

VALIDATION TEST

Title	Engines acceleration during approach		
Id	1 f i	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that simulation of engine acceleration (time from idle to 90% of Go-Around power) conforms to the class of aeroplanes	Time from idle to 10% of maximum load : Time 0.2 sec approx Time from idle to 90% of maximum load : Time 1.3 sec approx
Reference	Evaluation Criteria
Chapter 12 - Validation data - Performances - Test 1.f.i	Correct Trend and Magnitude

Demonstration procedure	From steady approach initial conditions, throttle is rapidly moved to idle power and then rapidly advanced to go-around power position. Time to accelerate to specified power is measured.
Manual test procedure	Trim the airplane to approach conditions (the parameters are given in the next page).The throttles are moved to idle power and then rapidly advanced to go around power. Load and Power Lever Position are recorded. Transient time (to new steady state) is read from the record and compared versus airplane data.
Automatic test procedure	1 f i

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

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Autopilot mode	AUTO_VZ
Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.	

Initial parameters	HOLD_FLAPS_APP_GEAR
Gross weight (kg) : 1900	Flaps lever position : 1
Balance (%) : 50	Gear lever position : 1
Altitude (ft) : 3000	Left Load (%) : 70
Vertical speed (ft/min) : 0 (free)	Right Load (%) : 70
IAS (kt) : 106	Left RPM : 2060
Heading (°) : 0 (free)	Right RPM : 2060
Bank (°) : 0	
Attitude (°) : -1	
Pedal Position (%) : 0	
Column Position (%) : 32	
Wheel Position (%) : 0	

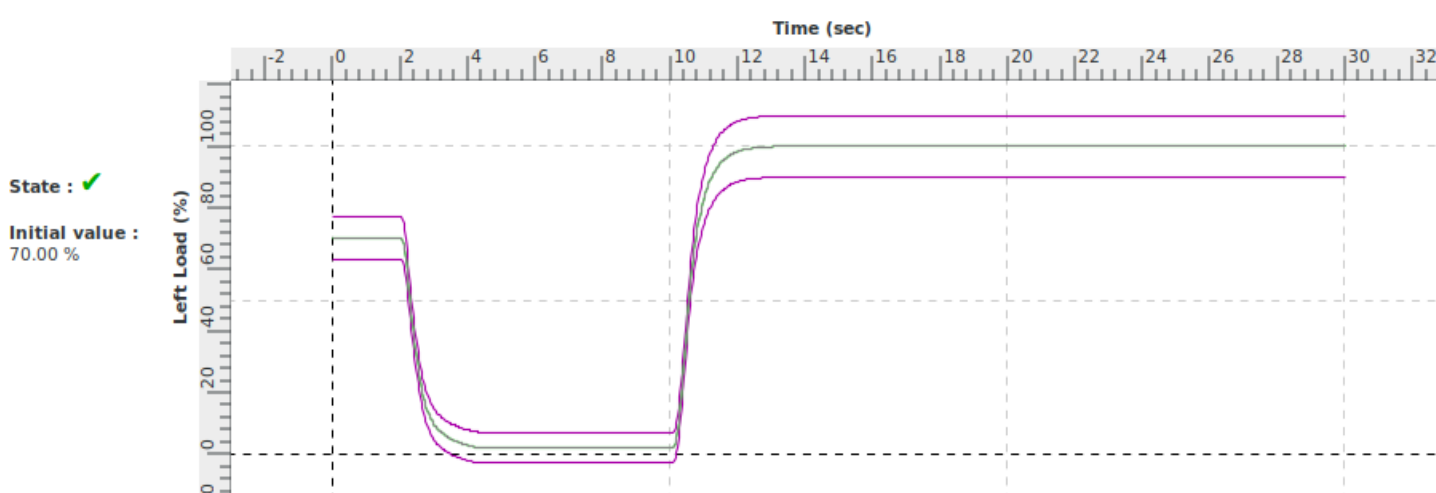
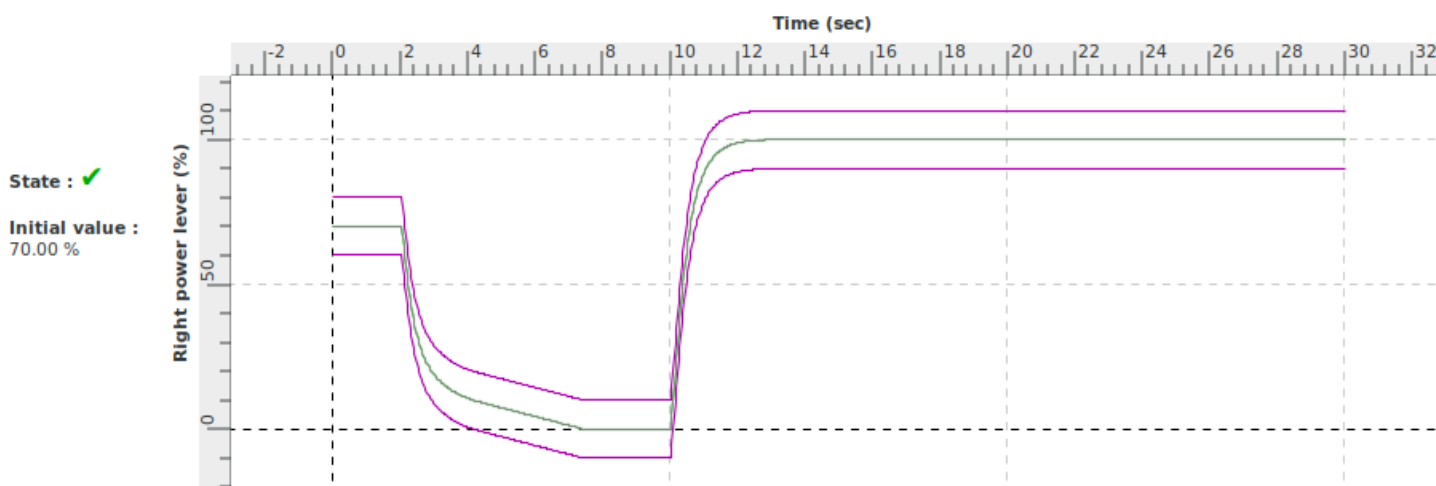
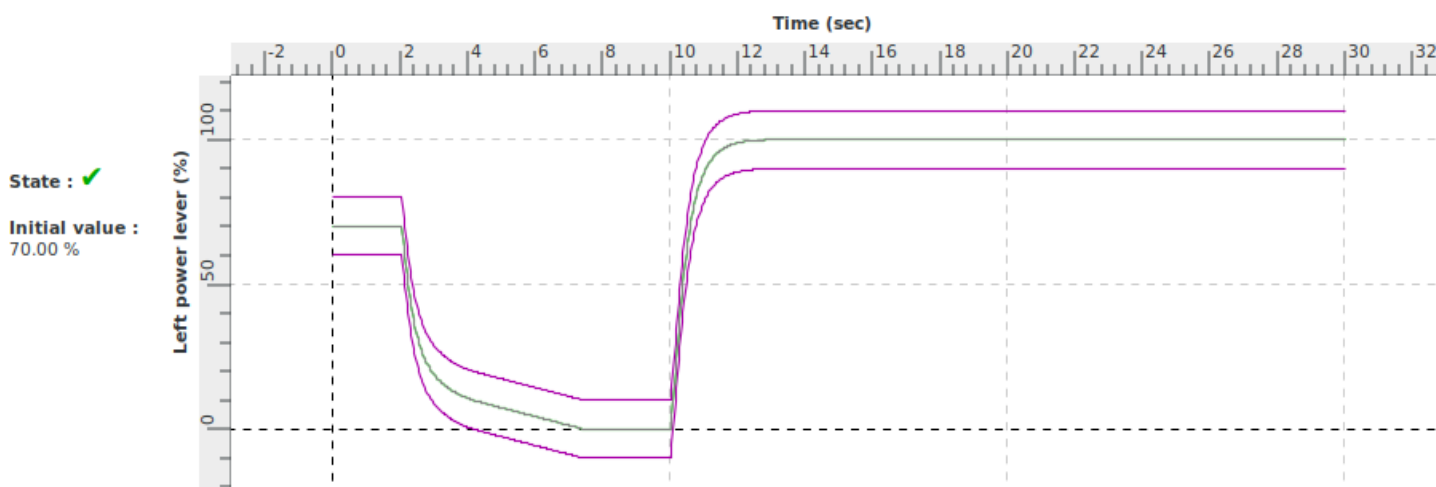
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	mode_stop	1.0	Set the aircraft to STOP or GO mode (0 means GO and 1 means STOP)
2.0	power_FLIGHT_IDLE	0.0	Set engine parameters to flight iddle power
10.0	power_GOAROUND_MAX	0.0	Set engine parameters to go-around power
30.0	Stop_Test	0.0	Stop the test procedure

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Log of Revision		
Rev. Nbr	Date	Reason for revision

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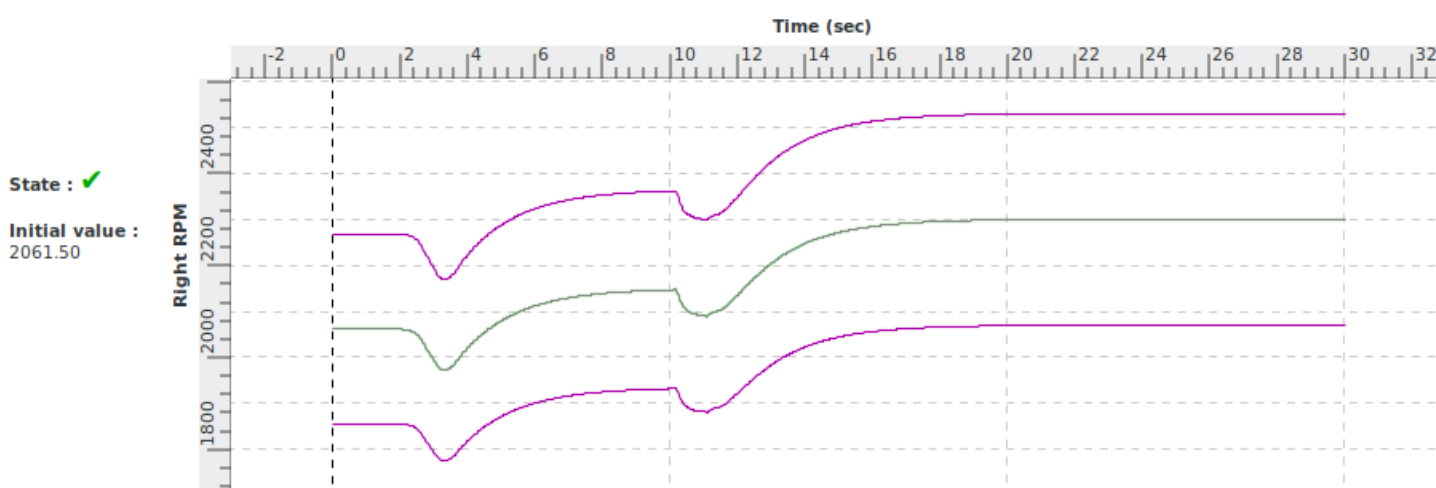
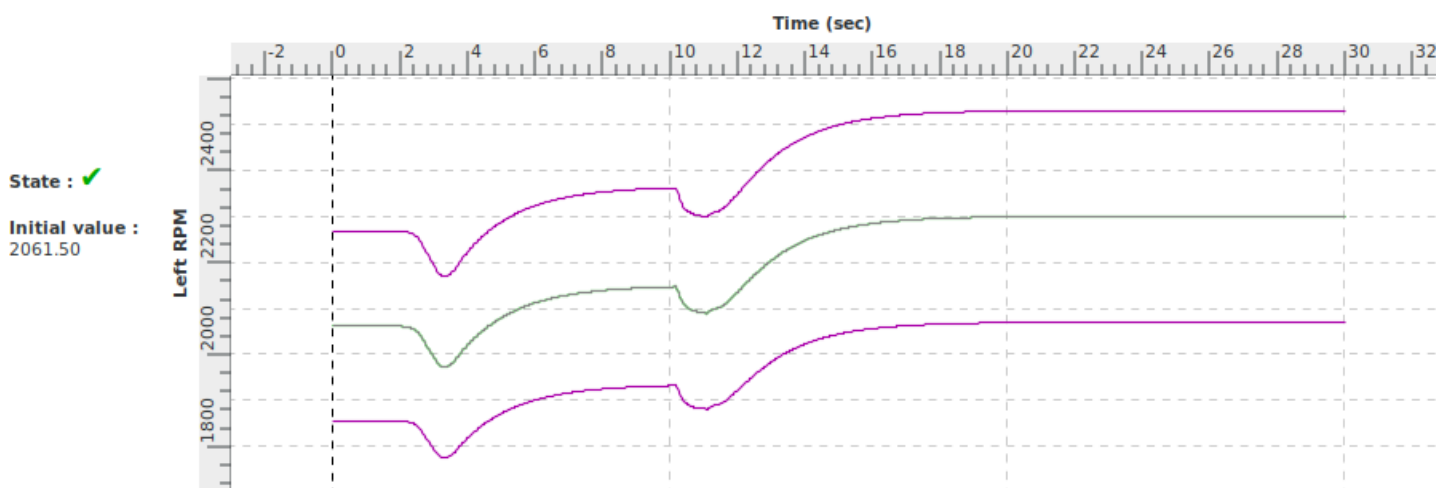
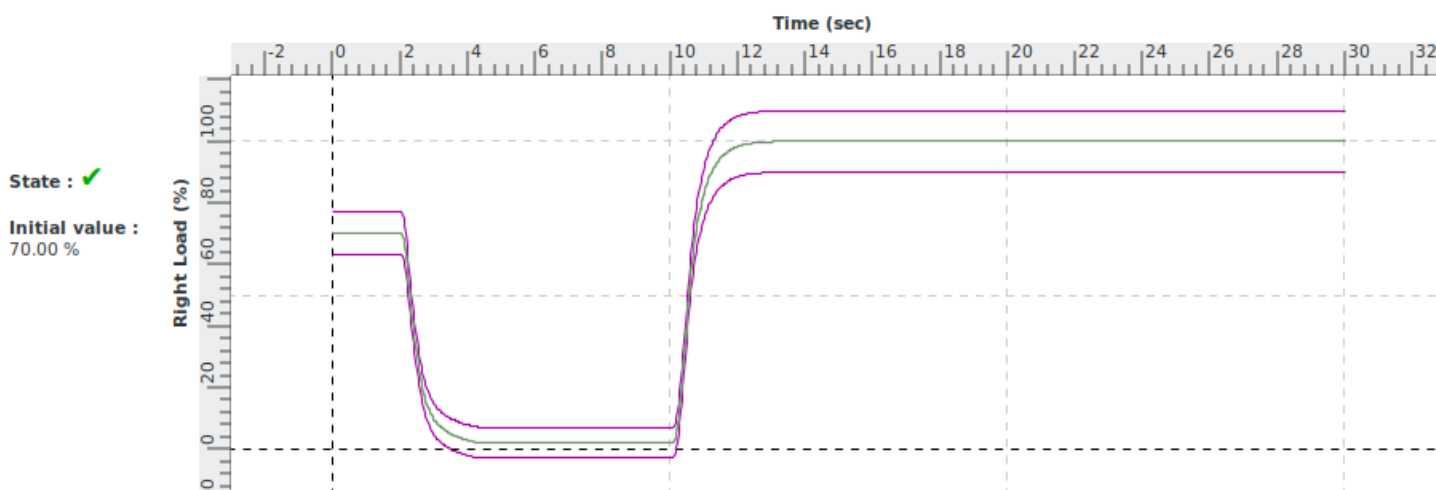
Legend :

green : results within tolerances
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VALIDATION TEST

Title	Rudder position vs force during cruise		
Id	2 a iii 2	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator pedal controller position vs. pedal controller force characteristics conform to the class of aeroplanes	Rudder Position / Pedal Force -100% / -353 N -50% / -175 N 0% / 0 N 50% / 176 N 100% / 353 N
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.a.iii.2	+/- 2.2.daN (5 Lbs) or +/- 10 % force

Demonstration procedure	At the given trimmed flight conditions, the control rudder is moved at slow rate over its full range. Control Force is plotted versus position and then compared to the aircraft reference data.
Manual test procedure	Airplane is trimmed at cruise conditions and put in freeze mode, then the pilot slowly moves pedals over its full travel in both directions using a dynamometer (results to be determined using the Table Sheet AL42_DA42VI_Tables_QTG_VoIII.xls).
Automatic test procedure	2 a iii 2

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Autopilot mode	AUTO_HEADING
Automatic AUTO_HEADING mode : Heading is maintained constant through roll and yaw trim and Vertical Speed through pitch trim.	

Initial parameters	CRUISE
Gross weight (kg) : 1900	Flaps lever position : 0
Balance (%) : 50	Gear lever position : 0
Altitude (ft) : 6000	Left Load (%) : 70
Vertical speed (ft/min) : 0	Right Load (%) : 70
IAS (kt) : 139 (free)	Left RPM : 2060
Heading (°) : 0	Right RPM : 2060
Bank (°) : 0 (free)	
Attitude (°) : 0	
Pedal Position (%) : 0	
Column Position (%) : 9	
Wheel Position (%) : 0	

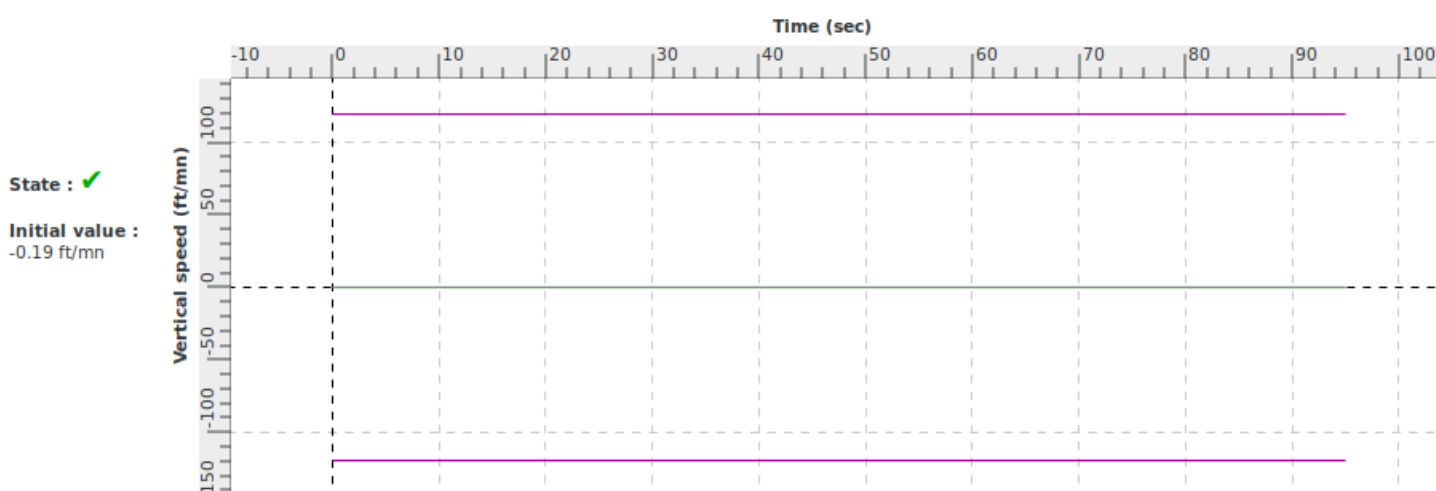
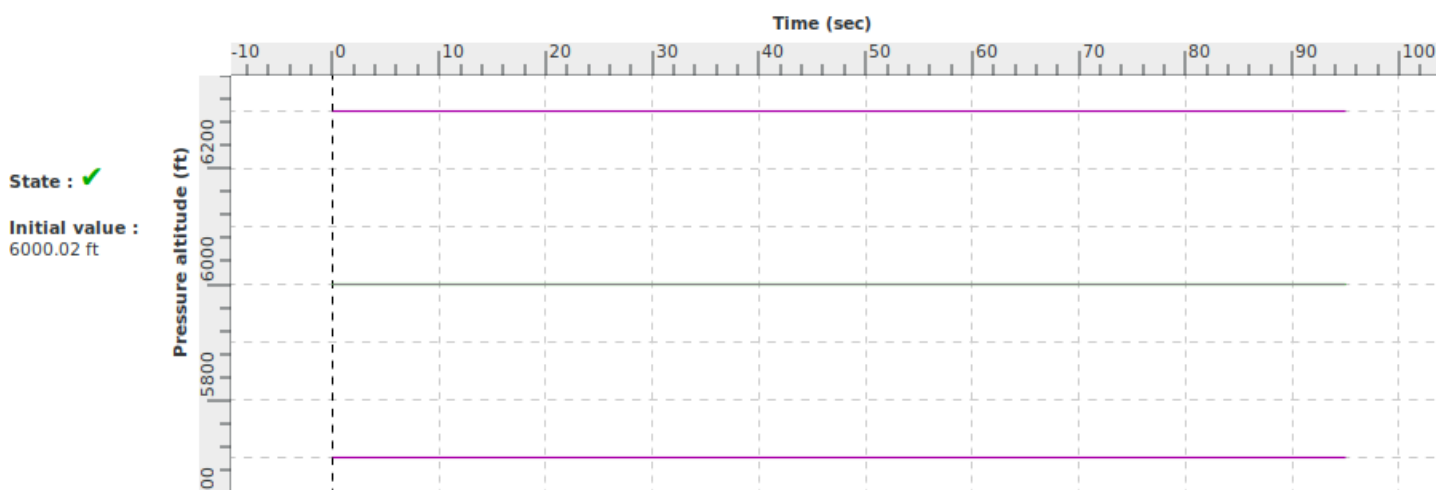
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	mode_stop	1.0	Set the aircraft to STOP or GO mode (0 means GO and 1 means STOP)
3.0	SetRudderCmdPalier	100.0	Send a step in the rudder govern
23.0	SetRudderCmdPalier	-100.0	Send a step in the rudder govern
63.5	SetRudderCmdPalier	0.0	Send a step in the rudder govern
95.0	Stop_Test	0.0	Stop the test procedure

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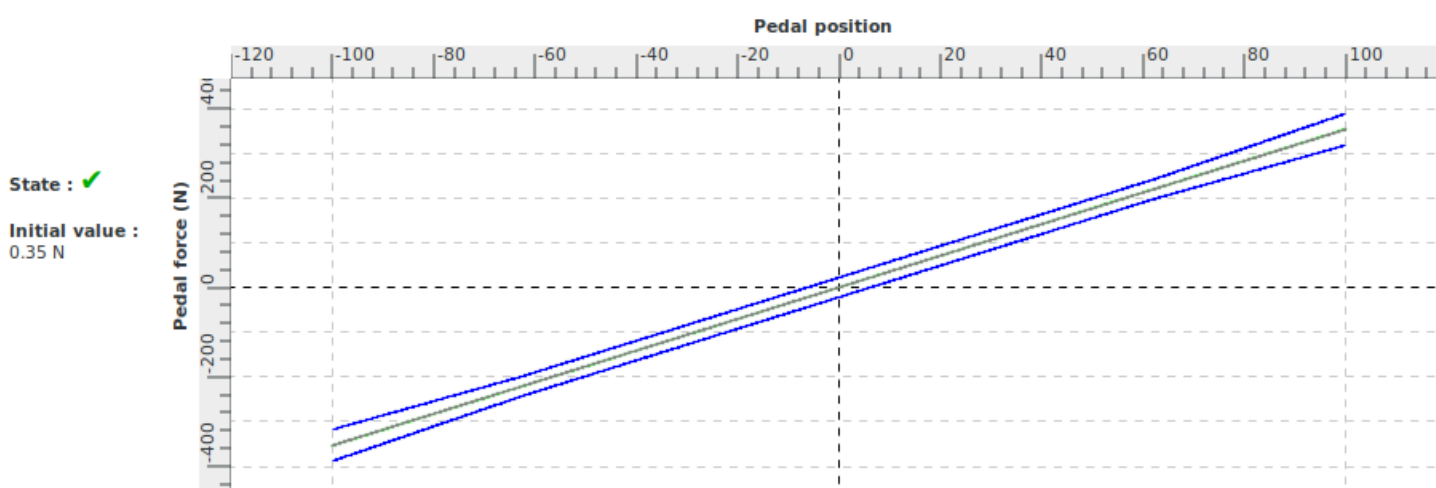
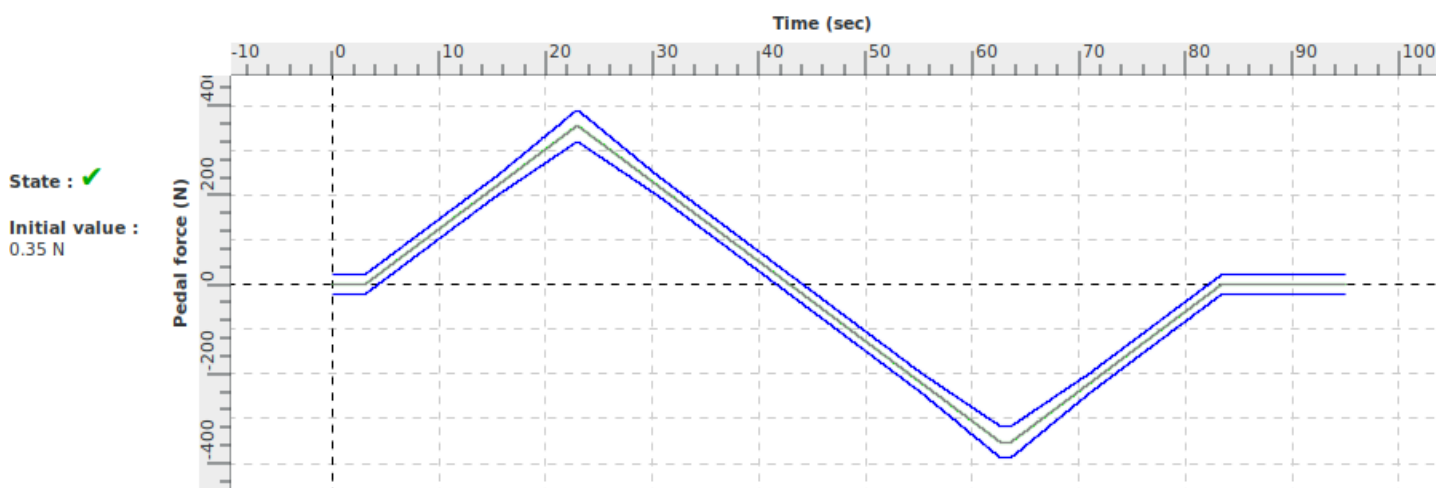
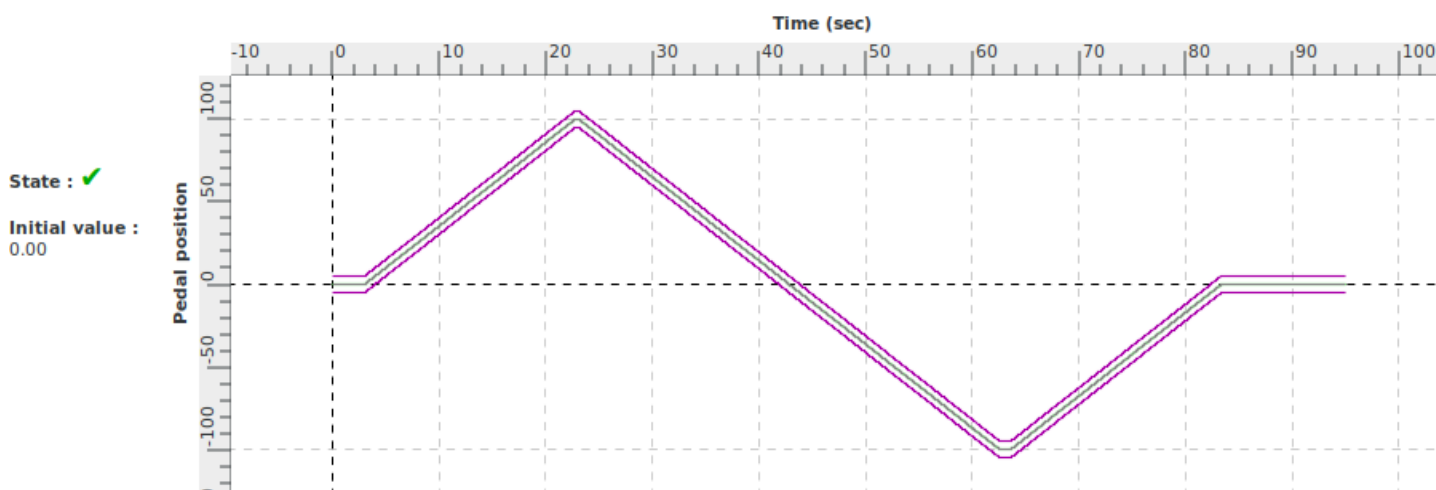
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VALIDATION TEST

Title	Flaps change dynamics during approach (extension)		
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Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator response to a flap extension during approach conforms to the class of aeroplanes	<p>Increments (from configuration change to 20s after):</p> <p>Airspeed: 0.4 Kts</p> <p>Pitch Angle: -2 deg</p> <p>Altitude: -220 ft</p>
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.ii.1.b	<p>Airspeed +/- 3 kt</p> <p>Altitude +/- 100 ft</p> <p>Pitch +/- 1.5° or 20%</p>

Demonstration procedure	From steady approach initial conditions, flaps are extended.
Manual test procedure	The aircraft is trimmed at approach flight condition. Then, the pilot sets the flaps from position 1 to 2, and allows the airplane to respond freely.
Automatic test procedure	2 c ii 1 b

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Title	Flaps change dynamics during approach (extension)		
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Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	DESCENT_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : -450 (free) IAS (kt) : 90 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : -2 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 30 Right Load (%) : 30 Left RPM : 1930 Right RPM : 1930

