avoidance measure that was not required, loss of a single primary system with redundant system available. Unintentional administrative or communicative failure of a regulation	0.6	1.2	2.4	4.8	16
Negligible	No SOP deviation, Design reliability or maintenance issues. Degradation of safety margin that does not negatively impact the safety of flight. Unintentional administrative or communicative failure of a non-regulatory nature or consequence.	0.4	0.8	1.6	3.2	8

- The Threat Severity 5 X 5 has been customized for FDA but does conform or is aligned with the same matrix utilized to assess ASR (Air Safety Report) filed by flight crews.



UNSTABLE APPROACH RESULTS



- Results more indicative of medium/high threat Unstable Approach were available.
- The breakdown is on four levels;
 - sector count,
 - count of unstable approach as per the SOP,
 - Unstable Approach with (any) threat,
 - Unstable approach with a medium to high threat assessment.



MOVING FORWARD – THREAT ASSESSMENT V2.0

- **The success shown by the Risk Assessment application led us to develop an application to encompass all flight phases.**
- **The application was renamed “Threat Assessment”. The major change is that we are now providing a severity rating and threat assessment to medium and high flight segments.**
- **Pro**
 - Provides a greater visibility on the operation and provides a new window on Threats not previously assessed.
 - Expands the drill-down option in the dashboard application.
- **Con**
 - - Sharp increase in workload for both Staff and Gatekeepers a compromise has been found and an additional Gatekeeper has been added to the team. As in the previous Risk application, a Gatekeeper assessment for Medium and above ratings is provided.
 - - More data points are required before we can add the probability assessment portion.



DATA ENTRY



Airbus AC	Airbus ACr	Embraer	A330	B777	B787	B767 AC	B767 ACr	B737
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Fleet Card Status: Airbus 330

Search local db by Replay ID/FIN(50):

Refresh ext. data for 2 days. Delete replay ID

FIN	Registration	Replay ID	Replay Date	Review Date	Station	Days Late		
Select	931	C-GFAF	23202	2/23/2019	2/24/2019	WGL	1	Remove
Select	932	C-GFAH	23203	2/23/2019	2/24/2019	WGL	1	Remove
Select	933	C-GFAJ	23204	2/23/2019	2/23/2019	U/K	1	Remove
Select	934	C-GFUR	23205	2/23/2019	2/23/2019	YUL	1	Remove
Select	935	C-GHKK	23206	2/23/2019	2/23/2019	U/K	1	Remove
Select	936	C-GHKK	23207	2/23/2019	2/23/2019	YUL	1	Remove
Select	937	C-GHKK	23208	2/23/2019	2/24/2019	YYZ	0	Remove
Select	938	C-GHLM	23217	2/24/2019	2/25/2019	WGL	2	Remove
Select	939	C-GFAF	23218	2/24/2019	2/25/2019	WGL	2	Remove
Select	940	C-GEGC	23219	2/24/2019	2/25/2019	U/K	2	Remove
Select	941	C-GEGI	23220	2/24/2019	2/25/2019	YUL	2	Remove
Select	942	C-GEGP	23221	2/24/2019	2/25/2019	U/K	2	Remove
			23222	2/24/2019	2/25/2019	YYZ	2	Remove
			23223	2/24/2019	2/25/2019	U/K	3	Remove
			23224	2/24/2019	2/25/2019	YUL	3	Remove
			23225	2/24/2019	2/25/2019	YYZ	2	Remove
			23226	2/24/2019	2/25/2019	YUL	2	Remove

Submit Staff

[FOAS](#) [Threats](#) [Email Info](#) [Schedule](#) [Admin](#) [Download Stats](#) [Help](#)

Review Staff: RP Review GK: Status: For GK

Aircraft Registration: 505 C-FSDW Flight ID: 130878 Review Date: 2/25/2019

First GK Access:

Staff Comments:
SOP compliance, final flap set altitude at 985 ft RA.

