



# Statistical contingency fuel

06.05.2024 EASA SPT.0097

Captain Tom Hakala

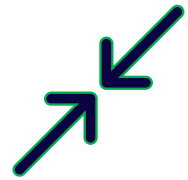
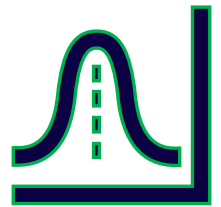
Fleet Technical Pilot, Finnair



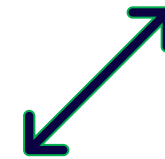
# Why Statistical Contingency Fuel?

- Prespective contingency fuel is based on fixed percentage or endurance and it only changes when planned trip fuel changes
- The actual fuel requirements depend more on citypair than route distance (= trip fuel)

- Current contingency fuel may lead to a situation where the planned contingency fuel could be either too small or too big for given citypair
- Pilots have to use their experience to estimate how much discretionary fuel is needed



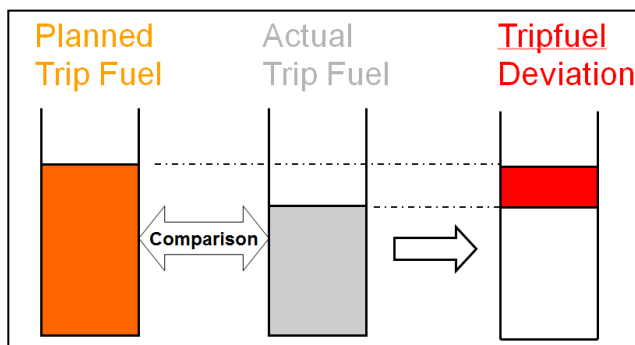
This could lead to over or under estimates in contingency fuel and unrealistic OFP



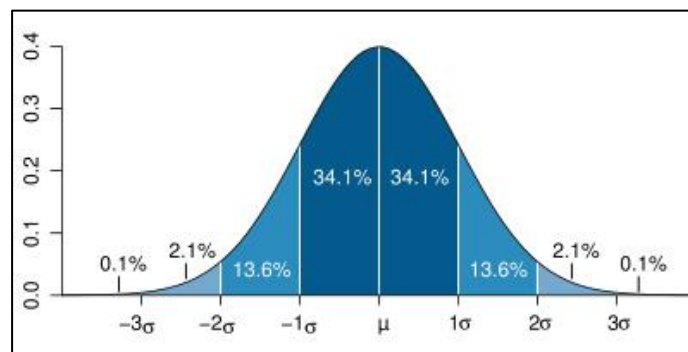
Using REAL Fuel Burn data and statistical analysis on given route and aircraft type to calculate contingency fuel leads to **More Realistic Flight Planning**

# How it works?

2.



3.



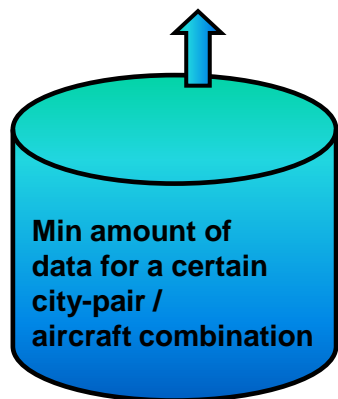
1. Flights are flown for given citypair with a given aircraft type

2. Deviation of actual vs. planned trip fuel is calculated

3. Statistical analysis is done on trip fuel deviation

4. Contingency fuel calculation for daily flight planning is based on the results from statistical analysis

1.

