

TAG Farnborough Airport, ACP Flyability Report

This report details the results of flight validation of the procedures proposed as part of the TAG Farnborough Airspace Change Proposal.

Aircraft types

The procedures were tested on three aircraft types which give a representative cross-section of the aircraft operating from Farnborough. These were the Beechcraft KingAir 200 (BE20), Hawker 800 (H25B) and Airbus A320 (A322).

Conditions

For the sake of expedition, that the calm wind scenario was only flown if there were issues with the more challenging wind conditions. Ambient surface temperature was set to 30°C, and QNH 1013HPa, weights were set to maximum take-off weight for SIDs and as maximum landing weight for STARs.

RCF & MAP

In addition to testing the STARs and SIDs, the radio comms failure transition to the ILS and ILS RCF missed approach procedures were flown once each to demonstrate that the transition from the proposed STARs to these were flyable.

Timetable

The simulation sessions were executed as follows:
21st July 2015 Hawker 800 simulator
+ Collins Proline 21 FMC, Flight Safety International



[REDACTED] FSI sim instructor)
(NATS ACA)
(NATS PDG)

24th July 2015 Beech King Air 200 simulator,
+ Universal UN 1K FMC, Flight Safety International

[REDACTED] (FSI sim instructor)
[REDACTED] (FSI sim instructor)
[REDACTED] (NATS ACA)
[REDACTED] (NATS PDG)



TBD A320 CTC Aviation


Flyability Simulation Script

H25B results: SIDs ✓ - indicates flown successfully with no issues

Run	SID	Conditions	Comments
1	GWC 1A / HAZEL 1A LFW01 max 210 KIAS ASLAP @3000 max 210 KIAS ESULU @3000 max 210 KIAS HAZEL @3000 max 250 KIAS GWC @3000 max 250 KIAS	Wind: Calm Temp: 30°C MTOW	Only the GWC 1A need be flown. HAZEL 1A is truncated version of GWC 1A, so separate validation for HAZEL 1A is not required. ✓
2	"	Wind: 240/25kts (Prevailing wind/ Temp: 30°C headwind) MTOW	✓
3	"	Wind: 030/25kts (Tail wind) Temp: 30°C MTOW	✓
4	GWC 1H / HAZEL 1H LFE01 above 2500 max 210 KIAS LFE02 @3000 max 210 KIAS ASLAP @3000 max 210 KIAS ESULU @3000 max 250 KIAS HAZEL @3000 max 250 KIAS GWC @3000 max 250 KIAS	Wind: Calm Temp: 30°C MTOW	Only the GWC 1H need be flown. HAZEL 1H is truncated version of GWC 1H, so separate validation for HAZEL 1H is not required. ✓
5	"	Wind: 330/25kts (crosswind) Temp: 30°C MTOW	Check no issue of ballooning at LFE02. ✓
6	"	Wind: 060/25kts Temp: 30°C MTOW	✓

H25B results: STARS

Run	STAR	Conditions	Comments
1	VEXUB 1A CPT @6000 210 KIAS INDOX @5000 210 KIAS VEXUB@3000 185 KIAS	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
2	As #1 then follow ILS/DME RWY24 RCF procedure to join ILS Perform RCF MAP to VEXUB	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	RCF transition to ILS24 + MAP to VEXUB OK ✓
3	As #1 then Enter HOLD at VEXUB (057°M) @3000 (holding speed 185kts)	Wind: 320/25kts (Tail wind) Temp: 30°C MLW	Slight repositioning glitch at shows at start of trace before INDOX. Hold entry OK ✓
4	VEXUB 1B EVEXU @FL140 250kts RIMUP @FL90 250kts NIDGO @ 6000 210kts VEXUB @3000 185kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
5	As #4 then Enter HOLD at VEXUB (057°M) @3000 (holding speed 185kts)	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	RIMUP FL90 -> NIDGO FL60 Ok, but 5000ft at NIDGO would be more challenging. ✓
6	As #4	Wind: 320/25kts (Tail wind) Temp: 30°C MLW	✓
7	VEXUB 1C/1D KUMIL @FL180 250kts KATHY @FL180 220kts RUDMO @FL70 210kts VEXUB @3000	Wind: Calm Temp: 30°C MLW	Only the VEXUB 1C need be flown. VEXUB 1D is truncated version of 1C, so separate validation for 1D is not required. <i>Calm wind - skipped</i>

8	As #7 then	Wind: 240/25kts (Prevailing wind/ Temp: 30°C tailwind) MLW	Turn at KATHY would be OK at 250kts ✓ (terminated at NIDGO since VEXUB 1B runs 5 & 6, tested these legs)
9	PEPIS 1A CPT @FL110 210kts HANKY @FL70 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
10	As #9 then Enter HOLD at PEPIS (005°M) (max holding speed 210kts)	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	HANKY- PEPIS turn OK at 220 (Video of this segment available if required) ✓
			
11	As #9	Wind: 350/25kts (Tail wind) Temp: 30°C MLW	✓
12	PEPIS 1B/1C KUMIL @FL180 250kts KATHY @FL170 220kts RUDMO @FL90 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	Only the PEPIS 1B need be flown. PEPIS 1C is truncated version of 1B, so separate validation for 1C is not required. <i>Calm wind - skipped</i>
13	As #12 then Enter HOLD at RUDMO (277°M) @FL110 2 turns then PEPIS @FL70 210kts	Wind: 240/25kts (Prevailing wind/ Temp: 30°C tailwind) (max holding speed 210kts) MLW	✓
14	PEPIS 1D EVEXU @FL140 210kts RUDMO @FL110 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
15	PEPIS 1D EVEXU @FL140 210kts RUDMO @FL110 210kts Enter HOLD at RUDMO (277°M) @FL110 1 turn then PEPIS @FL70 210kts	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	Hold at RUDMO OK ✓
16	As #14 then RCF transition to ILS/DME 06	Wind: 150/25kts (Tail wind) Temp: 30°C MLW	✓

Trajectory plots from the simulator and pilot's validation form are attached.