GK Comments:

Threats

Add

Update

Flight Info:
REPLAY DATE : 2/25/2019 FLIGHT ID : 130878
REPLAY ID : 93406 B737MAX 505 C-FSDW
ENG START: 16:27:15 YVR(RNY: 26L / LEN: 11500) -- HNL(RNY: 08L /

Events:

Event Name	State Value	Event Context	Event Duration
308 - Takeoff Distance	6886.58	LATITUDE=49.2, LONGITUDE=-123.2, WIND DIRECTION TRUE=31.64	0
834 - Above Glideslope at < 1000 ft	0.66	G/S DEV=0.741, AIRSPEED=160.3	5
842 - Late Land Flap	985	FLAP HANDLE (GATED)=30, AIRSPEED=166.5	0
930 - Significant Roll Below 5 ft	2.29	ROLL=2.2852, PITCH=3.6	0
937 - Excessive Deceleration on Landing	-0.39	LONGITUDINAL G=-0.395, GND NOT AIR=ON GND (1), GROUNDSPED=69.5	0

Maintenance Advisories:

Add Maintenance Advisory

- The Data Entry page shows the various aircraft downloads for the last 24 hours.
- The analyst will review the data as per protocols.
- When a flight of interest is detected, clicking on the FOAS (Flight Operation Analysis Synopsis) tab will open up a work page (left) where information is entered.
- Should a threat assessment be required, the next level of the process is initiated.



ASSESSMENT WINDOW

Risk ID:

Flight ID: FIN: Staff: GK: Status:

TO Airport: TD Airport: Threat Airport: Threat Elements

Flt Phase: Threat Cat:

Threat Cat Events:

- ☐ \$10 - Descent Rate High 500 to 50 ft
- ☐ \$16 - Approach Speed High 500 to 50 ft
- ☐ \$17 - Approach Speed High 50 ft to TL
- ☒ \$42 - Late land flap
- ☐ \$43 - Late Land Gear
- ☐ 9022 - Unstable Approach

☐ Go-around Required ☐ Go-around Carried Out ☐ ASR Filed

☐ No Related Event ☐ For Stats Only ☒ Significant Flight

SOP compliance, final flap set altitude at 985 ft RA.

Flight Phases

Before Take Off
Take Off
Climb
Cruise
Descent
Approach
Landing
After Landing

Threat Categories

AC Handling
Go-around
GPWS
Ground Handling
Mechanical
RTO
Stall Protection
Structural fatigue
TCAS
Turbulence
Unstable
Windshear

Root Cause / HFACS / Score

Root Cause **HFACS**

☒ Basic ☒ Errors (HFACS)
☒ Internal ☒ Violations (HFACS)
☒ External ☒ Environmental Factors (HFACS)
☒ Condition of Employee (HFACS)
☒ Supervision (HFACS)
☒ Organizational Influences (HFACS)

Significant Flight

Flight ID: Status:

By:

Description:

Animation link: Is Current: ☒

Password: Post Date:

Close Date:

