

DISCUSSION: (continued)

Flight 212 was conducted on 10/7/77. Conditions 17 through 20 were completed. The maximum changes of  $33^{\circ}$  of roll and  $15^{\circ}$  of heading occurred during test condition 18, power for level flight at 160 KIAS and 20,000 ft. Test condition 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  $200^{\circ}$  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  $20^{\circ}$  and a 1 second reaction time was applied to the test condition. The roll angle was  $\approx 15^{\circ}$  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.

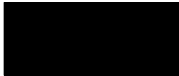
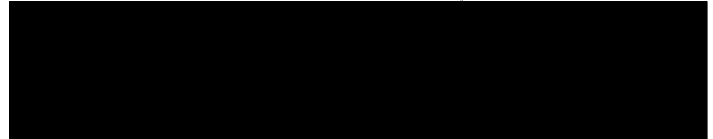
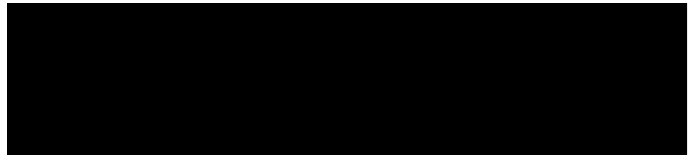
The hi-speed pylon flow test presented no vibration or buffet problems. The change to the pylons and the addition of the thrust reversers did not adversely effect the high speed characteristics of the aircraft.

CONCLUSION: (continued)

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

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

The testing for this FTR is considered complete.



GATES LEARJET FLIGHT FORM

DATE: 10 Oct 77

FLIGHT NO. 213

T.O. WT. 13211

T.O.C.G. - 30.390 WT. FORM - 57

LAND 1600

AIRPLANE 35001

PILOT/CREW [REDACTED]

T.O. 1450

ATIS C

WEATHER 160 260 10

FLT. TIME 1+10

O.A.T. 58

WIND 360/15620

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	<u>1401</u> ○

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 <sub>2</sub>	COMPUTER MODG	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	"

42,381 30 SHEETS  
 42,382 30 SHEETS  
 42,383 30 SHEETS  
 42,384 30 SHEETS  
 NATIONAL

FLY No	COND No	V <sub>i</sub> KNOTS	ALT Ft * 10 <sup>3</sup>	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 <sub>2</sub> 20	5	80% T.O.	80% T.O.	③ 1 Deploy STOW CYCLE

③ 1 SECOND DELAY before Recovery

FTR 856









