Appendix C

То

ADDENDUM NUMBER 4 TO THE SYSTEMS GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION - A300-600 GROUND TEST

A300-600 MSN 701 test program to confirm operational characteristics of the rudder system, in answer to NTSB request

I-/ Introduction :

In the frame of the AAL flight 587 accident on November 12, 2001, "iron bird" test session was held on 15, 16 and 17 May 2002 in Toulouse Blagnac (Cf MoM ref 506.0010/2002). A new test session on A/C (MSN 701) is now requested by the systems group in order to document the characteristics of the aircraft's flight control system:

Technical content:

- Measurement of Variable Stop Actuator extension characteristics and associated rudder max deflection depending on Vc
- Measurement of control system characteristics under pedals motions and forces (forces applied pedal on Rudder Travel Limiter Unit stop)
- Measurement of control system characteristics under Yaw Damper input
- Measurement of control system characteristics under Yaw Damper input combined with force and motion applied on pedals
- Measurement of Flight Augmentation Computer control laws characteristics
- Measurement of Autopilot characteristics

Organisation of the Test campaign

For the purpose of efficiency towards the successful completion of the Test program, as well as to guarantee the security of both personnel and equipment, each the NTSB and Airbus designate a test Supervisor who both co-ordinate and direct communication between the two and the conduct of test procedures assigned to each entity.

The Test Supervisor and its assistance team designated for each the NTSB and Airbus are listed in Appendix 3 of this document.

II-/ Test configuration :

Tests will be achieved on A300-600 MSN701, aircraft on wheels, three hydraulics circuits pressurised (no electric pomp use).

Pedals motions and forces shall be applied on Pilot side.

Reminder: Individual pedal force shall not exceed 133 daN (300 lbs) (limit load).

Sum of the pedal forces shall not exceed 200 daN (450 lbs) (limit load).

III-/ Means :

Pedals force measurement:

It shall be derived from the signal delivered by a specific sensor to be installed on the rod downstream of the first bellcrank of the rudder pedal control linkage under the cockpit floor, and measures the force on this rod (Cf Appendix 1).

Pedals position measurement:

It shall be derived from the signal delivered by a specific sensor to be installed on the first bellcrank downstream of the instrumented rod above (installation similar to SB A300-31-6093, Cf Appendix 2).

Rudder control surface position measurement:

It shall be measured from the signal delivered by the A/C sensor 10CT mounted on the rudder rotation axis (sensor originally fitted on A300-600).

Control wheel force measurement:

It shall be derived from the signals delivered by specific sensors to be installed on the vertical rod inside the Captain control column and the first horizontal rods downstream control columns (Captain and First Officer), and measure the force on these rods (Cf Appendix 1).

Control wheel position measurement:

It shall be derived from the signal delivered by a specific sensor to be installed on the first bellcrank downstream of the horizontal rod in the control wheel mechanical linkage. (Cf Appendix 2).

Aileron control surfaces position measurement:

It shall be measured from the signals delivered by the A/C sensors 6CT and 7CT mounted on the ailerons rotation axis (sensors originally fitted on A300-600).

Control column force measurement:

It shall be derived from the signal delivered by a specific sensor to be installed on the first rod downstream of the control column under the cockpit floor, and measures the force on this rod (Cf Appendix 1).

Control column position measurement:

It shall be derived from the signal delivered by a specific sensor to be installed on the second bellcrank in the control column mechanical linkage (installation similar to SB A300-31-6093, Cf Appendix 2).

Pitch control surface position measurement:

It shall be measured from the signal delivered by the A/C sensor 12CT mounted on the right hand pitch control surface rotation axis (sensor originally fitted on A300-600).

Variable Stop Actuator length measurement:

It shall be measured from the signal delivered by a specific sensor to be mounted on the actuator.

Vc simulation tool:

It will permit to inject simulated Vc as an ADC output.

Yaw Damper actuator servoloop kit:

It will permit to inject rudder deflection order to the Yaw Damper actuator.

Yaw Auto Pilot actuator servoloop kit:

It will permit to inject rudder deflection order to the Yaw Auto Pilot actuator.

Yaw rate simulation tool:

It will permit to inject simulated yaw rate to the FAC.

Function generator.

Information to be recorded: For each test sequence, all the following parameters shall be simultaneously registered: Pedals position (parameter N° 271025) Paired pedals force (parameter N° 271003) Rudder control surface position (parameter N° 271024) Control wheel position (parameter N° 271026) Control wheel force (parameter N° 271008) Aileron control surfaces position (parameters N° 271020 and 271021) Control column position (parameter N° 271027) Control column force (parameter N° 271009) Pitch control surface position (parameter N° 271022) VSA length (parameter N° 312)

IV-/ Test program :

IV-0: Measurement of Variable Stop Actuator extension characteristics and associated rudder max deflection depending on Vc

IV-0-1: Vc = 160 knots

Push left pedal until it reaches RTL stop. Inject a positive ramp of 1 kt/sec until Vc reaches 310 knots. Let the left pedal come back but still apply sufficient force to be in permanent contact with RTL stop. Repeat the same on right pedal.

IV-0-2: Vc=160 knots

Inject a Vc step input to 395 knots until Variable Stop Actuator motion stops. Push left pedal until it reaches RTL stop. Return to neutral. Push right pedal until it reaches RTL stop.

IV-0-3: Vc=300 knots

Cut off electrical power supply to FLC 1 & 2: Pull C/B 5CY2 (110PP) and 305CY2 (231XP). Then pull C/B 5CY1 (301PP) and 305 CY1 (331XP).

IV-1 : Measurement of control system characteristics under pedals motions and forces (Rudder trim= 0°, Yaw Damper OFF; Auto Pilot OFF)

IV-1-1 Vc = 0 knots

Left and right slow pedal motion up to the pedal mechanical stops (about 20 s from neutral to full deflection)

IV-1-2 Vc = 240 knots

IV-1-2-a: Push left pedal with a speed of 5 deg pedals / second until it reaches RTL stop. Keep on pushing the left pedal in order to increase left pedal force up to 100 daN (225 lbs) as continuously as possible.

Repeat the same on the right hand side.

IV-1-2-b: Idem IV-1-3-a but with a speed of 20 deg pedals / second.

IV-1-3 Idem IV-1-3 but with Vc = 250 knots

IV-1-4 Idem IV-1-3 but with Vc = 260 knots

WARNING: For points IV-1-5, IV-1-6, IV-1-7, IV-3-1, IV-4-9, IV-4-10, IV-4-11, IV-4-12 below, pedal force shall be continuously monitored so that it does not exceed 100 daN (225 lbs) (conservative load). The aircraft behaviour in terms of vibration / oscillations shall be monitored and test sequence shall be stopped according to specific structural criteria.

For points IV-1-5, IV-1-6, IV-1-7, operator shall be trained to achieve these test sequences

IV-1-5 Vc=0 knots

Repeat in a continuous manner three times the following sequence:

Push left pedal. When left pedal position is higher than 15° (2/3 of full travel) and before it reaches pedals mechanical stop, push right pedal. When right pedal position is higher than 15° (2/3 of full travel) and before it reaches mechanical stop, return to neutral.

The three cycles shall be completed in about 1.5 min, trying to achieve a sine movement of a 30 sec period (Cf **WARNING** above).

IV-1-6 Vc=0 knots

Same as IV-1-5 but the three cycles shall be completed in about 15 seconds, trying to achieve a sine movement of a 5 sec period (Cf **WARNING** above).

IV-1-7 Vc=0 knots

Same as IV-1-5 but the three cycles shall be completed in about 6 seconds, trying to achieve a sine movement of a 2 sec period (Cf **WARNING** above).

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<u>IV-2</u>: Measurement of control system characteristics under Yaw Damper input without any force applied on pedals

IV-2-0 Vc=0 knot

Search for maximum possible rudder deflection with Yaw Damper actuator servoloop kit tool.

IV-2-1 Vc = 0 knot

Inject a left rudder position order ramp of 15 deg rudder / sec (equivalent to a rudder deflection speed order step input) to the Yaw Damper actuator, with Yaw Damper actuator servoloop kit tool and function generator (max ordered position: 8.5 deg rudder)

Repeat the same with a right ramp.

IV-2-2 Idem IV-2-1 but with a ramp of 39 deg rudder / sec (39 deg rud / sec is the actuator and FAC max speed).

IV-2-3 Idem IV-2-1 but with a ramp of 60 deg rudder / sec (rudder deflection speed should be 39 deg rud / sec only due to actuator max speed).

IV-3 : Measurement of control system characteristics under Yaw Damper input combined with force and motion applied on pedals

IV-3-1 Vc = 0 knot

Inject a left ramp of 0.5 deg rudder / sec to the Yaw Damper actuator until rudder reaches max deflection (max deflection should be 8.5 deg rud due to function generator). During this rudder movement , apply the following cycle to the pedals:

push left pedal up to mechanical stop, return to neutral, push right pedal up to mechanical stop, return to neutral. This cycle shall be completed in about 3 seconds (Cf **WARNING** above). Continue movement in order to achieve a sine movement of a 3 sec period.

IV-3-2 Vc = 240 knots

Inject a rudder deflection order to the Yaw Damper actuator of 4 deg rudder left.

Push left pedal until it reaches RTLU stop.

Slowly increase pedal force up to 50 daN (112 lbs).

Inject a right ramp of 39 deg rudder / sec to the Yaw Damper until Yaw Damper output reaches 4 deg rudder right. Maintain 50 daN (112 lbs) on the left pedal.