NOTE: use these buttons for significant flights, not the 'Commit' button

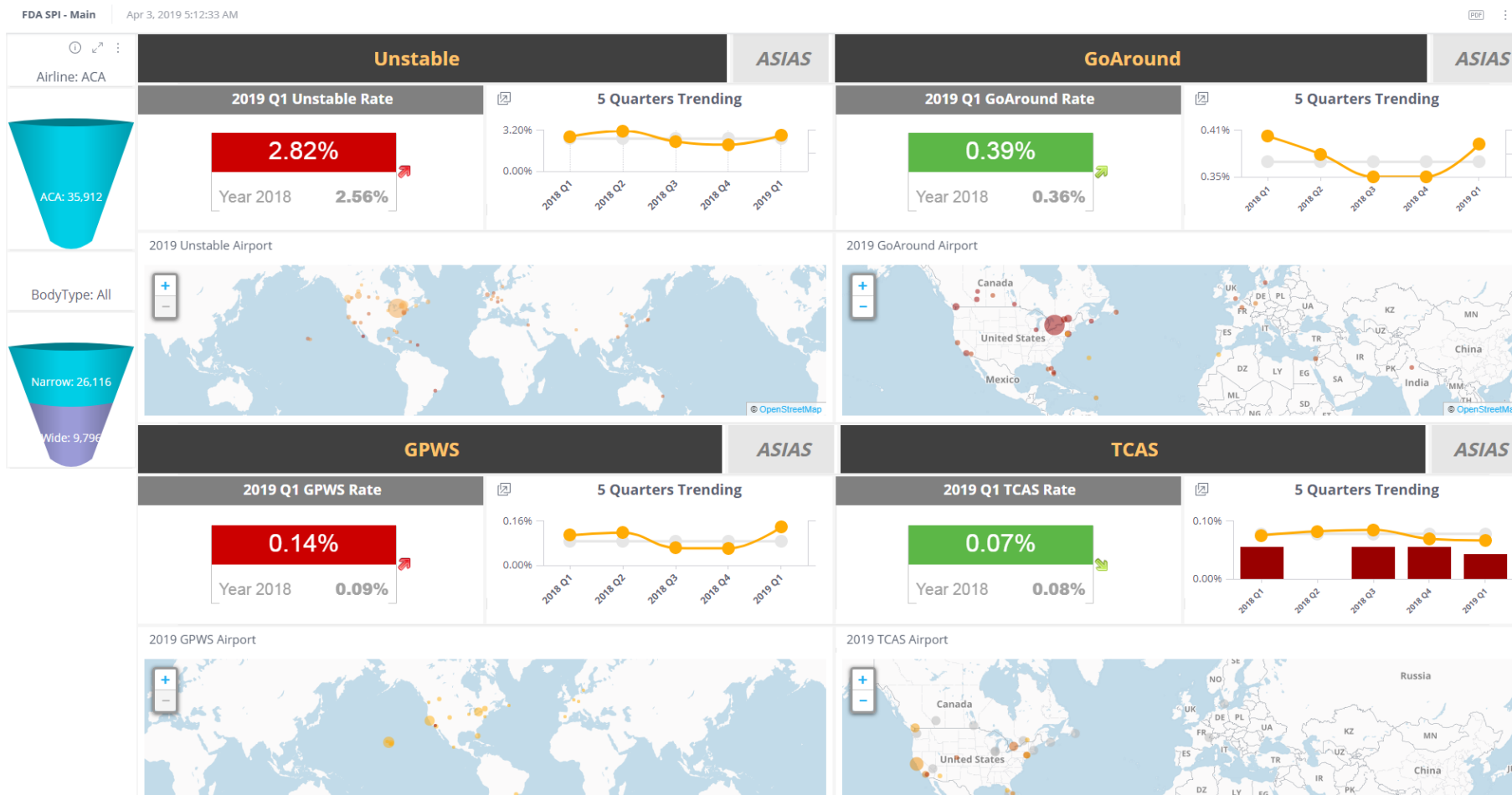
Risk Score

Severity: Threat Factor:

Severity	Guidelines
Critical 1.7 1.8 1.9 2.0	Hull loss with near or total loss of life Hull loss with partial loss of life Hull loss with no loss of life Loss of life with no hull loss AOC Suspension
High 1.3 1.4 1.5 1.6	Willful violations (SOP, company policy, etc) with hull damage and/or passenger or crew injury Incorrect response with Hull damage and/or passenger or crew injury Severe turbulence or upset resulting in hull damage and/or passenger or crew injury Willful or incorrect response resulting in increased threat with no damage or injury / aggressive or prolonged avoidance maneuver Loss of primary systems with no redundant system available/ commanded control input / hazard effecting performance or configuration
Medium 0.9 1.0 1.1 1.2	Violation of SOP, policy or regulations affecting safety Occurrence of hazard(s) that affect config or performance of essential systems Severe turbulence or upset without injury or aircraft damage Loss of multiple primary systems with redundant systems available Incorrect action not resulting in increased threat / required avoidance action
Low 0.5 0.6 0.7 0.8	Avoidance measure that was not required Loss of single primary system with redundant system available Required avoidance maneuver with correct crew response and no further impact on safety Activation of system or procedure with correct crew response Unintentional administrative or communicative failure of a regulation
Negligible 0.1 0.2 0.3 0.4	Degradation of safety margin that does not negatively impact safety Mechanical degradation without impact on safety of flight Unintentional administrative or communicative failure of a non-regulatory nature Required deviation from procedure that does not impact safety Events with no SOP deviation, design reliability or maintenance issues