BE20 results: SIDs

✓ - indicates flown successfully with no issues

Run	SID	Conditions	Comments
1	GWC 1A / HAZEL 1A LFW01 max 210 KIAS ASLAP @3000 max 210 KIAS ESULU @3000 max 210 KIAS HAZEL @3000 max 250 KIAS GWC @3000 max 250 KIAS	Wind: Calm Temp: 30°C MTOW	Only the GWC 1A need be flown. HAZEL 1A is truncated version of GWC 1A, so separate validation for HAZEL 1A is not required. <i>Calm wind - skipped</i>
2	"	Wind: 240/25kts (Prevailing wind/ Temp: 30°C headwind) MTOW	✓ Max speed 230kts
3	"	Wind: 030/25kts (Tail wind) Temp: 30°C MTOW	✓
4	GWC 1H / HAZEL 1H LFE01 above 2500 max 210 KIAS LFE02 @3000 max 210 KIAS ASLAP @3000 max 210 KIAS ESULU @3000 max 250 KIAS HAZEL @3000 max 250 KIAS GWC @3000 max 250 KIAS	Wind: Calm Temp: 30°C MTOW	Only the GWC 1H need be flown. HAZEL 1H is truncated version of GWC 1H, so separate validation for HAZEL 1H is not required. <i>Calm wind - skipped</i>
5	"	Wind: 330/25kts (crosswind) Temp: 30°C MTOW	Check no issue of ballooning at LFE02. Alt at LFE01 above 2500 OK. No ballooning at LFE02. ✓
6	"	Wind: 060/25kts Temp: 30°C MTOW	Alt at LFE01 >3000. ✓

BE20 results: STARs

Run	STAR	Conditions	Comments
1	VEXUB 1A CPT @6000 210 KIAS INDOX @5000 210 KIAS VEXUB@3000 185 KIAS	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
2	As #1 then follow ILS/DME RWY24 RCF procedure to join ILS Perform RCF MAP to VEXUB	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	✓
3	As #1 then Enter HOLD at VEXUB (057°M) @3000 (holding speed 185kts)	Wind: 320/25kts (Tail wind) Temp: 30°C MLW	✓
4	VEXUB 1B EVEXU @FL140 250kts RIMUP @FL90 250kts NIDGO @ 6000 210kts VEXUB @3000 185kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
5	As #4 then Enter HOLD at VEXUB (057°M) @3000 (holding speed 185kts)	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	+ Hold at VEXUB + transition to ILS 24 ✓
6	As #4	Wind: 320/25kts (Tail wind) Temp: 30°C MLW	✓
7	VEXUB 1C/1D KUMIL @FL180 250kts KATHY @FL180 220kts RUDMO @FL70 210kts VEXUB @3000	Wind: Calm Temp: 30°C MLW	Only the VEXUB 1C need be flown. VEXUB 1D is truncated version of 1C, so separate validation for 1D is not required. <i>Calm wind - skipped</i>

8	As #7 then	Wind: 240/25kts (Prevailing wind/ Temp: 30°C tailwind) MLW	Turn at KATHY would be OK at 250kts Hold at RUDMO OK (terminated at NIDGO since VEXUB 1B runs 5 & 6, tested these legs) ✓
9	PEPIS 1A CPT @FL110 210kts HANKY @FL70 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind – skipped</i>
10	As #9 then Enter HOLD at PEPIS (005°M) (max holding speed 210kts)	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	HANKY- PEPIS turn no problem. ✓ (video available if required)



11	As #9	Wind: 350/25kts (Tail wind) Temp: 30°C MLW	+hold at VEXUB & transition to ILS 06 ✓
12	PEPIS 1B/1C KUMIL @FL180 250kts KATHY @FL170 220kts RUDMO @FL90 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	Only the PEPIS 1B need be flown. PEPIS 1C is truncated version of 1B, so separate validation for 1C is not required. Calm wind - skipped
13	As #12 then Enter HOLD at RUDMO (277°M) @FL110 2 turns then PEPIS @FL70 210kts	Wind: 240/25kts (Prevailing wind/ Temp: 30°C tailwind) (max holding speed 210kts) MLW	✓
14	PEPIS 1D EVEXU @FL140 210kts RUDMO @FL110 210kts PEPIS @FL70 210kts	Wind: Calm Temp: 30°C MLW	<i>Calm wind - skipped</i>
15	PEPIS 1D EVEXU @FL140 210kts RUDMO @FL110 210kts Enter HOLD at RUDMO (277°M) @FL110 1 turn then PEPIS @FL70 210kts	Wind: 240/25kts (Prevailing wind/ Temp: 30°C crosswind) MLW	Hold at RUDMO ✓
16	As #14 then RCF transition to ILS/DME 06	Wind: 150/25kts (Tail wind) Temp: 30°C MLW	✓

Trajectory plots from the simulator and pilot's validation form are attached.