IV-3-3 Vc = 240 knots

Inject a rudder deflection order to the Yaw Damper of 4 deg left.

Push right pedal until it reaches RTLU stop.

Slowly increase pedal force up to 50 daN (112 lbs).

Inject a right ramp of 39 deg rudder / sec to the Yaw Damper until Yaw Damper output reaches 4 deg rudder right. Resist pedal motion up to 100 daN (225 lbs).

IV-4 : Measurement of FAC (Flight Augmentation Computer) control laws characteristics

IV-4-1 Vc = 165 knots

Inject a step input yaw rate of 10 deg yaw /sec to the FAC until rudder reaches maximum deflection.

IV-4-2 Idem IV-4-1 but with Vc = 200 knots

IV-4-3 Idem IV-4-1 but with Vc = 240 knots

IV-4-4 Idem IV-4-1 but with Vc = 260 knots

IV-4-5 Vc = 165 knots

Inject a yaw rate varying from 0 to 10 deg yaw /sec, with an increase rate of 0.1 deg yaw / sec / sec, to the FAC until rudder reaches maximum deflection.

IV-4-6 Idem IV-4-5 but with Vc = 240 knots

IV-4-7 Idem IV-4-5 but with Vc = 240 knots and a yaw rate increase rate of 0.5 deg yaw / sec / sec

IV-4-8 Idem IV-4-5 but with Vc = 240 knots and a yaw rate increase rate of 1 deg yaw / sec / sec

IV-4-9 Vc = 240 knots

Inject a sinusoidal yaw rate varying from 0 to 10 deg yaw /sec, with a period of 10 seconds, to the FAC (Cf WARNING above)

IV-4-10 Idem IV-4-9 but with a period of 5 seconds (Cf WARNING above)

IV-4-11 Idem IV-4-9 but with a period of 3 seconds (Cf WARNING above)

IV-4-12 Idem IV-4-9 but with a period of 2 seconds (Cf WARNING above)

IV-5 : Measurement of Autopilot actuator characteristics (Rudder trim= 0°, Yaw Damper OFF; Auto Pilot ON)

IV-5-0 Search for maximum possible rudder deflection with Autopilot actuator servoloop kit.

IV-5-1 Vc = 0 knots

Inject a left rudder position order ramp of 15 deg rudder / sec (equivalent to a rudder deflection speed order step input) to the Yaw Autopilot Actuator, with Yaw Auto Pilot actuator servoloop kit and function generator (max ordered position: 18 deg rudder).

Repeat the same with a right ramp.

IV-5-2 Idem IV-5-1 but with a ramp of 34 deg rudder / sec (34 deg rud / sec is the actuator and FAC max speed).

IV-5-3 Idem IV-5-1 but with a ramp of 60 deg rudder / sec (rudder deflection speed should be 34 deg rud / sec only due to actuator max speed).

Agreed and accepted

AIRBUS

Dominique CHATRENET

Vice President Flight Control & Hydraulics Systems

Date: 12/09/09

Signature:

NATIONAL TRANSPORTATION SAFETY BOARD

Steven MAGLADRY

Systems Group Chairman

Date:

Signature:

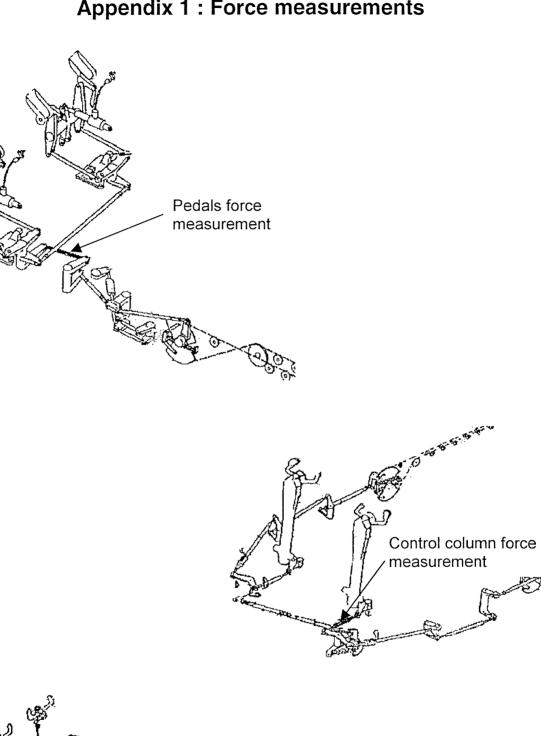
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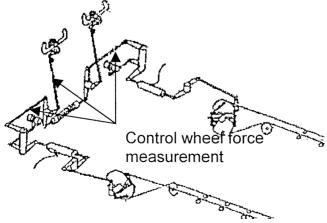
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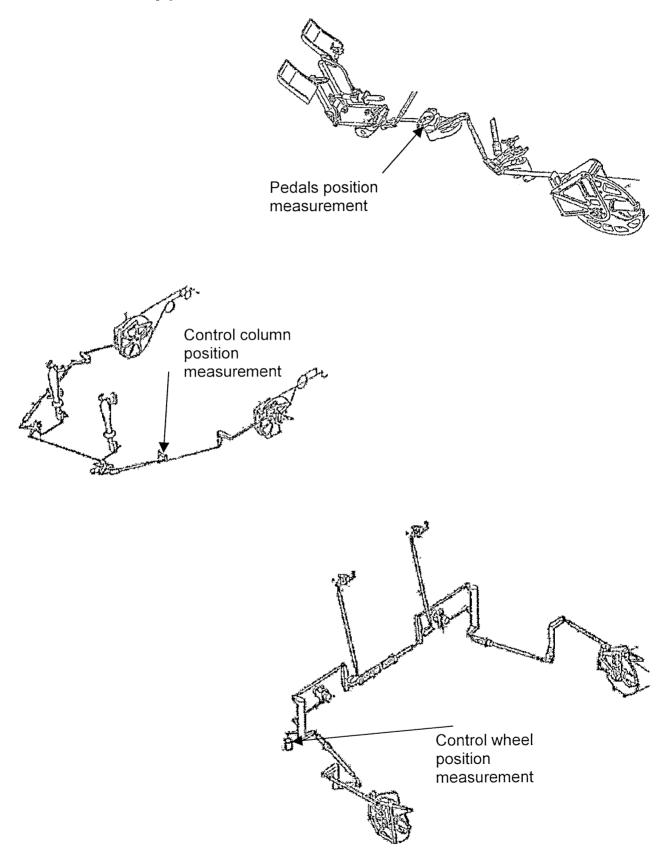
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Appendix 1 : Force measurements



Appendix 2 : Position measurements



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Appendix 3 : Test Supervisory

For Airbus:

Ground Test Supervisor – Instrumentation & Engineering	Denis OSWALD
With the assistance of:	
System Ground Test Follow-up – Design Office -	Laurent ANDRIEU (back-up Cecile MAGNE)
Ground Test Maintenance Support & Logistics liaison	Dominique MAZZARINO
Ground Test Support Engineering	André MAUMUS
HUMAN FACTORS Tests Support	Armand JACOB

For the NTSB

Ground Test Supervisor -	Scott WARREN
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With the assistance of:	
System Ground Test Follow-up –	.Steve MAGLADRY
Instrumentation Engineering	.Marc HEPP

HUMAN FACTORS Tests Support -.....Bart ELIAS

September 11th 2002

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-> ALI	IV-0 MEASUREMENT OF VSA EXTENSION CHARACTERISTICS AND ASSOCIATED ALL TRIMS = 0° YAW DAMPER = OFF AUTO PIL	AND ASSOCIATI	CIATED RUDDER M AUTO PILOT = OFF	IAX DEFLEC	RUDDER MAX DEFLECTION DEPENDING ON Vc OT = OFF SLATS/FLAPS = retracted	ON Vc tracted
	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-0-1 Vc = 160 kts					
A	Set Vc = 160 kts	LACOMBE		34120611		253 IV01.001
			VSA	271040		
മ	Left pedal motion → RTL stop	Pilot	Rud. Ped. Rud Surf	271025		16:29:00 16:30:30
			Rud. Force	271003		00.10
			L Ped. Force	271001		95 lbs
U	Increase Vc 1 kts/s → 310 kts	LACOMBE		34120611		
	Left pedal comes back but apply force to maintain contact to	Pilot	VSA	271040		
	RTL stop		Rud. Ped.	271025		
			Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		
ш	Return to neutral	Pilot	Rud. Ped.	271025		
			Rud. Surf	271024		
100 mil						
ш	Set Vc = 160 kts	LACOMBE	Vc 3	34120611		
			VSA	271040		253 IV01.002
U	Right pedal motion → RTL stop	Pilot	Rud. Ped.	271025		
	-		Rud. Surf	271024		16:36:00
			Rud. Force	271003		16:39:15
			R Ped. Force	271002		
I	Increase Vc 1 kts/s \rightarrow 310 kt	LACOMBE		34120611		
			VSA	271040		
_	Right pedal comes back but apply force to maintain contact to	Pilot	Rud. Ped.	271025		
	RTL stop		Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		
			Rud. Ped.	271025		
7	Return to neutral	Pilot	Rud. Surf	271024		

IV-0 MEASUREMENT OF VSA EXTENSION CHARACTERISTICS AND ASSOCIATED RUDDER MAX DEFLECTION DEPENDING ON Vc ALL TRIMS = 0° | YAW DAMPER = OFF | | AUTO PILOT = OFF | | SLATS/FLAPS = retracted