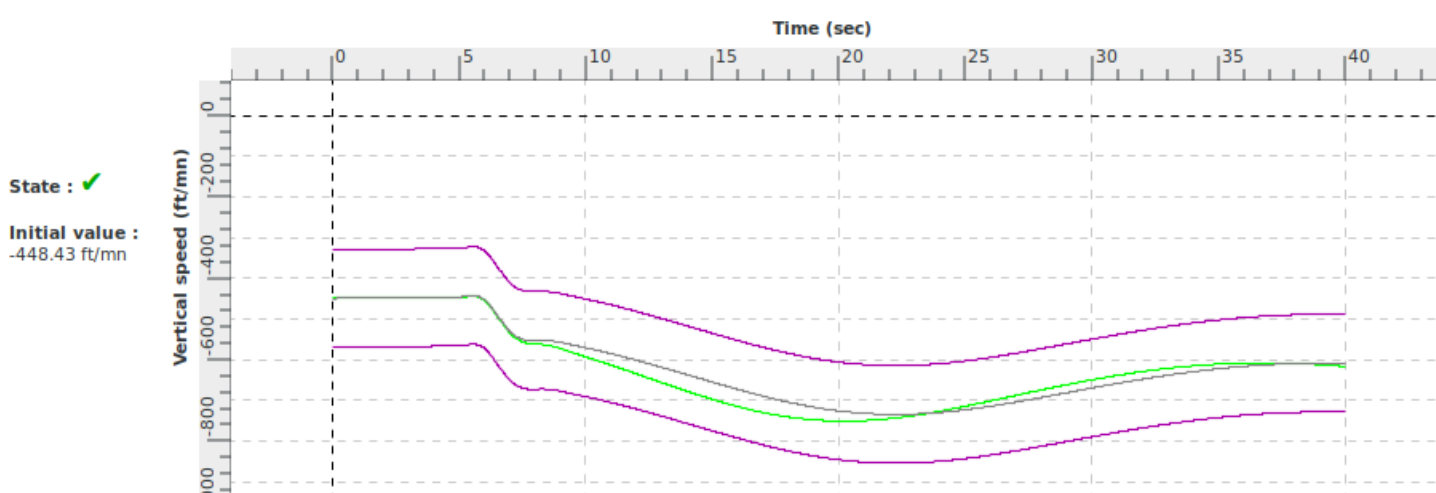
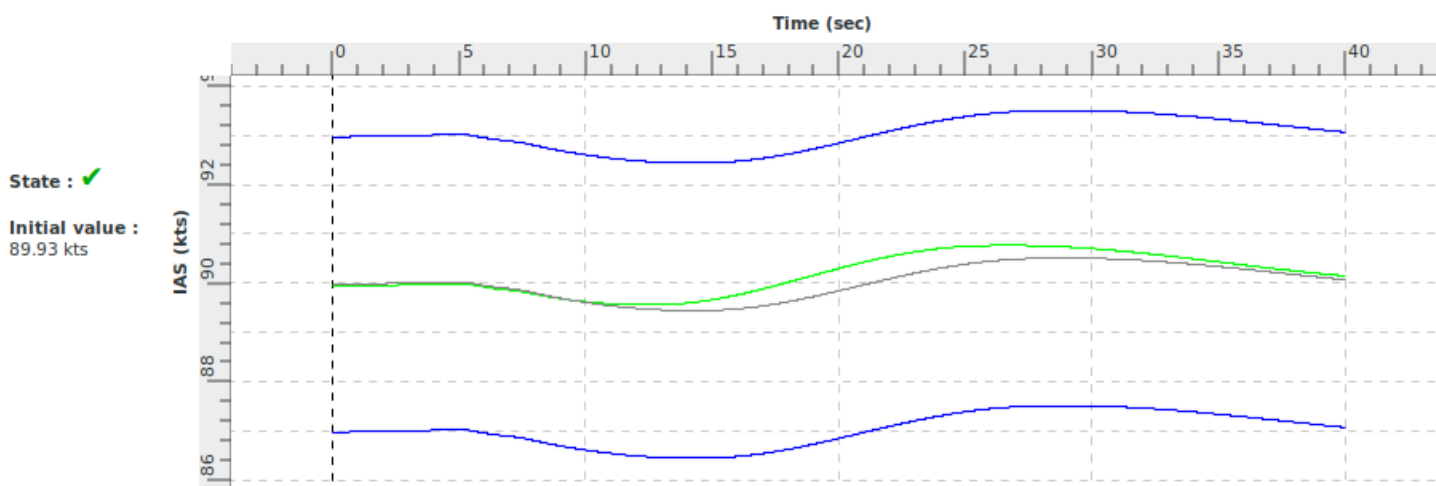
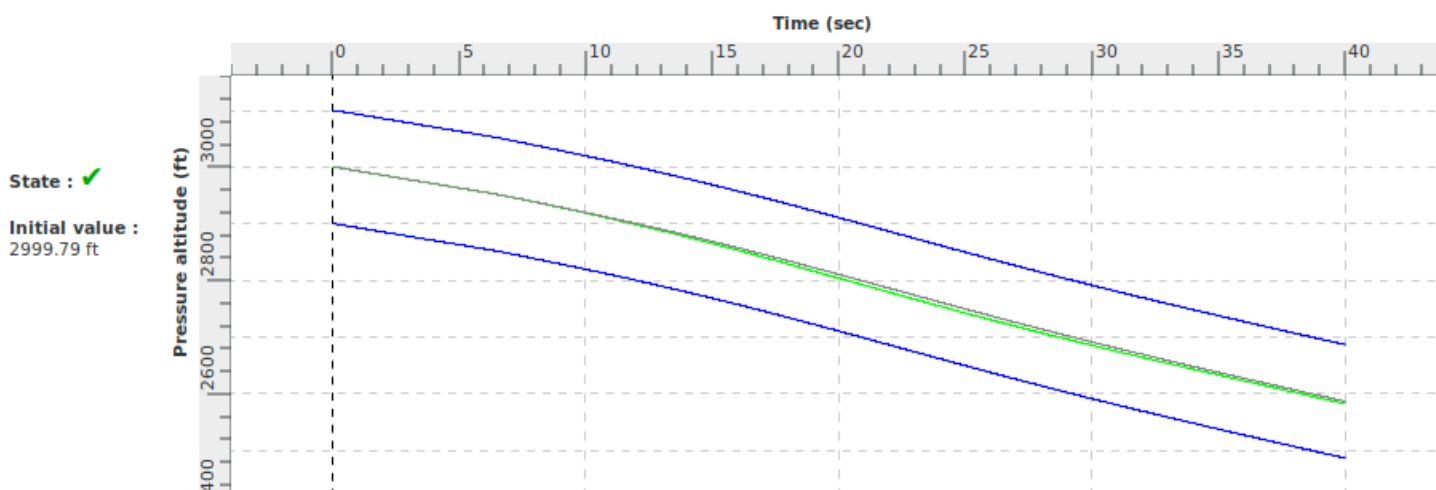
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_att	0.0	disable QTG Autopilot in attitude axis
0.0	deconnectionPA_roll	0.0	disable QTG Autopilot in roll axis
0.0	deconnectionPA_rudder	0.0	disable QTG Autopilot in yaw axis
5.0	Flaps	2.0	Move the flaps lever to the desired position
40.0	Stop_Test	0.0	Stop the test procedure

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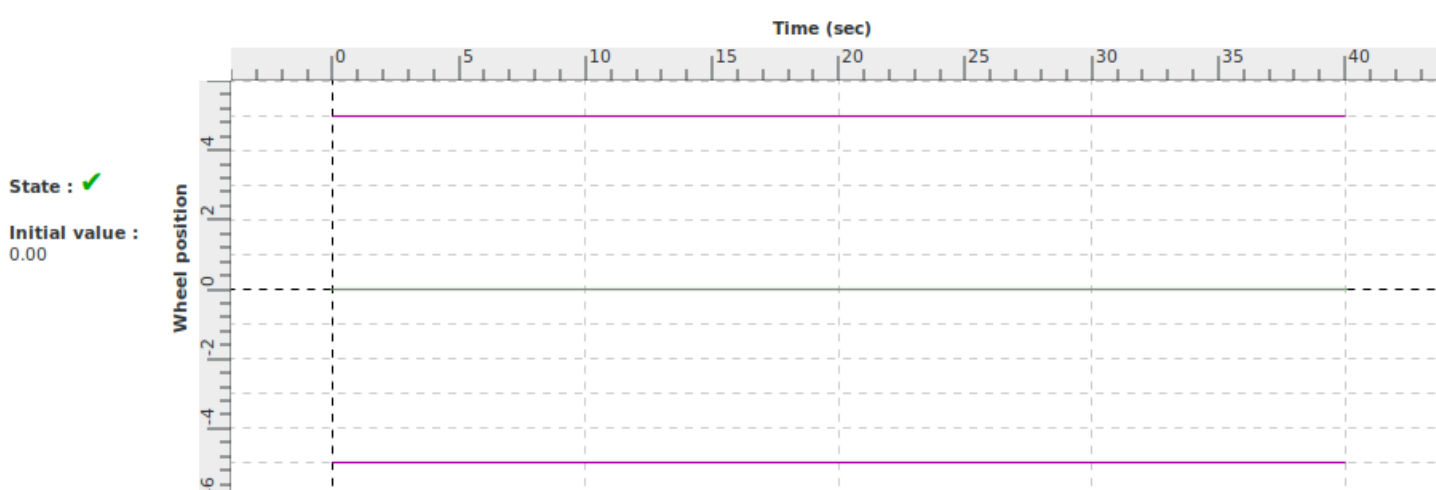
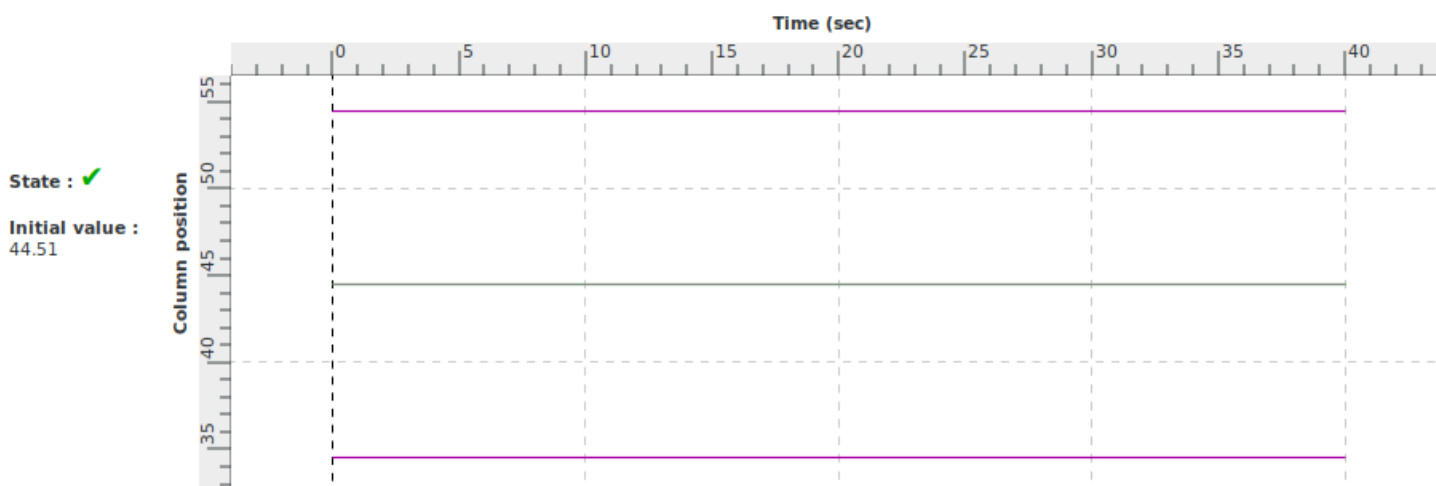
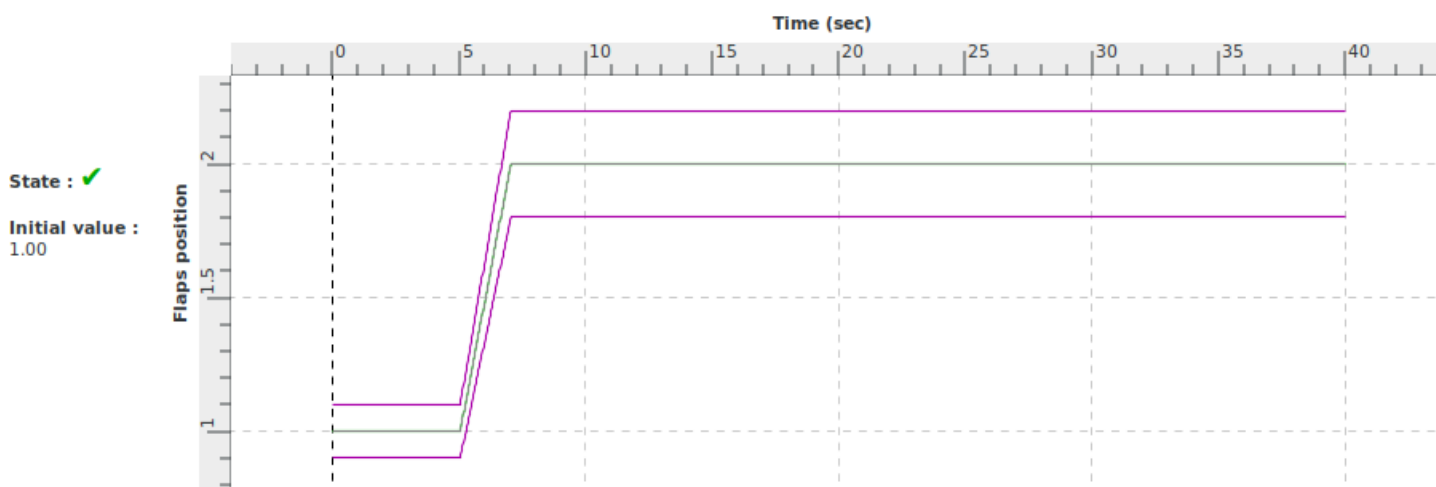
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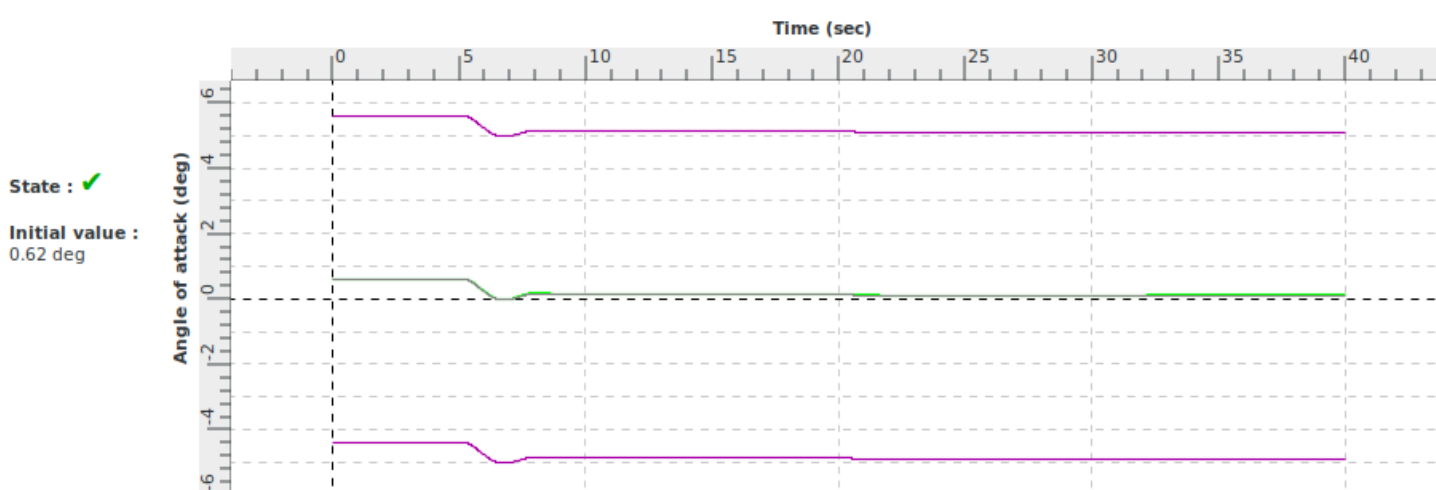
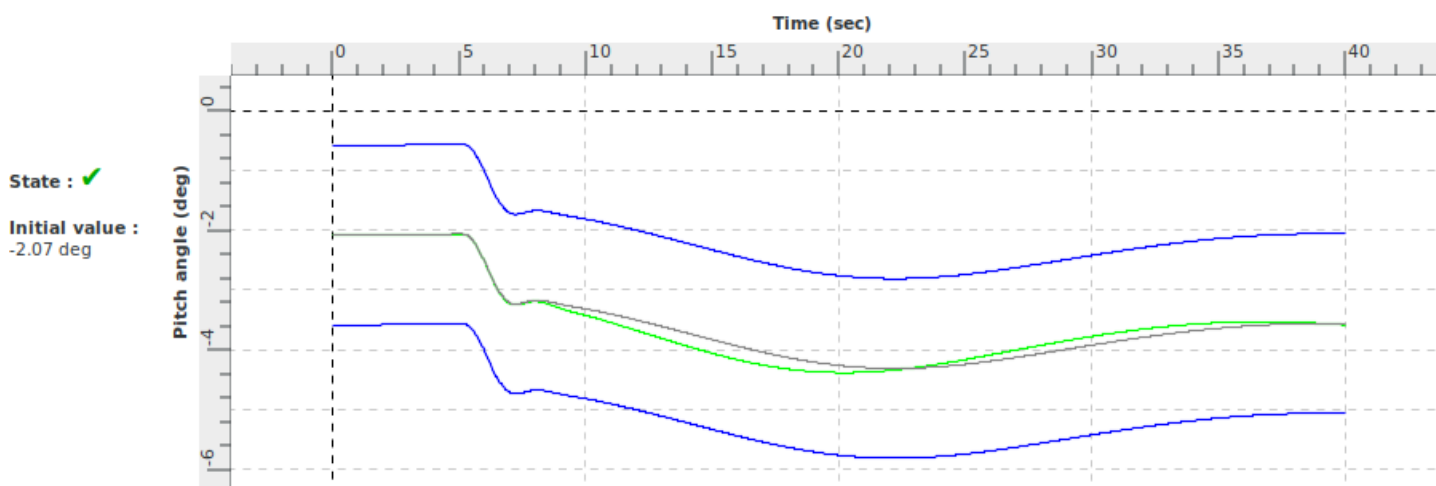
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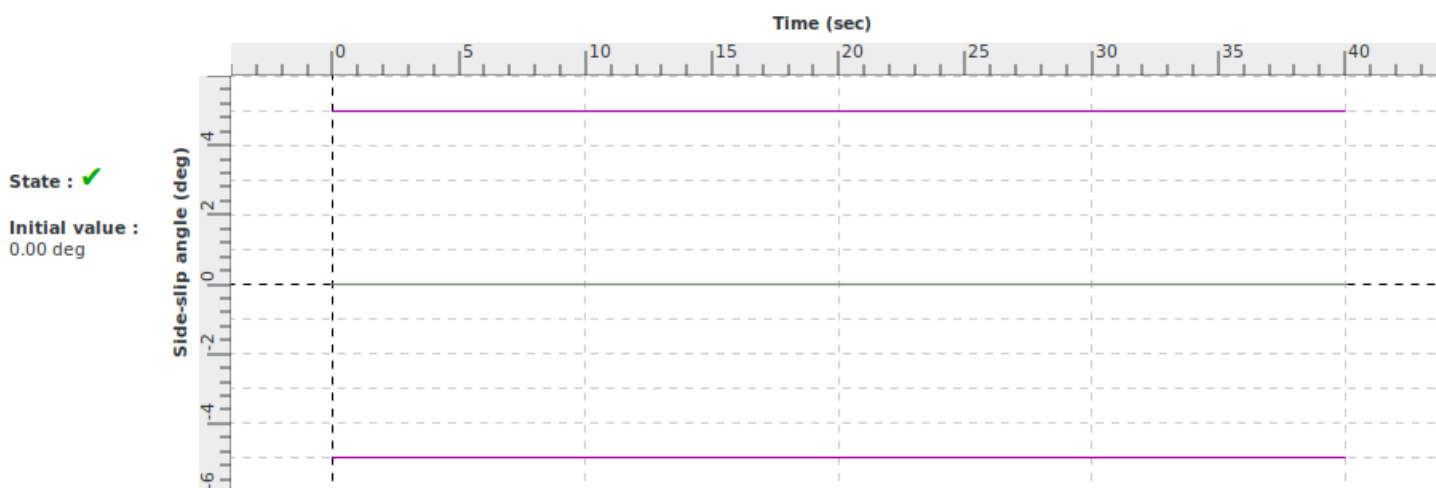
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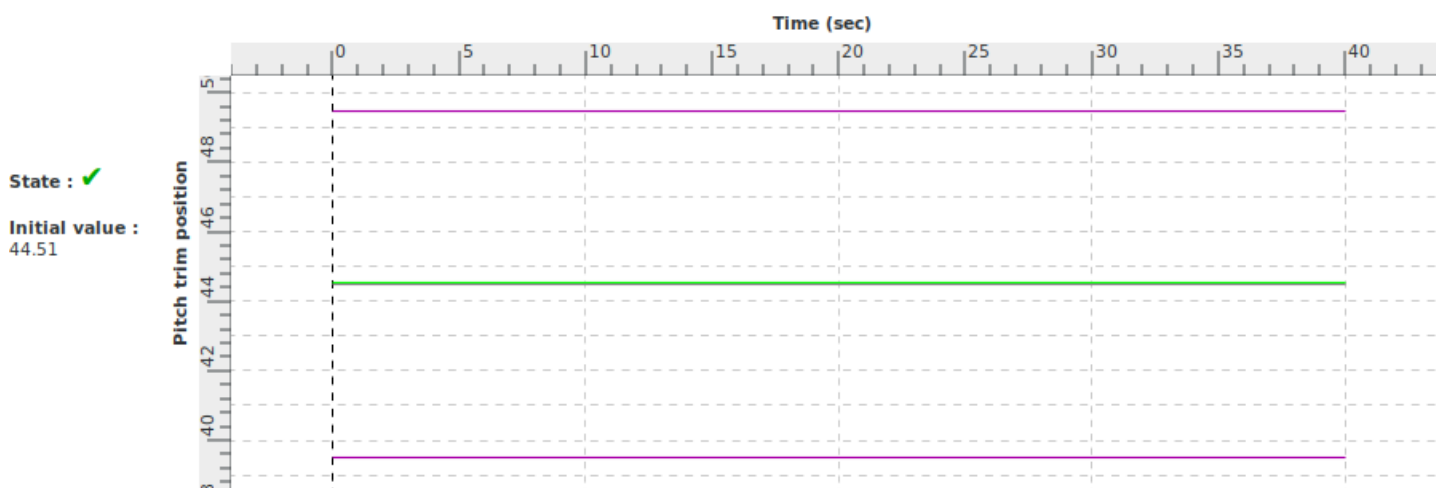
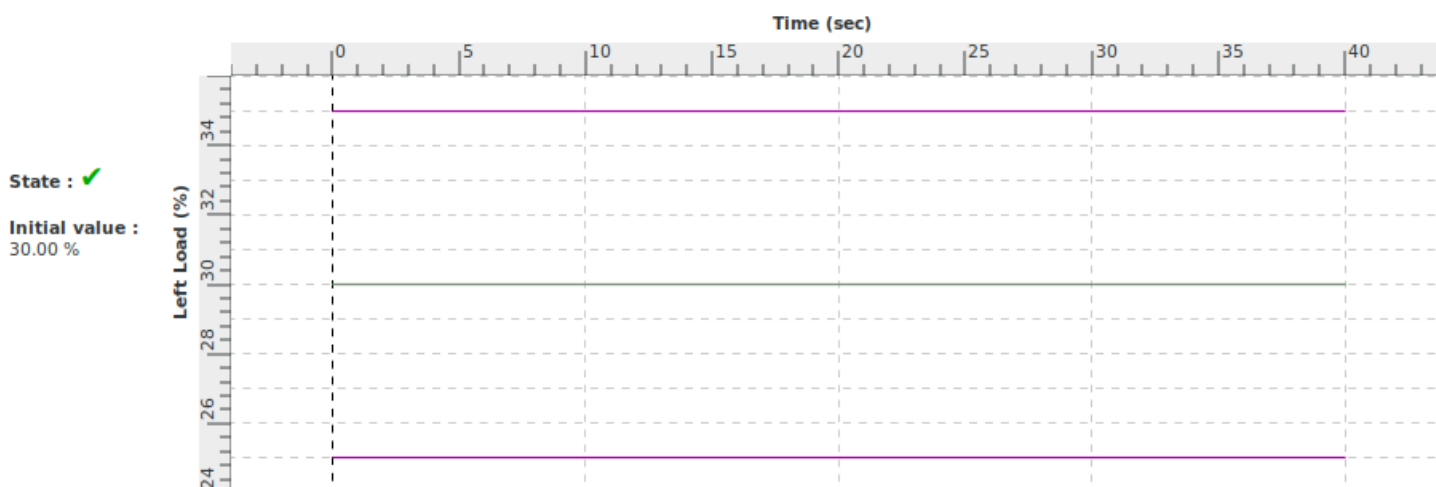
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Title	Gear change dynamics during approach (extension)		
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Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the dynamics response to a landing gear extension during approach conforms to the class of aeroplanes	<p>Increments (from configuration change to 20s after):</p> <p>Airspeed: +2 Kts</p> <p>Pitch Angle: -0.3 deg</p> <p>Altitude: -60 ft</p>
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.iv.1.b	<p>Airspeed +/- 3 kt</p> <p>Altitude +/- 100 ft</p> <p>Pitch +/- 2° or +/- 20%</p>

Demonstration procedure	From steady approach initial conditions, gear is extended.
Manual test procedure	The aircraft is trimmed at approach flight condition. Then, the pilot releases the controls and sets the gear up (0) to down (1), and allows the airplane to respond freely.
Automatic test procedure	2 c iv 1 b

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Title	Gear change dynamics during approach (extension)		
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Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	HOLD_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 0 (free) IAS (kt) : 96 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 37 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 0 Left Load (%) : 55 Right Load (%) : 55 Left RPM : 2040 Right RPM : 2040

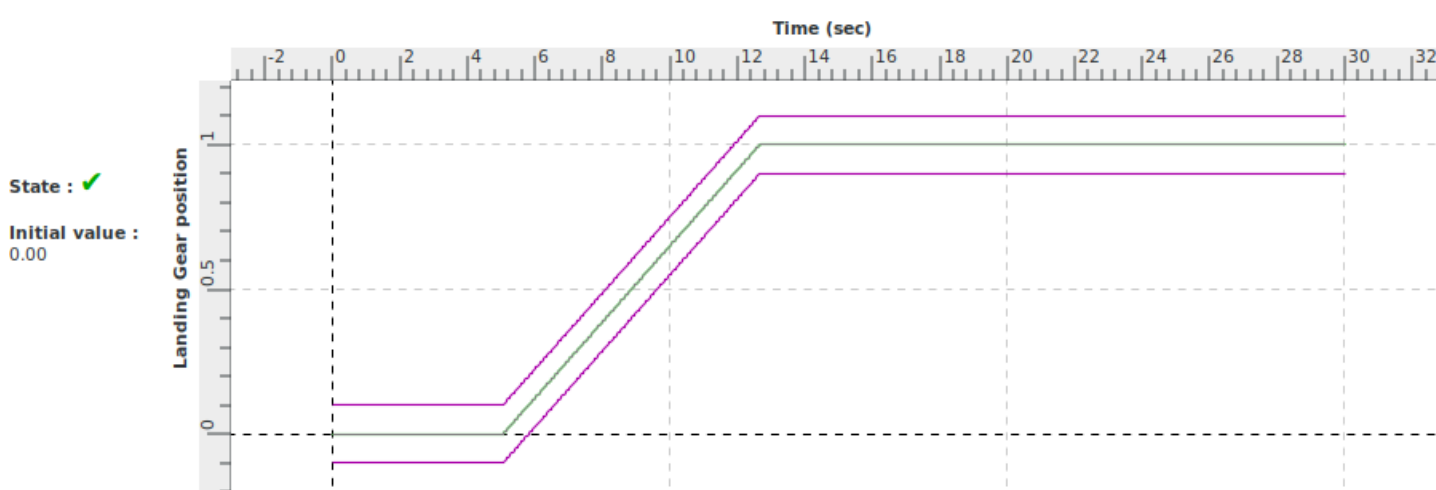
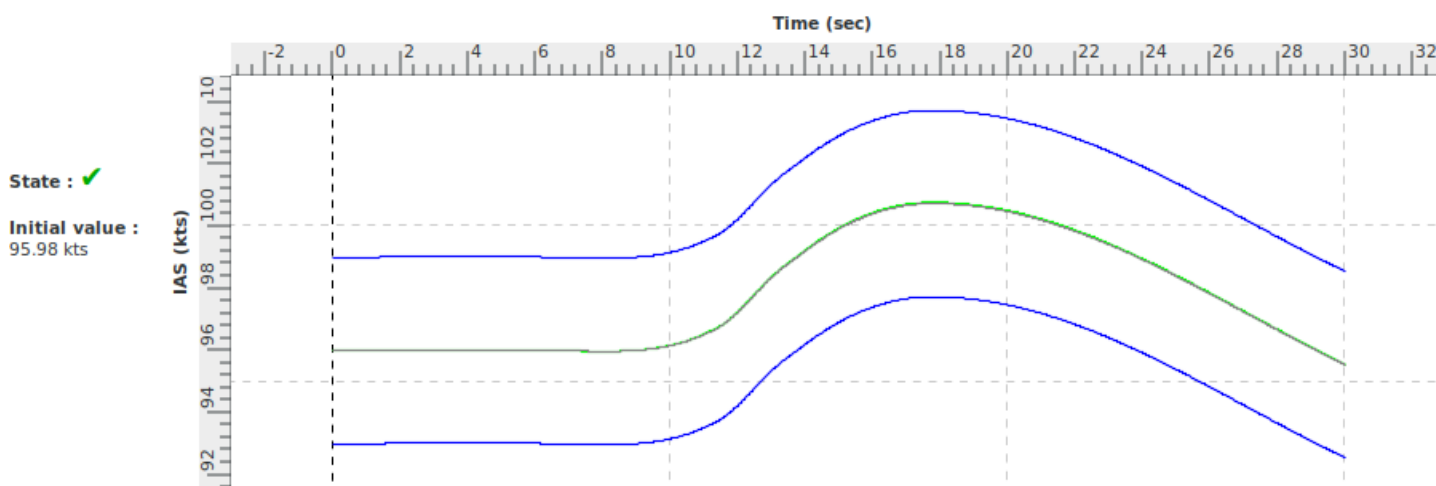
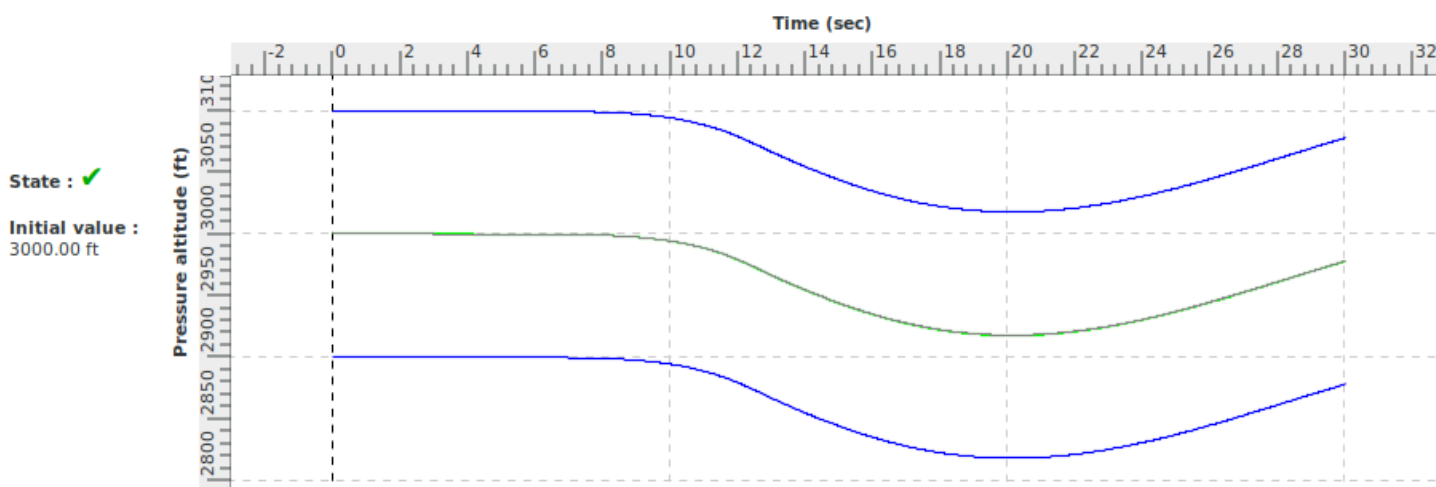
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_att	0.0	disable QTG Autopilot in attitude axis
0.0	deconnectionPA_roll	0.0	disable QTG Autopilot in roll axis
0.0	deconnectionPA_rudder	0.0	disable QTG Autopilot in yaw axis
5.0	Gear	1.0	Move the gear lever to the desired position
30.0	Stop_Test	0.0	Stop the test procedure