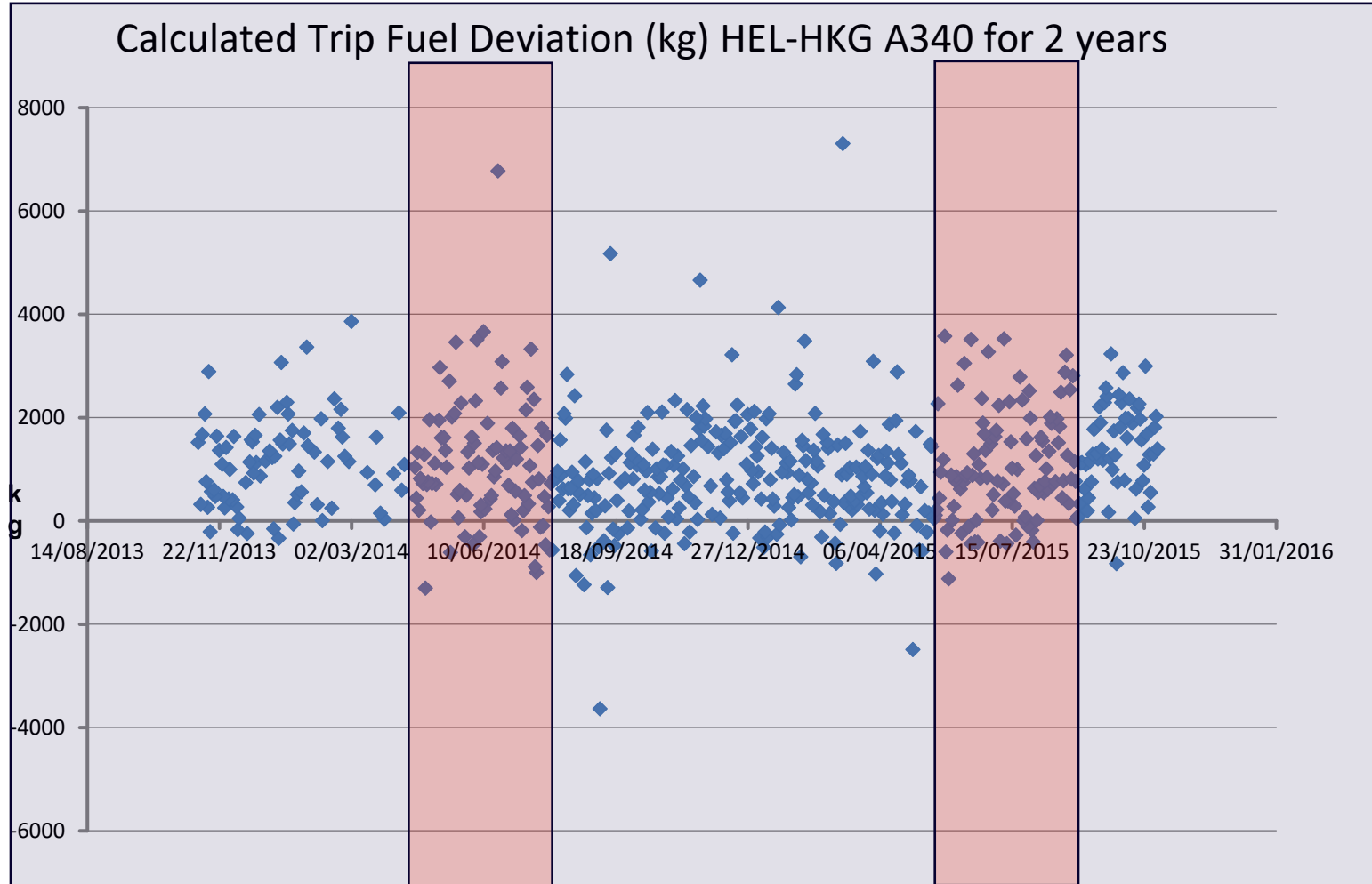


	PLANNED FUEL	TIME	ACTUAL FUEL	TIME	ALTERNATES:
TAXI.....	000400	00:12	.....	.....	TAKEOFF ALT:.....
TRIP.....	058660	09:51	.....	.....	
					DIALTS: DIST W/C FL TIME FUEL
CONT. (CF99)	002600	00:31	.....	.....	
DIALT1 ZGSZ	002020	00:19	.....	.....	ZGSZ/SZX 075 -003 090 0:19 02.02
DIALT2 ....	000000	00:00	.....	.....	VMMC/MFM 134 +001 157 0:28 03.11
FINAL RES...	002470	00:30	.....	.....	ZGGG/CAN 151 -009 197 0:31 03.49
ADDITIONAL...	000000	00:00	.....	.....	RCTP/TPE 501 +037 360 1:08 07.47
MIN BLOCK...	065450	11:14	.....	.....	ENROUTE ALT:.....
EXTRA.....	000000	00:00	.....	.....	
TOT BLOCK...	065450	11:14	.....	.....	TNKCAP:112511 CREW:.....

