MDE IFTR104

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

file 4OPS-1 Dpe

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PFQ/G0690	B. FLIGHT NO/DATA POINTS 104/PER TIS	C. DATE 2 JUL 86
D. FRONT COCKPIT (Left Seat) EDMONDSON	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT (Right Seat) SHAWLER	H. START UP GR WT/CG 8847/18.05	I. WEATHER 100 SCT/45
J. TO TIME/SORTIE TIME 0930/1.4	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 210/04
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MARTINEZ/RICHE	O. CHASE TO TIME/SORTIE TIME

4. PURPOSE OF FLIGHT/TEST POINTS

Preliminary Flying Qualities at forward CG
Pressure survey in the nose and mid fuselage
Over the top aerobatics

5. RESULTS OF TESTS (Continue on reverse if needed)

PRESSURE SURVEY:

Pressure survey data were collected by flying stabilized (constant altitude and airspeed with wings level) at the following conditions:

a. 15,000 Ft PA - 120, 150, 200 and 250 KIAS in clean configuration
   - 120 KIAS P.A. configuration
b. 20,000 Ft PA - 108, 135, 180, 225 KIAS in clean configuration
   - 108 KIAS in P.A. configuration

FLYING QUALITIES:

Flying qualities tests were all flown at 25,000 Ft P.A. and included:

a. Speed stability and steady heading side slips at 122 KIAS

b. Dynamics included pitch & yaw doublets, aileron rolls and wind up turns at 122 KIAS. During the bank to bank (60° to 60°) roll, I inadvertently applied too much rudder in the direction of roll while trying to coordinate the maneuver. Instead, it was very uncoordinated (too much proverse rudder) but a very unexpected reaction occurred. About mid way through the roll and well after roll rate had reached its peak steady state value, roll rate abruptly increased to almost twice its steady state valve. The increase was very apparent to the pilot and obvious on the engineering data traces.

AEROBATICS:

Several loops were performed at 10,000 Ft P.A. with an entry airspeed of 250 KIAS using a target G of 3.5. The maneuver was relatively easy to fly with sufficient margins to make it over the top with sufficient airspeed (110 to 120 KIAS) to maintain a positive one G environment. On the back side coming down the 4 G limit is sufficient to keep from exceeding the Vmax limit of 279 KIAS. Overall, even with the T-1 limits, over the top aerobatics are safe to fly without pressing any limit. However I would not recommend letting a non pilot (such as a VIP) attempt the maneuver until the T-1 envelope is enlarged a little more.

6. RECOMMENDATIONS

Investigate the cause of unexpected roll acceleration.

COMPLETED BY	SIGNATURE	DATE

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IFTR 105

DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T-46A	84-0492

file 40PS-1 OK

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
PFQ/G8525	105/Per TIS	2 Jul 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
MARTINEZ	1280	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
BUSH	8918/17.16	60 SCT/40
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1323/1.7	Per TIS	240/02
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	SHAWLER/RICHE	1323/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

1. Preliminary Flying Qualities - FWD CG
2. Pressure survey, nose and mid fuselage
3. Landing evaluations FWD CG

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. Blocks "A" and "B" maneuvers were performed at FL 275 and 170 KIAS.
2. Pressure survey data obtained at 15 K' Hp and at 20 K' Hp at speeds of .24M, .3M, .4M, and .5M.
3. Speed stability data obtained at FL 275 and commencing from trim airspeed of 170 KIAS>
4. Cruise data obtained at FL 280 at .45M and at .5M.
5. Landings in the forward CG configuration were easily accomplished with only a slight increase in AFT stick force required.

BUSH

1. During pitch doublets at 27,500 feet, 170 KIAS left and right fuel pressure lights and master caution lights illuminated momentarily when pushing the nose down. No engine abnormalities were noted. Telemetry data showed left fuel pressure dropped from 13 psi to 7 psi for 1 second. Right fuel pressure dropped from 10 psi to zero psi for 1 second. Right fuel flow was 100 pph and left fuel flow was 115 pph.
2. Takeoffs from initial takeoff rotation and touch and go landings were evaluated. Stick forces were noticeably higher than at AFT CG but not heavy. Rotation rate to takeoff was rapid but controllable. No tendency to overshoot desired takeoff attitude was noted. Aircraft could be trimmed lands off on final approach, PA configuration, 110 KIAS. Stick forces to flare were higher than at AFT CG but not heavy. Had no trouble holding the aircraft off the runway for a complete flare and smooth landing at 90 KIAS.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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file 4 OPS-1