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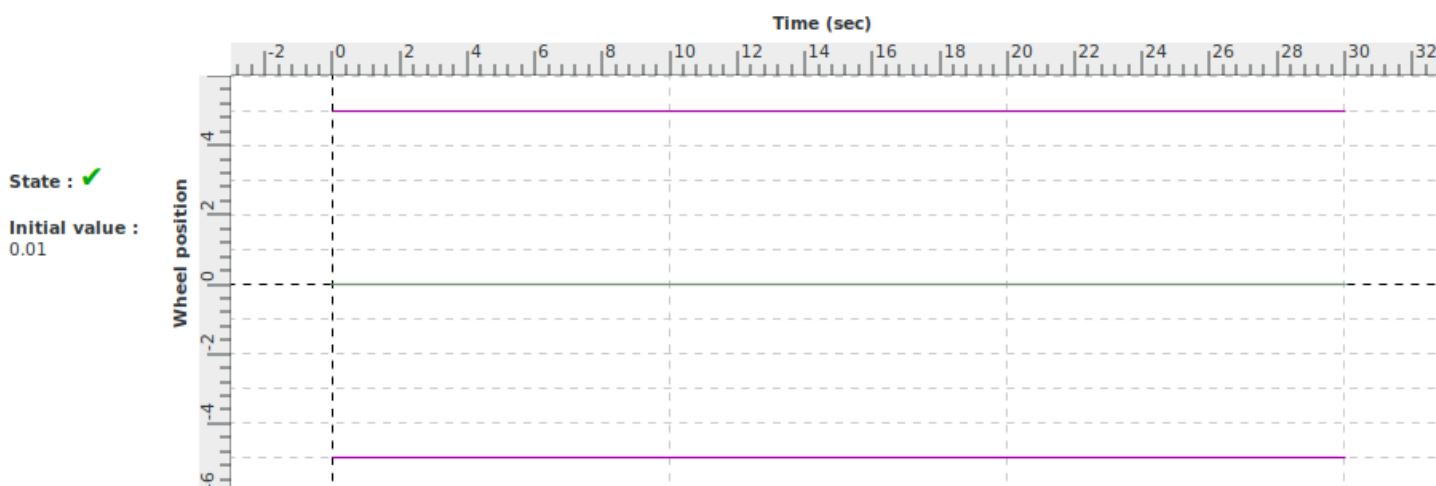
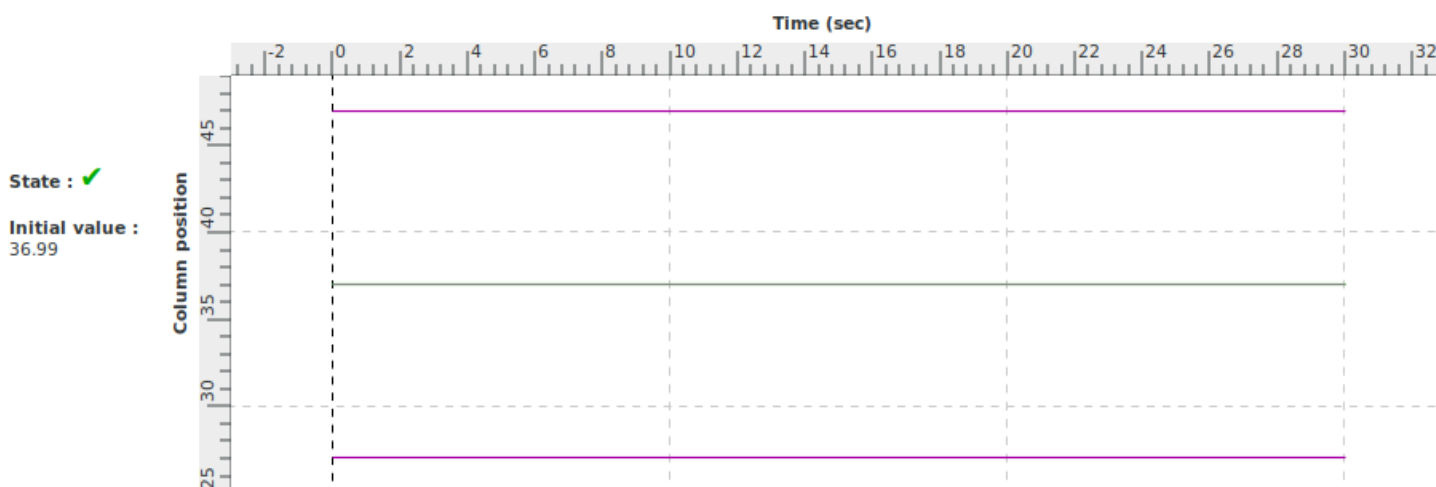
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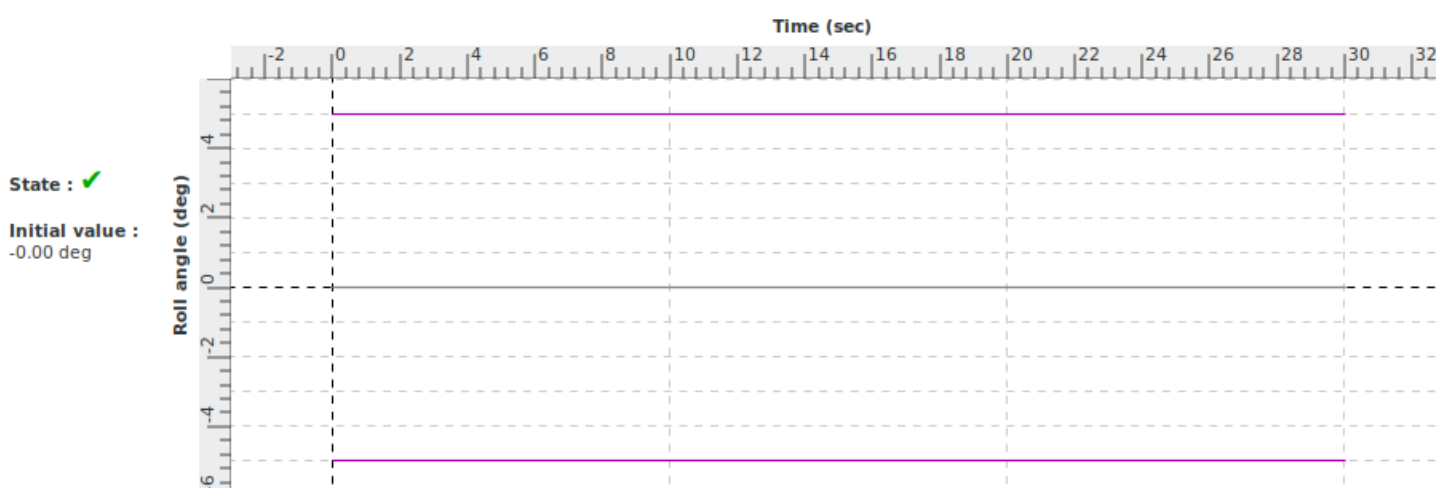
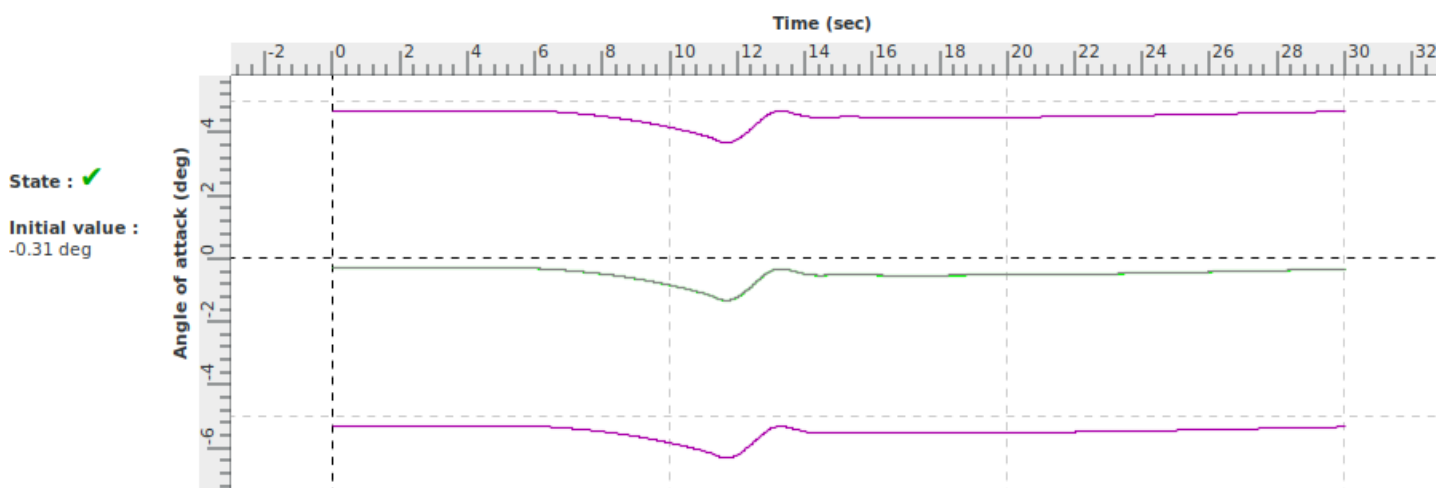
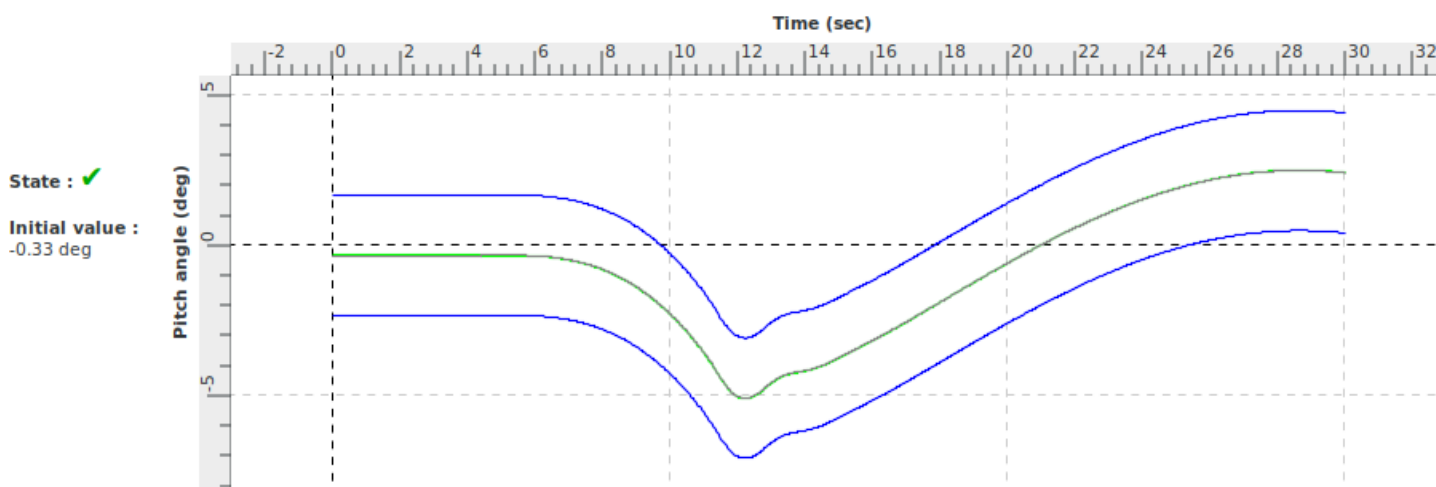
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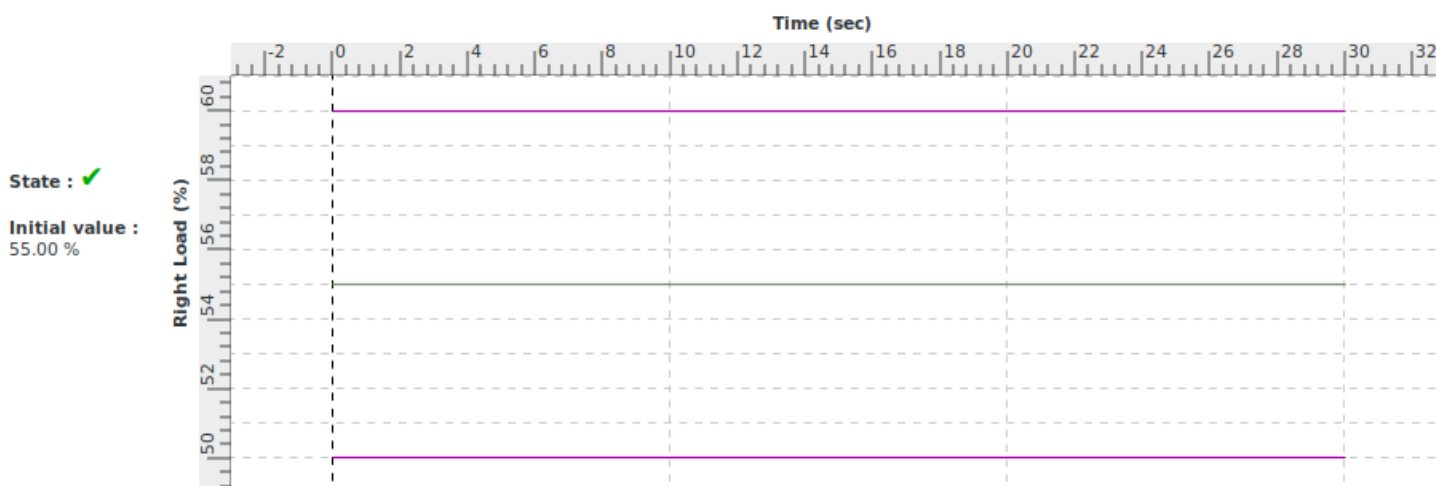
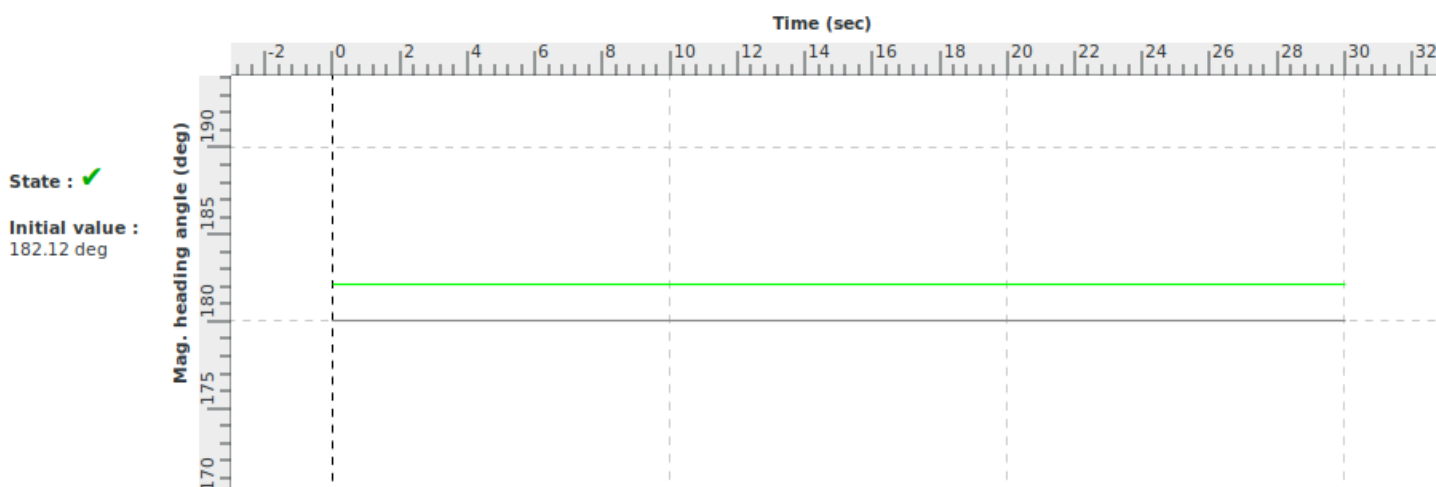
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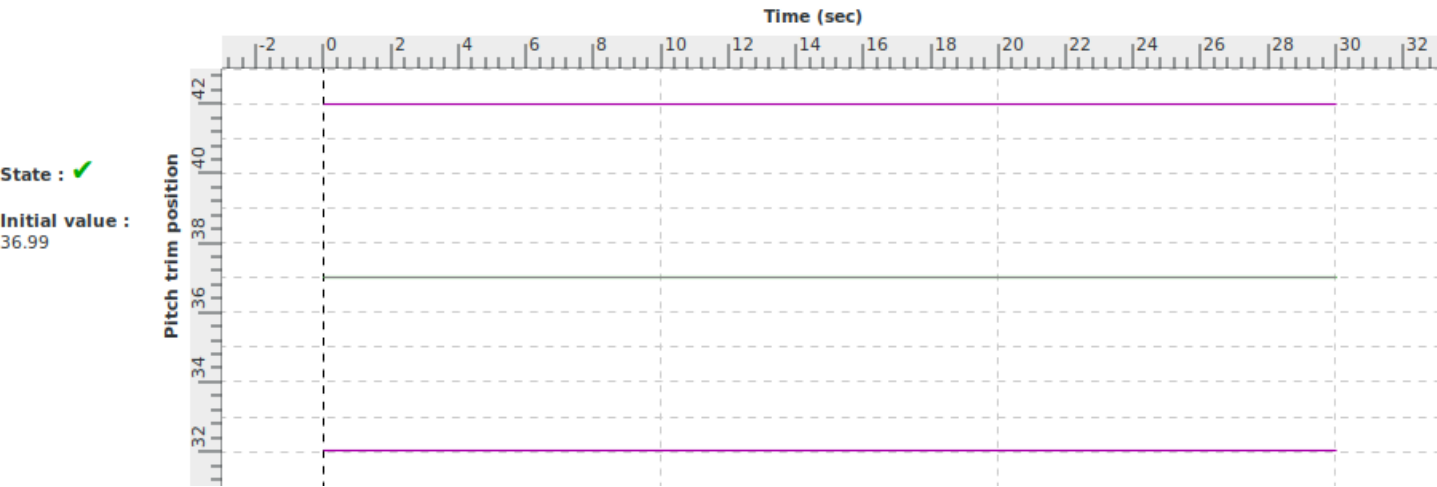
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VALIDATION TEST

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator inter-relationships of lift, drag, thrust and longitudinal trim during approach conforms to the class of aeroplanes	Pitch control: +44 % Pitch angle: -2 deg Load: 30 %
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.v.b	+/- 2° Pitch control (equivalent 16%) +/- 2° Pitch angle +/- 5% Power

Demonstration procedure	The aeroplane is established in steady approach. Tolerance: 30° is representative of the maximum elevator deflection observed on this class of aeroplane i.e 1° of elevator deflection corresponds to 6.7% of column deflection.
Manual test procedure	In ISA and approach conditions, the pilot trims the airplane for the approach, records the pitch control position, pitch angle, airspeed and power.
Automatic test procedure	2 c v b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	DESCENT_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : -450 IAS (kt) : 90 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : -2 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 30 Right Load (%) : 30 Left RPM : 1930 Right RPM : 1930

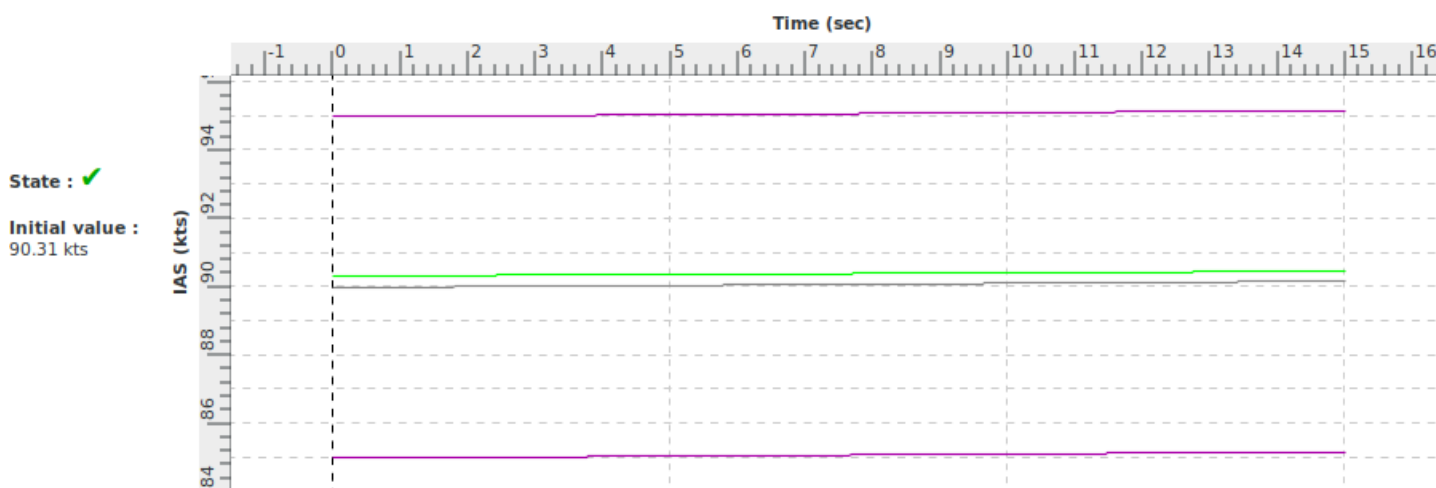
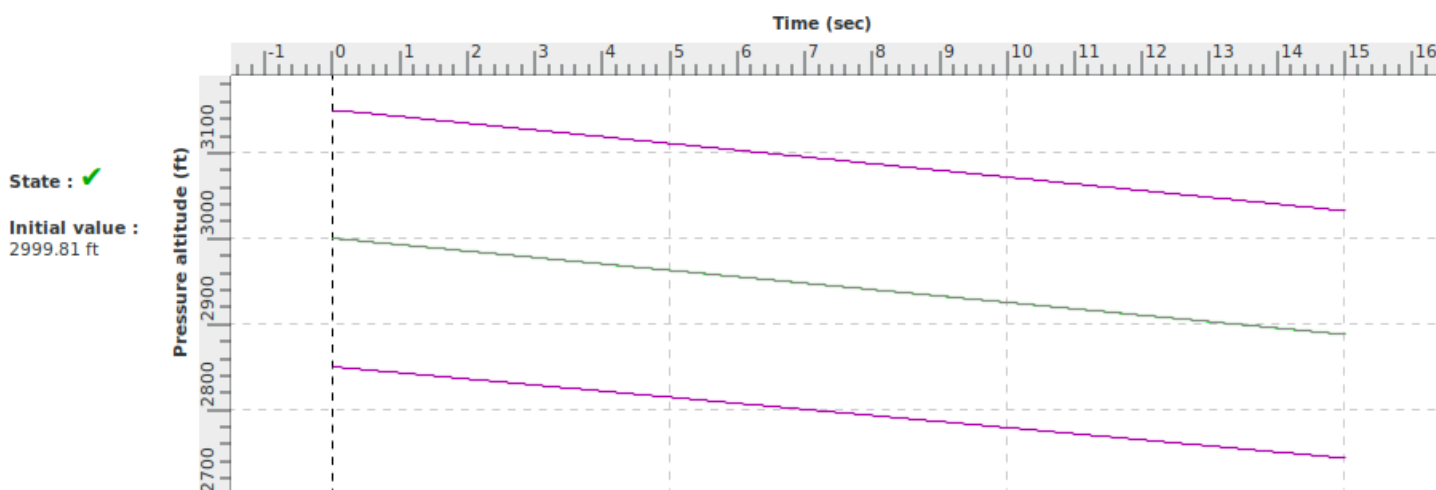
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
15.0	Stop_Test	0.0	Stop the test procedure

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



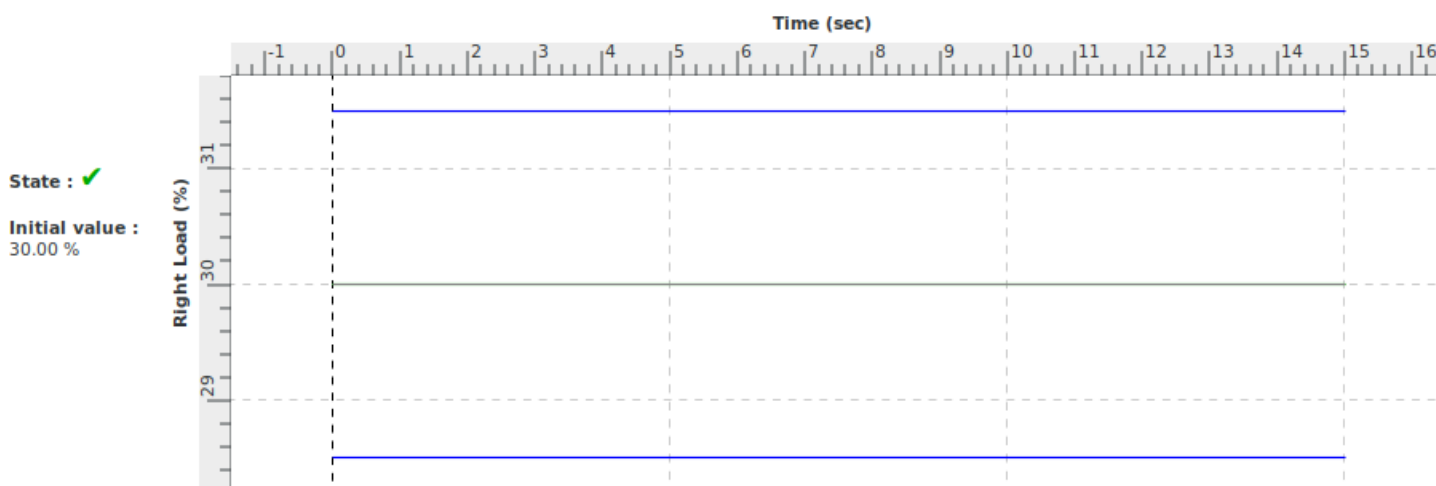
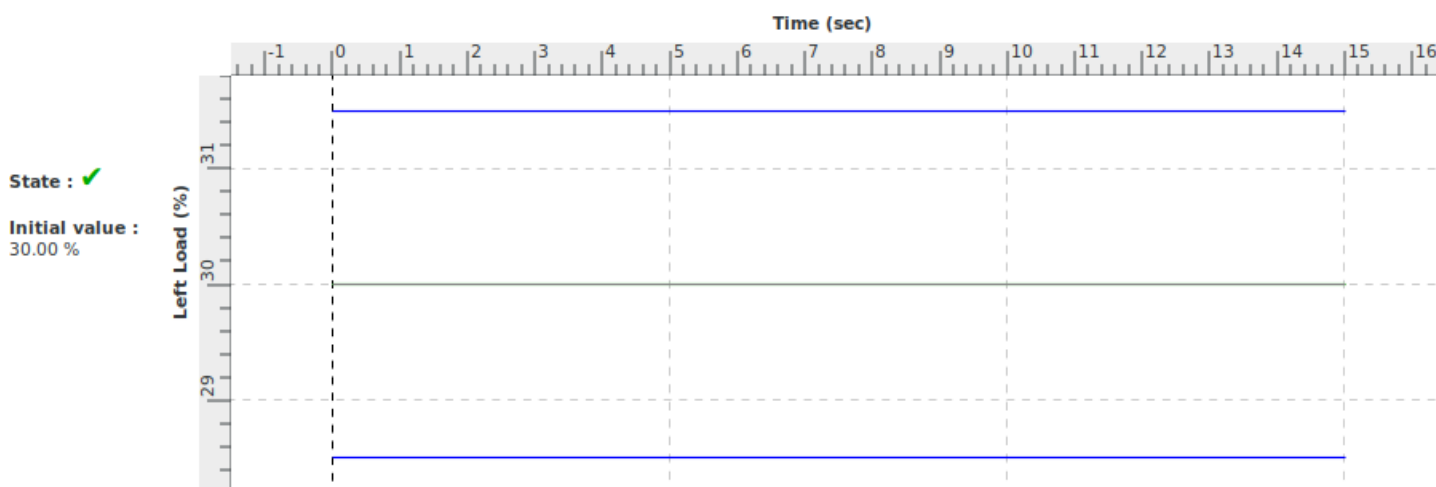
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



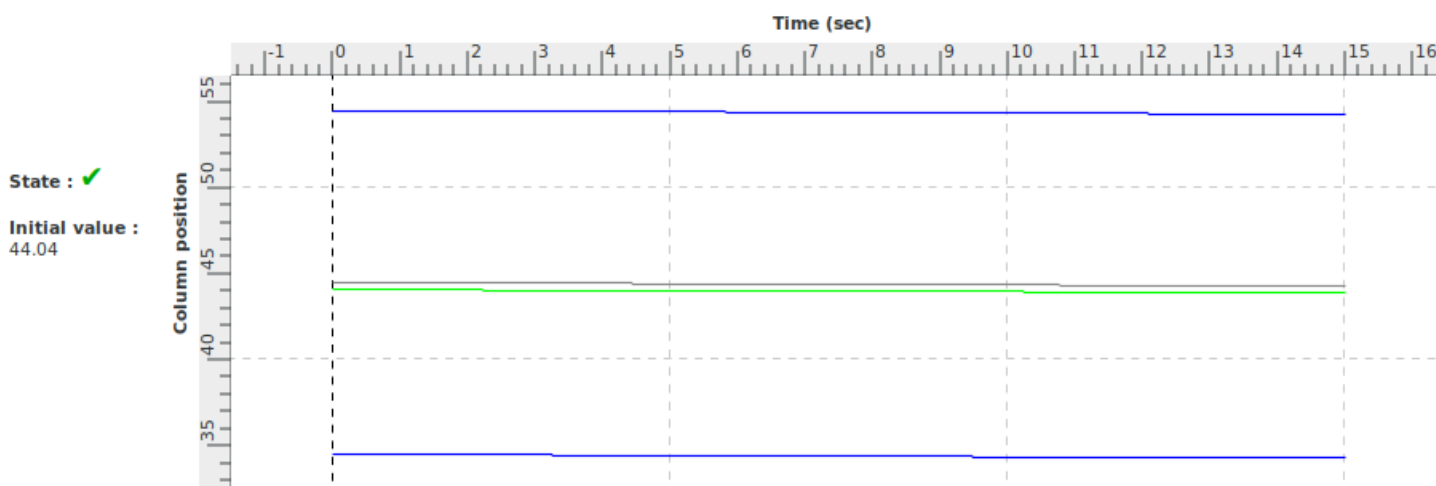
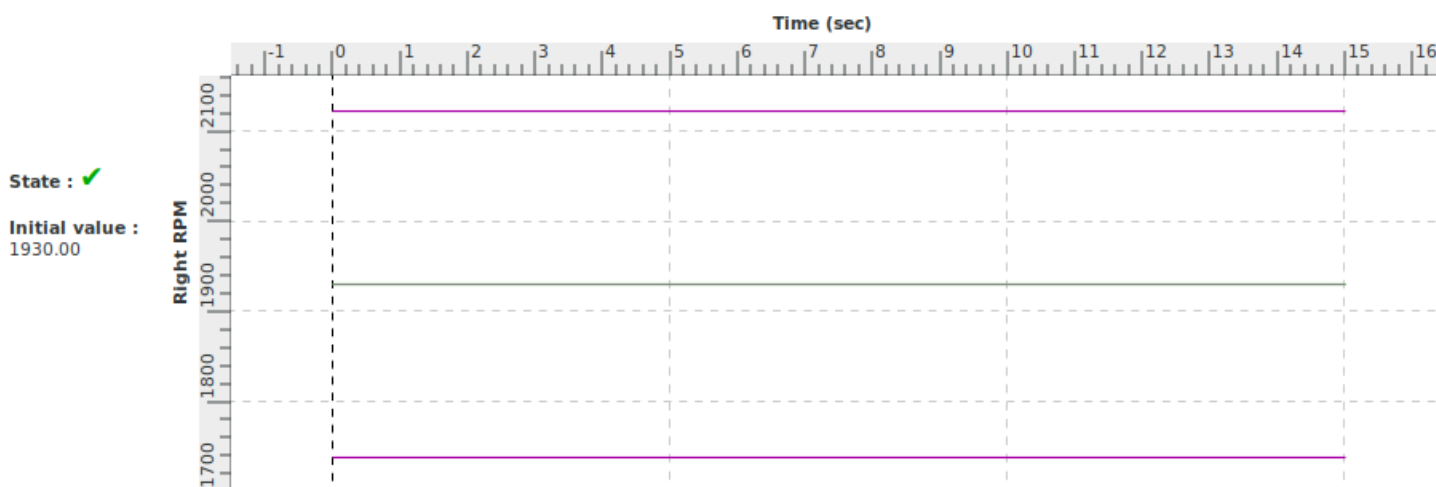
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blue : tolerances