EXECUTIVE SPI'S



- The Executive SPI dashboard yields a running five quarter indication of the four main FDA safety concerns.
- If they wish, the dashboard provides drill-down, by Airline, fleet, ASR comparison and ASIAs benchmark.
- FDA needed to classify number of unstable, unstable by risk and unstable requiring a Go-Around and ultimately, if a Go-Around was completed



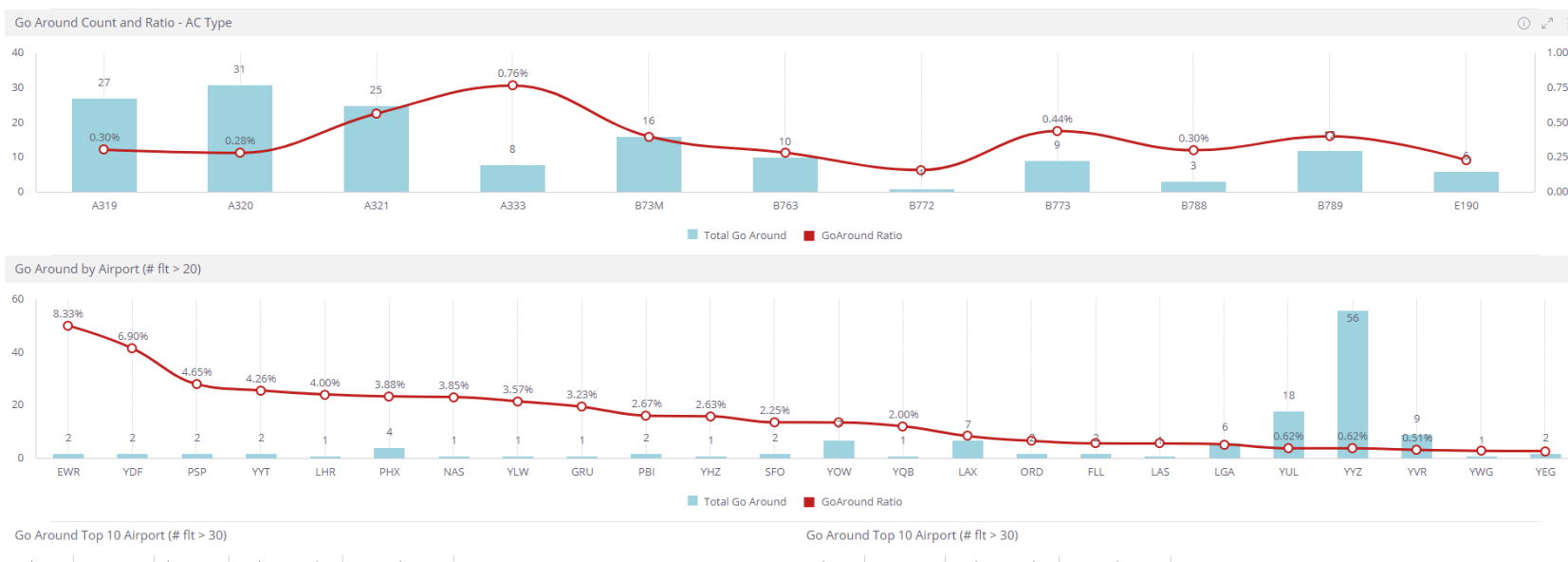
FDA SEVERITY DASHBOARD



- The Severity dashboard provides the user the ability to drill-down by fleet and by threat category.
- Should an area of concern be identified by the fleet manager they can utilise the additional dashboards such as Go-Around, GPWS, TCAS and other specialized studies.

