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).

519.0440/02 Page **4** 

### <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:

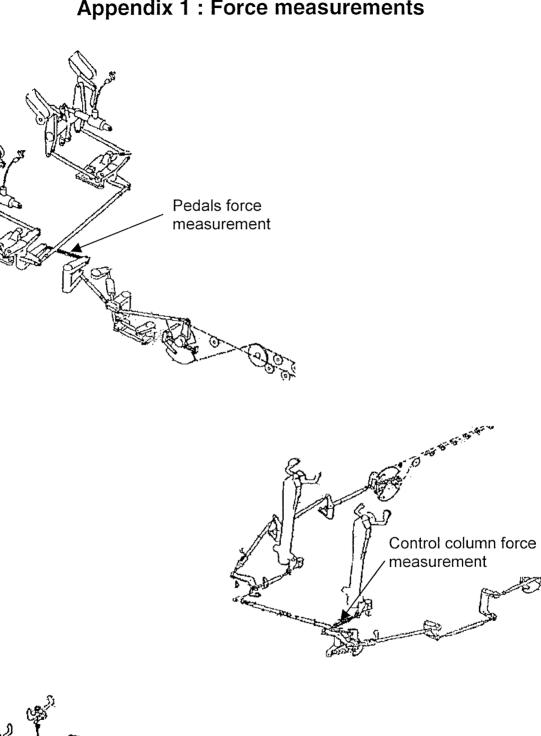
09/13/02 14.74.74

© - AIRBUS FRANCE 2002. All right reserved

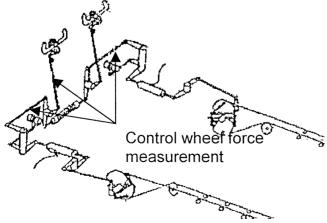
Appendix C

519.0440/02 Appendix 1 Page 1

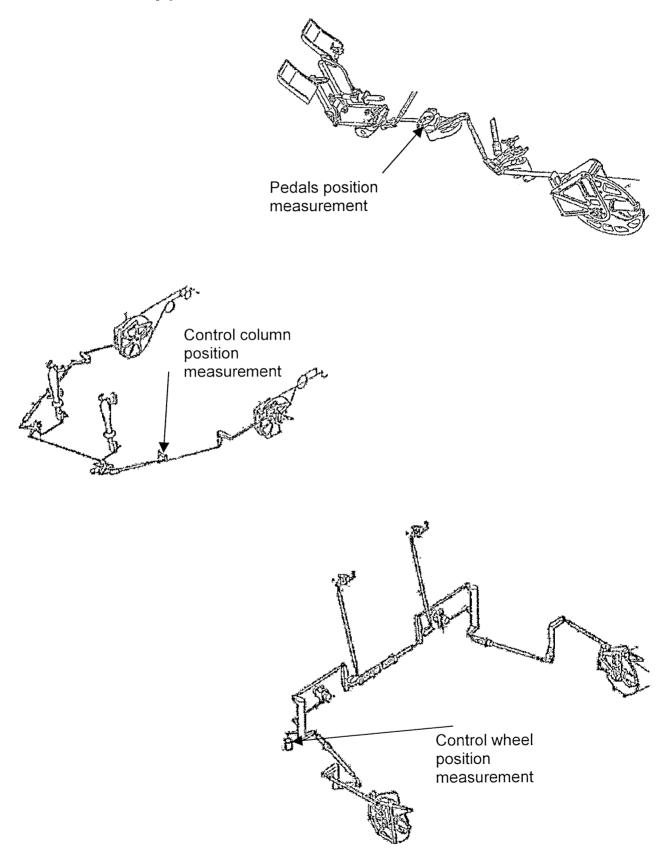
370



### **Appendix 1 : Force measurements**



### **Appendix 2 : Position measurements**



Appendix C

519.0440/02 Appendix 3 Page 1

### 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
--------------------------	--------------

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

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

September 11th 2002

519.0440/02 Appendix 4 Page 1

-> 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

Appendix 4 Page 7 519.0440/02

 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 $5^{\circ}$ /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 $5^{\circ}$ /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 $20^{\circ}$ /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 $20^{\circ}$ /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	
Set Vc = 260 kts       LACOMBE       Vc       34120611       Vc         Left pedal motion at 5'/s $\rightarrow$ to RTL stop (approx 1 s)       Pilot       Rud Fed.       271023         Increase pedal force up to 100daN = 225 lbs       Rud Force       271003       Rud Force       271003         Return to meutral       Rud Force       271003       Rud Force       271003       Rud Force       271003         Return to meutral       Rud Force       271003       Rud Force       271003       Rud Force       271003         Return to meutral       Rud Force       271003       Rud Force       271003       Rud Force       271003         Return to meutral       Rud Force       271003       Rud Force       271003       Rud Force       271003         Increase pedal force up to 100daN = 225 lbs       Rud Force       271003       Rud Force       271003       Rud Force       271003         Rut force up to 100daN = 225 lbs       Rud Suff       271025       Rud Force       271003       Rud Force       271003         Rut force up to 100daN = 225 lbs       Rud Suff       271025       Rud Force       271003       Rud Force       271003         Rut force up to 100daN = 225 lbs       Rud Force       271003       Rud Force       271003       Rud F		2 2					
VSA271040Left pedal motion at 5's $\rightarrow$ to RTL stop (approx 1 s)PilotVSA271040Increase pedal force up to 100daN = 225 lbsRud Suff271025Return to neutralRud Suff271025Return to neutralNoRud Suff271025Return to neutralNoVC271011Return to neutralNoNo271025Return to neutralNoNo271025Return to neutralNoNo271025Increase pedal force up to 100daN = 225 lbsRud Suff271025Increase pedal force up to 100daN = 225 lbsRud Suff271025Return to neutralNoNo271025Increase pedal force up to 100daN = 225 lbsRud Force271002Return to neutralNoNoNoReturn to neutralNoNoNo<	∢	Set Vc = 260 kts	LACOMBE	Vc	34120611		253 IV14.001
Left pedal motion at 5's $\rightarrow$ to RTL stop (aptrox 1 s)PilotRud. Pede.271025PilotLeft pedal motion at 5's $\rightarrow$ to RTL stop (approx 1 s)Rud. Force271031PilotRutun to neutralLeft Force271001PilotVocRutun to neutralNoNo241061PilotRutun to neutralNoNo241061PilotRutun to neutralNoNo241061PilotRutun to neutralNoNo2410261PilotRutun to neutralNoNo271025PilotRutun to neutralNoNo271025PilotRutun to neutralNo271025Pilot271025Rutun to neutralNoNo271025PilotRutun to neutralPilotNoNo271025Rutun to neutralNoNoRud. Force271003Rutun to neutralNoNoNo271025Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271026Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271026Rutun to neutralNoRud. Surf271025Rutun to neutralNoRud. Surf271026Rutun to neutralNoRud				VSA	271040		17:25:00
RudStringRudStringStringIncrease pedal force up to 100daN = 225 lbsLediForce271001LediReturn to neutralImageLediForce271001ImageReturn to neutralImageLediForce271001ImageReturn to neutralImageImageImage25 lbsImageReturn to neutralImageVis271026ImageImageIncrease pedal force up to 100daN = 225 lbsPilotVis271026ImageReturn to neutralImageRudForce271002ImageReturn to neutralImageRudForce271002ImageReturn to neutralImageRudForce271002ImageReturn to neutralImageRudForce271003ImageReturn to neutralImageRudForce271003ImageIncrease pedal force up to 100daN = 225 lbsRudForce271003ImageReturn to neutralImageRudForce271003ImageIncrease pedal force up to 100daN = 225 lbsRudForce271003ImageReturn to neutralImageRudForce271003ImageReturn to neutralImageRudForce271003ImageReturn to neutralImageRudForce271003ImageReturn to neutralImageRudForce271003ImageReturn to neutralI	m	Left pedal motion at $5^{s/s} \rightarrow$ to RTL stop (approx 1 s)	Pilot	Rud. Ped.	271025		17:25:55
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		-		Rud. Surf	271024		
$ \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
Return to neutral       L Ped. Force       271001         Return to neutral       Non-       3412611         Right pedal motion at 5'/s $\rightarrow$ to RTL stop (approx 1 s)       No       3412611         Increase pedal force up to 100daN = 225 lbs       Rud. Force       271003         Return to neutral       Rud. Force       271003         Return to neutral       Rud. Force       271003         Return to neutral       Rud. Force       271003         Increase pedal force up to 100daN = 225 lbs       Rud. Force       271003         Return to neutral       Rud. Force       271003       Rud. Force         Increase pedal force up to 100daN = 225 lbs       Rud. Force       271003       Rud. Force         Return to neutral       Rud. Force       271003       Rud. Force       271003         Increase pedal force up to 100daN = 225 lbs       Rud. Force       271003       Rud. Force       271003         Return to neutral       Rud. Force       271003       Rud. Force       271003       Rud. Force       271003         Return to neutral       Rud. Force       271003       Rud. Force       271003       Rud. Force       271003         Return to neutral       Led. Force       271003       Rud. Force       271003       Rud. Force <td></td> <td>Increase pedal force up to 100daN = 225 lbs</td> <td></td> <td>Rud. Force</td> <td>271003</td> <td></td> <td></td>		Increase pedal force up to 100daN = 225 lbs		Rud. Force	271003		
Return to neutralReturn to neutralNoRight pedal motion at 5'/s $\rightarrow$ to RTL stop (approx 1 s)PilotVc34120611Visit271025Nud. Force271002Increase pedal force up to 100daN = 225 lbsRud. Force271002Return to neutralReturn to neutralRed. Force271002Return to neutralNud. Force271002Nud. ForceReturn to neutralRed. Force271002Nud. ForceReturn to neutralNud. Force271002Nud. ForceReturn to neutralNud. Force271003Nud. ForceReturn to neutralNud. Force271003Nud. ForceReturn to neutralNud. Force271003Nud. ForceReturn to neutralNud. Force271003Nud. ForceRud. Force271003Nud. Force271003Rud. force up to 100daN = 225 lbsNud. Force271003Rud. force up to 100daN = 225 lbsRud. Force271003Rud. force up to 100daN = 225 lbsRud. Force271003Rud. force up to 100daN = 225 lbsRud. Force271002Rud. for				L Ped. Force	271001		Max 100 daN/225 lbs
Right pedal motion at 5's $\rightarrow$ to RTL stop (approx 1 s)PilotVc34120611Right pedal motion at 5's $\rightarrow$ to RTL stop (approx 1 s)VSA271040Increase pedal force up to 100daN = 225 lbsRud. Force271002Return to neutralRud. Force271002Left pedal motion at 20's $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003Increase pedal force up to 100daN = 225 lbsRud. Force271003Rud. Force271003Return to neutralRud. Force271003Rud. Force271003Rud. Force271003Increase pedal force up to 100daN = 225 lbsRud. Force271003Rud. Force271003Rud. Force271003Return to neutralRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Return to neutralRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Return to neutralRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Ruth pedal motion at 20's $\rightarrow$ to RTL stop (approx 1/4 s)Rud. Force271003Rud. Force271003Rud. Force271003Ruth to neutralRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Ruth to neutralRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Ruth to neutralRud. Force271003Rud. Force<	ပ	Return to neutral					
WSA $271040$ NoIncrease pedal force up to 100daN = 225 lbsRud. Ped. 271025Rud. Force 271002Rud Force 271002RPed. Force 271002Rud Force 271002Return to neutralRed Force 271002Rud Force 271002Left pedal motion at $20^{7}$ (s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force 271002Increase pedal force up to 100daN = 225 lbsRud. Force 271002Rud. Force 271003Increase pedal force up to 100daN = 225 lbsLed. Force 271003Led. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Right pedal motion at $20^{7}$ (s $\rightarrow$ to RTL stop (approx $\chi$ s)Rud. Force 271003Rud. Force 271003Right pedal motion at $20^{7}$ (s $\rightarrow$ to RTL stop (approx $\chi$ s)Rud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Return to neutralIncrease pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Rud. Force 271003Rud. Force 271003Rud. Force 271003Rud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003Increase pedal force up to 100daN = 225 lbsRud. Force 271003Rud. Force 271003 </td <td></td> <td>Richt nedal motion at 5°/s → to RTI ston (approx 1 s)</td> <td>Pilot</td> <td>Vc</td> <td>34120611</td> <td></td> <td></td>		Richt nedal motion at 5°/s → to RTI ston (approx 1 s)	Pilot	Vc	34120611		
$ \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		
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				Rud. Surf	271024		
Increase pedal force up to 100daN = 225 lbsR Ped. Force 271002Return to neutralR.U. Force 271003Return to neutralEff pedal motion at 20°/s $\rightarrow$ to RTL stop (approx 1/4 s)Increase pedal force up to 100daN = 225 lbsR.ud. Force 271003Increase pedal force up to 100daN = 225 lbsI.Ped. Force 271003Return to neutralR.ud. Force 271003Return to neutralI.Ped. Force 271003Return to neutralR.ud. Force 271003Return to neutralR.ud. Force 271003Return to neutralI.Ped. Force 271003Return to neutralR.ud. Force 271003Return to neutralR.ud. Force 271003Return to neutralI.Ped. Force 271003Return to neutralR.ud. Surf 271025Return to neutralR.ud. Surf 271025Return to neutralR.ud. Force 271003Return to neutralR.ud. Force 271003Return to neutralR.red. Force 271002Return to neutralR.red. Force				Rud. Force	271003		
Return to neutralRud. Force271003Return to neutralRud. Force271002Left pedal motion at 20'/s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Ped.Left pedal motion at 20'/s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. SurfIncrease pedal force up to 100daN = 225 lbsLeft.271025Increase pedal force up to 100daN = 225 lbsLeft.271003Rud. Force271001Rud. Force271003Rud. Force271003Rud. Force271003Right pedal motion at 20's $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Ped.271025Right pedal motion at 20's $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003Rud. Force271003Rud. Force271003Rud. ForceRight pedal motion at 20's $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003Rud. Force271003 <td></td> <td>Increase pedal force up to 100daN = 225 lbs</td> <td></td> <td>R Ped. Force</td> <td>271002</td> <td></td> <td></td>		Increase pedal force up to 100daN = 225 lbs		R Ped. Force	271002		