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violet : tolerances Alsim

grey : master

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



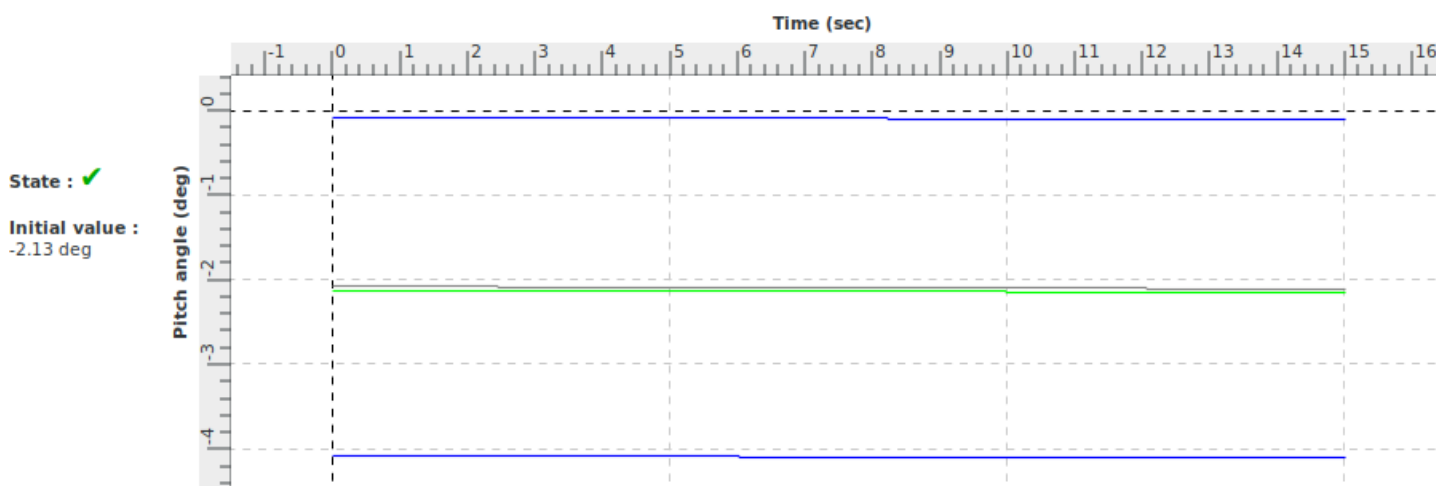
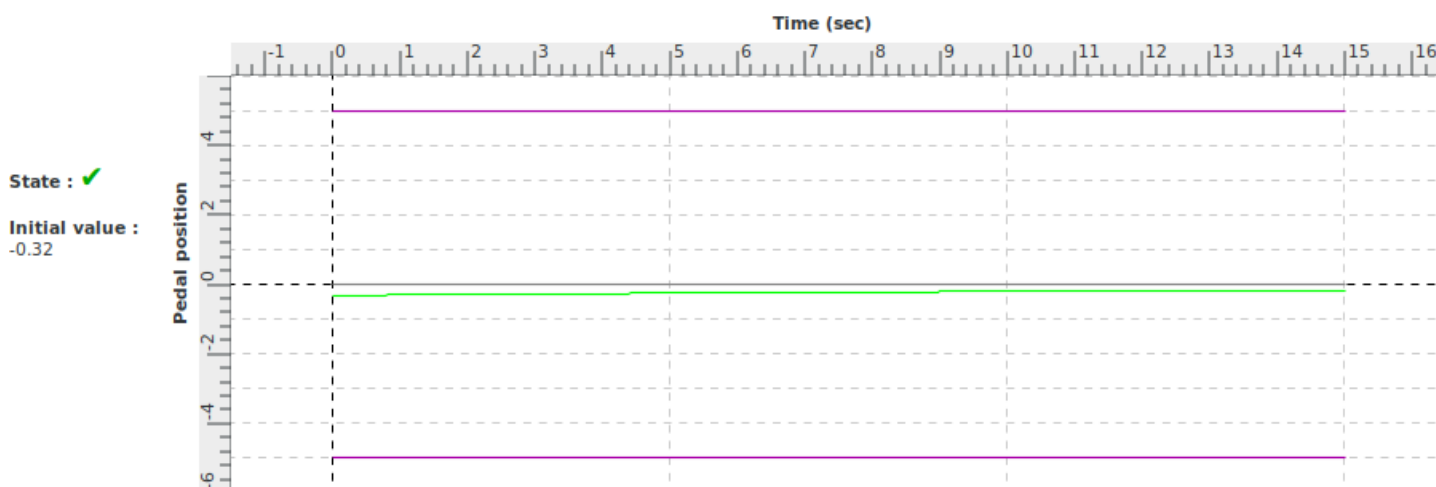
Legend :

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red : results out of tolerances
violet : tolerances Alsिम

grey : master

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



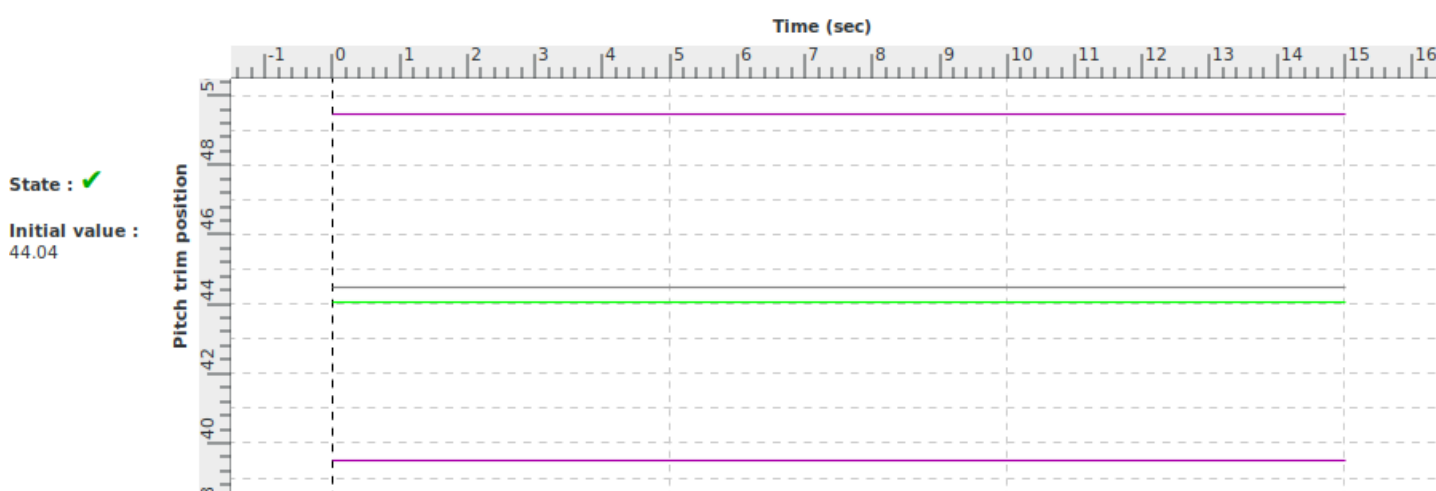
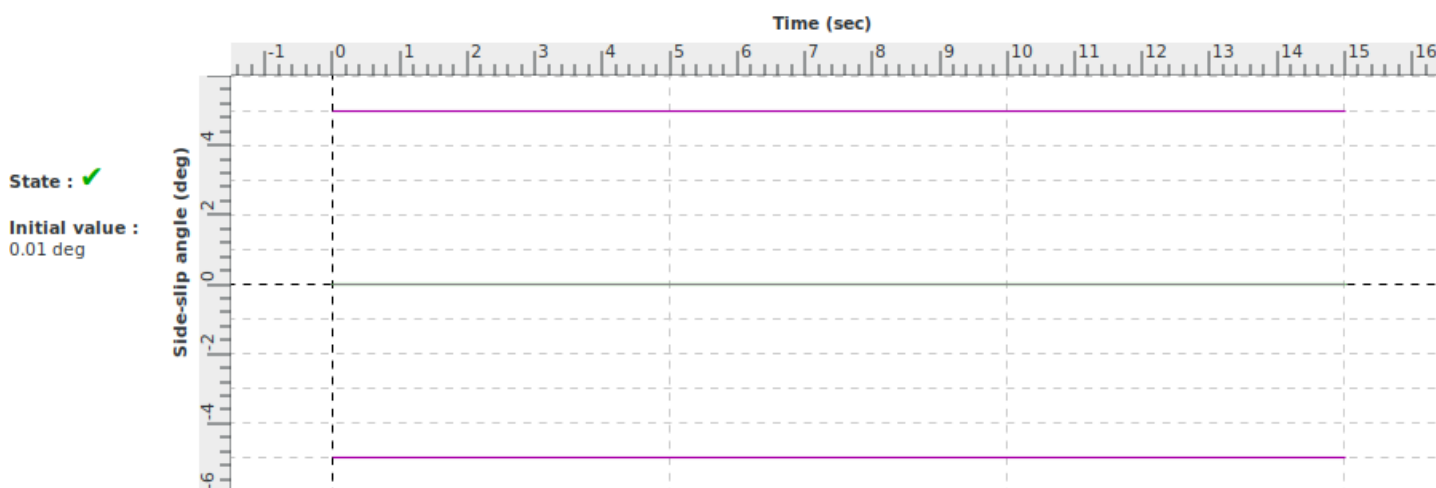
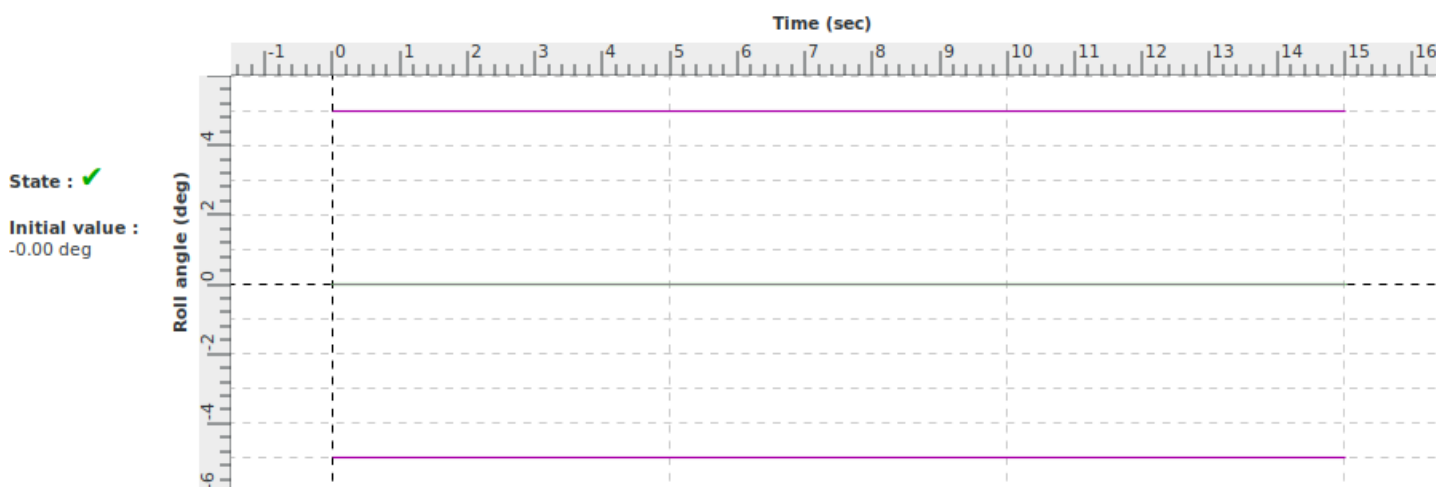
Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsimg

grey : master

Title	Longitudinal trim during approach		
Id	2 c v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

VALIDATION TEST

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the simulation of stall warning indication during second segment climb conforms to the class of aeroplanes	Stall warning expected at 76 kts
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.viii.b.1	+/- 3 kts Airspeed

Demonstration procedure	From steady second segment climb initial conditions power is set to idle.
Manual test procedure	Setting the aircraft initial parameters given next page, the pilot performs a standard climb profile maintaining vertical speed and constant power setting. When climb is stabilized, the pilot reduces the power to idle and maintains the vertical speed such as to increase the pitch attitude and one knot per second deceleration allowing the aeroplane to stall. (Do not trim below 1.4 vs).
Automatic test procedure	2 c viii b 1

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CLIMB
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 1200 IAS (kt) : 90 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 12 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 92 Right Load (%) : 92 Left RPM : 2090 Right RPM : 2090

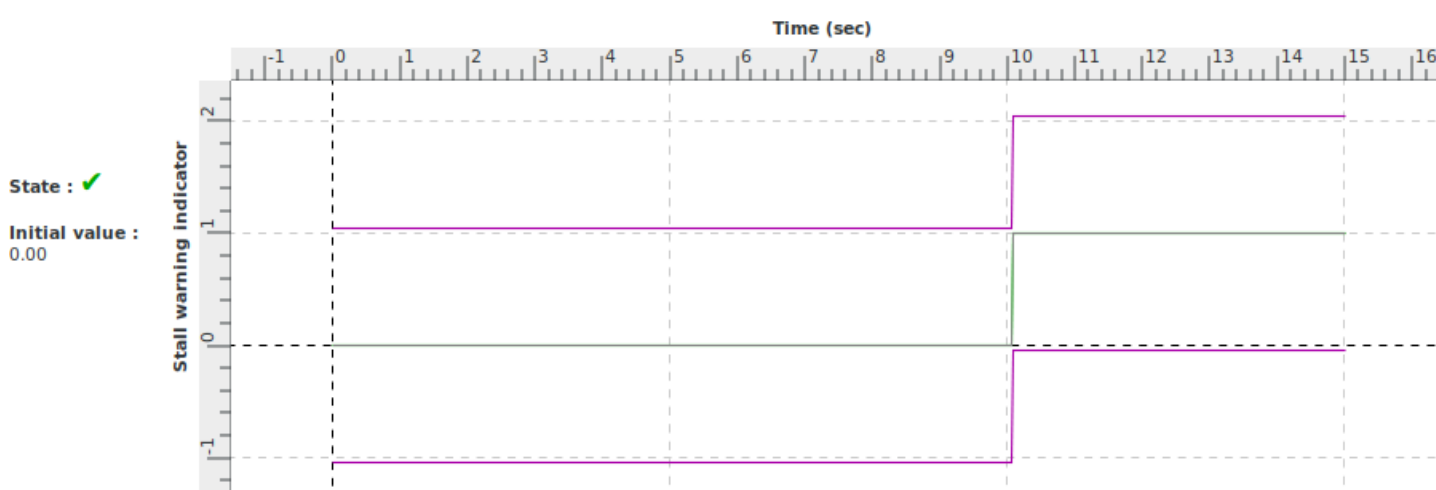
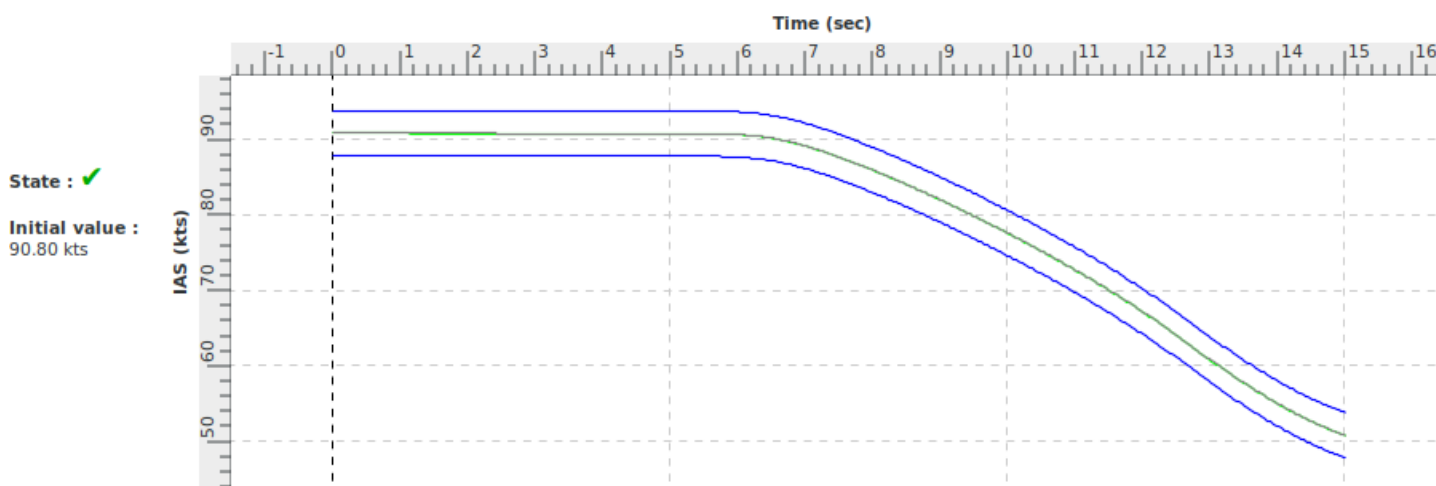
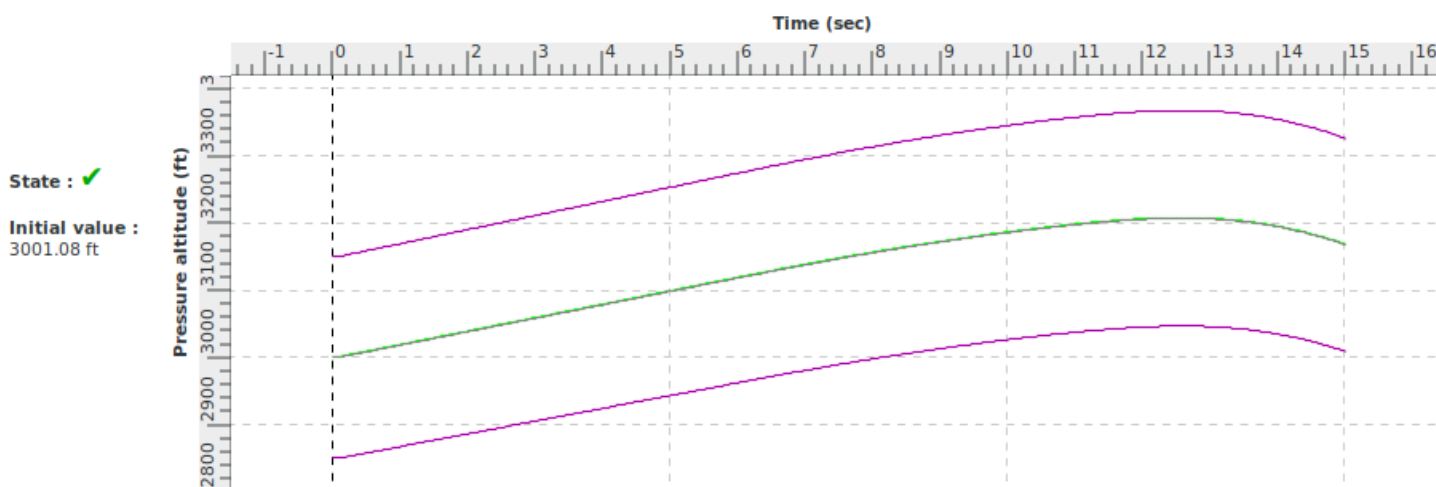
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	power_FLIGHT_IDLE	0.0	Set engine parameters to flight iddle power
15.0	Stop_Test	0.0	Stop the test procedure

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 Master. Expected results unchanged. Time reduction to 15s
1.01	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



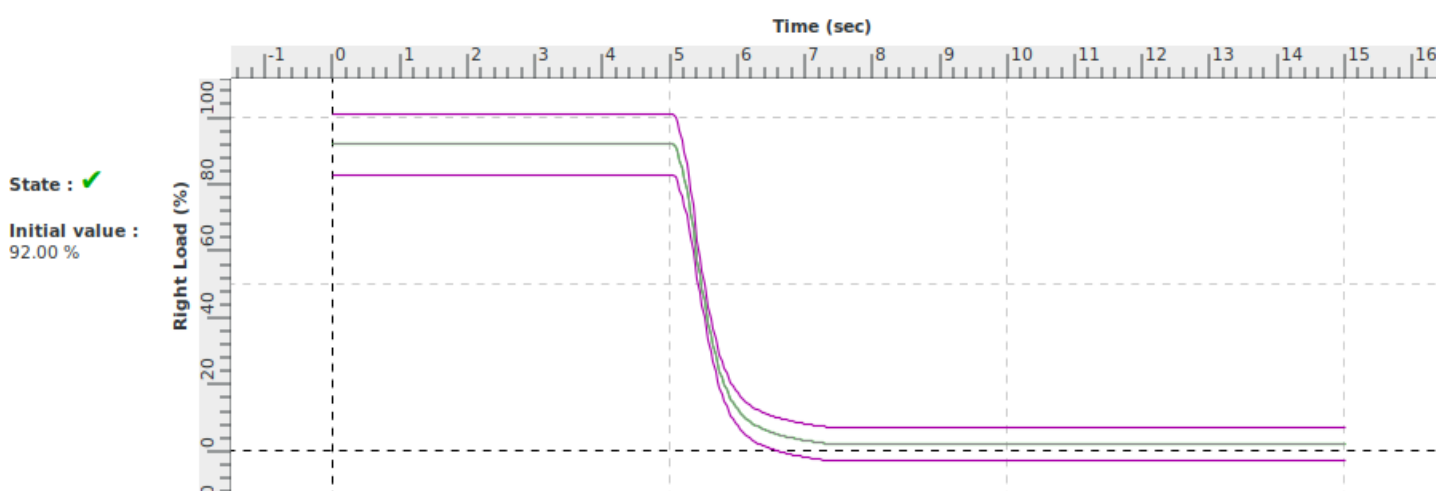
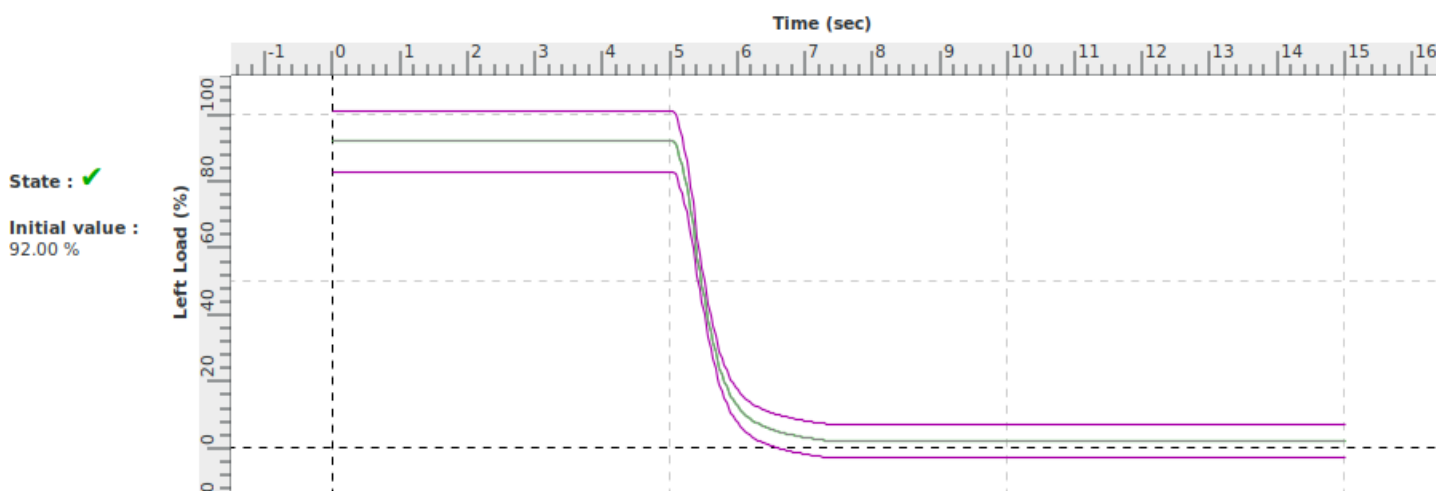
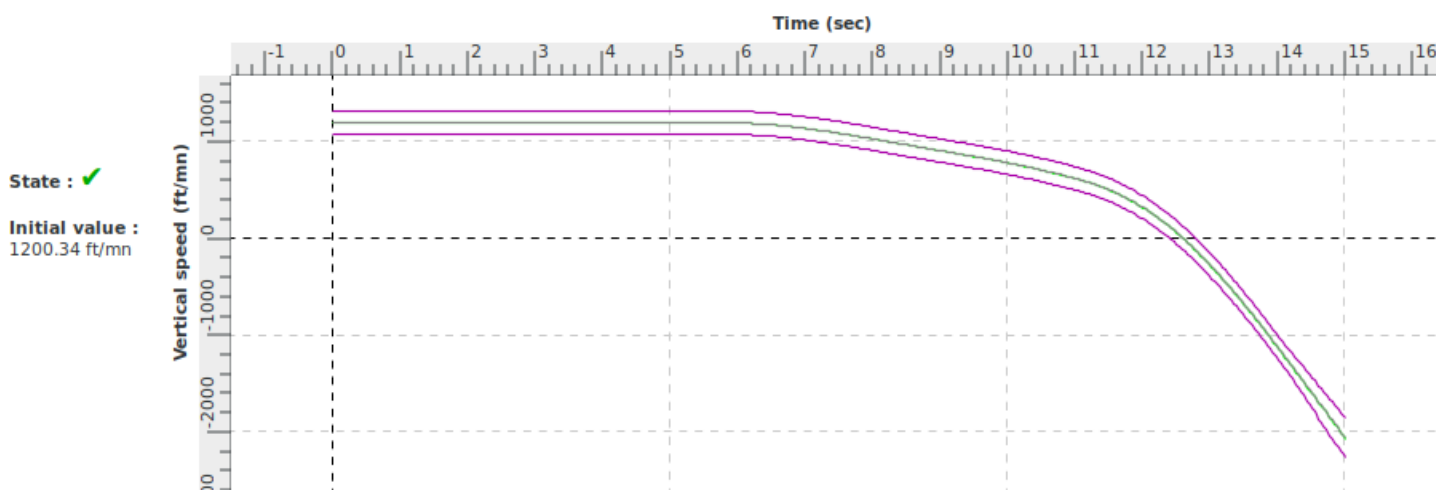
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



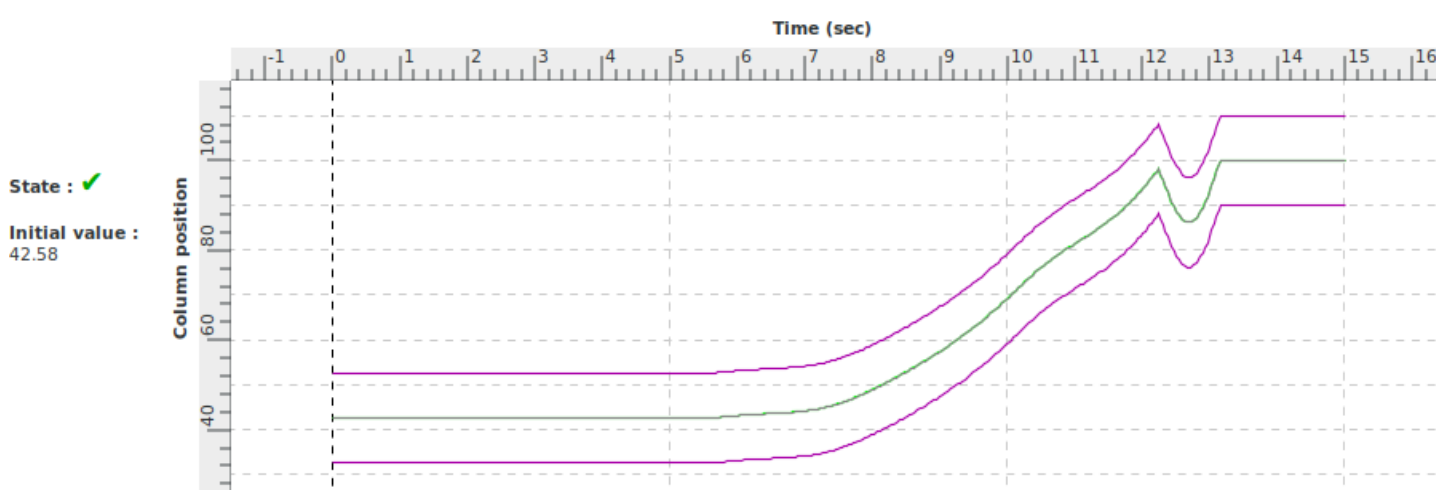
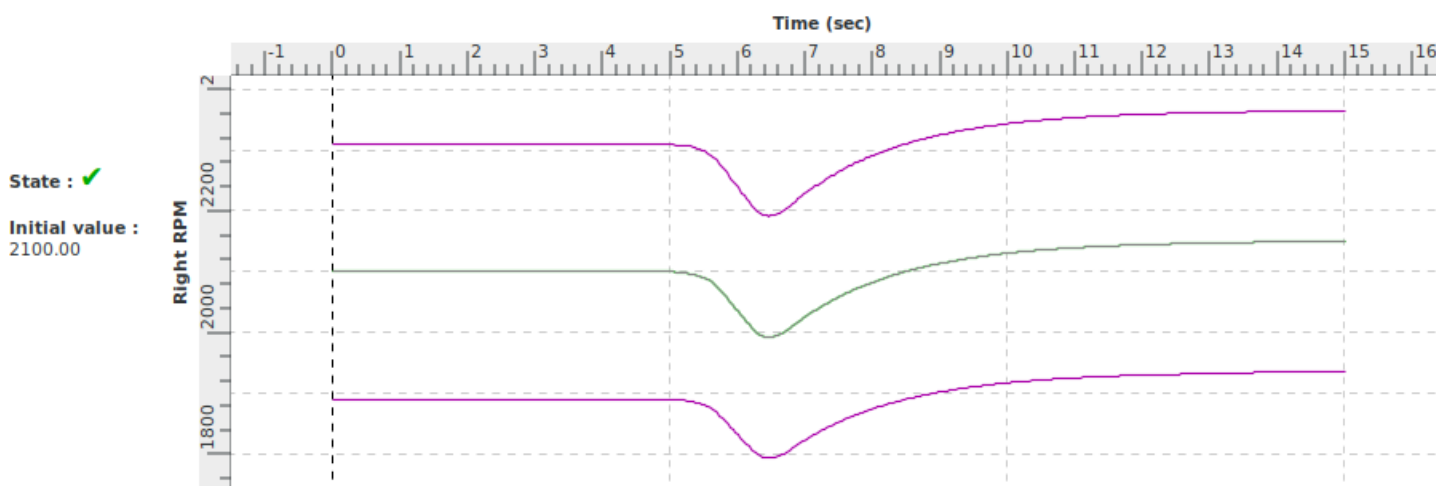
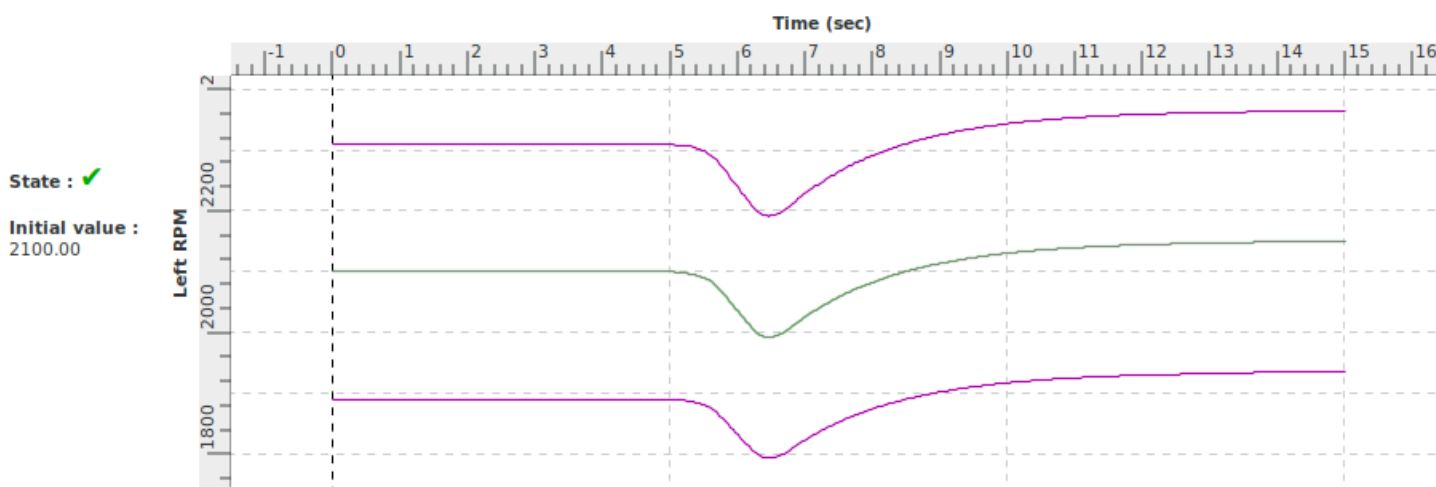
Legend :