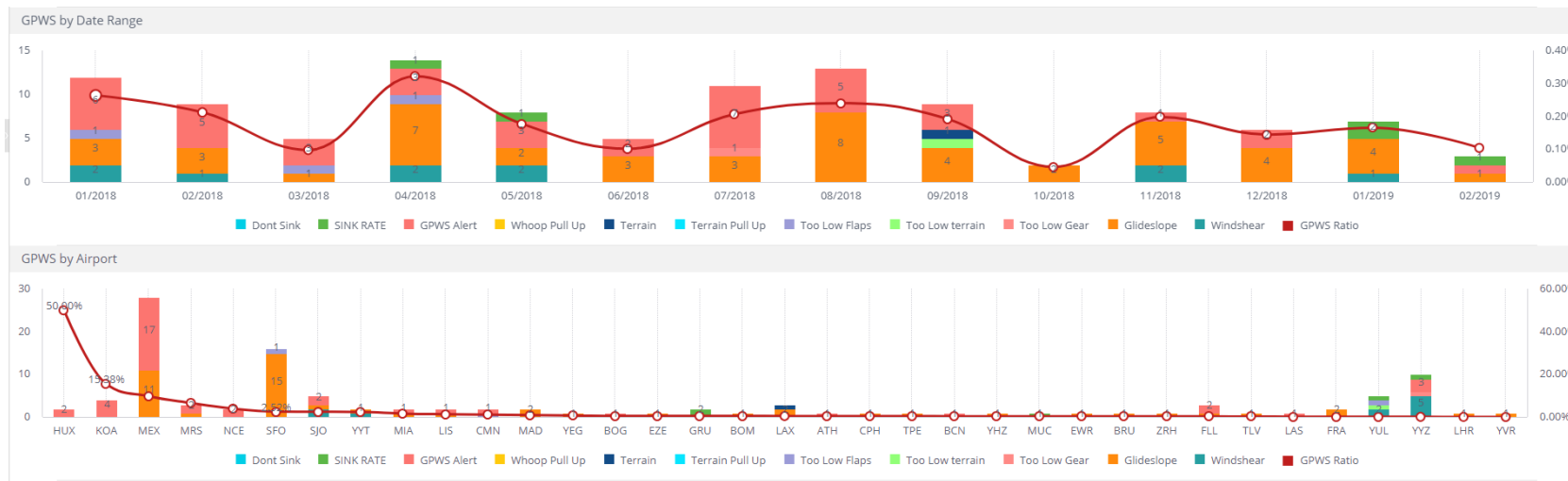


Go-AROUND



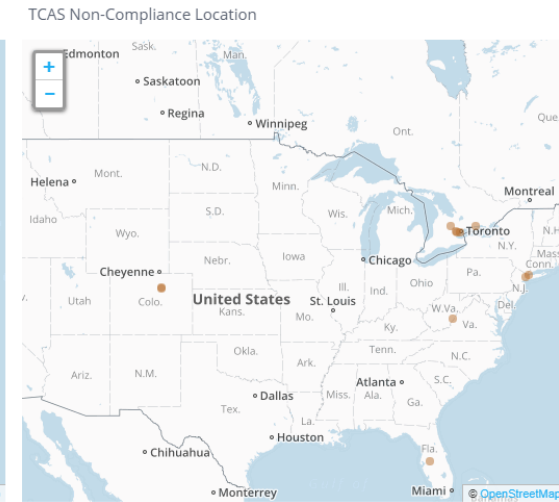