L	ACTIONS	ACTORS	READ	RESULTS	COMMENTS/GMT
	IV-0-2 Vc = 160 kts				
∢	Set Vc = 160 kts	LACOMBE	Vc 34120611	311	253 IV02
			VSA 2710	040	
m	B Vc step 160kts → 395 kts	LACOMBE	Vc 34120611	311	16:44:15
			VSA 2710	040	16:47:20
ပ	C Push left pedal to stop	Pilot	L ped force 271001	100	
			Rud.surf 271024	224	
	D Push right pedal to stop	Pilot	R ped force 271002	202	
			Rud.surf 271024	224	

IV-0 MEASUREMENT OF VSA EXTENSION CHARACTERISTICS AND ASSOCIATED RUDDER MAX DEFLECTION DEPENDING ON Vc ALL TRIMS = 0° YAW DAMPER = OFF AUTO PILOT = OFF SLATS/FLAPS = retracted

	ACTIONS		ACTORS	В	READ	RESULTS	COMMENTS/GMT
	IV-0-3-1 Vc = 300 kts						253 IV03.001
∢	A Set Vc = 300 kts		LACOMBE	Vc	34120611		16:07:51
				VSA	271040		16:11:00
m	B Cut off electrical power supply to FLC2 5CY2 and 305CY2 Pilot	5CY2 and 305CY2	Pilot	VSA	271040		nothing
		J4 J5		RTL fit	271042		
ပ	C Cut off electrical power supply to FLC1	5CY1 and 305CY1 Pilot	Pilot	VSA	271040		retract
		J1 J2		RTL flt	271041		253 IV03.002
	Reset C/B		Pilot				16:16:00
							16:17:20

IV-0 MEASUREMENT OF VSA EXTENSION CHARACTERISTICS AND ASSOCIATED RUDDER MAX DEFLECTION DEPENDING ON Vo Nota: Post test program NSTB request

SLATS/FLAPS = retracted

AUTO PILOT = OFF

YAW DAMPER = OFF

ALL TRIMS = 0°				
ACTIONS	ACTORS	READ	RESULTS	COMMENTS/GMT
IV-0-3-2 Vc = 300 kts				253 IV03.003
A Set Vc = 300 kts	LACOMBE	Vc 34120611	611	16:19:00
		VSA 271040	040	16:20:30
B Cut off electrical general 115 VAC/400 power	Pilot	VSA 271040	040	retract
		RTL fit 271042	042	
		RTL fit 271041	041	
D Reset C/B	Pilot			

IV-0 MEASUREMENT OF VSA EXTENSION CHARACTERISTICS AND ASSOCIATED RUDDER MAX DEFLECTION DEPENDING ON VC Nota: Post test program NSTB request

۲	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	racted
		ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-0-3-3 Vc = 300 kts	Si					254 IV03.004
∣∢	A Set Vc = 300 kts		LACOMBE	Vc 341	34120611		16:05:30
				VSA 2	271040		16:06:28
ш	Shut down A/C external	B Shut down A/C external ground electrical power supply	Ground		271040		retract
			mechanic	RTL fit 27	271042		
				RTL fit 2'	271041		
ပ	C Reset power		Ground				
			mechanic				

IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES ALL TRIMS = 0° YAW DAMPER = OFF AUTO PILOT = OFF SLATS/FLAPS = retracted

	ACTIONS	ACTORS	READ	AD	RESULTS	COMMENTS/GMT
	IV-1-1 Vc = 0 kts					253 IV11.001
R	A Set Vc = 0 kts	LACOMBE	Vc	34120611		16:51:20
۵	B Left pedal motion \rightarrow to stop (approx 20 s)	Pilot	Rud. Ped.	271025		16:53:54
	-		Rud. Surf	271024		253 IV11.002
ပ	C Return to neutral (approx 20 s)	Pilot				16:57:32
	D Right pedal motion → to stop (approx 420s)	Pilot	Rud. Ped.	271025		16:59:45
	-		Rud. Surf	271024		253 IV11.003
ш	E Return to neutral (approx 20 s)	Pilot				17:00:21
						17:02:30

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 IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES

 ALL TRIMS = 0°
 | YAW DAMPER = OFF |
 | AUTO PILOT = OFF |

F	ALL TRIMS = 0° YAW DAMPER = OFF	AUT	AUTO PILOT = OFF	ALL TRIMS = 0° YAW DAMPER = OFF AUTO PILOT = OFF	SLATS/FLAPS = retracted	acted
	ACTIONS	ACTORS	READ	0	RESULTS	COMMENTS/GMT
	IV-1-2 Vc = 240 kts					
∢	Set Vc = 240 kts	LACOMBE	Vc :	34120611		253 IV12.001
			VSA	271040		17:06:50
മ	Left pedal motion at 5° /s \rightarrow to RTL stop (approx 2 s)	Pilot	Rud. Ped.	271025		17:08:20
	-		Rud. Surf	271024		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			L Ped. Force	271001		Max 100 daN/225 lbs
		Pilot	Rud. Force	271003		
			L Ped. Force	271001		Max 100 daN/225 lbs
ပ	Return to neutral					
	Right pedal motion at 5° /s \rightarrow to RTL stop (approx 2 s)	Pilot		34120611		
			VSA	271040		
			Rud. Ped.	271025		
			Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			R Ped. Force	271002		
ш	Left pedal motion at 20° /s \rightarrow to RTL stop (approx 1/2 s)	Pilot	Rud. Ped.	271025		253 IV12.002
			Rud. Surf	271024		17:13:50
			Rud. Force	271003		17:14:55
*****			L Ped. Force	271001		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			L Ped. Force	271001		
щ	Return to neutral		1			
ני	Right needal motion at $20^{\circ/s} \rightarrow to RTI stop (approx 1/2 s)$	Pilot	Rud. Ped.	271025		
)			Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		
			Rud. Force	271003		
	Increase pedal force up to 100daN = 225 Ibs		R Ped. Force	271002		
I	Return to neutral					
				_		

IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES

					SI ATS/FI ADS = retracted	acted
ł					-	
	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-1-3 Vc = 250 kts					
⊲	Set Vc = 250 kts	LACOMBE	Vc 34	34120611		253 IV13.001
			VSA	271040		17:18:50
m	Left pedal motion at $5^{\circ}/s \rightarrow$ to RTL stop (approx 1.5 s)	Pilot	Rud. Ped.	271025		17:19:50
			Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		Max 100 daN/225 lbs
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			L Ped. Force	271001		Max 100 daN/225 lbs
ပ	Return to neutral					
	Right pedal motion at $5^{\circ}/s \rightarrow$ to RTL stop (approx 1.5 s)	Pilot		34120611		
			VSA	271040		
			Rud. Ped.	271025		
			Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			R Ped. Force	271002		
1000						
Ш	Left pedal motion at 20° /s \rightarrow to RTL stop (approx 1/3 s)	Pilot	Rud. Ped.	271025		253 IV13.002
			Rud. Surf	271024		17:21:40
			Rud. Force	271003		17:22:20
			L Ped. Force	271001		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			L Ped. Force	271001		
	Return to neutral					
U	Binht nedal motion at 20°/c → to RTI ston (approx 1/3 s)	Pilot	Rud. Ped.	271025		
)			Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		
	Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
			R Ped. Force	271002		
	Increase pedal force up to Toodaly - 220 lbs					
				-	1	

 IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES

 ALL TRIMS = 0°
 YAW DAMPER = OFF

	ALL TRIMS = 0° YAW DAMPER = OFF	ALL TRIMS = 0° YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		UTO PILOT = OFF SLATS/FLAPS = retracted	racted
W1.4 Vc = 260 kts ACIUNS			ACTOD?				COMMENTS/CMT
W-1-14VC = 260 ktsLACOMBEVo3120611Set VC = 260 ktsSet VC = 260 ktsVA271040Left pedal motion at 5's \rightarrow to RTL stop (approx 1 s)PilotRud Sid271024Increase pedal force up to 100daN = 225 lbsRud Force271001Rud Force271001Return to neutralLeft pedal motion at 5's \rightarrow to RTL stop (approx 1 s)PilotVc371244Return to neutralLeft pedal motion at 5's \rightarrow to RTL stop (approx 1 s)PilotVc371040Return to neutralLeft pedal motion at 5's \rightarrow to RTL stop (approx 1 s)PilotVc371024Rud Force271003Rud Force271003Rud Force271003Increase pedal force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force271003Rud Force271003Rud Force271003Rut force271003Rud Force271003Rud Force271003Rut force271003Rud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force271003Rud Force271003Rut force up to 100daN = 225 lbsRud Force2710			ACIONS			НЕЭЦГІЭ	
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$				Rud. Force	271003		
$ \mbox{Increase pedal force up to 100daN = 225 lbs } \mbox{Increase pedal force up to 100daN = 225 lbs } \mbox{Increase pedal motion at $7's $> to RTL stop (approx 1 s) } \mbox{Pilot} \mbox{Increase pedal force up to 100daN = 225 lbs } \mbox{Increase pedal force up to 100daN = 225 lbs } \mbox{Rud Force 271002 } \mbox{Rud Force 271003 } R$				L Ped. Force	271001		Max 100 daN/225 lbs
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$)			VSA	271040		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					271025		
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Left pedal motion at 20 /s \rightarrow to K1L stop (approx 1/4 s)mutual set and surf Surf S17024Increase pedal force up to 100daN = 225 lbsLeft. Surf. S17003Increase pedal force up to 100daN = 225 lbsLeft. Force 271001Return to neutralLeft. Force 271003Right pedal motion at 20°/s \rightarrow to RTL stop (approx 1/4 s)Right pedal motion at 20°/s \rightarrow to RTL stop (approx 1/4 s)PilotRud. Surf 271025Right pedal motion at 20°/s \rightarrow to RTL stop (approx 1/4 s)PilotRud. Surf 271026Rud. Surf 271026Rud. Surf 271027Rud. Surf 271027Rud. Force 271003Rud. Force 271003Return to neutralReturn to neutral	ſ		+~!:0	םיק חיק	271025		253 N/14 003
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Increase pedal force up to 100daN = 225 Ibs Rud. Force 271001 Rud. Force 271001 Rud. Force 271001 Rud. Force 271001 Rud. Force 271002 Rud. Acres 271003 Rud. Force 271003 Rud.				Rud. Surt	2/1024		17:28:10
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Rud. Surf Rud. Force Return to neutral	ני	Right needal motion at $20^{\circ/s} \rightarrow$ to RTL stop (approx ½ s)	Pilot	Rud. Ped.	271025		
Rud. Force Increase pedal force up to 100daN = 225 lbs Return to neutral)			Rud. Surf	271024		
Increase pedal force up to 100daN = 225 lbs Return to neutral Return to neutral				Rud. Force	271003		
Increase pedal force up to 100daN = 225 lbs Return to neutral Return to neutral				R Ped. Force	271002		
Increase pedal force up to 100daN = 225 lbs Return to neutral				Rud. Force			
		Increase pedal force up to 100daN = 225 lbs		R Ped. Force			
		Return to neutral					

IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES Warning: Do not exceed 100 daN = 225 lbs on pedal force

A	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
	AC	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-1-5 Vc = 0 kts (note delta ped max=21°)	delta ped max=21°)					
∣∢	A Set Vc = 0 kts		LACOMBE	Vc	34120611		253 IV15
	****			VSA	271040		17:51:00
m	+	Push left pedal up to 15° (2/3 of full travel) but don't reach	Pilot	Rud. Ped.	271025		17:52:45
	stop			Rud. Surf	271024		
				Rud. Force	271003		
				L Ped. Force	271001		Max 100 daN/225 lbs
O	C Push right pedal up to 15° (2	Push right pedal up to 15° (2/3 of full travel) but don't reach	Pilot	Rud. Ped.	271025		
	stop			Rud. Surf	271024		
	-			Rud. Force	271003		
				R Ped. Force	271002		Max 100 daN/225 lbs
ഥ 	D Return to neutral. Cycle achieved in 30s and continue immediately with next point	nieved in 30s and continue at					
Ш	E Repeat cycle. Cycle achieved in 30s and continue	ed in 30s and continue	Pilot	Rud. Ped.	271025		
		nt		Rud. Surf	271024		
				Rud. Force	271003		
				L Ped. Force	271001		
				R Ped. Force	271002		
<u> </u> Ľ	F Repeat cycle. Cycle achieved in 30s	ed in 30s	Pilot	Rud. Ped.	271025		
	•			Rud. Surf	271024		
				Rud. Force	271003		
				L Ped. Force	271001		
				R Ped. Force	271002		

IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES Warning: Do not exceed 100 daN = 225 lbs on pedal force

A	ALL TRIMS = 0° YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	itracted
	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-1-6 Vc = 0 kts					
∢	A Set Vc = 0 kts	LACOMBE	Vc :	34120611		253 IV16
			VSA	271040		17:55:56
m	3 Push left pedal up to 15° (2/3 of full travel) but don't reach	Pilot	Rud. Ped.	271025		17:56:33
	stop		Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		Max 100 daN/225 lbs
U	C Push right pedal up to 15° (2/3 of full travel) but don't reach	Pilot	Rud. Ped.	271025		
	stop		Rud. Surf	271024		
			Rud. Force	271003		
			R Ped. Force	271002		Max 100 daN/225 lbs
) Return to neutral. Cycle achieved in 5s and continue		Rud. Ped.	271025		
	immediately with next point		Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		
			R Ped. Force	271002		
ш	E Repeat cycle. Cycle achieved in 5s and continue	Pilot	Rud. Ped.	271025		
	immediately with next point		Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		
			R Ped. Force	271002		
L	Repeat cycle. Repeat cycle. Cycle achieved in 5s	Pilot	Rud. Ped.	271025		
	· ·		Rud. Surf	271024		
			Rud. Force	271003		
			L Ped. Force	271001		
			R Ped. Force	271002		

IV-1 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER PEDALS MOTIONS AND FORCES Warning: Do not exceed 100 daN = 225 lbs on pedal force