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violet : tolerances Alsimg

grey : master

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



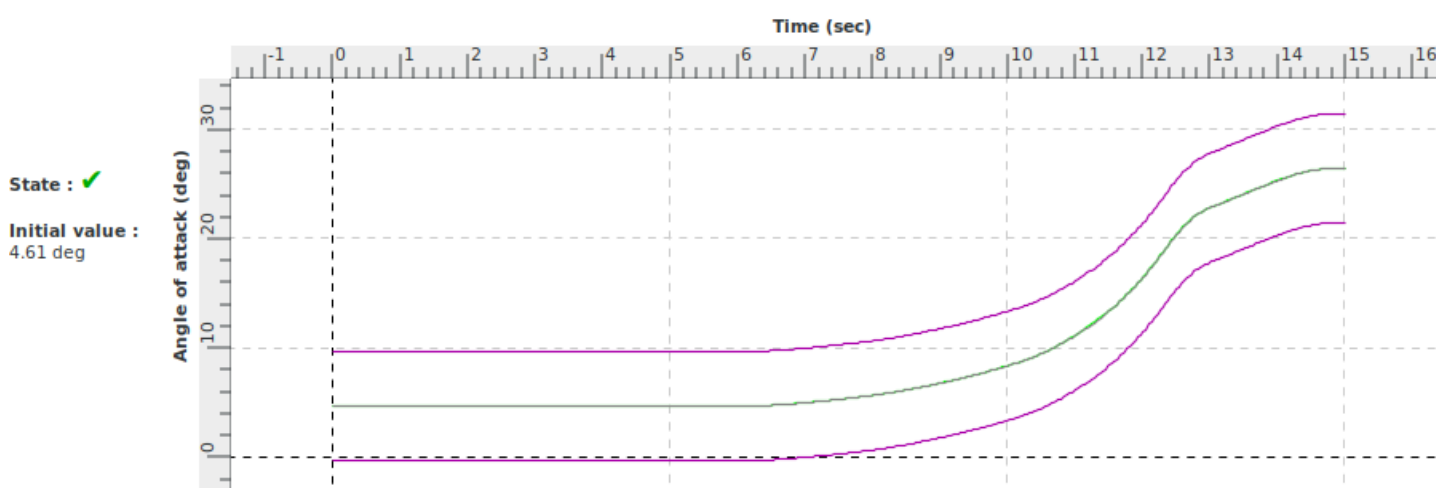
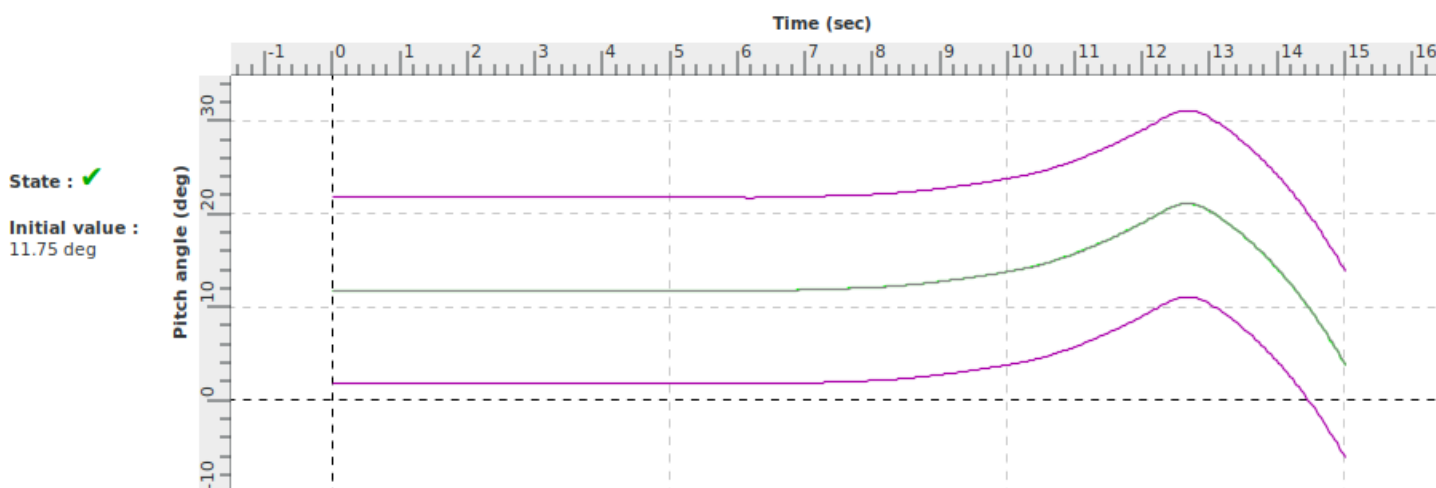
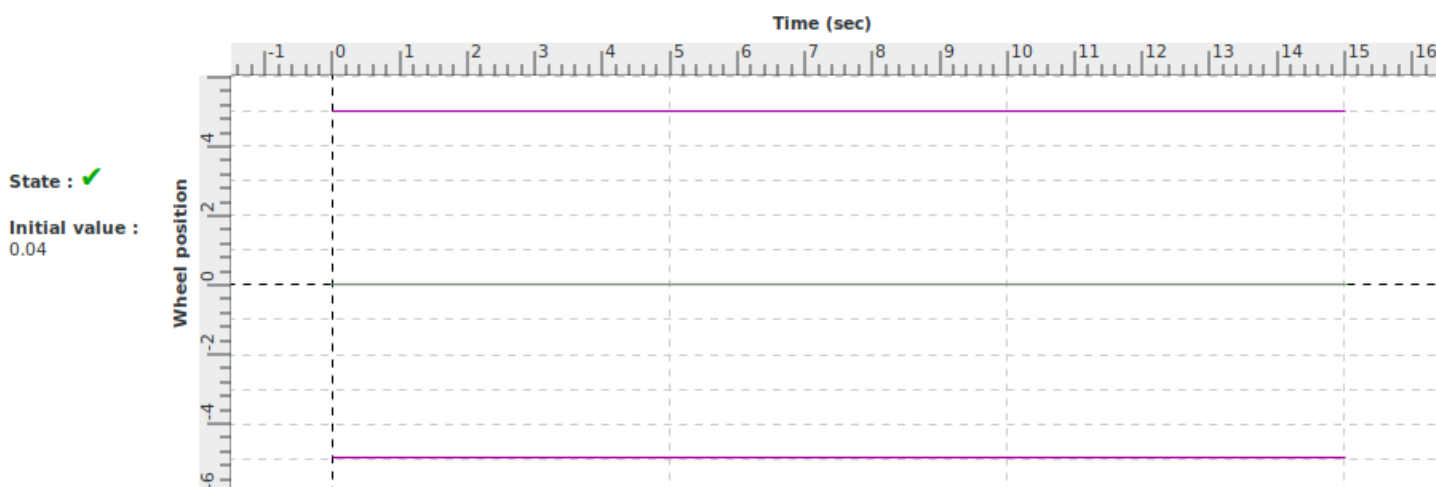
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violet : tolerances Alsimg

grey : master

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



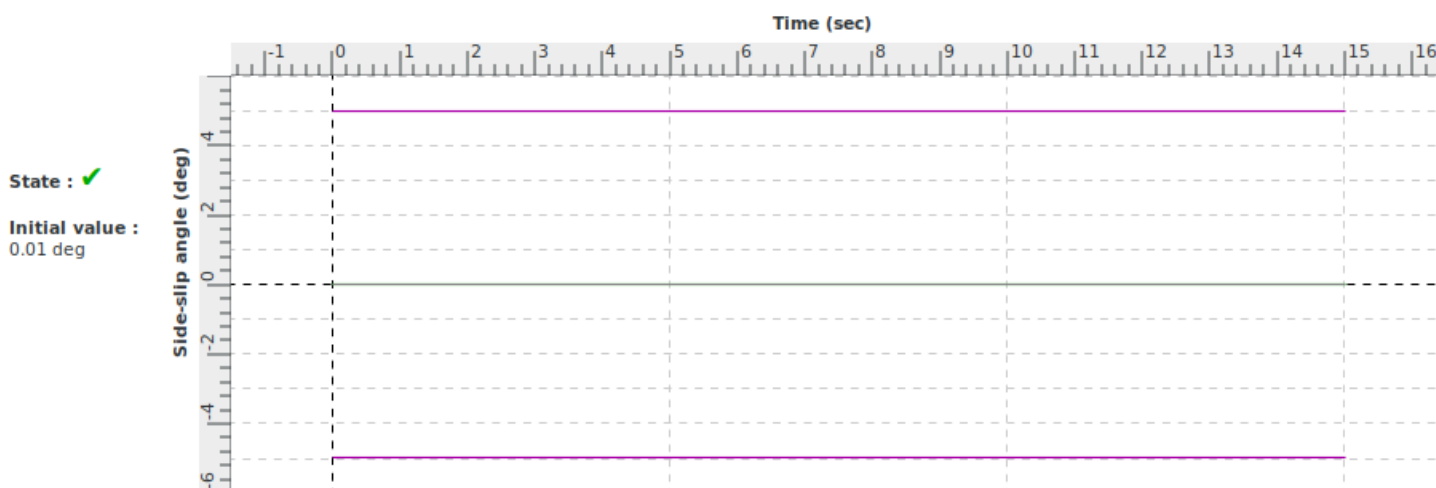
Legend :

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grey : master

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



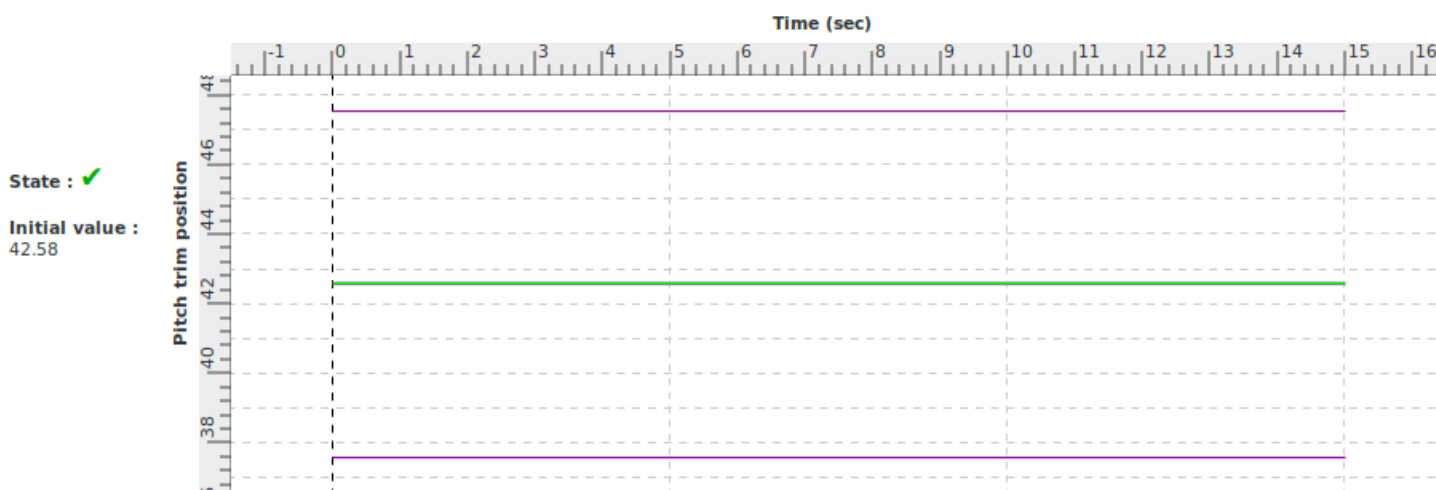
Legend :

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red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Stall characteristics second segment climb		
Id	2 c viii b 1	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator short period dynamic characteristics conform to the class of aeroplanes	<p>Increments :</p> <p>Pitch rate = 1 deg/sec</p> <p>Pitch angle = 5°</p> <p>Normal acceleration = 1.3 g</p>
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.x	<p>+/- 1.5 deg Pitch or +/- 2 deg/sec Pitch Rate</p> <p>+/- .1g Normal Acceleration</p>

Demonstration procedure	From steady initial cruise conditions, a pitch up control impulse is applied in order to excite the short period mode.
Manual test procedure	The pilot trims aeroplane at cruise. Then, applies the inputs on the stick of approximately 10 cm and releases the controls.
Automatic test procedure	2 c x

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 IAS (kt) : 139 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

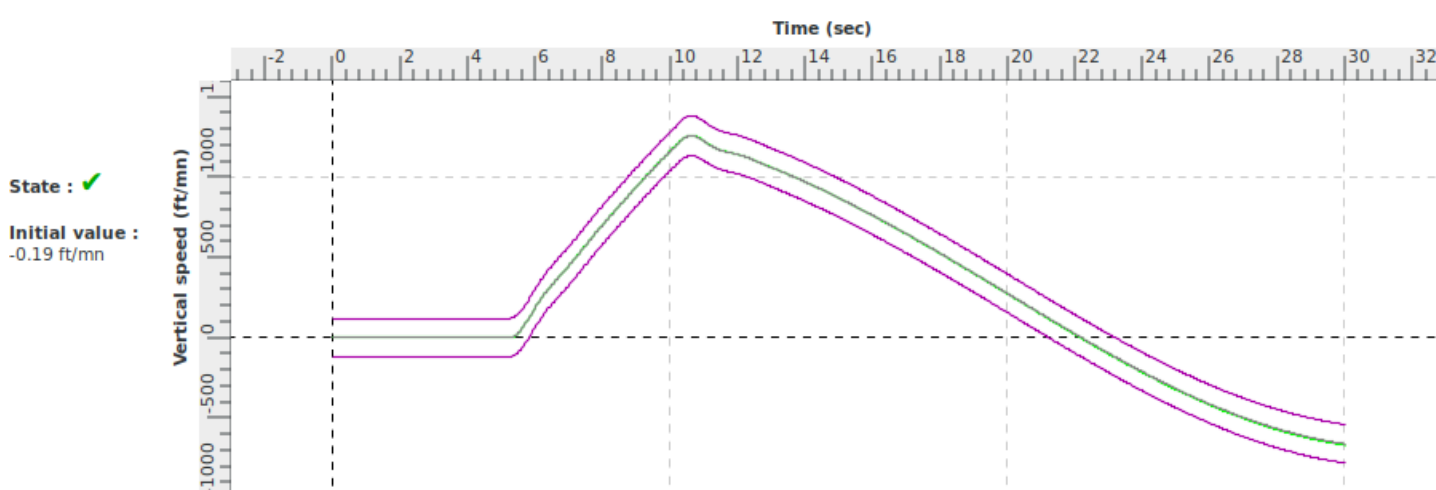
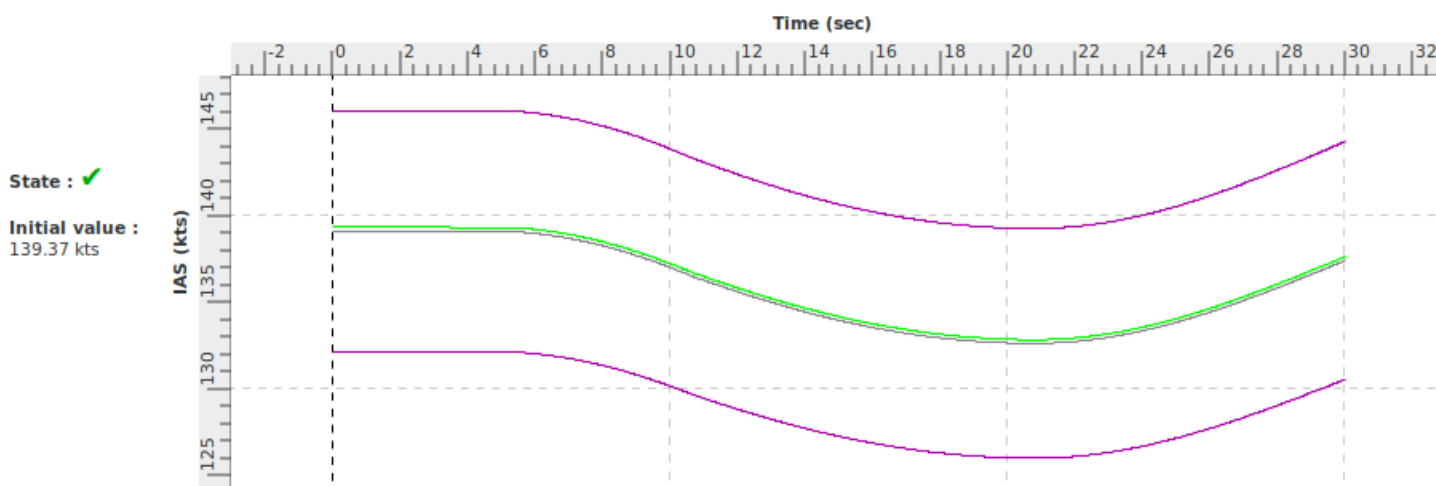
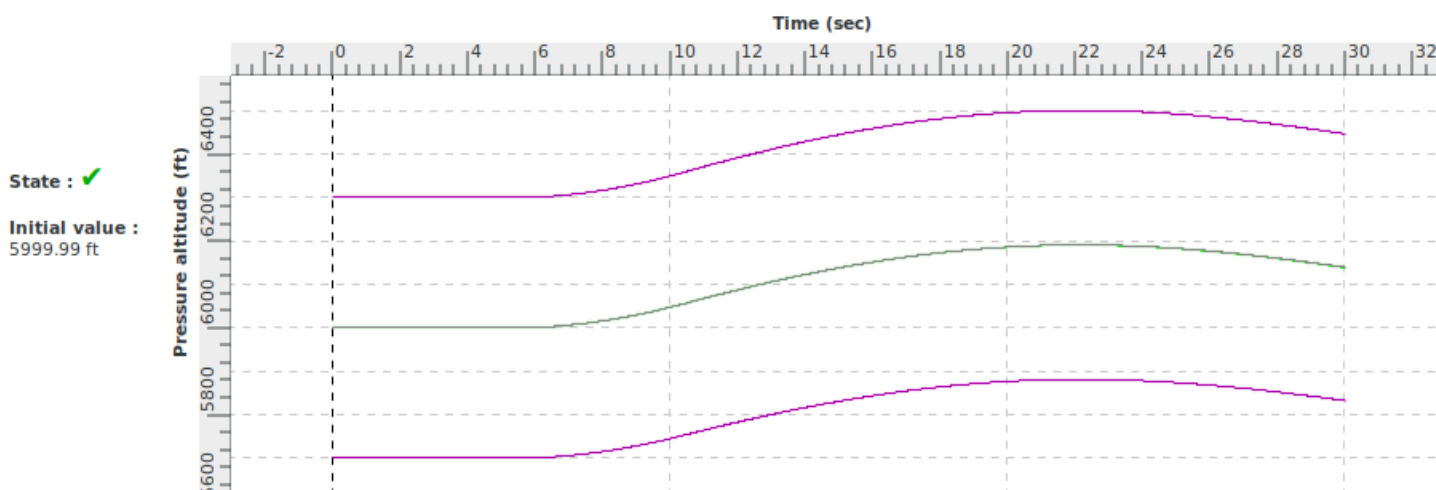
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_att	0.0	disable QTG Autopilot in attitude axis
5.0	SetAttCmd	5.0	Send an impulse in the attitude govern
30.0	Stop_Test	0.0	Stop the test procedure

Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



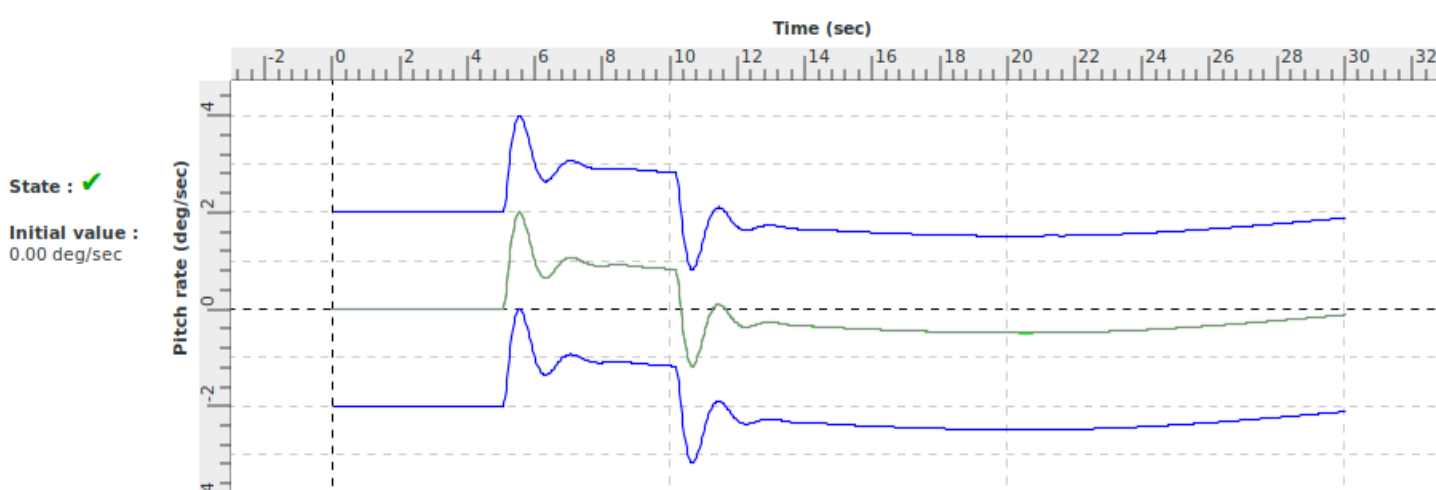
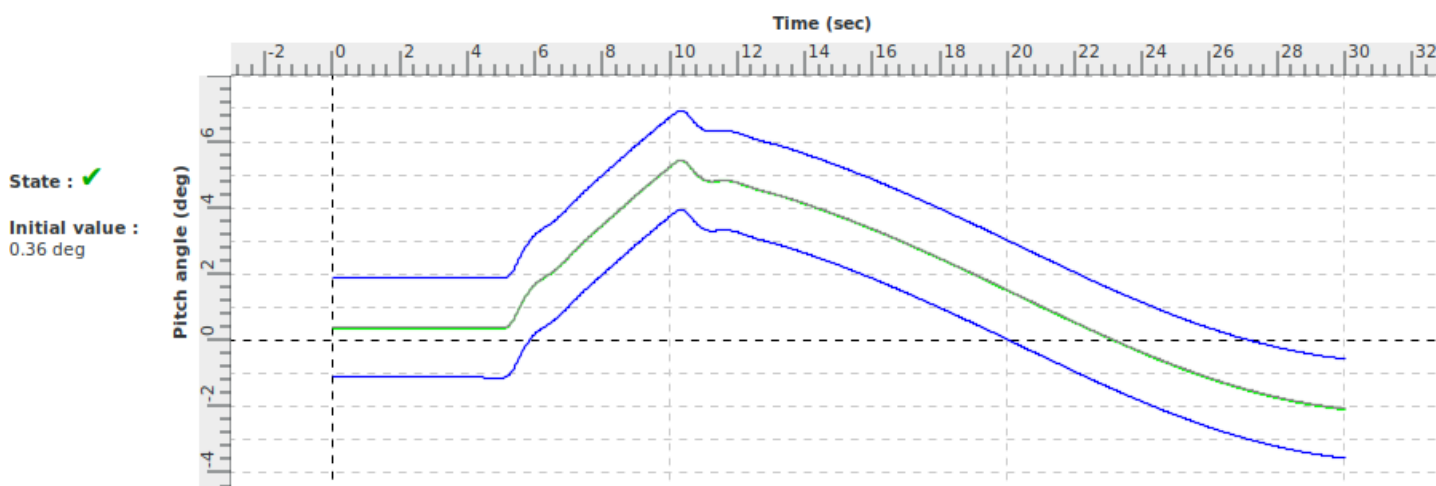
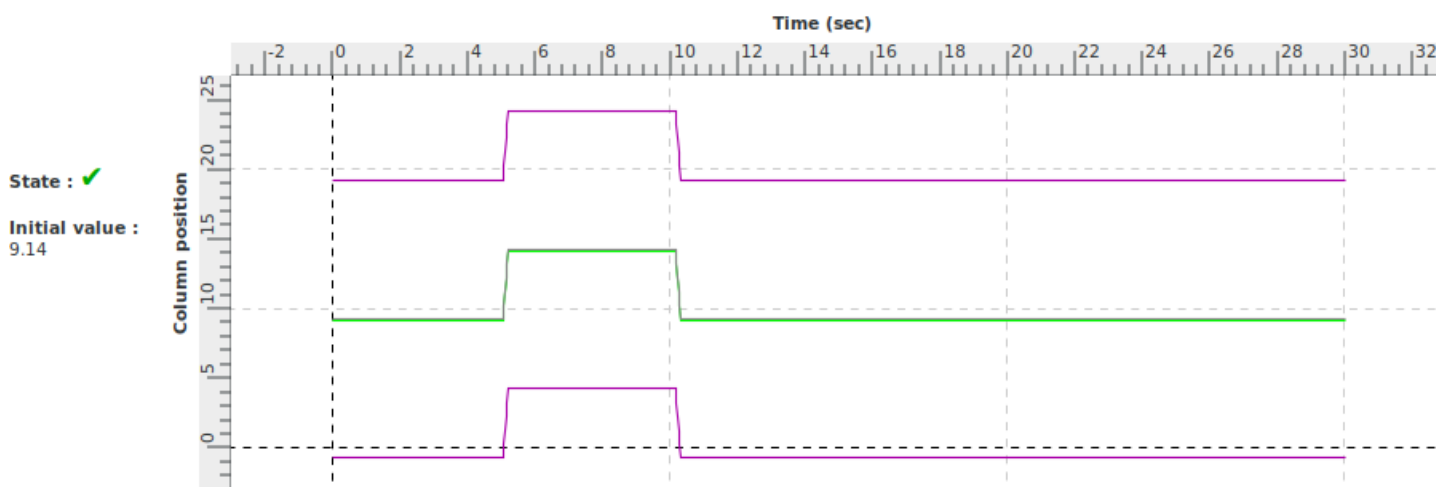
Legend :

green : results within tolerances
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violet : tolerances Alsimg

grey : master

Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



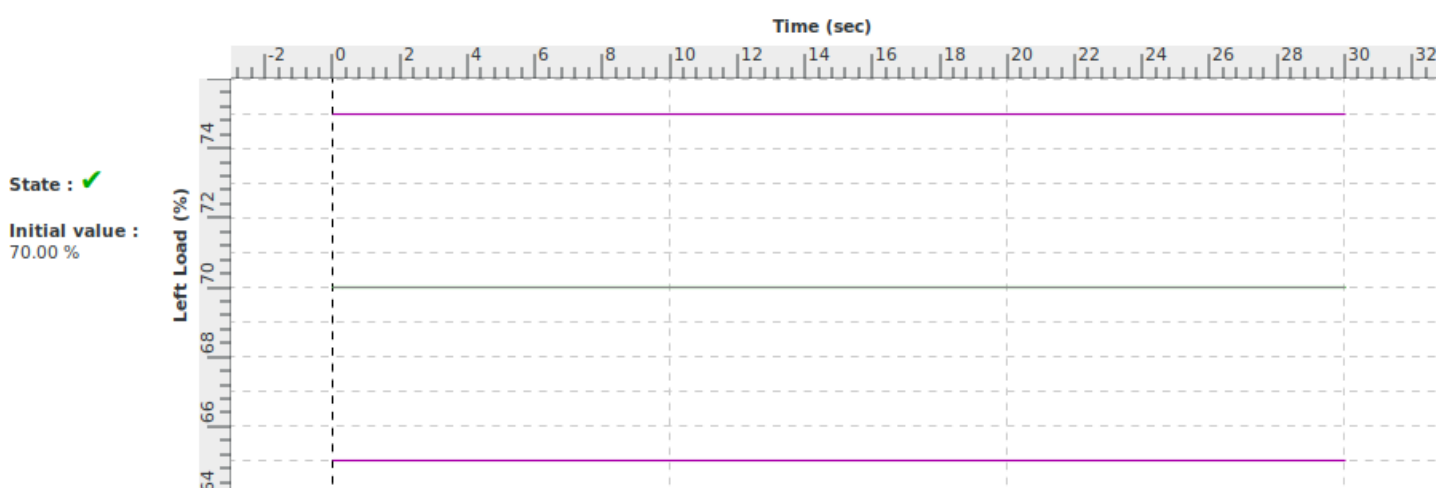
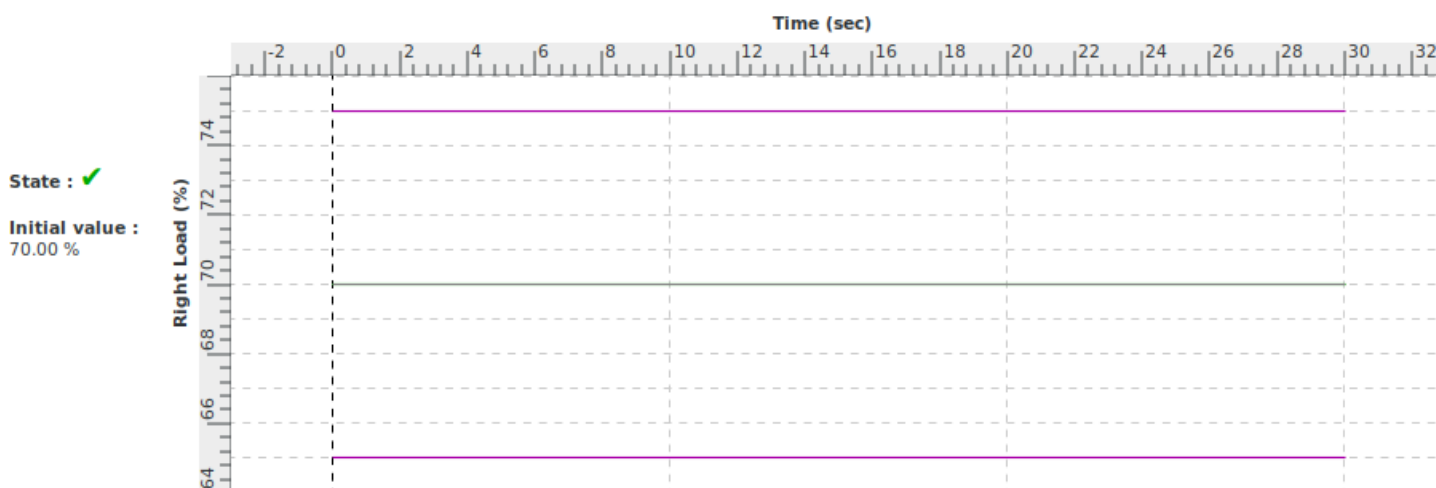
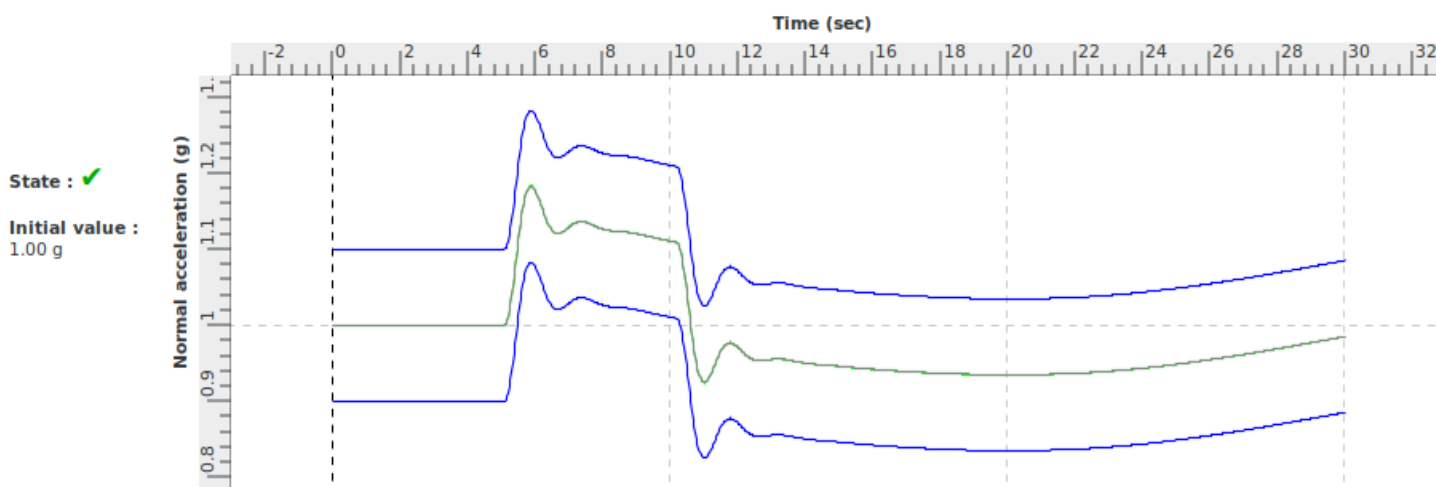
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Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



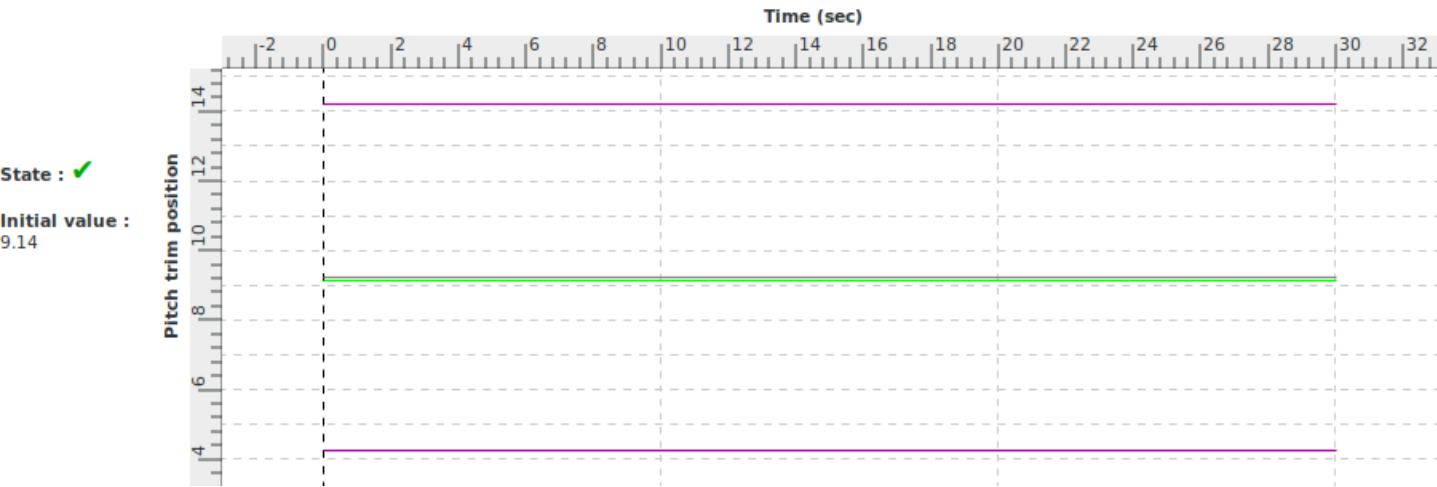
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Title	Short period dynamics during cruise		
Id	2 c x	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

green : results within tolerances red : results out of tolerances grey : master
blue : tolerances violet : tolerances Alsim

VALIDATION TEST

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulation of roll characteristics during approach after a step roll control input conforms to the class of aeroplanes	Max Bank Angle: -15°
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.iii	+/- 2° or +/-10% Bank

Demonstration procedure	From steady approach initial conditions, a wheel deflection step of about 30% of maximum is applied for right direction to reach a bank angle of approximatively 15°. Then the wheel is abruptly return to neutral.
Manual test procedure	In ISA conditions and approach condition, the pilot trims the airplane. When approach is stabilised, the pilot applies impulse on the wheel 30% of total travel on each side.
Automatic test procedure	2 d iii

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_VZ
Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.	