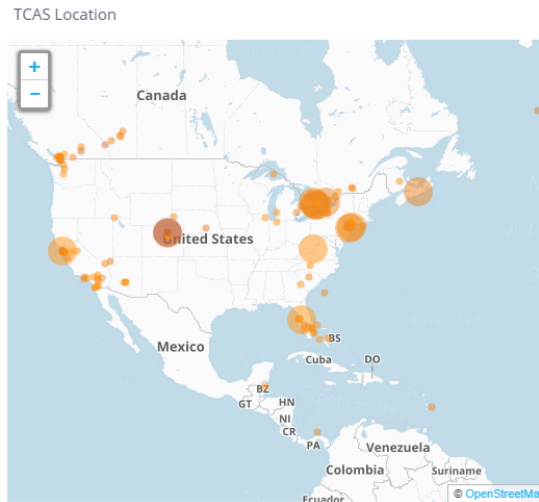
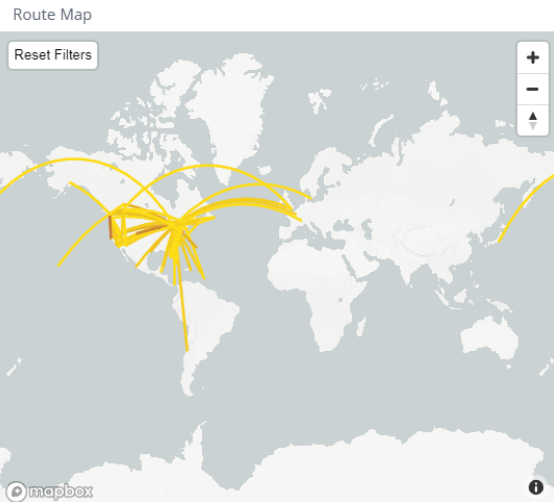
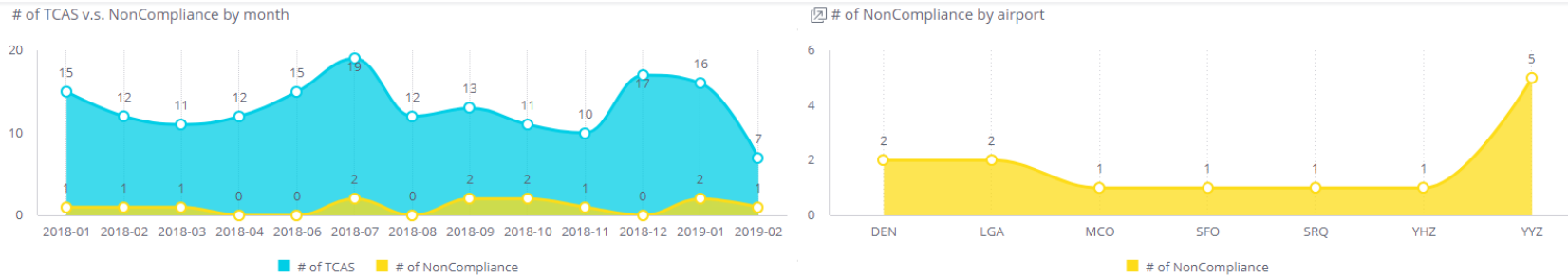