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
OT&E/G0691	106/Per TIS	3 Jul 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
CAMPANO	1140	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
SHAWLER	8720/17.59	160 SCT/45
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0913/1.6	Per TIS	220/08
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	RICHE/EDMONDSON	0913/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Forward CG handling qualities (OT&E) takeoff/landings, departure, stalls, slow flight, over-the-top aerobatics, SSE patterns/landings and cruise performance data points.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. Ground Operations: excellent taxi handling with either nosewheel steering or differential braking.
2. Takeoff: applied and held constant light stick force at approximately 90-95 KIAS. Aircraft smoothly rotated at 113-115 kts and pitch attitude was easy to control. Some concern, however, over delay between applying stick force and actual rotation. This technique seems to improve single ship takeoff/rotation but not sure it will work well in formation.
3. Stalls (Clean & PA): all rolled off to right. Benign stalls with no warning. Recovery very easy and A/C is quite responsive.
4. Aerobatics: (10-13 M') Loop, Cuban 8 and Cloverleaf performed. Aircraft handled and performed well at this lower altitude. Maneuvers did not lose energy (max power for loop and C-8 with 95% core for cloverleaf). Current "G" and airspeed limits restrict flexibility of maneuvers. Once these are relaxed, actually flying of maneuvers will be easier.
5. Speed Brake: Speed brakes (43° top and 35° side) deployed at 250 kts and PFLF. Slight buffet, no problem for formation or instrument work. Drag very effective in slowing down to below 200 kts with power still up. Also, brakes seemed to work well in a nose-low dive recovery (240 kts @ 30° nose low). Recovery with idle and speed brakes ended with only a 10 kts gain on airspeed.
6. Pattern/Landings: SSE pattern flown heavy weight with 20° flags and gear only. Lateral control no problem. Required high power on remaining engine (95% + core) to maintain speed and altitude and about 90% core in final (straight-in). Suspect use of speedbrake would be too much drag for power available under today's conditions and T-1's weight.

All landings had heavier stick forces than AFT CG landings, but not uncomfortable. Noticeable sink rate on all finals when slowing from final turn to 110 kts final speed requiring a good addition of power to stop sink. Landings were relatively simple. Personally prefer forward CG landings to AFT CG landings due to stick forces being slightly heavier with less chance to balloon.

see continuation sheet

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE
MICHAEL A. CAMPANO, Maj, USAF		

ITEM 5 CONTINUED

7. Speed Stability - small to moderate changes in airspeed (up to 20 kts) did not produce very noticeable stick force changes. Several times, the only real clue to airspeed change was via airspeed indicator. This was especially true during climbout/departure while targeting 170 kts.
8. Air Conditioning: overall outstanding! Both in ground and in flight.

IFTR 109

DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T-46A	84-0492

file 4 OPS-1

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PEAC/G0699	B. FLIGHT NO/DATA POINTS 109/PER TIS	C. DATE 8 JUL 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* BUSH	H. START UP GR WT/CG 9010/19.73	I. WEATHER 150 SCT/85
J. TO TIME/SORTIE TIME 1355/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 240/08G14
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/G+9	O. CHASE TO TIME/SORTIE TIME 1355/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

1. Preliminary Engine Airframe Compatability Investigation (EAC)
2. Pressure Survey

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. Preliminary EAC data obtained at 7,500' Hp, 15,000' Hp and FL 250. Tests included throttle bursts from idle to maximum power, throttle chops from maximum power, and bodie-type accel-decels.
2. Pressure survey data obtained at 15,000' Hp and FL 200.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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MDE IFTR110

DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T-46A	84-0492

file 4 OPS

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
PEAC/G0700	110/PER TIS	9 JUL 86
D. FRONT COCKPIT (Left Seat)	**E. FUEL LOAD**	**F. JON**
EDMONDSON	1280	2591A0
G. REAR COCKPIT (Right Seat)	**H. START UP GR WT/CG**	**I. WEATHER**
SHAWLER	8967/20.28	200 SCT/85
J. TO TIME/SORTIE TIME	**K. CONFIGURATION/LOADING**	**L. SURFACE CONDITIONS**
1124/2.0	PER TIS	240/08G15
M. CHASE ACFT/SERIAL NO	**N. CHASE CREW**	**O. CHASE TO TIME/SORTIE TIME**
T33/83TB	MARTINEZ/G+9	1124/2.0