Initial parameters	HOLD_FLAPS_APP_GEAR
Gross weight (kg) : 1900	Flaps lever position : 1
Balance (%) : 50	Gear lever position : 1
Altitude (ft) : 3000	Left Load (%) : 70
Vertical speed (ft/min) : 0 (free)	Right Load (%) : 70
IAS (kt) : 106	Left RPM : 2060
Heading (°) : 0 (free)	Right RPM : 2060
Bank (°) : 0	
Attitude (°) : -1	
Pedal Position (%) : 0	
Column Position (%) : 32	
Wheel Position (%) : 0	

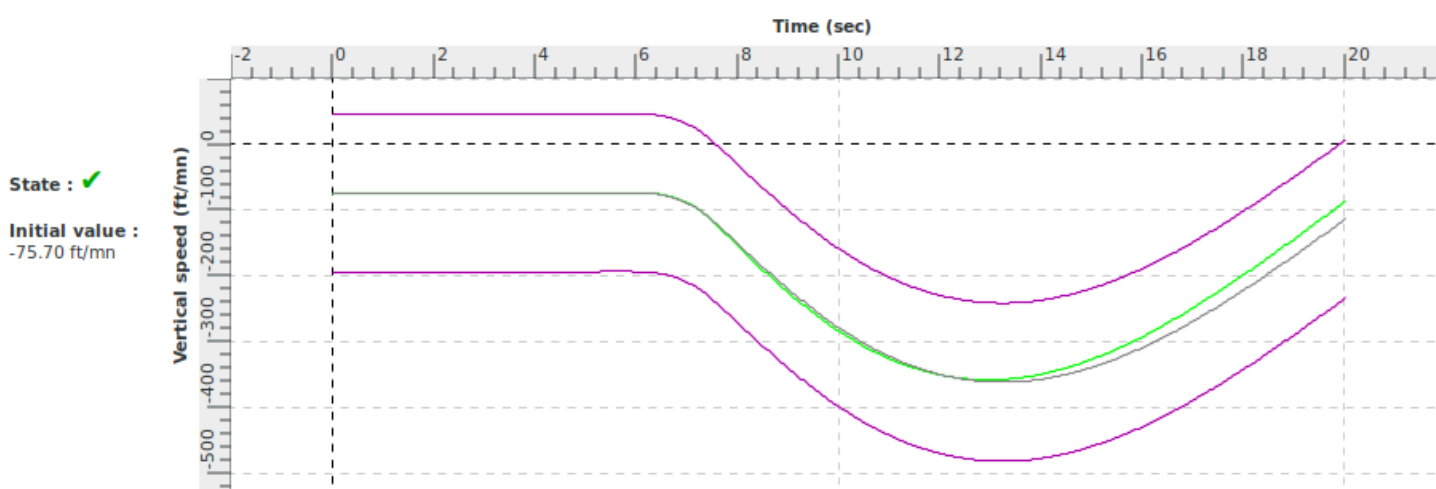
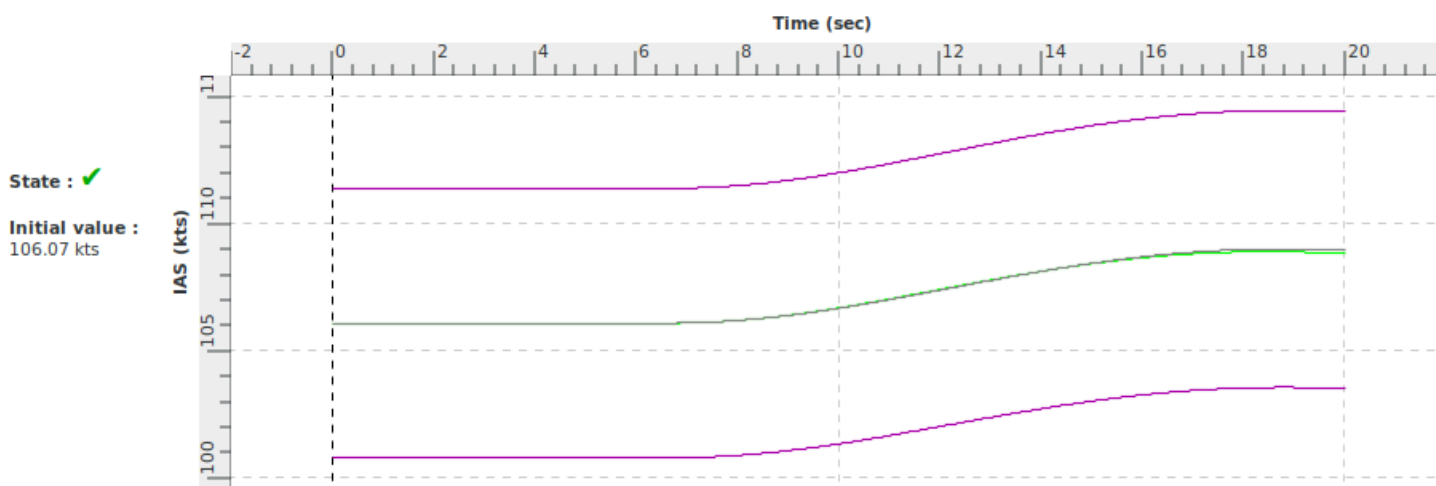
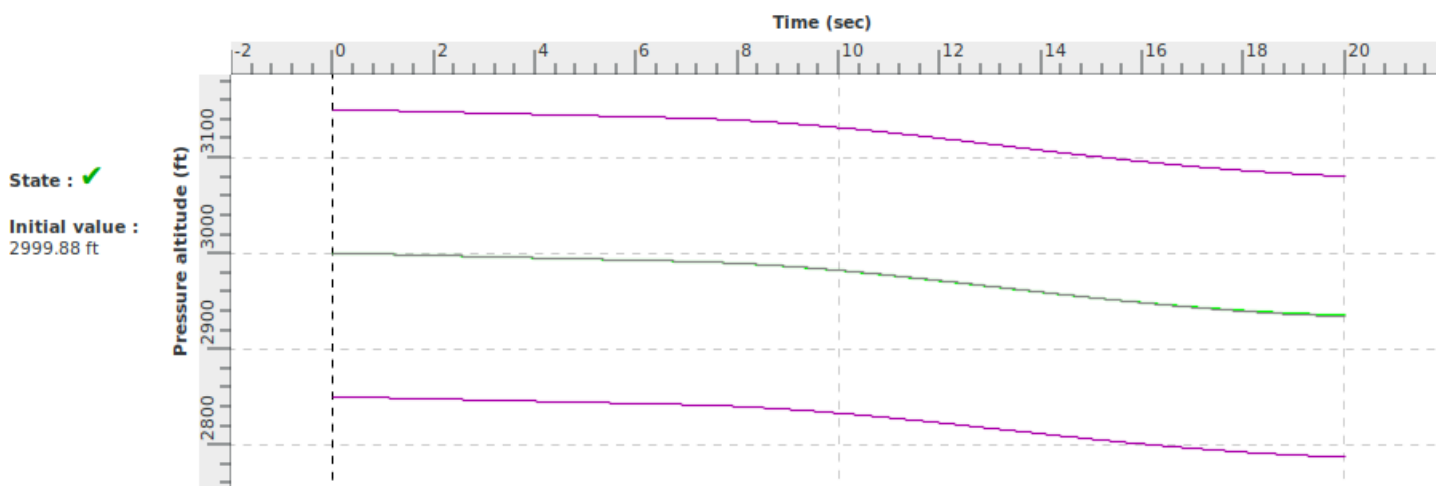
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_rudder	0.0	disable QTG Autopilot in yaw axis
0.0	deconnectionPA_att	0.0	disable QTG Autopilot in attitude axis
5.0	SetRollCmdPalier	30.0	Send a step in the roll govern
7.0	SetRollCmdPalier	0.0	Send a step in the roll govern
20.0	Stop_Test	0.0	Stop the test procedure

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



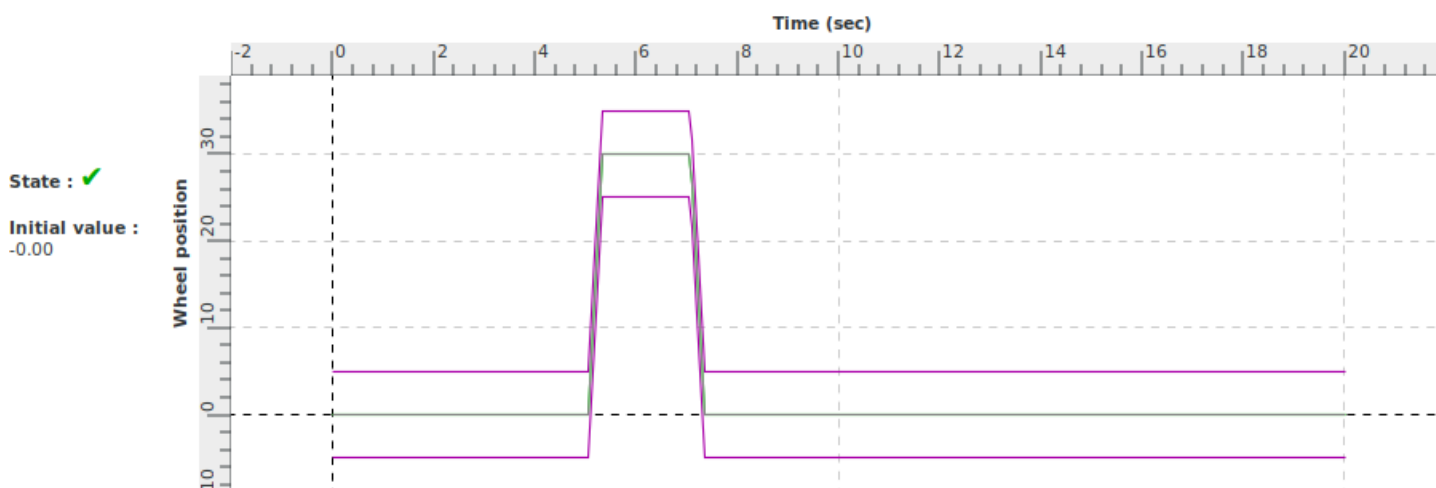
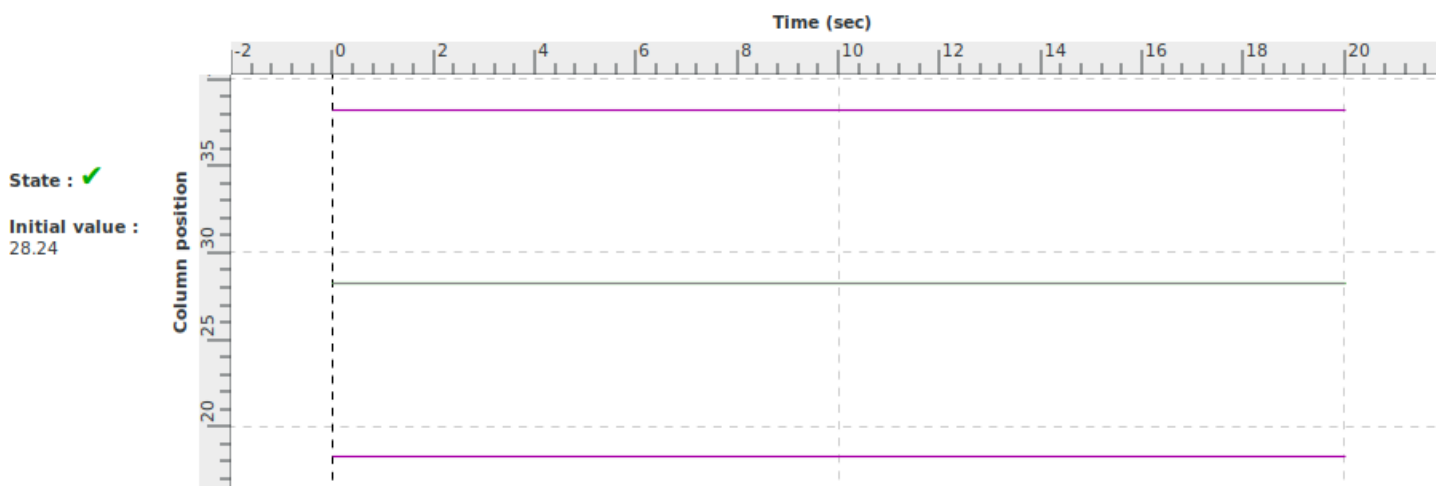
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



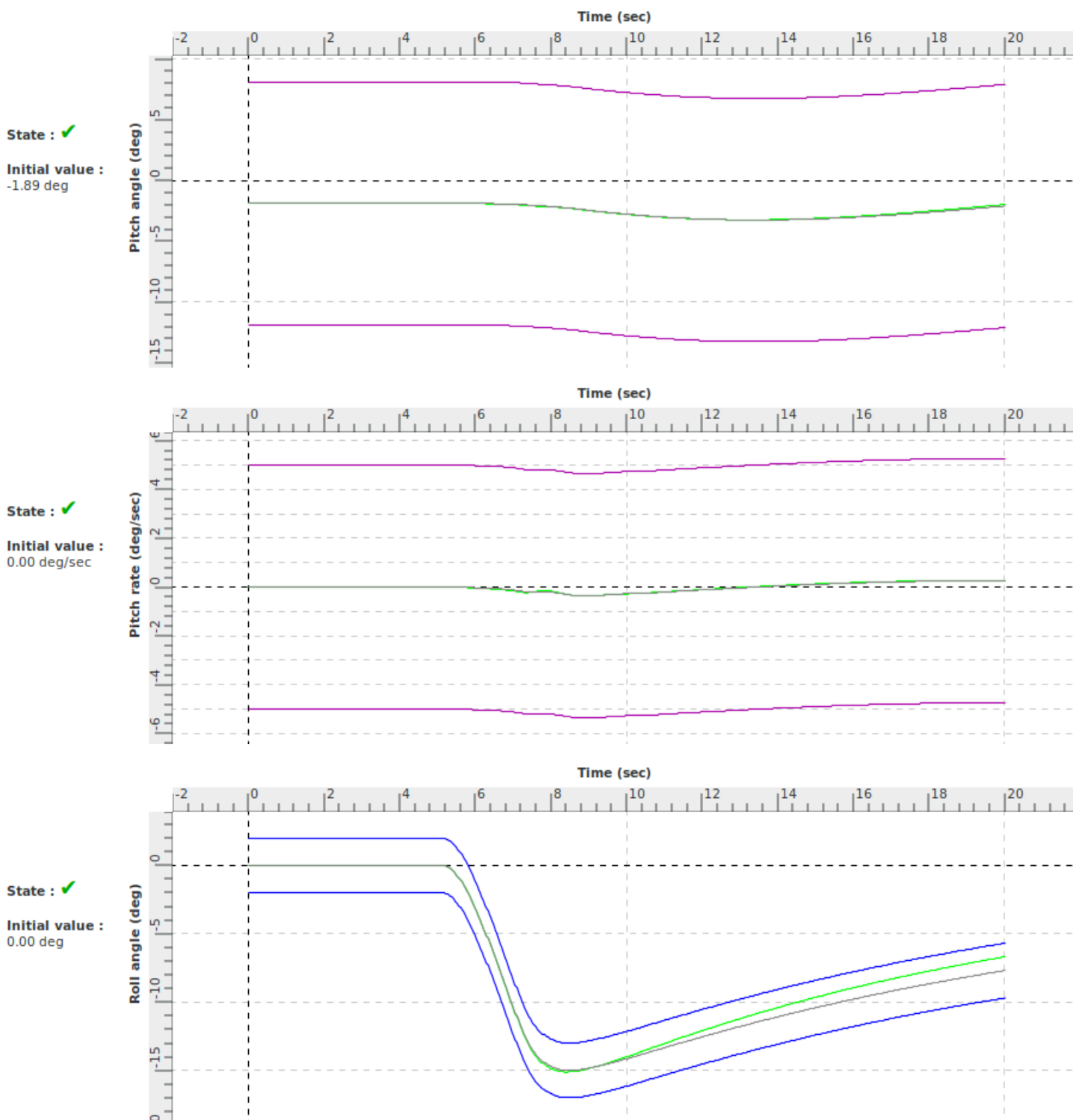
Legend :

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blue : tolerances

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violet : tolerances Alsim

grey : master

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



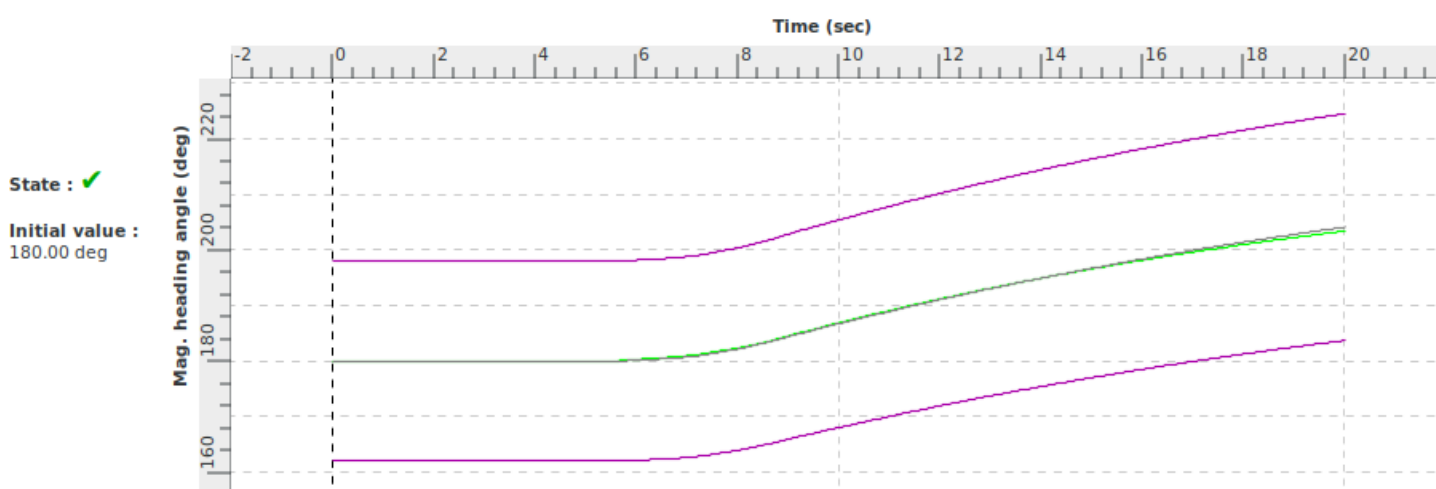
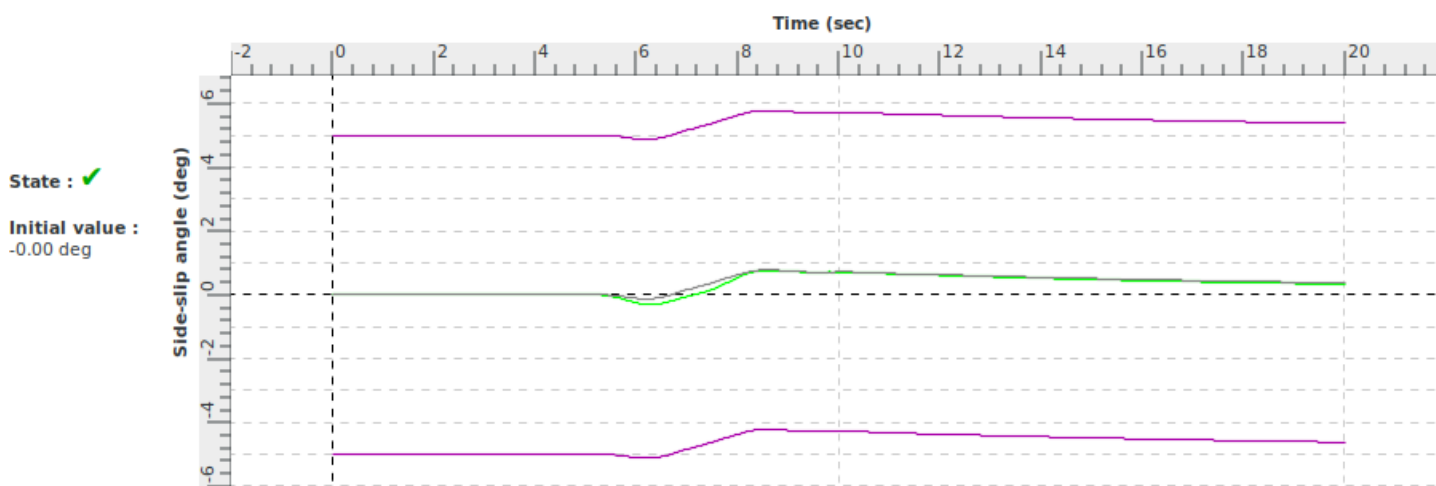
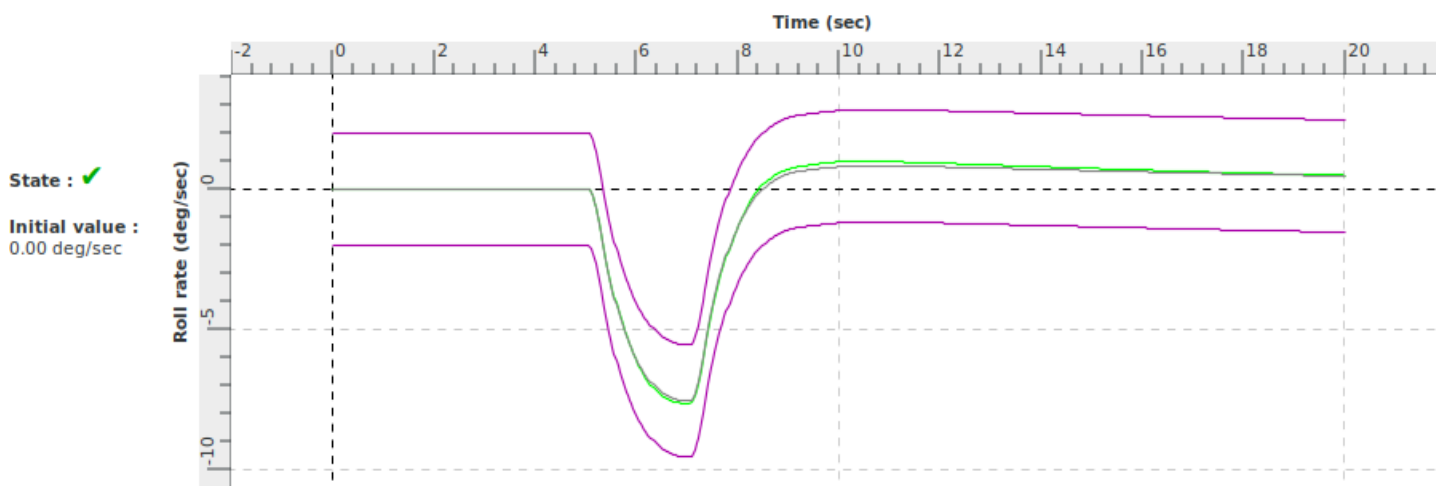
Legend :

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violet : tolerances Alsim

grey : master

Title	Roll overshoot or response to step input of cockpit roll controller during approach		
Id	2 d iii	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the simulation of the effects of directional trim during an engine inoperative manoeuvre conforms to the class of aeroplanes	Sideslip angle = 0 deg Rudder control = 23 %
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.v.b	+/-1° Rudder angle (equivalent 3% of pedal position) +/-2° Sideslip angle

Demonstration procedure	From steady one engine inoperative approach initial conditions, the pilot trims the aeroplane for the engine out condition. Tolerance: 60° is representative of the maximum rudder deflection observed on this class of aeroplane i.e 1° of rudder deflection corresponds to 3.3% of pedal position.
Manual test procedure	See the aircraft configuration described next page.&&In ISA conditions and one engine inoperative approach configuration, the pilot trims the aeroplane for the engine out condition with the relevant propeller feathered.
Automatic test procedure	2 d v b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_HEADING
Automatic AUTO_HEADING mode : Heading is maintained constant through roll and yaw trim and Vertical Speed through pitch trim.	