ActronsActorsActorsREADRESULTSCOMMENTS(G)A Set Vc = 0 ktsVc = 0 ktsVc = 0 kts253 (V17)253 (V17)B vush left pedal up to 15° (2/3 of full travel) but don't reachPilotVc = 2102417:55 2817:55 28C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf27102517:55 28C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf27102517:55 28C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf27102517:55 28C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf27102517:55 28C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel)Rud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel)Rud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel)Rud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel)Rud Surf271024Max 100 daN/22518C Push right pedal up to 15° (2/3 of full travel)Rud Surf271024Max 100 daN/22518 <t< th=""><th>Ā</th><th>ALL TRIMS = 0° YAW DAMPER = OFF</th><th>AUT</th><th>AUTO PILOT = OFF</th><th></th><th>SLATS/FLAPS = retracted</th><th>tracted</th></t<>	Ā	ALL TRIMS = 0° YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	tracted
ACTORSACTORSREADRESULTSIV-1-7 Vc = 0 ktsACTIONSACTORSNc 3120611 253Ev C = 0 ktsVc 3120611 273273Set Vc = 0 ktsVc 3120611 273273Push left pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Ped.27102417.5Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Fed.271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Fed.271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Fed.271024MaxPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Fed.271024MaxReturn to neutral. Cycle achieved in 2s and continuePilotRud. Fed.271025MaxRepeat cycle. Cycle achieved in 2s and continuePilotRud. Fed.271024PilotRepeat cycle. Cycle achieved in 2sPilotRud. Force271002PilotPilotRepeat cycle. Cycle achieved in 2s							
IV-1-7Vc = 0 ktsLacOMBEVc 34120611 NcSet Vc = 0 ktsNc 34120611 NcNcSet Vc = 0 ktsPlotNc 34120611 NcPush left pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Ped. 271024 NcPush right pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Surf 271024 NcPush right pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Surf 271024 NcPush right pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Surf 271024 NcPush right pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Surf 271024 NcPush right pedal up to 15° (2/3 of full travel) but don't reachPliotRud. Force 271003 NcPush right pedal up to 15° (2/3 of full travel)PliotRud. Force 271003 NcPush right pedal up to 15° (2/3 of full travel)PliotRud. Force 271003 NcPush right pedal up to 15° (2/3 of full travel)PliotRud. Force 271003 NcRud. Force271003Rud. Force 271003 NcNcRepeat cycle. Cycle achieved in 2s and continuePliotRud. Force 271003 NcRepeat cycle. Cycle achieved in 2s and continuePliotRud. Force 271003 NcRud. ForceCyrlosPloitRud. Force 271003 NcRepeat cycle. Cycle achieved in 2sPliotRud. Force 271003 Nc<		ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
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Push left pedal up to 15° (2/3 of full travel) but don't reachVSA 271026 NPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force 271024 NPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force 271024 NPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force 271024 NPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force 271024 NRud. Force 271025 Rud. Force 271026 NNReturn to neutral. Cycle achieved in 2s and continuePilotRud. Surf 271026 NRepeat cycle. Cycle achieved in 2s and continuePilotRud. Surf 271026 NRepeat cycle. Cycle achieved in 2s and continuePilotRud. Eorce 271002 NRepeat cycle. Cycle achieved in 2s and continuePilotRud. Surf 271026 NRepeat cycle. Cycle achieved in 2s and continuePilotRud. Eorce 271002 NRepeat cycle. Cycle achieved in 2s and continuePilotRud. Surf 271026 NRepeat cycle. Cycle achieved in 2sPilotRud. Surf 271026 NNRepeat cycle. Cycle achieved in 2sPilotRud. Surf 271026 NNRepeat cycle. Cycle achieved in 2sPilotRud. Surf 271026 NNRepeat cycle. Cycle achieved in 2sPilotRud. Eorce 271001 NNRepeat cy	∣∢		LACOMBE		120611		253 IV17
Push left pedal up to 15° (2/3 of full travel) but don't reach stopPilotRud. Eur. 271025 Pund.Push right pedal up to 15° (2/3 of full travel) but don't reach stopPilotRud. Eor.ce 271003 Pund.Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Eor.ce 271003 Pund.Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Eor.ce 271003 Pund.Rutu for ce 271003 Rud. Eor.ce 271002 Pund.Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf 271024 Pund.Return to neutral. Cycle achieved in 2s and continuePilotRud. Eor.ce 271003 Pund.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Eor.ce 271002 Pund.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Eor.ce 271002 Pund.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Eor.ce 271002 Pund.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Eor.ce 271002 Pund.Rute for ce 271002 Pund.Pund.Pund.Pund.Rute for ce 271002 Pund.Pund.Pund.Pund.Rute for ce 271002 Pund.Pund.Pund.Pund.Rute for ce 271002 Pund.Pund.Pund.Pund.Rute for ce. Cycle achieved in 2sPund.Pund.Pund.Pund.Rute for ce. Cycle achieved in					71040		17:58:45
stopRud. Surf 271024 mud.Push right pedal up to 15° (2/3 of full travel) but don't reachRud. Force 271003 Rud. Force 271024 Push right pedal up to 15° (2/3 of full travel) but don't reachRud. Surf 271024 Rud. Surf 271024 Return to neutral. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Force 271002 Return to neutral. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Force 271002 Return to neutral. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Surf 271002 Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Force 271024 Rud. Force 271024 Repeat cycle. Cycle achieved	m	+	Pilot		:71025		17:59:28
Rud. Force271003Rud. Force271003Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf271025Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf271023Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf271024Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf271023Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf271024Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271024Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271023Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271024Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271026Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271023Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf271024Rud. Surf271026Rud. Surf271026Rud. Surf271027Rud. Surf271026Rud. Surf271023Rud. Surf271023Rud. Surf271024Rud. Surf271024Rud. Surf271026Rud. Surf271023Rud. Surf271027Rud. Surf271026Rud. Surf271023Rud. Surf271023Rud. Surf271024Rud. Surf271024Rud. Surf271024Rud. Surf271023Rud. Surf	.,				71024		
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stopRud. Surf 271024 Rud. Surf 271024 Return to neutral. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. SurfReturn to neutral. Cycle achieved in 2s and continuePilotRud. Surf 271024 Rud. SurfReteat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. SurfReteat cycle. Cycle achieved in 2s and continuePilotRud. Force 271002 Rud. SurfRepeat cycle. Cycle achieved in 2s and continuePilotRud. Ped. Force 271002 Rud. SurfRepeat cycle. Cycle achieved in 2s and continueRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Surf 271024 Rud. Surf 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Force 271024 Rud. Force 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Force 271024 Rud. Force 271024 Repeat cycle. Cycle achieved in 2sPilotRud. Force 271024 Rud. Force 271024 Repeat cycle. Cycle achieved in 2sPilotPilotRud. Force 271024 Rud. ForceRepeat cycle. Cycle achieved in 2sP	O	1	Pilot		21025		
Repeat cycle achieved in 2s and continue Rud. Force 271003 Rud. Force 271025 Return to neutral. Cycle achieved in 2s and continue Pilot Rud. Force 271025 Rud. Force 271026 Return to neutral. Cycle achieved in 2s and continue Pilot Rud. Force 271021 Rud. Force 271003 Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Force 271001 Rud. Force 271002 Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Force 271003 Rud. Force 271003 Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Force 271003 Rud. Force 271003 Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Force 271003 Rud. Force 271003 Rud. Force Z71003 Rud. Force Z71003 Rud. Force Z71003 Rud. Force Z71003 Repeat cycle. Cycle achieved in 2s Pilot Rud. Force Z71003 Rud. Force					21024		
Return to neutral. Cycle achieved in 2s and continueR Ped. Force271025Return to neutral. Cycle achieved in 2s and continuePilotRud. Fed.271024Immediately with next pointRud. Force271003ImmediatelyRepeat cycle. Cycle achieved in 2s and continuePilotRud. Force271002Repeat cycle. Cycle achieved in 2s and continuePilotRud. Fed. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Fed. Force271003Repeat cycle. Cycle achieved in 2s and continueRud. Force271003ImmediatelyRepeat cycle. Cycle achieved in 2sPilotRud. Force271003Repeat cycle. Cycle achieved in 2s<					271003		
Return to neutral. Cycle achieved in 2s and continue Pilot Rud. Ped. immediately with next point Rud. Surf Rud. Force Rud. Force Rud. Force Rud. Force Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Ped. Rud. Surf Rud. Surf Rud. Force Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Force Rud. Force Rud. Surf Rud. Surf Rud. Force Rud. Surf Rud. Force Rud. Force L Ped. Force L Ped. Force Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Force L Ped. Force L Ped. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force					271002		Max 100 daN/225 lbs
immediately with next point Rud. Surf Rud. Force L Ped. Force Rud. Force L Ped. Force Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Ped. Rud. Surf Rud. Surf Rud. Surf Rud. Force Rud. Surf Rud. Surf Rud. Surf Rud. Surf Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force			Pilot		21025		
Rud. Force LPed. Force RPed. Force RPed. Force Rud. Force Repeat cycle. Cycle achieved in 2s Repeat cycle. Cycle achieved in 2s		immediately with next point			271024		
Repeat cycle L Ped. Force Repeat cycle Rud. Ped. Force Rud. Sand continue Pilot Rud. Ped. Immediately with next point Rud. Surf Rud. Force Rud. Force Rud. Force Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force Rud. Surf Rud. Force Rud. Force Rud. Cycle Rud. Surf Pilot Repeat cycle. Cycle achieved in 2s Pilot Pilot				d)	271003		
Repeat cycle Cycle achieved in 2s and continue Pilot Rud. Ped. Rud. Surf Rud. Surf Rud. Force Rud. Force Rud. Force Rud. Force Rud. Force Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Rud. Force Rud. Force Rud. Force Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Interference				e	271001		
Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Ped. immediately with next point Rud. Surf Rud. Surf Rud. Force L Ped. Force L Ped. Force Repeat cycle. Cycle achieved in 2s Pilot Pilot					271002		
Repeat cycle. Cycle achieved in 2s and continue Pilot Rud. Ped. immediately with next point Rud. Surf Rud. Force Rud. Force Rud. Force Rud. Force Repeat cycle. Cycle achieved in 2s Pilot Ited. Force							
immediately with next point Rud. Surf Rud. Force L Ped. Force Repeat cycle. Cycle achieved in 2s Pilot	ш		Pilot		271025		
Rud. Force L Ped. Force R Ped. Force R Ped. Force		immediately with next point			271024		
L Ped. Force R Ped. Force R Ped. Force Pliot					271003		
R Ped. Force Repeat cycle. Cycle achieved in 2s Pilot					271001		
Repeat cycle. Cycle achieved in 2s					271002		
Repeat cycle. Cycle achieved in 2s							
	<u> </u> L		Pilot				
					_		

IV-2 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT WITHOUT ANY FORCE APPLIED ON PEDALS

AL	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
	AC	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-2-0 Vc = 0 kts Manual increase	ual increase					
∢	Set Vc = 0 kts		LACOMBE	Vc	34120611		254 IV20.001
				VSA	271040		08:46:50
m	Set FAC/FCC configuration B	ñ	BAUDET				08:48:00
ပ	Set Yaw Damper KIT ON		BAUDET				
	ł	Set a left rudder deflection in the YDA servo-loop until rudder	BAUDET	Fct gen	271045		
	stops at max deflection			YD current	271046		
				Rud pos	271024		
ш	Set a right rudder deflection in the YDA servo-loop until	in the YDA servo-loop until	BAUDET	Fct gen	271045		254 IV20.002
	rudder stops at max deflection	u		YD current	271046		08:50:00
			-	Rud pos	271024		08:51:00

IV-2 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT WITHOUT ANY FORCE APPLIED ON PEDALS

AL	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
		ACTIONS	ACTORS	READ	Q	RESULTS	COMMENTS/GMT
	IV-2-1 Vc = 0 kts ramp 15°/s	mp 15°/s					
∢	Set Vc = 0 kts		LACOMBE	Vc	34120611		254 IV21
				VSA	271040		08:56:20
ш	Set FAC/FCC configuration B	on B	BAUDET				08:56:40
ပ		Set a 15°/s left rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	rudder stops at a 8.5° deflection	flection		YD current	271046		
				Rud pos	271024		
	+	Set a 15°/s right rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	rudder stops at a 8.5° deflection	eflection		YD current	271046		
				Rud pos	271024		

IV-2 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT WITHOUT ANY FORCE APPLIED ON PEDALS

	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
	A	ACTIONS	ACTORS	READ	D	RESULTS	COMMENTS/GMT
1	IV-2-2 Vc = 0 kts ramp 39°/s	p 39°/s					
A	Set Vc = 0 kts		LACOMBE	Vc	34120611		254 IV22
				VSA	271040		09:03:00
	Set FAC/FCC configuration B	В	BAUDET				09:03:15
	Set a 39°/s left rudder defled	Set a 39°/s left rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	rudder stops at a 8.5° deflection	ction		YD current	271046		
				Rud pos	271024		
	Set a 39°/s right rudder defl	Set a 39°/s right rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	rudder stops at a 8.5° deflection	ction		YD current	271046		
				Rud pos	271024		

IV-2 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT WITHOUT ANY FORCE APPLIED ON PEDALS

AACTIONSACTORSACTORSREADRESULTSCOMMENTS/GIN-2-3-1 Vc = 0 kts ramp 60'sVc = 0 ktsEADEADEADEAUEAUCOMMENTS/GIASet Vc = 0 ktsComfiguration BLACOMBEVc 3412061109:09:2009:09:20BSet FAC/FCC configuration BBAUDETVc 3412061109:09:4009:09:40CSet a 60°/s left rudder deflection in the YDA servo-loop untilBAUDETFct gen 27104609:09:40DSet a 60°/s left rudder deflectionBAUDETFct gen 27104609:09:04DSet a 60°/s right rudder deflection in the YDA servo-loop untilBAUDETFct gen 27104609:09:40DSet a 60°/s right rudder deflection in the YDA servo-loop untilBAUDETYD current 27104609:09:40DSet a 60°/s right rudder deflection in the YDA servo-loop untilBAUDETFct gen 27102409:09:60DSet a 60°/s right rudder folcetionIn the YDA servo-loop untilBAUDETYD current 27104609:09:60DSet a 60°/s right rudder folcetionIn der stops at a 8.5° deflectionFct gen 27102409:09:6009:09:60DSet a 60°/s right rudder stops at a 8.5° deflectionMc pos 271026Mc pos09:09:6009:09:00DSet a 60°/s right rudder folcetionIn the YDA servo-loop untilBAUDETFct gen 271046Mc pos00Nudder stops at a 8.5° deflectionMc pos271026Mc pos000000Nudder stops at a 8.5° deflectionMc pos<	AL	ALL TRIMS = 0° YAW	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
IV-2-3-1 Vc = 0 kts ramp 60°/sLACOMBEVc 34120611 MSet Vc = 0 ktsLACOMBEVc 34120611 MSet FAC/FC configuration BBAUDETPAUDETPAMSet a 60° /s left rudder deflection in the YDA servo-loop untilBAUDETFct gen 271046 MSet a 60° /s left rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s left rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMSet a 60° /s right rudder deflectionBAUDETFct gen 271046 MMMSet a 60° /s right rudder deflectionBAUDETBAUDETMMMMMSet a 60° /s right rudder deflectionBAUDETBAUDETMMMMMSet a 60° /s right rudder deflectionBAUDETBAUDETMMMMMSet a 60° /s right rudder deflection <th></th> <th>ACTIONS</th> <th></th> <th>ACTORS</th> <th>REA</th> <th>D</th> <th>RESULTS</th> <th>COMMENTS/GMT</th>		ACTIONS		ACTORS	REA	D	RESULTS	COMMENTS/GMT
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		IV-2-3-1 Vc = 0 kts ramp 60°/s						
Set FAC/FCC configuration BVSA271040Set a 60°/s left rudder deflection in the YDA servo-loop until rudder stops at a 8.5° deflectionBAUDETEct gen271045Rud for stops at a 8.5° deflectionBAUDETFct gen271046PSet a 60°/s right rudder deflectionBAUDETFct gen271024PSet a 60°/s right rudder deflectionBAUDETFct gen271024PSet a 60°/s right rudder deflectionBAUDETFct gen271046Prudder stops at a 8.5° deflectionBAUDETFct gen271046Prudder stops at a 8.5° deflectionBAUDETFct gen271024Prudder stops at a 8.5° deflectionBAUDETFct gen271024Prudder stops at a 8.5° deflectionBAUDETFct gen271024PRud pos271024PPPPRud pos271024PP <td< td=""><td>⊲</td><td></td><td></td><td>LACOMBE</td><td>Vc</td><td>34120611</td><td></td><td>254 IV23.001</td></td<>	⊲			LACOMBE	Vc	34120611		254 IV23.001
Set FAC/FCC configuration B BAUDET A A Set a 60°/s left rudder deflection in the YDA servo-loop until BAUDET Fct gen 271045 rudder stops at a 8.5° deflection BAUDET Fct gen 271046 A rudder stops at a 8.5° deflection BAUDET Fct gen 271046 A rudder stops at a 8.5° deflection In the YDA servo-loop until BAUDET Fct gen 271024 Set a 60°/s right rudder deflection in the YDA servo-loop until BAUDET Fct gen 271046 A rudder stops at a 8.5° deflection In the YDA servo-loop until BAUDET Fct gen 271046 A rudder stops at a 8.5° deflection Rud pos 271024 A A A					VSA	271040		09:09:20
Set a 60°/s left rudder deflection the YDA servo-loop until BAUDET Fct gen rudder stops at a 8.5° deflection YD current Rud pos Set a 60°/s right rudder deflection BAUDET Fct gen Set a 60°/s right rudder deflection ND Servo-loop until BAUDET Fct gen YD current rudder stops at a 8.5° deflection Rud pos rudder stops at a 8.5° deflection Rud pos	۱m	+		BAUDET				09:09:40
rudder stops at a 8.5° deflection YD current Rud pos Rud pos Set a 60°/s right rudder deflection in the YDA servo-loop until BAUDET Fct gen rudder stops at a 8.5° deflection YD current Rud pos	ပ	Set a 60°/s left rudder deflection in the	PDA servo-loop until	BAUDET	Fct gen	271045		
Rud pos Rud pos Set a 60°/s right rudder deflection in the YDA servo-loop until BAUDET Fct gen rudder stops at a 8.5° deflection YD current Rud pos	ł	rudder stops at a 8.5° deflection	-		YD current	271046		
Set a 60°/s right rudder deflection in the YDA servo-loop until BAUDET Fct gen rudder stops at a 8.5° deflection Rud pos					Rud pos	271024		
Set a 60°/s right rudder deflection in the YDA servo-loop until BAUDET Ect gen rudder stops at a 8.5° deflection Rud be a Rud pos	1							
YD current Rud pos			ne YDA servo-loop until		Fct gen	271045		
Rud pos		rudder stops at a 8.5° deflection			YD current	271046		
					Rud pos	271024		

IV-2 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT WITHOUT ANY FORCE APPLIED ON PEDALS

Nota: Post test program NSTB request

ACTIONS IV-2-3-2 Vc = 0 kts step A Set Vc = 0 kts B Set FAC/FCC configuration B C Set a step left rudder deflection in the YDA servo-loop until		REA		RESULTS	COMMENTS/GMT 254 IV23.002 09:27:10
					254 IV23.002 09:27:10
			34120611 271040		254 IV23.002
			34120611 271040		09:27:10
		VSA	271040		09:27:10
*					09:27:10

ruddar etone at a 8 6° daflaction		Fct gen	271045		09:27:30
		YD current	271046		
		Rud pos	271024		
			_		
D Set a step right rudder deflection in the YDA servo-loop until	until BAUDET	Fct gen	271045		
rudder stops at a 8.5° deflection		YD current	271046		
		Rud pos	271024		

519.0440/02 Appendix 4 Page 18 IV-3 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT COMBINED WITH FORCE APPLIED ON PEDALS

AL	ALL TRIMS = 0° YA	YAW DAMPER = OFF	LUA	AUTO PILOT = OFF		SLATS/FLAPS = retracted	racted
	ACTIONS		ACTORS	READ	_	RESULTS	COMMENTS/GMT
	IV-3-1 Vc = 0 kts ramp 0.5°/s						
∢	A Set Vc = 0 kts		LACOMBE	Vc	34120611		254 IV31
				VSA	271040		
ш	Set FAC/FCC configuration B		BAUDET				
ပ	Set a 0.5°/s left rudder deflection in the YDA servo-loop until	the YDA servo-loop until	BAUDET	Fct gen	271045		09:39:10
	rudder stops at max deflection.			YD current	271046		09:39:40
	Continue with next step before rudder stop	ore rudder stop		Rud. Surf	271024		
	D During the rudder motion		Pilot	Rud. Ped.	271025		
	Push left pedal \rightarrow mech stop \rightarrow neutral \rightarrow right \rightarrow mech	itral→ right→ mech		Rud. Surf	271024		
	stop→neutral			Rud. Force	271003		
	Cycle performed in 3 s repeated 4 times	times		R Ped. Force 271002	271002		

519.0440/02 Appendix 4 Page 19 IV-3 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT COMBINED WITH FORCE APPLIED ON PEDALS

AL	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
L			00000				
		ACTIONS	ACTORS	READ	_	HESULIS	COMMENTS/GMT
	IV-3-2 Vc = 240 kts ramp 39°/s	kts ramp 39°/s					
∢	Set Vc = 240 kts		LACOMBE	Vc	34120611		254 IV32.001
				VSA	271040		09:57:45 (Bad data)
ш	Set FAC/FCC configuration B	uration B	BAUDET	-			09:58:30
ပ	ł	Set a 39°/s left rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	rudder reaches 4° left (approx 1 s)	ft (approx 1 s)		YD current	271046		254 IV32.002
				Rud. Surf	271024		09:59:30
	Push left pedal → RTLU stop	TLU stop	Pilot	Rud. Ped.	271025		10:00:20
	-	_		Rud. Surf	271024		11° left?
				Rud. Force	271003		
				L Ped. Force	271001		
ш		Increase left pedal force up to 50 daN= 112 lbs	Pilot	L Ped. Force	271001		Max 50 daN= 112lbs
				Rud. Force	271003		
ш	Set a 39°/s right rud	Set a 39°/s right rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		
	YDA output reaches 4° rudder right	4° rudder right		YD current	271046		
				Rud. Surf	271024		7° left?
				Rud. Force	271003		
				Yaw position	271030		

519.0440/02 Appendix 4 Page 20 IV-3 MEASUREMENT OF CONTROL SYSTEM CHARACTERISTICS UNDER YAW DAMPER INPUT COMBINED WITH FORCE APPLIED ON PEDALS

F	ALL TRIMS = 0° YAW DAMPER = OFF	LUA	AUTO PILOT = OFF		SLATS/FLAPS = retracted	etracted
	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-3-3 Vc = 240 kts ramp 39°/s					
∢	Set Vc = 240 kts	LACOMBE	Vc 3	34120611		254 IV33.001
			VSA	271040		10:03:00
m	Set FAC/FCC configuration B	BAUDET				10:03:45
ပ	Set a 15°/s left rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045		254 IV33.002
	rudder reaches 4° left (approx 1 s)		YD current	271046		10:07:30
			Rud. Surf	271024		10:08:02
ပ	Push right pedal → RTLU stop	Pilot	Rud. Ped.	271025		
			Rud. Surf	271024		11° right?
			Rud. Force	271003		
			R Ped. Force	271002		
	Increase right pedal force up to 50 daN= 112 lbs	Pilot	R Ped. Force	271002		Max 50 daN= 112lbs
	-		Rud. Force	271003		
ш	Set a 39°/s right rudder deflection in the YDA servo-loop until	BAUDET	Fct gen	271045	-	
	YDA output reaches 4° rudder right		YD current	271046		
			Rud. Surf	271024		11° right?
			Yaw position	271030		
ш.	Resist (Increase?)pedal motion force up to 100 daN= 225 lbs	Pilot	R Ped. Force	271002		Max 100 daN= 225lbs
			Rud. Force	271003		
I			Rud. Surf	271024		
			Yaw position	271030		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

