DISCUSSION: (continued)

Flight 212 was conducted on 10/7/77. Conditions 17 through 20 were completed. The maximum changes of 33° of roll and 15° of heading occurred during test condition 18, power for level flight at 160 KIAS and 20,000 ft. Test conditon 20, considered worse than the recommended AFM procedure, was completed with no control problems. The deployed reverser was kept at idle power throughout the landing. The control was good even in the gusty wind conditions that existed. The landing was made at ICT, runway 19R and the wind was 200° at 20 gusting to 30 knots. The controllability was good during the other test conditions conducted on the flight.

The AFM procedure for landing with a deployed reverser will be to shut down the engine with the deployed reverser. Landing with the thrust reverser deployed and the engine shut down is the same as a single engine landing since no parts of the thrust reverser are in the free stream air.

The operating engine could be deployed upon landing but maximum power is not possible due to the throttle lock solenoid. In order to accomplish this the shut down engine throttle must be brought to idle position and the reverser lever must be moved to the deploy position.

Flight 213 was made on 10/10/77. Conditions 21 through 24 were completed. The controllability was good throughout the tests on this flight. Condition 24 was completed with no difficulty. The thrust reverser was deployed at 5,000 ft. and 144 KIAS (V_2+20) and 80% N_1. The flaps were set at 20° and a 1 second reaction time was applied to the test condition. The roll angle was ≈15° and control was good.

Flight 214 was an FAA flight made on 10/11/77. The FAA pilot conducted test conditions 17, 19, 20, 22, 23 and 24. The controllability of the aircraft was acceptable during each of the tests.

This completed the unwanted in-flight deployment tests. The aircraft was controllable throughout the test envelope. The aircraft buffeting and vibrations were not a problem. Heavy tail buffeting did occur under the high power conditions, conditions 4, 8 and 16.

CONCLUSION:

The data has been forwarded to Engineering. A copy of the data will be filed with this report which is on file in Experimental Flight Test. The aircraft aerodynamic response data plots for the in-flight deployments have been filed under FTR 834.

The hi-speed pylon flow test presented no vibration or buffet problems. The change to the pylons and the addition of the thrust reversers did not adversely effect the high speed characteristics of the aircraft.

CONCLUSION: (continued)

The measured engine vibrations were all within the limit set by AiResearch.

The unwanted in-flight deployments persented no problems in aircraft control or structural vibration.

The testing for this FTR is considered complete.

[redacted]

[redacted]

[redacted]

GATES LEARJET FLIGHT FORM

DATE: 10 Oct 77 FLIGHT NO. 213

T.O. WT. 13211 T.O.C.G. - 30.3% WT. FORM - 57 LAND 1600

AIRPLANE 35001 PILOT/CREW [redacted] T.O. 1450

ATIS C WEATHER 160 26@ 10 FLT. TIME 1+10

O.A.T. 58 WIND 360/15G20 ALTIMETER 29.87

PURPOSE:

1. To conduct Inflight Deployment FTR 856 & 834A. Cond 21 → 24.

2. To conduct Engine Relight Envelope FTR 1264.

ENG. SHUTDOWN L / R

ENG. START L / R

ENG. RUN TIME L / R

PRE-FLIGHT FUEL:

L. TIP	
L. WING	
FUSELAGE	
R. WING	
R. TIP	
TOTAL	
COUNT	~~1401~~ 0

POST-FLIGHT FUEL:

COUNT 1401

DATA TAKEN:

P/R	
OSC	
DAS	✓
KNEEPAD	✓
OTHER	

TEST PLAN

FTR 1264
ENGINE RELIGHT ENVELOPE

1. USE AFM AIR START procedure
2. BATTERY STARTS ONLY

COND NO	ALT ft.	% N_2	COMPUTER MODE	START
1	15K	MIN	ON	STARTER ASSIST
2	↓	15	OFF	WINDMILL
3	↓	23	OFF	WINDMILL
4	20K	MIN	ON	STARTER ASSIST
5	↓	15	OFF	" "
6	↓	15	OFF	WINDMILL
7	↓	22	OFF	"
8	30K	MIN	ON	STARTER ASSIST
9	↓	15	ON	WINDMILL
10	↓	17	ON	"