Initial parameters	DESCENT_FLAPS_APP_N-1
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : -470 IAS (kt) : 90 (free) Heading (°) : 0 Bank (°) : 0 (free) Attitude (°) : -2 Pedal Position (%) : 23 Column Position (%) : 49 Wheel Position (%) : -5	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 0 Right Load (%) : 50 Left RPM : 0 Right RPM : 2030

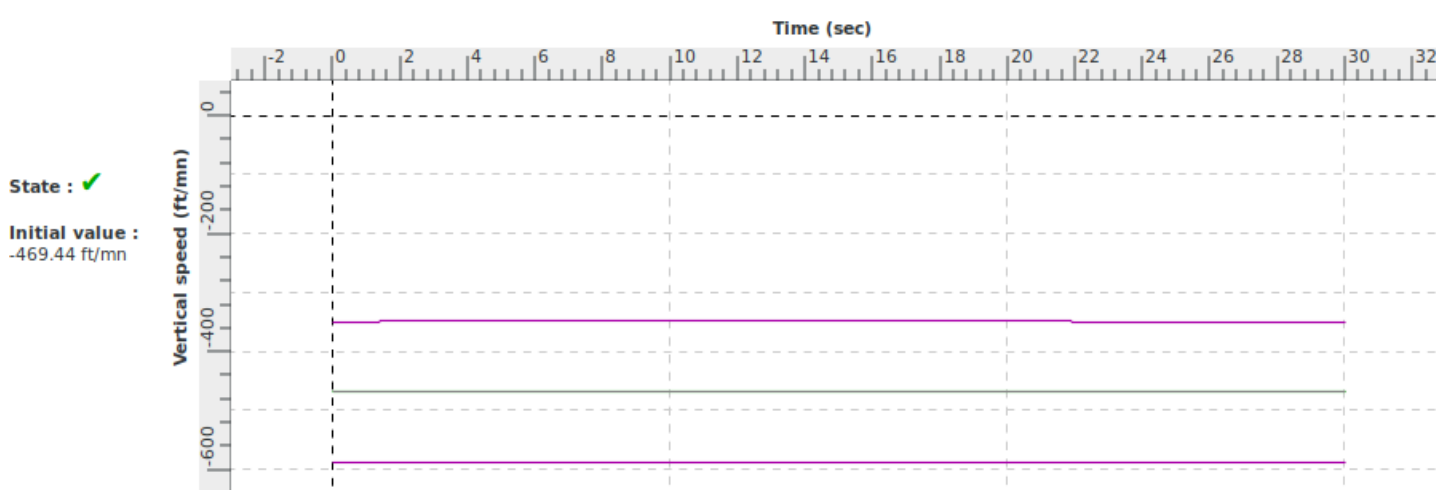
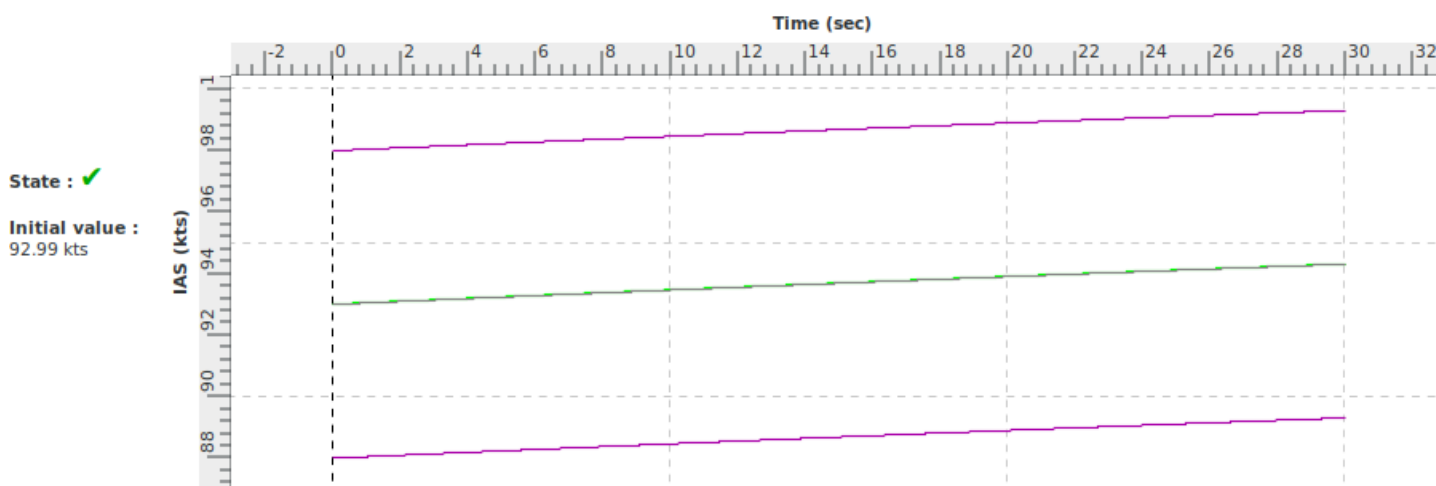
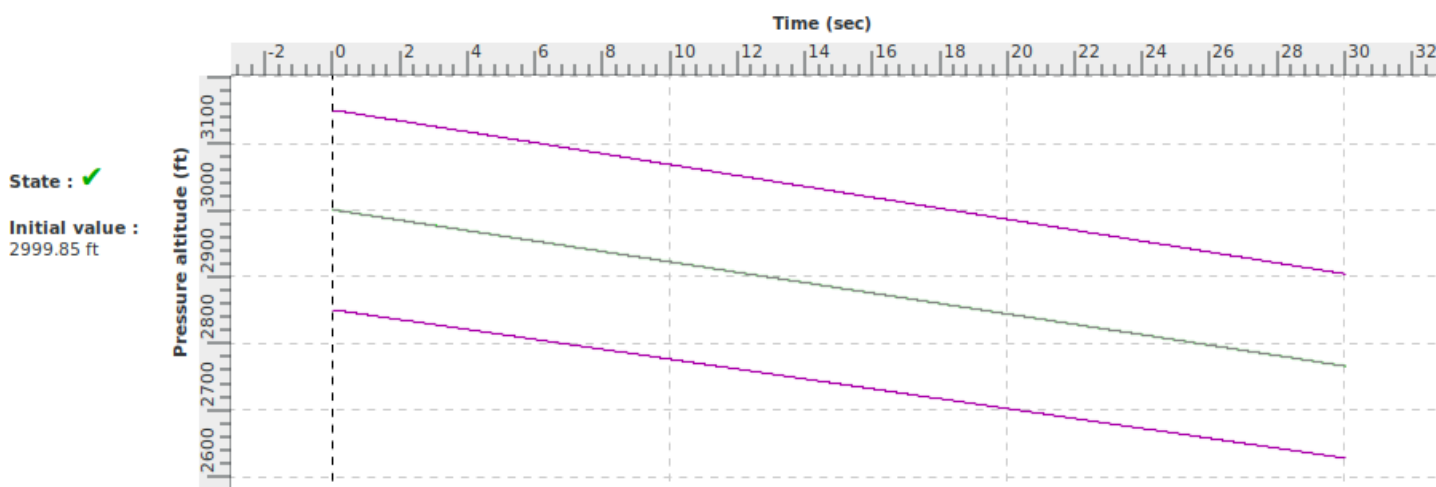
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
30.0	Stop_Test	0.0	Stop the test procedure

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 master. New expected results. Pedal input to 23%
1.02	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



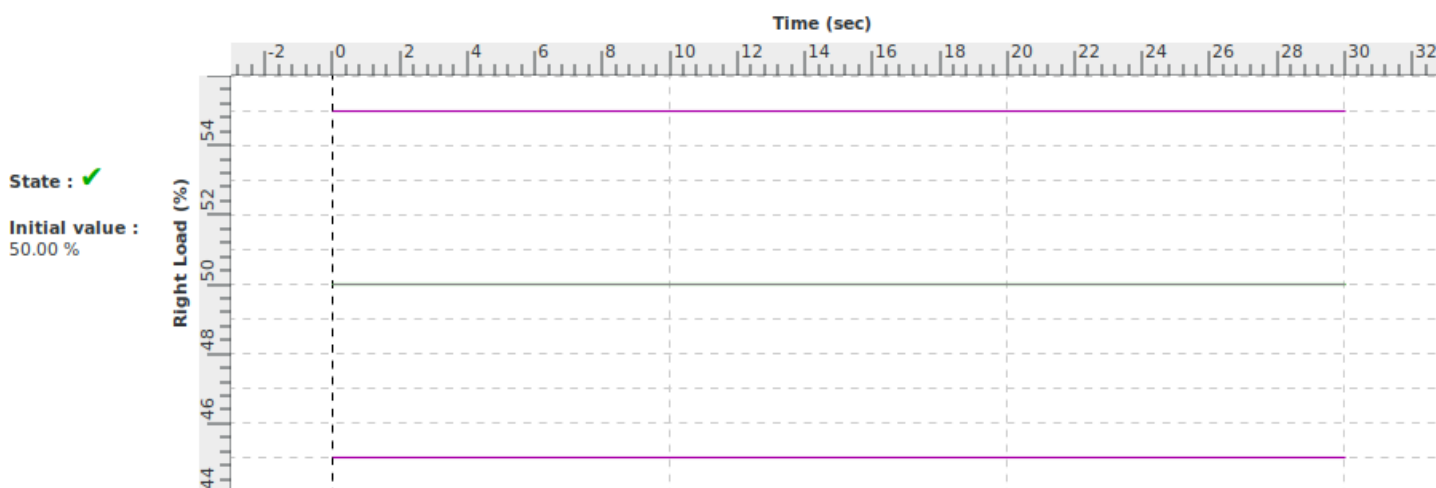
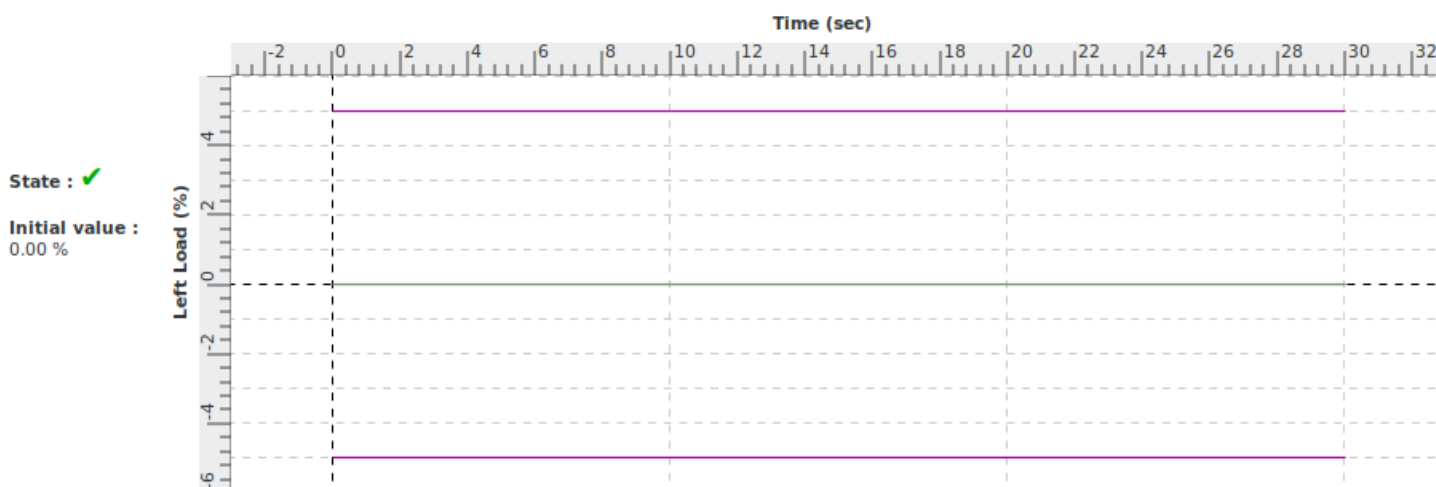
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



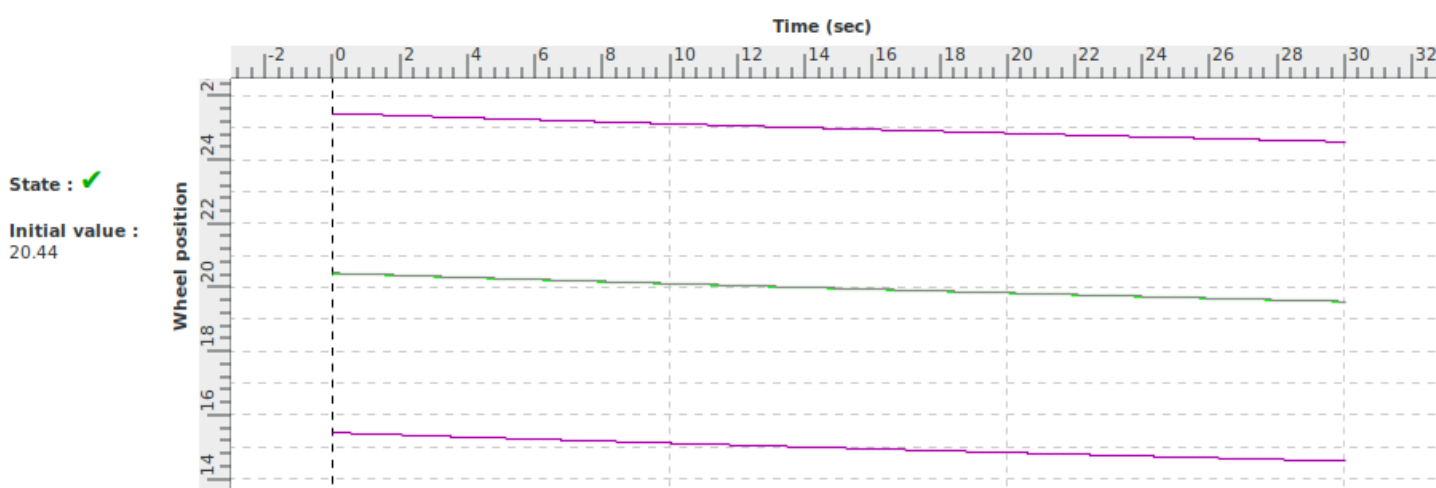
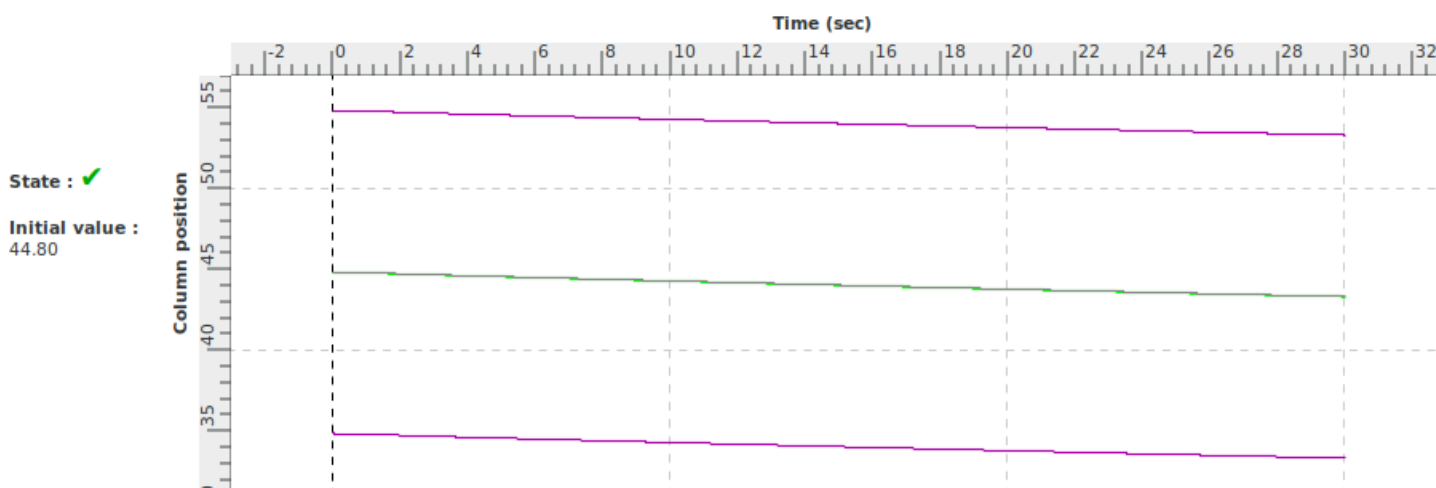
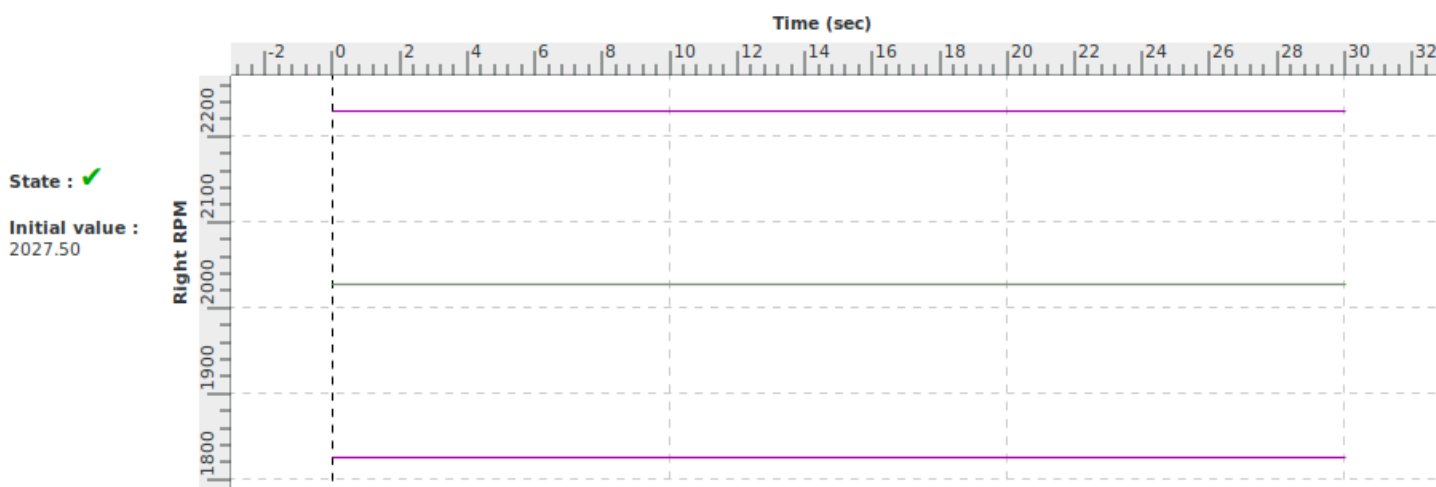
Legend :

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grey : master

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



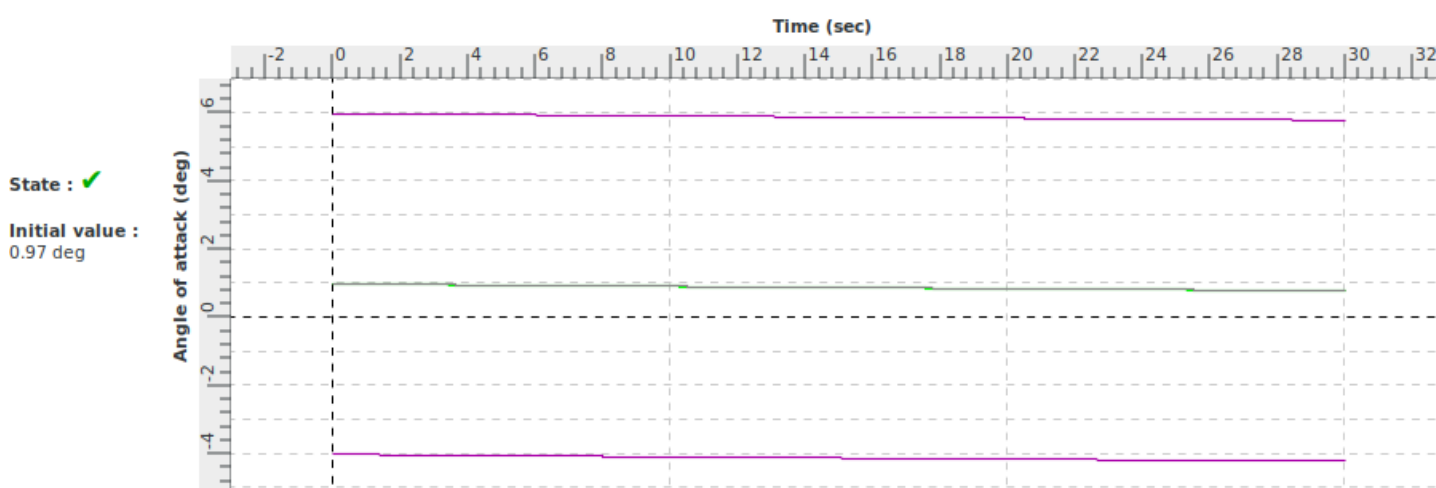
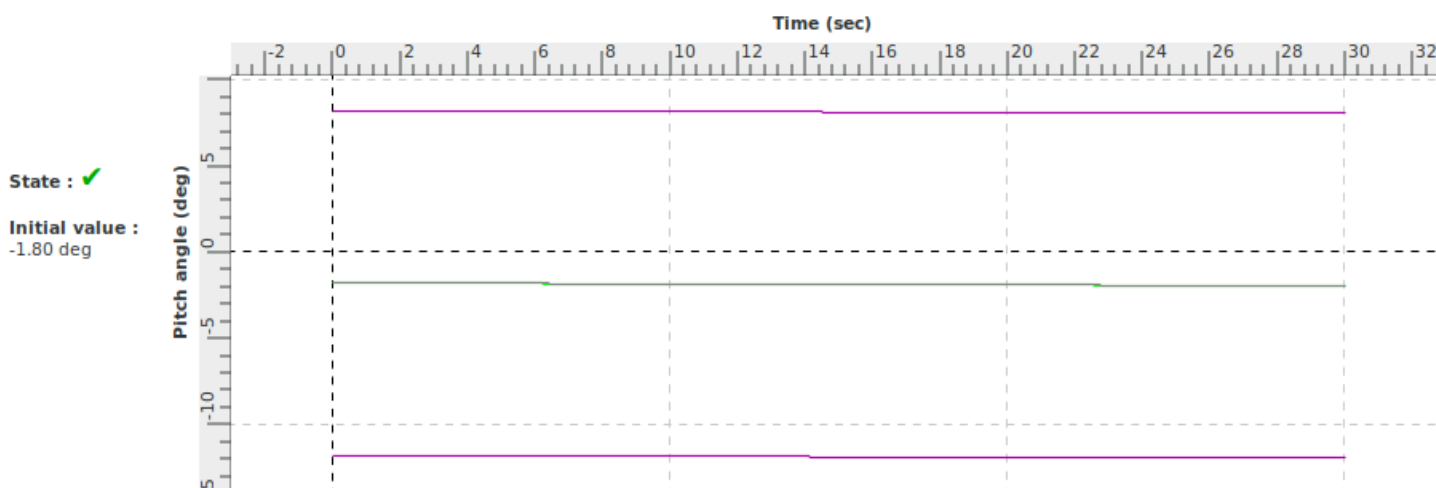
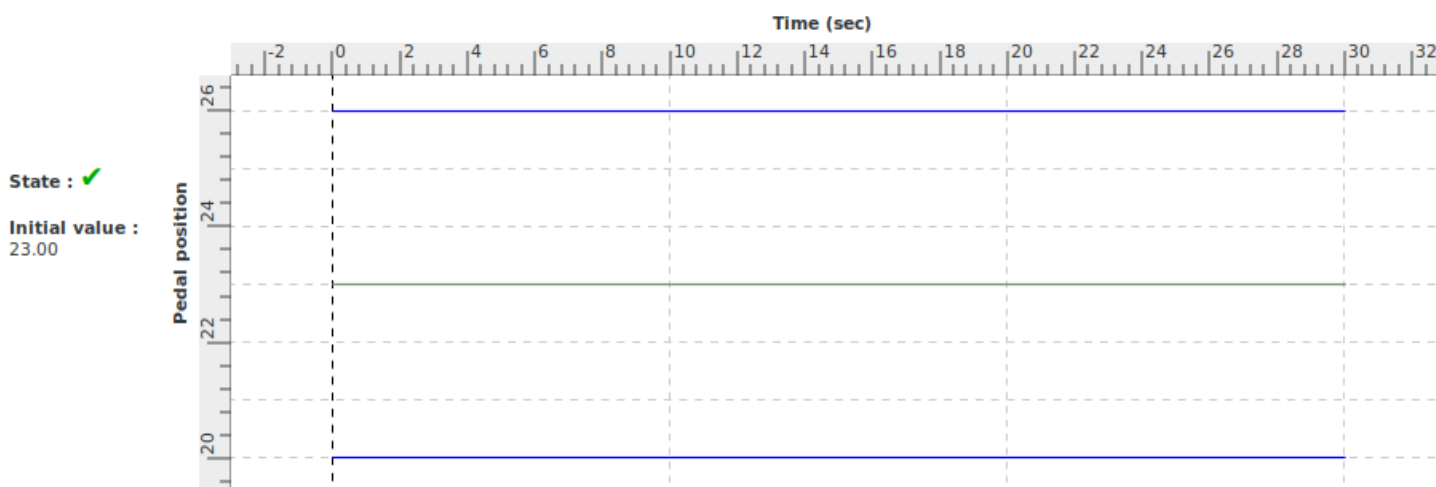
Legend :

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Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



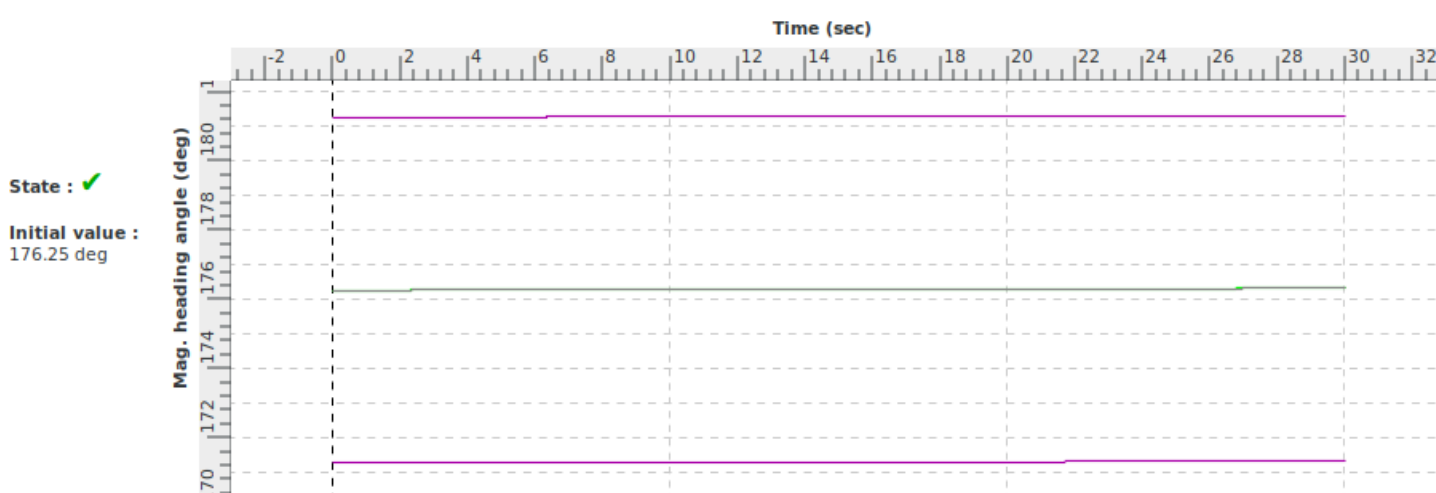
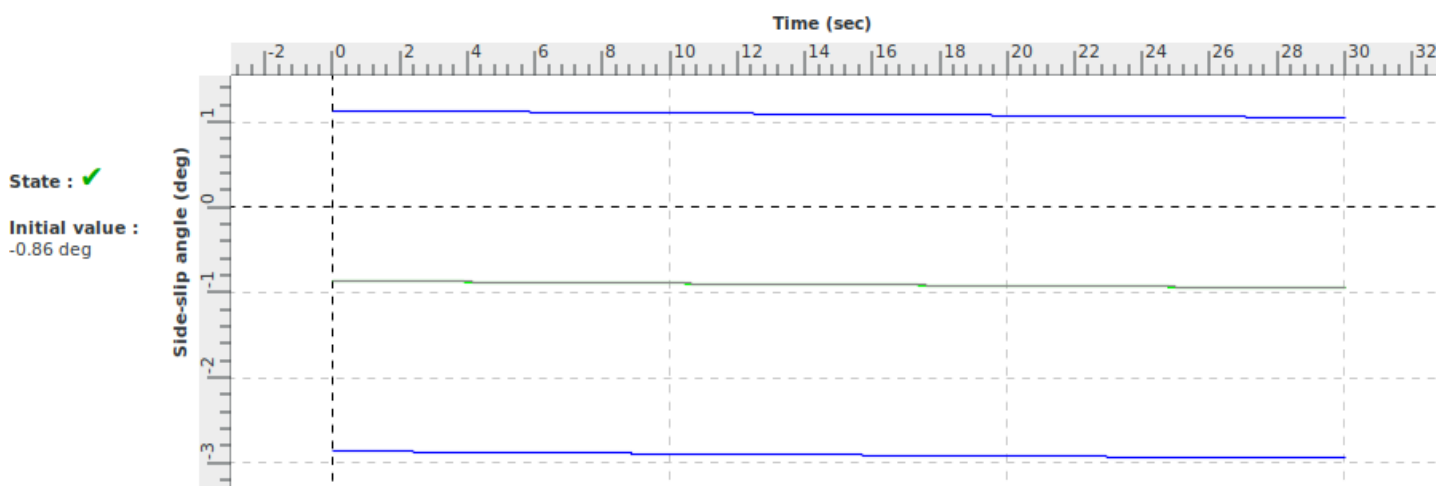
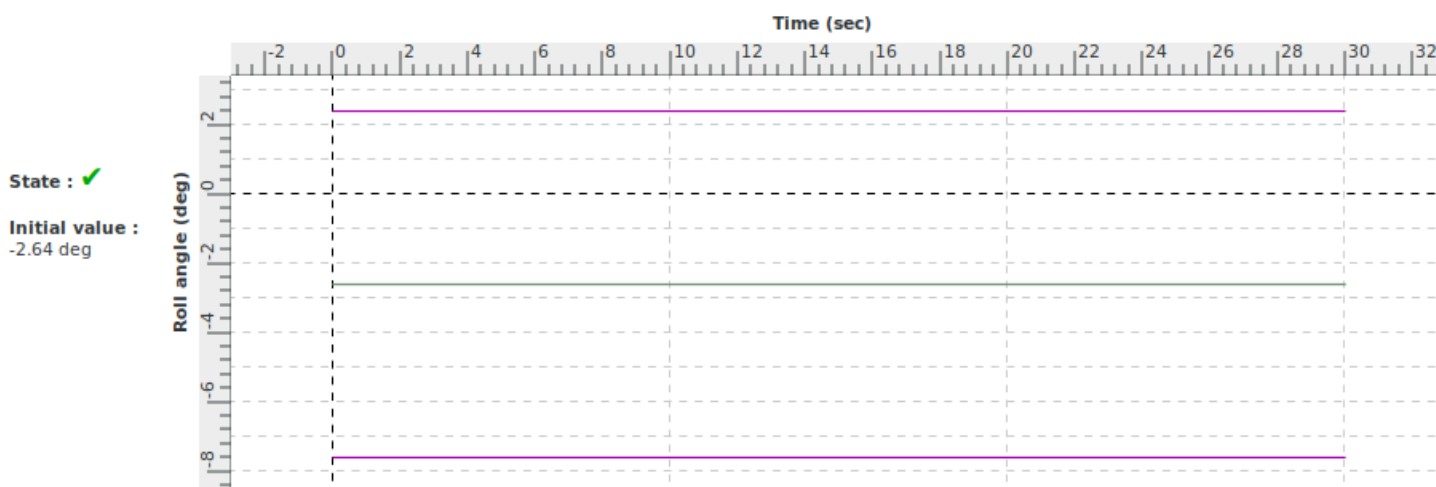
Legend :

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violet : tolerances Alsimg

grey : master

Title	Engine inoperative trim during approach		
Id	2 d v b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	03/12/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the the simulator exhibits the correct inter-relationship of steady state lateral/directional flight characteristics in conformance with the class of aeroplanes	Rudder / Bank / Sideslip / Wheel position -20% / -1.5 deg / 3.1 deg / 8.5% -100% / -10.2 deg / 25 deg / 68%
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.viii.a	+/- 2 deg bank +/- 1 deg sideslip +/- 5 deg or +/- 10% wheel position

Demonstration procedure	From steady approach initial conditions, the control rudder is used to established a steady state sideslip on the left, for two different rudder displacements.
Manual test procedure	In ISA conditions and approach configuration, the pilot performs standard approach profile. When approach is stabilised, the pilot moves the rudder by 20% then 60% of its travel in one side whilst the roll control is moved to stabilize a new heading.
Automatic test procedure	2 d viii a

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_HEADING
Automatic AUTO_HEADING mode : Heading is maintained constant through roll and yaw trim and Vertical Speed through pitch trim.	

Initial parameters	HOLD_FLAPS_APP_GEAR
Gross weight (kg) : 1900	Flaps lever position : 1
Balance (%) : 50	Gear lever position : 1
Altitude (ft) : 3000	Left Load (%) : 70
Vertical speed (ft/min) : 0	Right Load (%) : 70
IAS (kt) : 106 (free)	Left RPM : 2060
Heading (°) : 0	Right RPM : 2060
Bank (°) : 0 (free)	
Attitude (°) : -1	
Pedal Position (%) : 0	
Column Position (%) : 32	
Wheel Position (%) : 0	

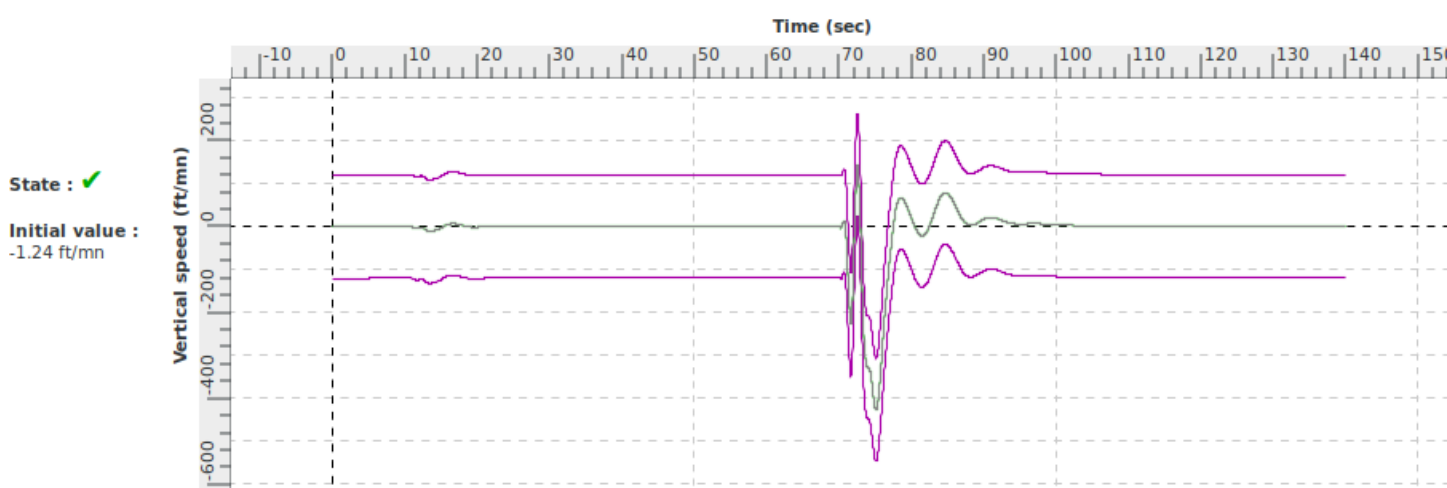
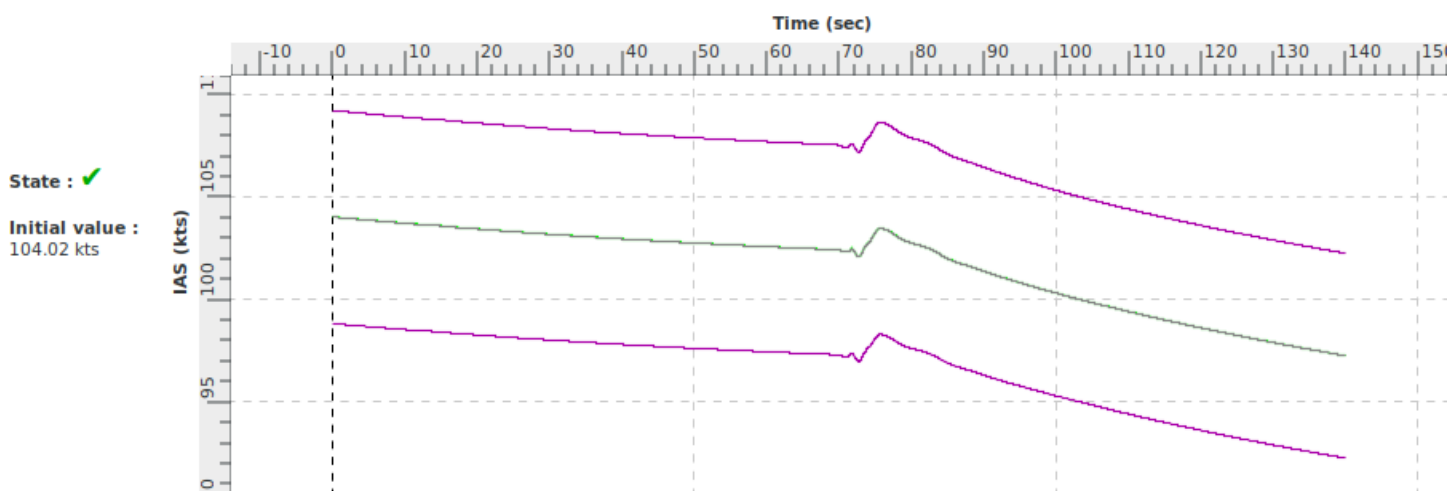
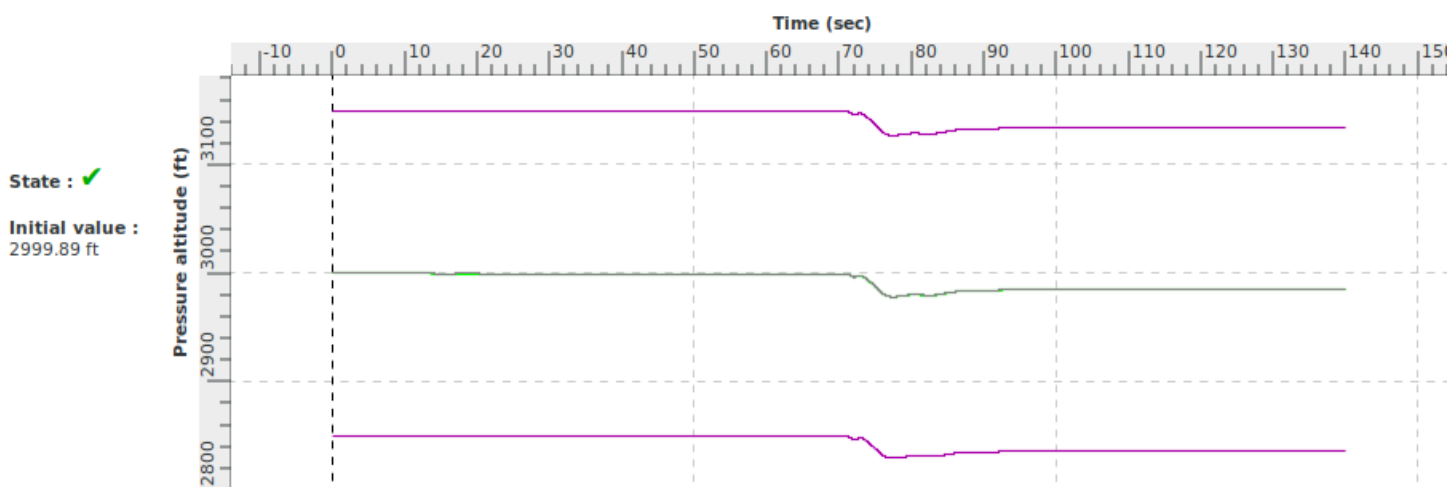
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
1.0	set_rudder_auto_heading	0.0	Ask it to maintain the desired rudder angle
10.0	set_rudder_auto_heading	-20.0	Ask it to maintain the desired rudder angle
70.0	set_rudder_auto_heading	-100.0	Ask it to maintain the desired rudder angle
140.0	Stop_Test	0.0	Stop the test procedure

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 Master. New expected results and new command.
1.02	27/07/21	2012-R1 Master. New expected results.
1.03	19/04/22	2012-R1 master correction on Force

Notes

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01



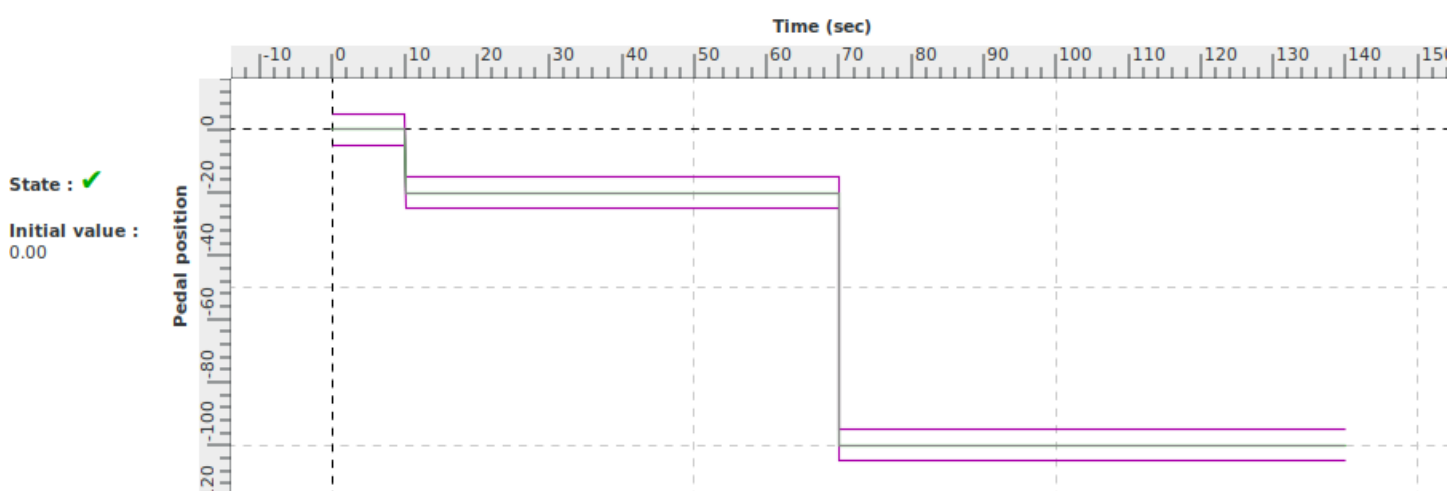
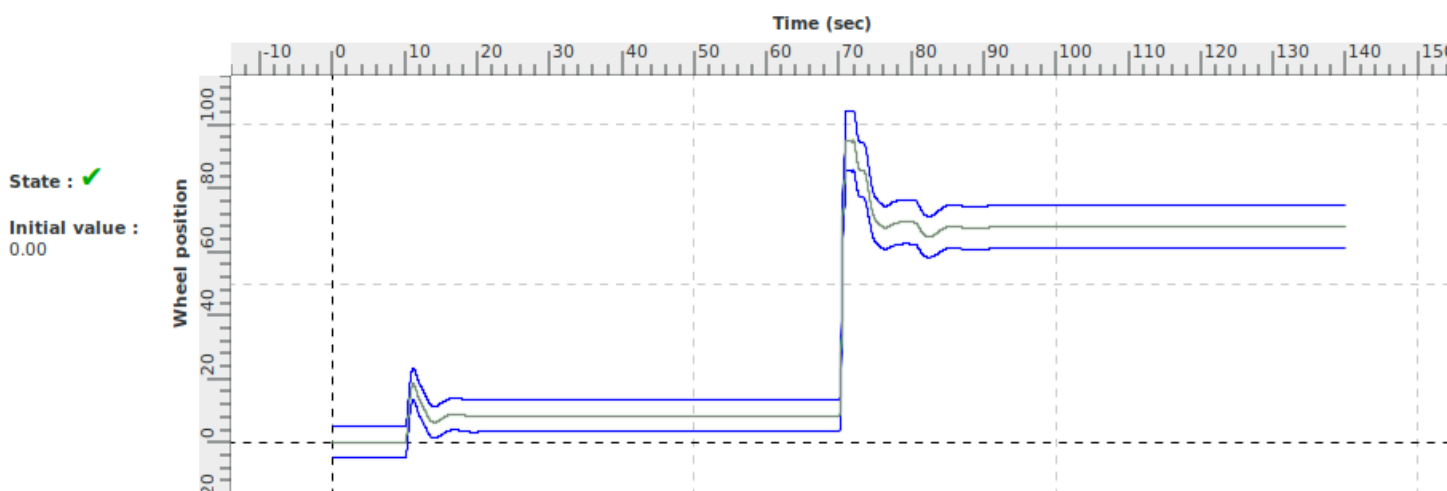
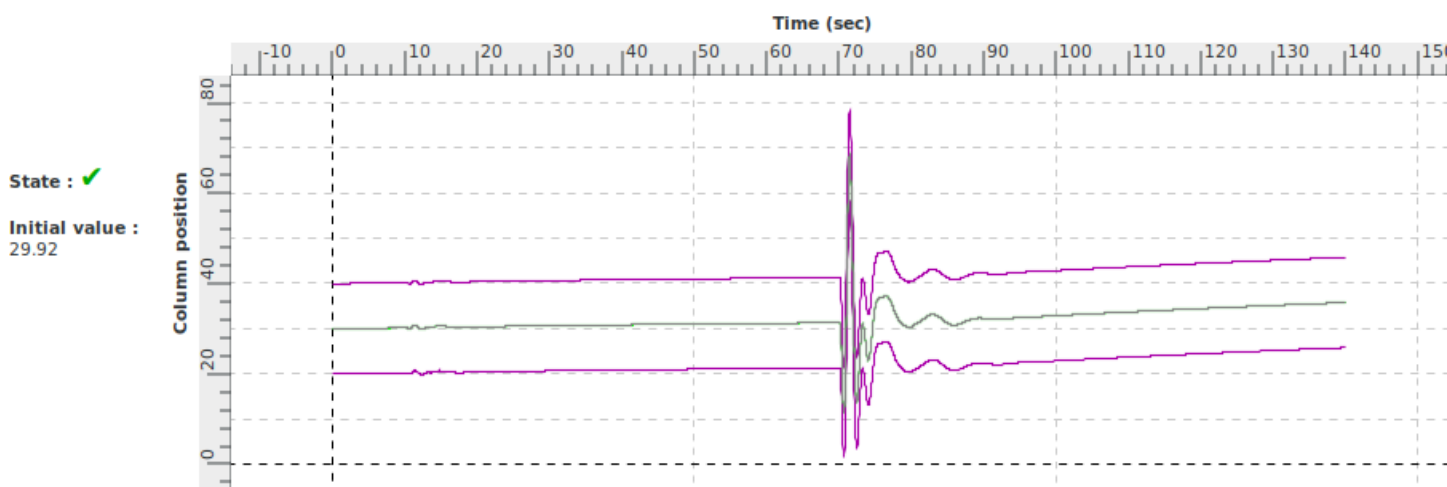
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01



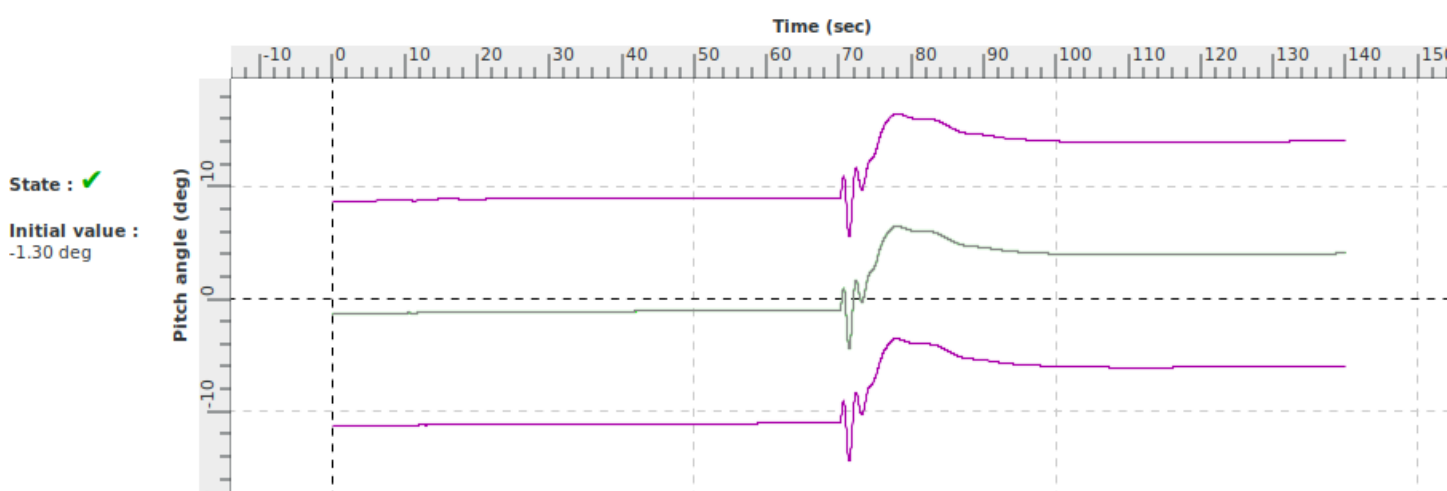
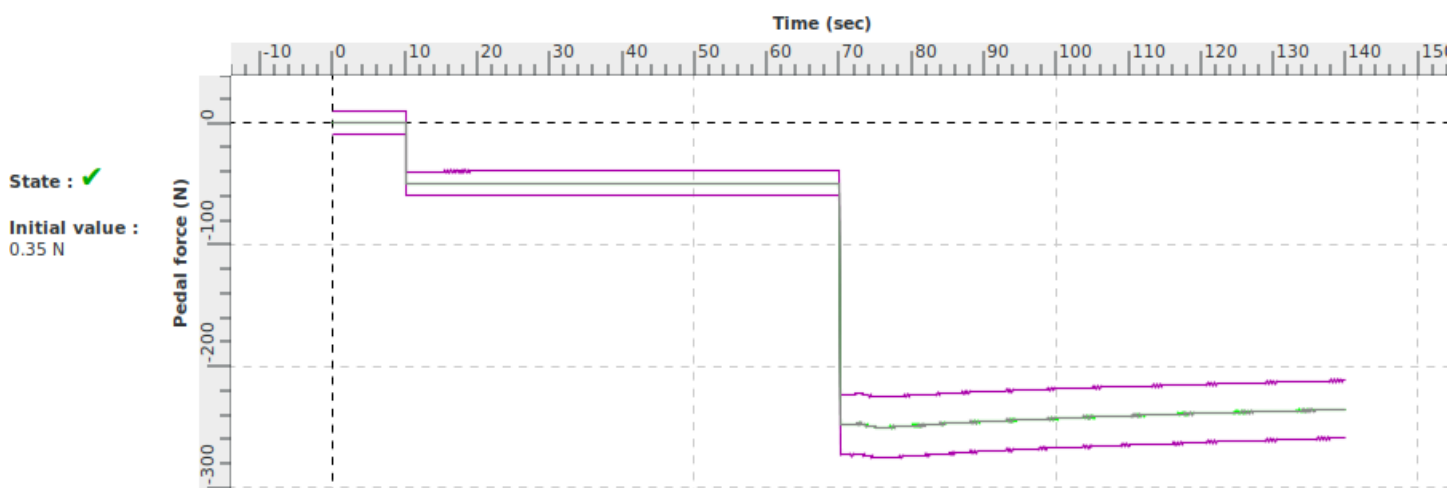
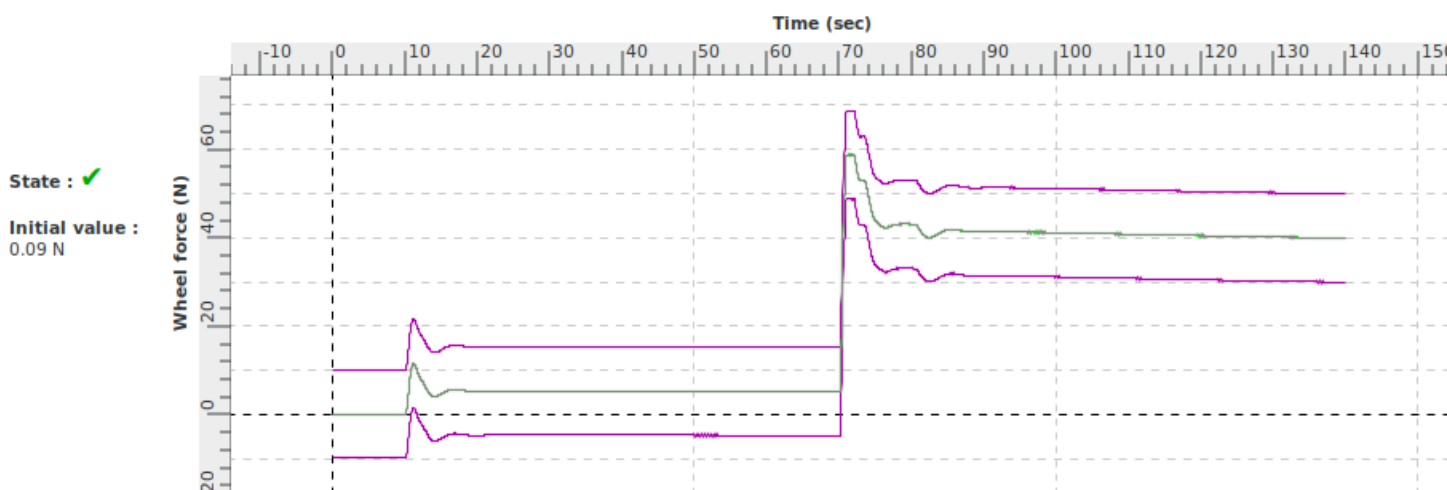
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grey : master

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01



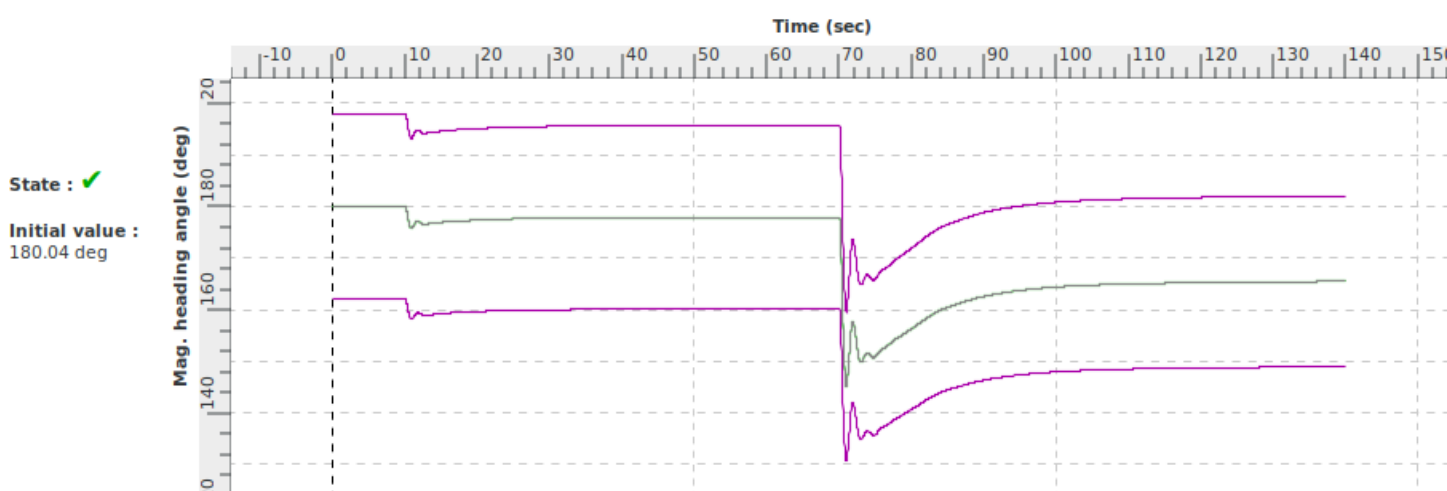
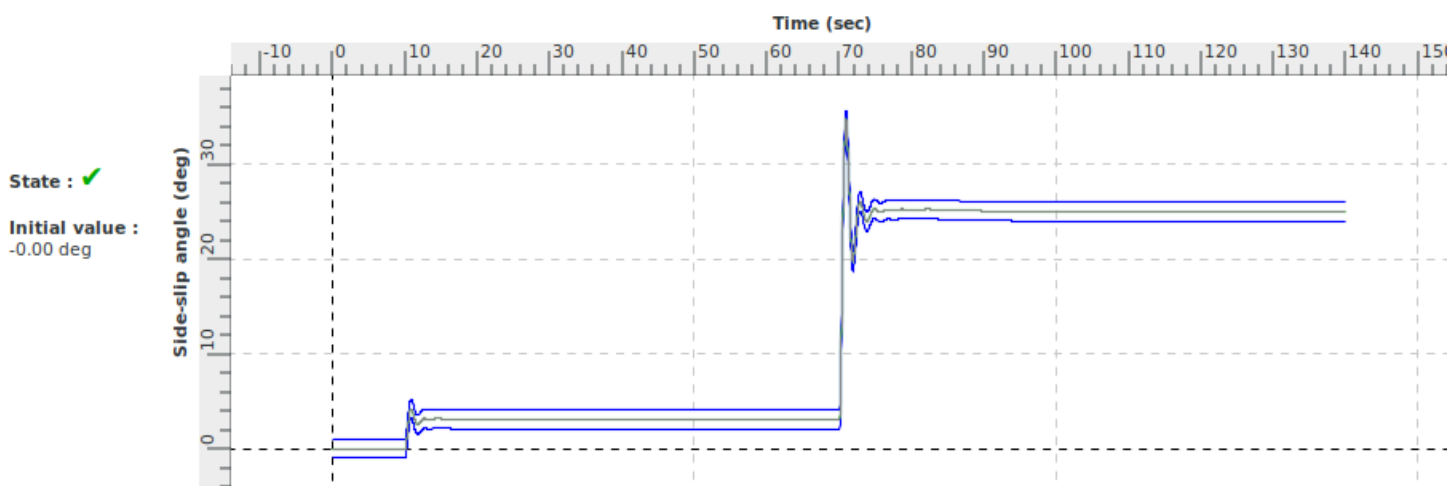
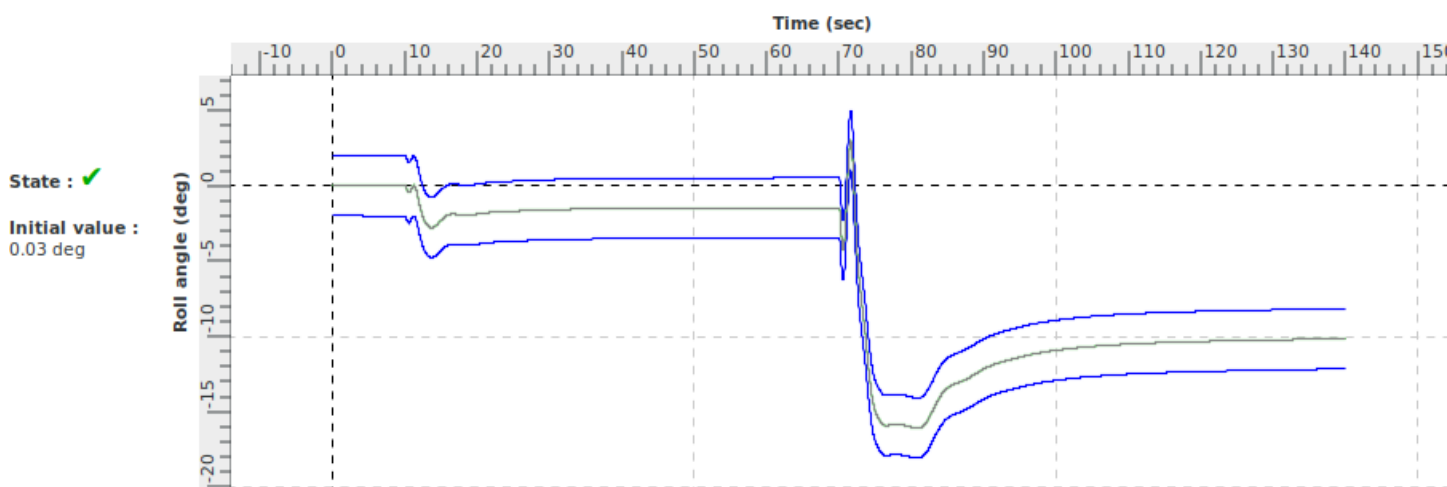
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violet : tolerances Alsim

grey : master

Title	Steady state sideslip during approach - Left		
Id	2 d viii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.03
Result Date	03/12/23	Master Date	19/04/22
Result Load	2012.01	Master Load	2012.01



Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Transport delay on yaw axis		
Id	4 a i c	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the cue correlation and responses of visual and instrument drives are sufficient to be representative of the cues perceived in the class of aeroplanes	Transport delay time : less than 300 ms
Reference	Evaluation Criteria
Chapter 12 - Validation data - Visual System Tests - Test 4.a.i.c	less than 300 ms

Demonstration procedure	The Yaw trim is moved to force the control loading system to move the yaw control. The yaw position is plotted versus time while the instruments and visual system response are also plotted versus time
Manual test procedure	The pilot moves rapidly the rudders of about 5% on one side.
Automatic test procedure	4 a i c

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Transport delay on yaw axis		
Id	4 a i c	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 IAS (kt) : 139 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

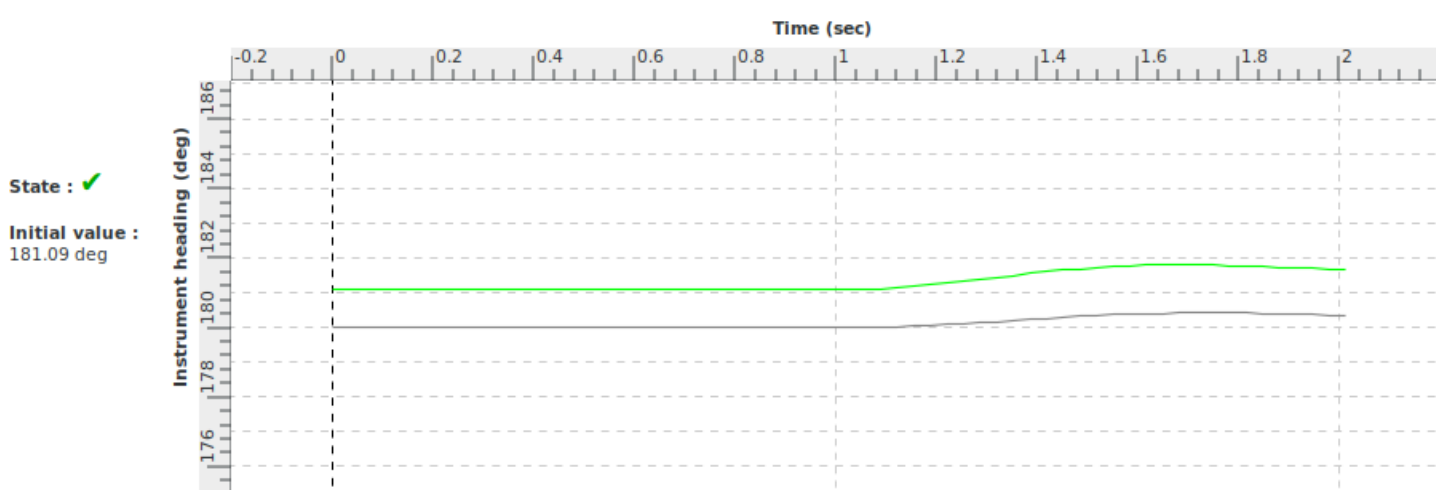
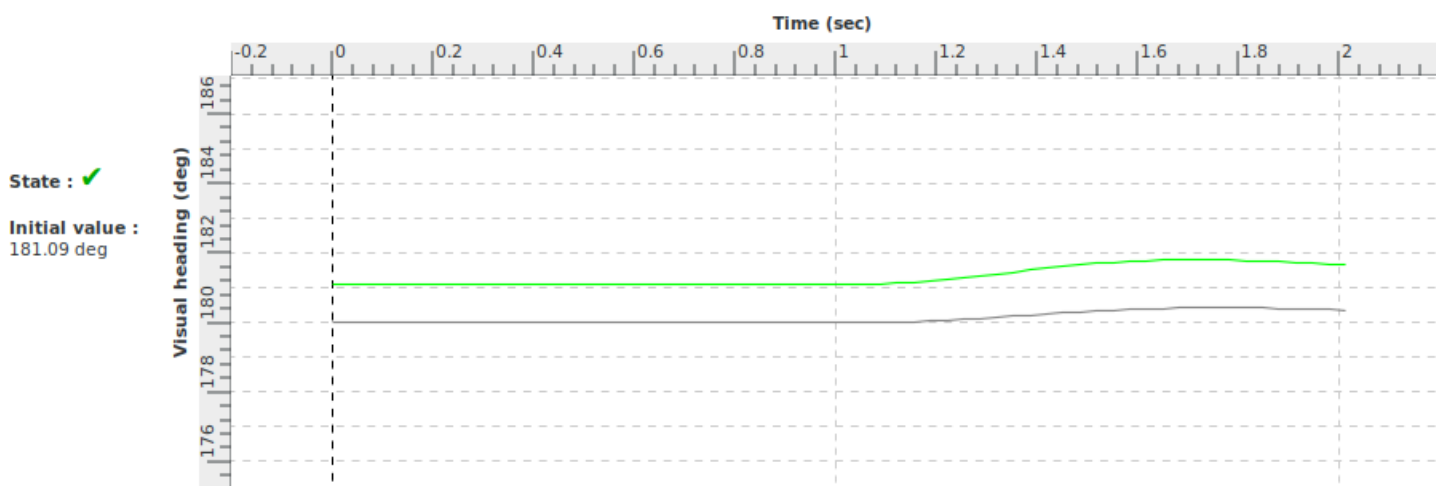
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
1.0	SetRudderCmdPalier	5.0	Send a step in the rudder govern
2.0	Stop_Test	0.0	Stop the test procedure

Title	Transport delay on yaw axis		
Id	4 a i c	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Transport delay on yaw axis		
Id	4 a i c	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	03/12/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

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