TRIMS = 0°	YAW DAMPER = ON	AUTO PILOT = OFF	SLATS/FLAPS = retracted
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2	ACTIONS	ACTORS	READ	۹D	RESULTS	COMMENTS/GMT
	IV-4-1 Vc = 165 kts rate 10°/s					
Set	A Set Vc = 165 kts	LACOMBE	Vc	34120611		254 IV41
			VSA	271040		10:54:30
Set	B Set FAC/FCC configuration A	LACOMBE				10:55:20
Set	C Set a 10°/s yaw rate to the FAC until rudder max deflection	LACOMBE	YD current	271046		
			Rud. Surf	271024		
			Yaw cd	271029		
			Yaw pos	271030		
			Yaw rate input 22F330	ut 22F330		
			Yaw rate	22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

	ACTIONS	ACTORS	READ	RESULTS	COMMENTS/GMT
J	IV-4-2 Vc = 200 kts rate 10°/s				
+	A Set Vc = 200 kts	LACOMBE	Vc 34120611		254 IV42
			VSA 271040		10:59:30
m	Set FAC/FCC configuration A	LACOMBE			11:00:25
ł	S Set a 10°/s yaw rate to the FAC until rudder max deflection	LACOMBE	YD current 271046		
			Rud. Surf 271024		
			Yaw pos 271030		
			Yaw rate input 22F330		
			Yaw rate 22 ^E 330		-
1000					

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

	ACTIONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-4-3 Vc = 240 kts rate 10°/s					
A A	Set Vc = 240 kts	LACOMBE		34120611		254 IV43
			VSA	271040		11:03:00
с, Ш	Set FAC/FCC configuration A	LACOMBE				11:03:50
0) 0	Set a 10°/s yaw rate to the FAC until rudder max deflection	LACOMBE	YD current	271046		
			Rud. Surf	271024		
				271029		
			Yaw pos	271030		
			Yaw rate input 22F330	22F330		
			Yaw rate	22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

	ACTIONS	ACTORS	READ	RESULTS	COMMENTS/GMT
ł	IV-4-4 Vc = 260 kts rate 10°/s				
1	A Set Vc = 260 kts	LACOMBE	Vc 34120611		254 IV44
			VSA 271040		11:05:40
m	Set FAC/FCC configuration A	LACOMBE			11:06:23
 	C Set a 10°/s yaw rate to the FAC until rudder max deflection	LACOMBE	YD current 271046		
			Rud. Surf 271024		
			Yaw cd 271029		
			Yaw pos 271030		
			Yaw rate input 22F330		
			Yaw rate 22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

IV-4-5 Vc = 1 A Set Vc = 165 kts	IV-4-5 Vc = 165 kts rate 10°/s + ramp 0.1°/s/s				
Set $Vc = 16$			-		
	5 kts	LACOMBE	Vc 3412	34120611	254 IV45
			VSA 27	271040	11:08:30
B Set FAC/FC	Set FAC/FCC configuration A	LACOMBE			11:09:48
Set a 10°/s	C Set a 10°/s yaw rate with a slope of 0.1°/s/s to the FAC until	LACOMBE	YD current 27	271046	
rudder max deflection	deflection		Rud. Surf 27	271024	
			Yaw cd 27	271029	
			Yaw pos 27	271030	
			Yaw rate input 22F330	F330	
			Yaw rate 22	22 ^E 330	

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

	ACTIONS	ACTORS	READ	RESULTS	COMMENTS/GMT
l	IV-4-6 Vc = 240 kts rate 10°/s + ramp 0.1°/s/s				
₹	Set Vc = 240 kts	LACOMBE	Vc 34120611		254 IV46.001
			VSA 271040		11:14:50 (Bad data)
m	Set FAC/FCC configuration A	LACOMBE			11:15:13
5	C Set a 10°/s yaw rate with a slope of 0.1°/s/s to the FAC until	LACOMBE	YD current 271046		
	rudder max deflection		Rud. Surf 271024		254 IV46.002
			Yaw cd 271029		11:15:40
			Yaw pos 271030		11:16:55
			Yaw rate input 22F330		
			Yaw rate 22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

IV-4-7 Vc = 240 kts rate 10°/s + ramp 0.5°/s/s LACOMBE Vc A Set Vc = 240 kts LACOMBE Vc B Set FAC/FCC configuration A LACOMBE VSA C Set a 10°/s yaw rate with a pitch of 0.5°/s/s to the FAC until BAUDET YD curre rudder max deflection rudder max deflection Yaw cd Yaw cd	ACT	ACTORS	READ	D	RESULTS	COMMENTS/GMT
Set Vc = 240 kts Set FAC/FCC configuration A Set a 10°/s yaw rate with a pitch of 0.5°/s/s to the FAC until rudder max deflection	p 0.5°/s/s					
Set FAC/FCC configuration A LACOMBE LACOMBE Set a 10°/s yaw rate with a pitch of 0.5°/s/s to the FAC until BAUDET rudder max deflection	LACO		Vc	34120611		254 IV47.001
Set FAC/FCC configuration A LACOMBE LACOMBE Set a 10°/s yaw rate with a pitch of 0.5°/s/s to the FAC until BAUDET rudder max deflection		-	VSA	271040		11:19:10
BAUDET	LACO	MBE				11:19:44
			YD current	271046	-	
Yaw cd Yaw pos Yaw rate		L	Rud. Surf	271024		254 IV47.002
Yaw pos			Yaw cd	271029		11:55:10
Yaw rate		<u> </u>	Yaw pos	271030		11:56:00
		<u> </u>	Yaw rate input 22F330	it 22F330		
1 aw rate		<u> </u>	Yaw rate	22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

IV-4-8 Vc = 2 A Set Vc = 240 kts		212-24	חראם		HESULIS	COMMENIS/GMI
Set Vc =	IV-4-8 Vc = 240 kts rate 10°/s + ramp 1°/s/s					
	= 240 kts	LACOMBE	Vc 32	34120611		254 IV48
			VSA	271040		12:01:45
B Set FAC	Set FAC/FCC configuration A	LACOMBE				12:02:30
Set a 10	C Set a 10°/s yaw rate with a pitch of 1°/s/s to the FAC until	LACOMBE	YD current	271046		
rudder r	rudder max deflection		Rud. Surf	271024		
			Yaw cd	271029		
			Yaw pos	271030		
			Yaw rate input 22F330	22F330		
			Yaw rate	22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

	YAW DAMPER = ON	AUTO PILOT = OFF	SLATS/FLAPS = retracted
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	ACTIONS	ACTORS	READ	D	RESULTS	COMMENTS/GMT
	IV-4-9 Vc = 240 kts rate 10° /s + sinusoid on 10s					
A	Set Vc = 240 kts	LACOMBE	Vc	34120611		254 IV49
			VSA	271040		12:10:10
В	Set FAC/FCC configuration A	LACOMBE				12:11:00
U	Set a sinusoidal yaw rate from 0 to 10°/s on a 10s period to	LACOMBE	YD current	271046		
	the FAC until rudder max deflection		Rud. Surf	271024		
			Yaw cd	271029		
			Yaw pos	271030		
			Yaw rate input 22F330	it 22F330		
			Yaw rate	22 ^E 330		

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

ATS/FLAPS = retracted	
AUTO PILOT = OFF	
YAW DAMPER = ON	
ALL TRIMS = 0°	

	ACTIONS	ACTORS	READ	10	RESULTS	COMMENTS/GMT
A	IV-4-10 Vc = 240 kts rate 10°/s + sinusoid on 5s					
1	A Set Vc = 240 kts	LACOMBE	Vc	34120611		254 IV410
			VSA	271040		12:12:40
1	B Set FAC/FCC configuration A	LACOMBE				12:13:13
1	C Set a sinusoidal yaw rate from 0 to 10°/s on a 5s period to the	LACOMBE	YD current	271046		
	FAC until rudder max deflection		Rud. Surf	271024		
			Yaw cd	271029		
			Yaw pos	271030		
			Yaw rate input 22F330	ut 22F330		
			Yaw rate	22 ^E 330		

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IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