Return to neutralR Ped. Force271002Return to neutralEdit pedal motion at 20°/s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271025Left pedal motion at 20°/s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Surf271024Increase pedal force up to 100daN = 225 lbsL Ped. Force271003Rud. Force271001L Ped. Force271003Rud. Force271001Rud. Force271003Right pedal motion at 20°/s $\rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped. 271023Right pedal motion at 20°/s $\rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped. 271023Rud. Force271003Rud. Ped. 271023Rud. Force271003Rud. ForceRud. Force271003Rud. Force271003Rud				Rud. Force	271003		
Return to neutralReturn to neutral20%Left pedal motion at 20% $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Surf271025Increase pedal force up to 100daN = 225 lbsRud. Force271003EndIncrease pedal force up to 100daN = 225 lbsL Ped. Force271003EndReturn to neutralL Ped. Force271001EndEndReturn to neutralL Ped. Force271001EndEndRight pedal motion at 20% $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003EndRight pedal motion at 20% $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003EndRight pedal motion at 20% $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Force271003EndRud. Force up to 100daN = 225 lbsRud. Force271003EndEndEnce271003Return to neutralRud. Force271003Rud. Force271003EndEndEndRud. Force271003Rud. Force271003EndEndEndEndEndEndRud. force up to 100daN = 225 lbsRud. Force271003Rud. Force271003EndE				R Ped. Force	271002		
Left pedal motion at 20°/s $\rightarrow$ to RTL stop (approx 1/4 s)PilotRud. Eurf.271025Increase pedal force up to 100daN = 225 lbsL Ped. Force271003Increase pedal force up to 100daN = 225 lbsL Ped. Force271001Rud. Force271001L Ped. Force271001Rud. Force271001L Ped. Force271001Right pedal motion at 20°/s $\rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped. 271001Rud. Force271001Rud. Force271003Increase pedal force up to 100daN = 225 lbsRud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Rud. Force271003Return to neutralRed. Force271003Rud. ForceReturn to neutralReturn to neutralRed. Force271002	ш	Return to neutral					
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
Increase pedal force up to 100daN = 225 lbsKud. Suff $2/1024$ Rud. Force $2/1003$ Rud. Force $2/1003$ Return to neutralL Ped. Force $2/1003$ Right pedal motion at 20°/s $\rightarrow$ to RTL stop (approx ½ s)PilotRud. Ped. $2/1025$ Rud. Force $2/1024$ Rud. $2/1025$ Increase pedal force up to 100daN = 225 lbsRud. Force $2/1003$ Return to neutralReturn to neutralRud. Force $2/1003$ Rud. Force $2/1002$	L	Lett pedal motion at $20^{7}$ $\rightarrow$ to K I L stop (approx 1/4 s)		Luu. reu.	070117		200 14 002
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
Return to neutralL Ped. ForceRight pedal motion at $20^{\circ}/s \rightarrow \text{to RTL stop (approx ¼ s)}$ PilotRud. ForceRud. SurfRud. SurfRud. SurfIncrease pedal force up to 100daN = 225 lbsRud. ForceRud. ForceReturn to neutralReturn to neutralReturn to neutral		Increase pedal force up to 100daN = 225 lbs		Rud. Force	2/1003	and a second	17:29:05
Return to neutralRud. ForceReturn to neutralL Ped. ForceRight pedal motion at $20^{\circ}/s \rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped.Rud. SurfRud. SurfRud. SurfIncrease pedal force up to 100daN = 225 lbsRud. ForceReturn to neutralReturn to neutralReturn to neutral				L Ped. Force	271001		
Return to neutralEt curl of curlRight pedal motion at $20^{\circ}/s \rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped.Rud. SurfRud. SurfRud. SurfIncrease pedal force up to 100daN = 225 lbsRod. ForceRud. ForceReturn to neutralReturn to neutralR Ped. Force				L Dad Force	2/1003		
Return to neutralPliotRud. Ped.Right pedal motion at $20^{\circ}/s \rightarrow$ to RTL stop (approx ¼ s)PilotRud. Ped.Rud. SurfRud. ForceRud. ForceIncrease pedal force up to 100daN = 225 lbsRed. ForceReturn to neutralReturn to neutral							
Right pedal motion at $20^{\circ}/s \rightarrow \text{to RTL stop (approx 1/4 s)}$ PilotRud. Ped.Rud. ForceRud. ForceRud. ForceRud. ForceIncrease pedal force up to 100daN = 225 lbsRud. ForceReturn to neutralReturn to neutral		Return to neutral					
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
Set Vc = 0 ktsLacOMBEVc34120611IPush left pedal up to 15° (2/3 of full travel) but don't reachPilotVSA $271040$ IPush left pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Surf $271024$ IPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force $271024$ IPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force $271024$ IPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force $271024$ IPush right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Force $271024$ IPush right pedal up to 15° (2/3 of full travel)Rud. Force $271024$ IIPush right pedal up to 15° (2/3 of full travel)Rud. Force $271026$ IIRud. Force $271026$ Rud. Surf $271026$ IIIRepeat cycle. Cycle achieved in 2s and continuePilotRud. Surf $271026$ IIRud. Force $271026$ Rud. Surf $271026$ IIIIRud. Force $271026$ Rud. Surf $271026$ IIIIIRud. Force $271026$ Rud. Surf $271026$ <		IV-1-7 Vc = 0 kts					
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		
Push right pedal up to $15^{\circ}$ (2/3 of full travel) but don't reachL Ped. Force271001L Ped. Force271025stopRud. Surf271023Rud. Force271003Rud. Force271003Return to neutral. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Return to neutral. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force271002Rud. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2s and continuePilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2sPilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2sPilotRud. Force271003Rud. Force271003Repeat cycle. Cycle achieved in 2sPilotRud. Force271003Rud. Force271003Rude ForcePilotRud. Force271003Rud. Force271003Rud. ForcePilotRud. Force271003Rud. Force271003Rud. ForcePilotRud. Force271003Rud. Force2					21003		
Push right pedal up to 15° (2/3 of full travel) but don't reachPilotRud. Eurd. $271026$ mud.stopRud. Surf. $271024$ mud.mud.mud.Return to neutral. Cycle achieved in 2s and continuePilotRud. Force $271002$ mud.Return to neutral. Cycle achieved in 2s and continuePilotRud. Force $271002$ mud.Return to neutral. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Reter to neutral. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2s and continuePilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2sPilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2sPilotRud. Surf. $271026$ mud.Repeat cycle. Cycle achieved in 2sPilotPilotPilotmud.PilotRepeat cycle. Cycle achieved in 2sPilotPilotPilotPilotPilotRud. Surf.PilotPilotPilotPilotPilotPilotRud. Surf.PilotPilotPilotPilotPilotPilotRud. Surf.PilotPilotP					1001		Max 100 daN/225 lbs
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 <b>right</b> 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 $60^{\circ}$ /s left rudder deflection in the YDA servo-loop untilBAUDETFct gen $271046$ MSet a $60^{\circ}$ /s left rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s left rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMSet a $60^{\circ}$ /s right rudder deflectionBAUDETFct gen $271046$ MMMSet a $60^{\circ}$ /s right rudder deflectionBAUDETBAUDETMMMMMSet a $60^{\circ}$ /s right rudder deflectionBAUDETBAUDETMMMMMSet a $60^{\circ}$ /s right rudder deflectionBAUDETBAUDETMMMMMSet a $60^{\circ}$ /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 <b>right</b> 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
------------	-----------------	------------------	-------------------------

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 <sup>E</sup> 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 <sup>E</sup> 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 <sup>E</sup> 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
<b> </b>	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 <sup>E</sup> 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 <sup>E</sup> 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 <sup>E</sup> 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 <sup>E</sup> 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 <sup>E</sup> 330		

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

	YAW DAMPER = ON	AUTO PILOT = OFF	SLATS/FLAPS = retracted
--	-----------------	------------------	-------------------------

	ACTIONS	ACTORS	READ	D	RESULTS	COMMENTS/GMT
	IV-4-9 Vc = 240 kts rate $10^{\circ}$ /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 <sup>E</sup> 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 <sup>E</sup> 330		

519.0440/02 Appendix 4 Page 31

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 <sup>7</sup> 330Yaw Damper12:25:23 (.001 repeated)225:00225:00Yaw rateYaw rate22 <sup>7</sup> 330Yaw Damper12:25:23 (.001 repeated)225:00Yaw rateYaw rate27 <sup>5</sup> 330Yaw Damper12:25:23 (.001 repeated)Yaw rateYaw rate27 <sup>5</sup> 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 <sup>E</sup> 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 <sup>E</sup> 330				Yaw cd	271029		12:25:00
disengaged after 2 Yaw rate input 22F330 Yaw rate 22 <sup>E</sup> 330				Yaw pos	271030	Yaw Damper	12:25:23 (.001 repeated)
Yaw rate input 22F330 Yaw rate 22 <sup>E</sup> 330						disengaged after 2	
						cycles	
Yaw rate				Yaw rate inp	ut 22F330		
				Yaw rate	22 <sup>E</sup> 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 <sup>E</sup> 330		
	1000						

519.0440/02 Appendix 4 Page 33

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
<b>m</b>	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		

519.0440/02 Appendix 4 Page 34

= 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
<b>m</b>	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		
Ő.		shi shki ƙiyan ananan a ƙ			AN CALIFICATION OF CONTRACTOR OF CONTRACTOR		