4. PURPOSE OF FLIGHT/TEST POINTS

Preliminary Engine/Airframe Compatability (PEAC)
Pressure Survey at Mid Aft Fuselage

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Excellent mission. All the planned test points were accomplished. The engine airframe compatability tests included a new test technique not previously flown under this TIS. The technique involved a symmetrical wind up turn with a goal of reaching 5 to 10 degrees per second of AOA rate. This maneuver was relatively easy and quick to accomplish with no problem of overshooting the AOA limit of first stall indication. In fact, the accelerated stall characteristics of the aircraft includes a large amplitude airframe shudder which is easily recognized by the pilot just before stall. The technique was used up to 4.0 G's and at AOA's up to 16 degrees and the engines were not affected. As a matter of fact the engines appeared to operate absolutely normally during all test points. The AOA rates were flown only with the fuel control in normal as were the snap accelerations, snap decelerations and bodie cycles. However manual fuel control was selected at 35,000 and the engine was operated from idle to max with no apparent degradation except at max power. The N-1 (fan) RPM was approximately 5 percent less than during the normal mode at max power. At This condition, the N-2 (core) RPM and temperature (T-4.5) were nearly the same as when at max power in the normal mode. Overall, the engines behaved exceptionally well during AOA accelerations and during throttle transients even at high altitude and low speed. The next step will be to do both (transients and AOA accel) at the same time. I suspect the engine will have no problem with both at the same time. Manual fuel control operation at high altitude looks very good at this point.

6. RECOMMENDATIONS

Continue PEAC testing.

COMPLETED BY	SIGNATURE	DATE

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IFTR 111

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PEAC/G7056	B. FLIGHT NO/DATA POINTS 111/PER TIS	C. DATE 10 JUL 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8973/20.21	I. WEATHER CLR/50
J. TO TIME/SORTIE TIME 0912/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 220/05
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/RICHMOND	O. CHASE TO TIME/SORTIE TIME 0912/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

1. Preliminary Engine/Airframe Compatability
2. T-46A Checkout Flight for Maj Riche

5. RESULTS OF TESTS *(Continue on reverse if needed)*

RICHE: Ground Ops - Nosewheel steering good at slow speed, gets more sensitive at faster taxi speeds. Speeds fast enough to make rudders effective may be too fast a taxi speed but provides good directional control.

- idle thrust almost too much at light weight (after landing)
- initial reaction to control harmony - roll stiffer than pitch. OK in the air.

Takeoff - NWS used only to approx 40 KTs - rudders effective above. Good control.

- initial aft stick movement required very little force, then noticeably higher forces to obtain takeoff attitude
- forward stick required to prevent overrotation; not considerable amount.
- good, stable attitude. Gear retraction required minimal compenstation.

General - Very pitch stable, not very sensitive to pitch trim.

- Seems to have a low freq roll oscillation of 1-2 deg. More noticeable at high Hp.

Descent - Speed brake required minimal compensation.

Landing - Configuring requires minimal compensation.

- Stable final approach, good power response, good aimpoint control.
- Landing gear "stiff" on touchdown.
- Moderate stick forces during flare.
- Touch & Go - Possible tendency to lift off prematurely if nose not lowered.

MARTINEZ:

Mission successfully completed. Test technique consisted of symmetrical wind up turn with AOA rate of 5-10 degreess per second at which time a "bodie" type deflection was introduced. The engines performed flawlessly at all altitudes tested (7,500' Hp, 15,000' Hp, FL 250, and FL 350).

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

AFFTC FORM MAR 84 365 PREVIOUS EDITION IS OBSOLETE

mjk IFTR112

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO OT&E/G8526	B. FLIGHT NO/DATA POINTS 112/PER TIS	C. DATE 10 JUL 86
D. FRONT COCKPIT *(Left Seat)* MINK	E. FUEL LOAD 1140	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SHAWLER	H. START UP GR WT/CG 8857/19.65	I. WEATHER 200 SCT/35
J. TO TIME/SORTIE TIME 1306/1.3	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MARTINEZ/G+9	O. CHASE TO TIME/SORTIE TIME 1306/1.3

4. PURPOSE OF FLIGHT/TEST POINTS

Operational Test & Evaluation/Climb to 20,000, One G Power on stalls, accelerated stalls clean and PA configuration, One G stalls PA configuration, Loop, Cuban 8, Cloverleaf, VOR Holding Pattern, HI altitude VOR penetration and final approach, Overhead patterns 1500 and 1000 AGL.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