----- CONT STATISTICS -----  
 PERIOD: NOV2013-OCT2015  
 CF90: +1720KG | MEAN: 1030KG  
 CF95: +2030KG | NUMBER OF CONSIDERED FLIGHTS: 499  
 CF99: +2600KG |



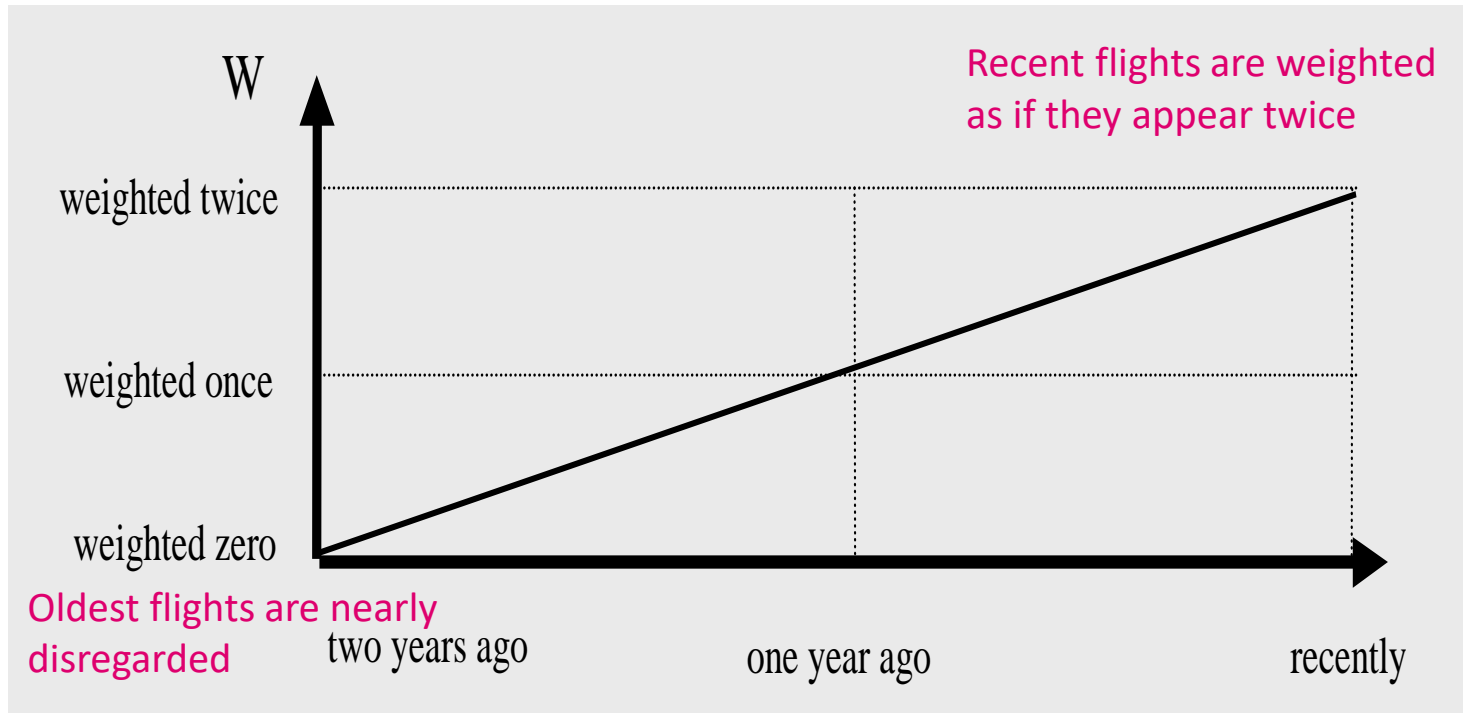
# Data periods



- Statistics can be refined to certain time period (season, month, day of week or even time of day)
- On the sample to left only summer season data is used to create statistics for summer season flights



# Weighting with the “Age” of a flight



- Flights in the statistical analysis have a different weighting based on flight date
- More recent flights have more weight on the analysis
- Weighting helps to react more quickly to change of conditions on route (e.g. ATC, other traffic, seasonal WX)

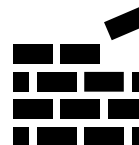
# How to decide the coverage of the data?

## Draft Fuel Manual version:

- The decision to use SCF for specific city pair/aeroplane combination could consider availability of intermediate landing possibilities throughout the flight, reliability of weather forecasts and accuracy of weather information for enroute, destination and alternate aerodromes.*
- Common practice for coverage values (but not exhaustive) are of 90%/95%/99%.*



- Update to the GM (GM2 CAT.OP.MPA.181, NPA 2024-02) text is under work ..





# What is the take for the operators?

More realistic and accurate flight planning



Less pilot discretionary fuel



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**Thank You.**