Nu-4-11 Vc = 240 kts rate 10°/s + sinusoid on 3sLACOMBEVc34120611254 IV411.001ASet Vc = 240 kts $240 kts$ 271040Yaw Damper254 IV411.001BSet FAC/FC configuration ALACOMBEVSA271040Yaw Damper12:15:20CSet a sinusoidal yaw rate from 0 to 10°/s on a 3s period to theLACOMBEMc27102412:15:00FAC until rudder max deflectionLACOMBEYD current27102412:15:01254 IV411.002FAC until rudder max deflectionYD serrent271029271029254 IV411.002256 IV411.002Yaw posYaw pos271029Yaw Damper12:25:23 (.001 repeated)225:00225:00Yaw rateYaw rate22 ⁷ 330Yaw Damper12:25:23 (.001 repeated)225:00225:00Yaw rateYaw rate22 ⁷ 330Yaw Damper12:25:23 (.001 repeated)225:00Yaw rateYaw rate27 ⁵ 330Yaw Damper12:25:23 (.001 repeated)Yaw rateYaw rate27 ⁵ 330Yaw rateYaw rate	L	ACTIONS	ACTORS	READ	٨D	RESULTS	COMMENTS/GMT
Set Vc = 240 kts LACOMBE Vc 34120611 Paw Damper VSA 271040 Yaw Damper Set FAC/FC configuration A LACOMBE VSA 271040 Yaw Damper Set FAC/FC configuration A LACOMBE VSA 271040 Yaw Damper Set FAC/FC configuration A LACOMBE VC 271040 Vaw Damper Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to the LACOMBE YD current 271026 FAC until rudder max deflection Yaw od 271029 Yaw Damper FAC until rudder max deflection Yaw rate input 271030 Yaw Damper Yaw rate input 27330 Yaw rate Cycles		IV-4-11 Vc = 240 kts rate 10°/s + sinusoid on 3s					
Set FAC/FCC configuration A LACOMBE VSA 271040 Yaw Damper Set FAC/FCC configuration A LACOMBE eycles Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to the FAC until rudder max deflection LACOMBE Yaw cd 271024 FAC until rudder max deflection Yaw cd 271029 Yaw Damper FAC until rudder max deflection Yaw cd 271029 Yaw Damper FAC until rudder max deflection Yaw cd 271030 Yaw Damper Yaw rate Yaw pos 271030 Yaw Damper Yaw rate Yaw rate input 227330 cycles	◄	ļ	LACOMBE	Vc	34120611		254 IV411.001
Set FAC/FCC configuration A Set FAC/FCC configuration A Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to the FAC until rudder max deflection FAC until rudder max deflection Taw pos 271030 Yaw pos 271030 Yaw pos 271030 Yaw rate input 22F330 Yaw rate input 22F330 Yaw rate input 22F330 Yaw rate input 22F330 Yaw rate input 22F330				VSA	271040	Yaw Damper	12:15:20
Set FAC/FCC configuration A Set FAC/FCC configuration A Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to the FAC until rudder max deflection FAC until						disengaged after 2	
Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to the LACOMBE YD current 271046 Provided in the input 271029 Provided in the input Provided in the input 271029 Provided interval Provided interva Provided interva	m		LACOMBE			2000	12:15:51
Rud. Surf 271024 Yaw cd 271029 Yaw bos 271030 Yaw Damper Yaw rate input Yaw rate input Yaw rate Yaw rate	ပ	Set a sinusoidal yaw rate from 0 to 10°/s on a 3s period to	·····	YD current	271046		
Yaw cd 271029 Yaw pos 271030 Yaw Damper disengaged after 2 cycles Yaw rate input 22F330 Yaw rate 22 ^E 330		FAC until rudder max deflection		Rud. Surf	271024		254 IV411.002
Yaw pos 271030 Yaw Damper disengaged after 2 cycles Yaw rate input 22F330 Yaw rate 22 ^E 330				Yaw cd	271029		12:25:00
disengaged after 2 Yaw rate input 22F330 Yaw rate 22 ^E 330				Yaw pos	271030	Yaw Damper	12:25:23 (.001 repeated)
Yaw rate input 22F330 Yaw rate 22 ^E 330						disengaged after 2	
						cycles	
Yaw rate				Yaw rate inp	ut 22F330		
				Yaw rate	22 ^E 330		
	10000						

IV-4 MEASUREMENT OF FAC (Flight Augmentation Computer) CONTROL LAWS

LACOMBE Vc 34120611 LACOMBE VSA 271040 VSA 271040 271046 LACOMBE YD current 271024 Rud. Surf 271029 771029 Yaw cd 271029 771030 Yaw rate input 271030 78 Yaw rate 271030 78		ACTIONS	ACTORS	READ	ND	RESULTS	COMMENTS/GMT
		IV-4-12 Vc = 240 kts rate $10^{\circ}/s$ + sinusoid on 2s					
Set FAC/FCC configuration AVSA 271040 Set FAC/FCC configuration ALACOMBELACOMBESet a sinusoidal yaw rate from 0 to 10°/s on a 2s period to theLACOMBEFAC until rudder max deflectionYD current 271026 Yaw cd 271029 Yaw rate input 271030 Yaw rate input $22F330$ Yaw rate input $22F330$	1 -	Set Vc = 240 kts	LACOMBE	Vc	34120611		254 IV412
Set FAC/FCC configuration A LACOMBE A Set a sinusoidal yaw rate from 0 to 10°/s on a 2s period to the FAC until rudder max deflection LACOMBE YD current 271046 FAC until rudder max deflection Yaw cd 271029 Yaw cd 271030 Yaw rate input 271030 Yaw rate input 22F330				VSA	271040		12:22:25
Set a sinusoidal yaw rate from 0 to 10°/s on a 2s period to the LACOMBE FAC until rudder max deflection	Ι.		LACOMBE				12:22:52
	1	Set a sinusoidal yaw rate from 0 to 10°/s on a 2s period to		YD current	271046		
		FAC until rudder max deflection		Rud. Surf	271024		
				Yaw cd	271029		
				Yaw pos	271030		
<u> </u>				Yaw rate inpl	ut 22F330		
				Yaw rate	22 ^E 330		
	1000						

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ΡΓ	ALL TRIMS = 0°	YAW DAMPER = OFF	AUT	AUTO PILOT = ON		SLATS/FLAPS = retracted	tracted
		ACTIONS	ACTORS	READ	0	RESULTS	COMMENTS/GMT
	IV-5-0 Vc = 0 kts Manual increase	nual increase					
◄	Set Vc = 0 kts		LACOMBE	Vc	34120611		254 IV50.001
				VSA	271040		12:57:15
m	Set FAC/FCC configuration D	D	LACOMBE				12:58:00
ပ	Set AP ON and YD OFF		Pilot				
		Set a left rudder rate to the APYA up to rudder max deflection	BAUDET	Fct gen	271045		
				APYA current 271047	271047		
				Rud. Surf	271024		
				APYA pos	271031		
Ш		Set a right rudder rate to the APYA up to rudder max	BAUDET	Fct gen	271045		254 IV50.002
	deflection			APYA current 271047	271047		13:00:25
				Rud. Surf	271024		13:01:10
				APYA pos	271031		

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= ON SLATS/FLAPS = retracted	READ RESULTS COMMENTS/GMT		34120611 254 IV51	271040 13:11:00	13:11:45		271045	APYA current 271047	rf 271024	bs 271031	271045	APYA current 271047	rf 271024	os 271031	
AUTO PILOT = ON	ACTORS		_ACOMBE Vc	VSA	ACOMBE	t.	BAUDET Fct gen	APYA c	Rud. Surf	APYA pos	 BAUDET Fct gen	APYA c	Rud. Surf	APYA pos	
ALL TRIMS = 0° YAW DAMPER = OFF	ACTIONS	IV-5-1 Vc = 0 kts rate 15°/s	A Set Vc = 0 kts LAC		B Set FAC/FCC configuration D LAC	C Set AP ON and YD OFF Pilot	Set a 15°/s left rudder rate to the APYA for an 18° rudder max BAU	deflection			E Set a 15°/s right rudder rate to the APYA for an 18° rudder BAU	max deflection			

F	ALL TRIMS = 0°	YAW DAMPER = OFF	TUA	AUTO PILOT = ON		SLATS/FLAPS = retracted	etracted
1	ACTIONS	ONS	ACTORS	READ		RESULTS	COMMENTS/GMT
	IV-5-2 Vc = 0 kts rate 34 °/s	°/S					
\triangleleft	Set Vc = 0 kts		LACOMBE	Vc 3	34120611		254 IV52
				VSA	271040		13:13:25
m	Set FAC/FCC configuration D		LACOMBE				13:14:00
ပ	Set a 34°/s left rudder rate to the APYA for an 18° rudder		max BAUDET	Fct gen	271045		
	deflection			APYA current 271047	271047		
				Rud. Surf	271024		
				APYA pos	271031		
	Set a 34°/s right rudder rate to the APYA for an 18° rudde	the APYA for an 18° rudder	BAUDET	Fct gen	271045		
	max deflection			APYA current 271047	271047		
				Rud. Surf	271024		
				APYA pos	271031		
			2010-0010-0010-0010-0010-0010-0010-0010	VANALASTIN A ANALASTININA (INTERNATIONAL AND A SUBJECT OF A ANALASTINI A SUBJECT OF A SUBJECT OF A ANALASTINI A SUBJECT OF A ANALASTINI A SUBJECT OF A ANALASTINI A SUBJECT		A DATE OF A DESCRIPTION OF A DATE OF A DA	

	ALL TRIMS = 0° YAW DAMPER = OFF		AUT	AUTO PILOT = ON		SLATS/FLAPS = retracted	tracted
	ACTIONS		ACTORS	READ	0	RESULTS	COMMENTS/GMT
	IV-5-3 Vc = 0 kts rate 60 °/s						
	Set Vc = 0 kts		ACOMBE	Vc	34120611		254 IV53
				VSA	271040		13:17:15
	Set FAC/FCC configuration D		LACOMBE				13:17:35
	Set a 60°/s left rudder rate to the APYA for an 18° rudder	max	BAUDET	Fct gen	271045		
	deflection			APYA current 271047	271047		
				Rud. Surf	271024		
_				APYA pos	271031		
1.11.1.21							
	Set a 60°/s right rudder rate to the APYA for an 18° rudder		BAUDET	Fct gen	271045		
	max deflection			APYA current 271047	271047		
				Rud. Surf	271024		
				APYA pos	271031		
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