NATIONAL
42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE

FLT NO	COND NO	Vi KNOTS	ALT Ft*10^3	RENG PWR	LENG* PWR	TEST DESCRIPTION
6	21	180	40	As Req	As Req	② 1 Deploy Stow Cycle
	22	200	40	As Req	As Req	② 1 Deploy Stow Cycle
	23	200	5	As Req	As Req	② 1 Deploy Stow Cycle
	24	V_2+20	5	80% T.O.	80% T.O.	③ 1 Deploy Stow Cycle

③ 1 Second Delay before Recovery

WORK SHEET
FORM LB 117

AERONCA T/R

FLT # 213 35001

TIME HR: MIN: SEC	COND. NO	Vi PILOT	Hi PILOT	RAT °C	N2 % LEFT	N2 % RIGHT	ITT °C LEFT	ITT °C RIGHT	N1 % LEFT	N1 % RIGHT	FUEL FLOW * LEFT	FUEL FLOW RIGHT	
	ALL BLEED OFF				SINGLE ENGINE				45.6		2.2	DEPLOY	
											2.0	STOW	
	ALL BLEED ON				SINGLE ENGINE				48.		4.0	DEPLOY	
											UNABLE STOW -		went to deploy
	ALL BLEED OFF				TWO ENGINE				46	49	2.2	DEPLOY	
											2.0	STOW	
	ALL BLEED ON				two Eng.				48	52	3.5	DEPLOY	
									UNLOCK LIGHT			STOW	
									UNABLE to get Lock w/bleed on				
15:07:30	21	180	41000	-36			25° ROLL		84.6	85.0	Y/D OFF		
:49			NO CONTROL PROBlem				4° HEADING						
15:09:27	22	200	41000	-38					88.4	88.8			
:42			NO CONTROL PROBlem				30° ROLL						

WORK SHEET
FORM LE 117

AERONCA T/R

FLT # 213 35001

TIME HR: MIN: SEC	COND. NO	Vi PILOT	Hi PILOT	RAT °C	N2 % LEFT	N2 % RIGHT	ITT °C LEFT	ITT °C RIGHT	N1 % LEFT	N1 % RIGHT	FUEL FLOW * LEFT	FUEL FLOW RIGHT
				FTR	1264	ENG RELIGHT						
	10	170	30000		OK	GOOD START				17		WINDMILL
	8	137	30000	-30	OK	GOOD START				14.2		STARTER ASSIST
		COND 9 NOT RUN.										
	7	220	20000	-6	OK					21		WINDMILL
												COMPUTER OFF
	6	175	20000	-8	OK					15		WINDMILL
	5	175	20000	-9	OK					15.0		START ASSIST
	4	120	20000	-10	OK					11.0		START ASSIST
	3	210	15000		OK					19.5		
	2	175	15000	+4	OK					15.		
	1	120	15000	0	OK					10		

WORK SHEET
FORM LE117

AERONCA T/R
FLT # 213 35001

TIME HR: MIN: SEC	COND. No	Vi PILOT	Hi PILOT	RAT °C	N2 % LEFT	N2 % RIGHT	ITT °C LEFT	ITT °C RIGHT	N1 % LEFT	N1 % RIGHT	FUEL FLOW * LEFT	FUEL FLOW RIGHT		
: :														
15 : 34 : 33	23	200	5000	+ 12		22°	ROLL		60	59	Y/D	OFF		
: : 55						5°	HEADING							
: :														
15 : 36 : 44	24								8 0	80	FLAPS - 20°			
: 37 : 15		144	5000	+ 8		≈ 25° OR LESS ROLL								
: 37 : 35				1 sec	delay	CONTROL WAS ACCEPTABLE								
: :														
16 : 00 : 45		LANDING			W/ ALL BLEED AIR									
: 01 : 11														
: :									44	48.6	SLOW			
: :		1600							46.9	51.2	FAST			
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PG 1 OF 1

DATA REQUEST

A/C - 35001 TEST DATE - 10 OCT 77 FLT. NO. - 213

MASTER TITLE - ETR 856 & 834A INFLIGHT Deployments.

TIME	GROUPS	SAMPLE	RUN TITLE
15:07:30	OSC SIM	As Req	COND 21 Deploy STOW PWR Level FLT
:49	PLOTS	10/sec	
15:09:27			COND 22
:42			
15:34:33			COND 23
:55			
15:37:15			COND 24 V2+20 80% PWR
:35			
16:00:45			LANDING ALL BLEED ON
:01:11			

DATA FORM - TAB ☐ PLOTS ☑

42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL