Docket No. SA-537

Exhibit No. 14-G

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Human Performance

B777 Autothrottle Mode AFDS Pitch Mode Compatibility Information

(3)

THRUST MANAGEMENT
Autothrottle Mode AFDS Pitch mode compatibility

A/P – F/D PITCH MODE		A/T MODE	COMMENTS
ON GROUND:			
	TO/GA	THR REF	When TO/GA switch is pushed, below 50 kts. Switch is Inoperative above 50 kts.
	TO/GA	HOLD	At 80 kts. Through at least 400 feet, unless TO/GA switch is pushed again after liftoff.
IN AIR:			
	TO/GA	THR REF	When TO/GA is pushed a second time after takeoff. Takeoff derates are removed and thrust advanced to full TO reference thrust.
	TO/GA	THR REF	After CLB CON switch pushed for thrust reduction.
	ALT, V/S, FPA, G/S	SPD	Controls to MCP speed window. If the previous mode was TO/GA, and the MCP window has not changed since liftoff (for the Takeoff case) or TO/GA activation (for the GA case) the MCP window becomes the higher of current airspeed, current flap placard speed – 5 kts., or 250 kts., if flaps are up.
	FLCH SPD	THR	For normal FLCH climb and descent.
	FLCH SPD	HOLD	For FLCH descent with throttles at aft stop, or if throttles have been overridden by pilot
	VNAV	SPD, THR, THR REF, IDLE, HOLD	As requested by VNAV.
	TO/GA	THR	For normal one-push GA.
	TO/GA	THR REF	For second push of TO/GA switch
	FLARE	SPD	Unless A/P is requesting throttle retard.
	FLARE	IDLE	If A/P is requesting throttle retard
	No Mode	SPD	

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Speed On Throttle

Speed On Elevator

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THRUST MANAGEMENT
Autothrottle Modes & Annunciation on PFD

Mode	Controlling To	Comment
THR REF	**EPR or N1 reference thrust**	**The target value is shown above the EPR/N1 dial, and as a bug positioned on the dial**
SPD	**MCP or VNAV speed target**	**The target value is shown numerically above the speed tape, and target bug is shown on the speed tape.**
THR	**Internally computed thrust target**	**Provides a nominal vertical speed. Only allowed if the corresponding pitch mode is FLCH SPD, VNAV PTH, VNAV SPD or TOGA. Target value is not shown on PFD**
IDLE	**Throttle Aft Stop**	**During VNAV descent or retard during flare for landing**
HOLD	**Fixed throttle position.**	**Autothrottle is not driving the servos, and power has been removed from them.** This mode occurs during FLCH, or VNAV PTH descent after the throttles have been driven to the aft stop in IDLE mode, or in FLCH or VNAV IDLE when the throttles have been overridden by manual throttle lever adjustments. Or during a takeoff over 80 kts.
BLANK	**No Mode**	**Autothrottle is not engaged. There is no mode. This is the only state where the Autothrottle wakeup function is potentially active.**

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