GPWS RATES & LOCATION



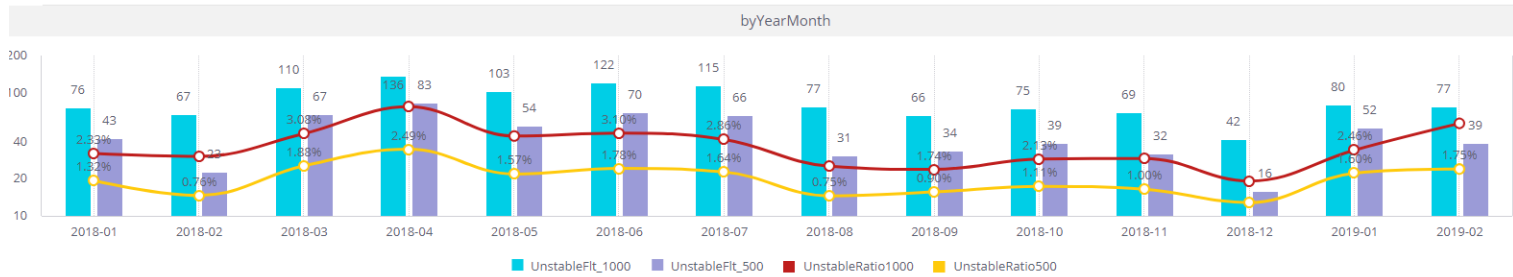
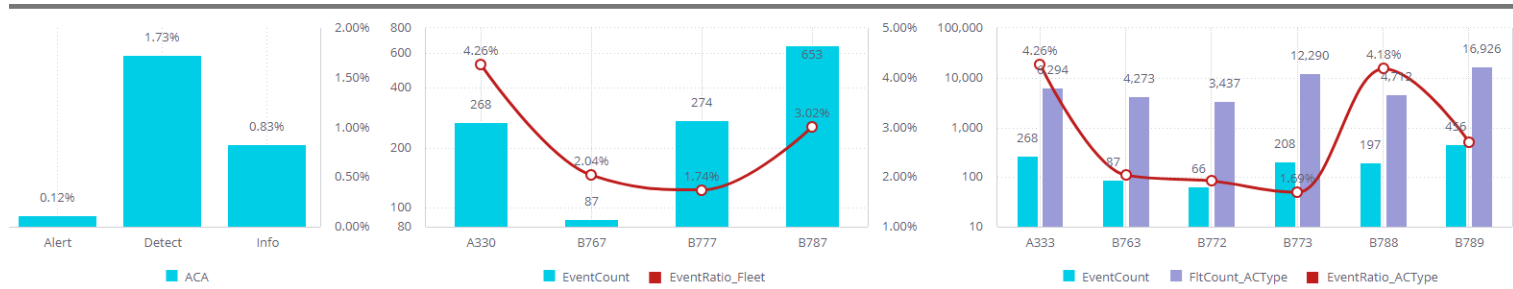


TCAS



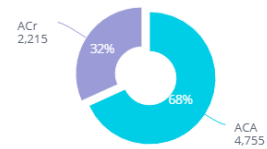


UNSTABLE APPROACH

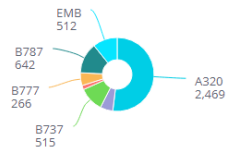


UNSTABLE

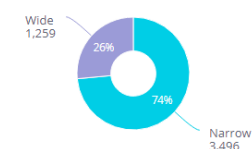
Current Quarter Unstable - Airline



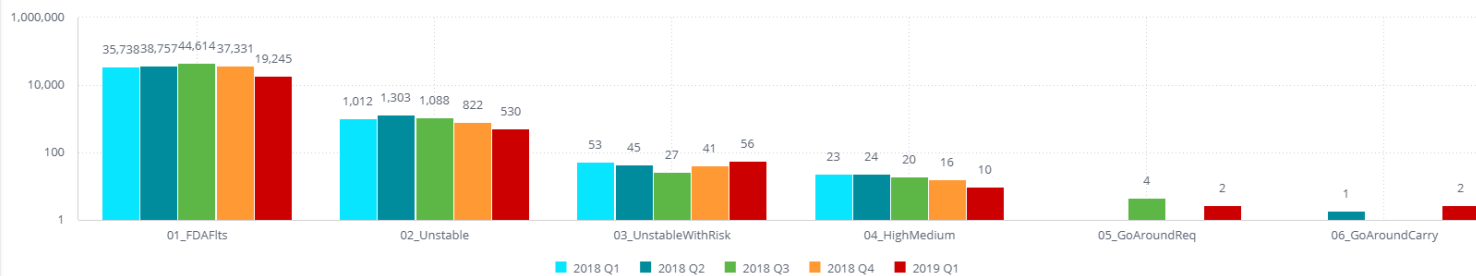
Current Quarter Unstable - Fleet



Current Quarter Unstable - Fleet



5 Quarter Unstable breakdown to Risk severity





CONCLUSION

- **Air Canada is studying the concept of a lower Unstable Approach gate. Our Threat Application will allow FDA to closely monitor performance and to address any instability issues.**



Questions ???