During battery start of the left engine, there was a hard light followed by a blow out with no relight in the next 7-8 seconds. The next start attempt took 70 seconds with a maximum ITT of 630. The right engine took 38 sec with a maximum ITT of 710. The climb to 20,000 ft took approximately 14 1/2 minutes from brake release. The one G stalls were characterized by definite G breaks and sometimes a right roll off. Accelerated stalls, both clean and PA configuration, had mild buffet a few knots prior to G breaks. The acrobatics were easy to do, but there is very little room for error on these maneuvers with the current airspeed and G limits. During the VOR work, course guidance was erratic and erroneous at all times in the southwest quadrant. I had difficulty controlling the touchdowns from almost every landing. Landings were characterized by balloons, dropped in and bounced touchdowns. Sink rate on final increases noticeably when approaching final approach speed of 110 KIAS.

6. RECOMMENDATIONS

I recommend further investigation of VOR course guidance. There were no reports of ground station problems from any other aircraft.

COMPLETED BY	SIGNATURE	DATE

AFFTC FORM MAR 84 365 PREVIOUS EDITION IS OBSOLETE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
PEAC/G0706	113/Per TIS	15 Jul 86
D. FRONT COCKPIT *(Left Seat)* Martinez	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* Riche	H. START UP GR WT/CG 8973/20.21	I. WEATHER 80SCT/40
J. TO TIME/SORTIE TIME 1354/1.7	K. CONFIGURATION/LOADING Per TIS	L. SURFACE CONDITIONS 230/13
M. CHASE ACFT/SERIAL NO T-33/83TB	N. CHASE CREW Edmondson/Gamble	O. CHASE TO TIME/SORTIE TIME 1354/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

1. Preliminary Engine/Airframe Compatibility

2. T-46 checkout flight for Maj Riche

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Mission successfully completed, no engine anomalies noted.

Riche: Previous roll oscillation reported not noted on this flight.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

AFFTC FORM 365 PREVIOUS EDITION IS OBSOLETE

MDE IFTR 114

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PEAC/G0707	B. FLIGHT NO/DATA POINTS 114/PER TIS	C. DATE 16 JUL 86
D. FRONT COCKPIT *(Left Seat)* EDMONDSON	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8953/20.45	I. WEATHER 120 SCT/10
J. TO TIME/SORTIE TIME 0937/1.9	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 220/16
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW SHAWLER/GAMBLE	O. CHASE TO TIME/SORTIE TIME

4. PURPOSE OF FLIGHT/TEST POINTS

Preliminary Engine Airframe Compatability (EAC)
Pressure Survey
Cruise Performance
Engine Temperature Survey
Initial Qualification Flight Check for Maj Riche

5. RESULTS OF TESTS *(Continue on reverse if needed)*

The first engine start time is taking longer than in the past. During the last two weeks of flying, the first start (either engine) is taking up to one minute to start. Today the left engine was started first and it took 55 seconds (ECS off). The longest has been 70 seconds. In the past a nominal start time was 30 to 40 seconds. A new battery was installed 8 Jul with little improvement.

Today's mission was very successful in that the engines operated flawlessly during the integration test. The test included rapid throttle transients and reversals (bodies) while simultaneously stalling the aircraft. Test points began at 15,000 ft 125, 145, and 170 KIAS and then moved up to 25,000 ft 170 and 195 KIAS. Each point was picture perfect. A final EAC point was flown at 33,500 ft 195 KIAS where a full sideslip was flown (8 deg BETA with 16 deg rudder deflection). Again the engine operated normally.

A few level flight cruise points were flown at 28,000 and 31,000 ft PA. to spot check our DPS computer model we are using to predict T-2 ferry range capability. The following cockpit data were recorded:

ALTITUDE	VELOCITY KIAS	TEST POINT DURATION	FUEL USED LBS	FUEL FLOW PPH
28,000	207(V MAX)	2 min	20	580
	190	4 min	40	520
	175	4 min	30	480
	160	4 min	30	420
31,000	185(V MAX)	4 min	35	540
	175	4 min	40	480
	165	4 min	30	470

SEE CONTINUATION SHEET

6. RECOMMENDATIONS

Investigate the longer than nominal engine start times.

COMPLETED BY	SIGNATURE	DATE

ITEM 5 continued

The indicated fuel flows compare very favorably with the DPS data used to predict ferry range for T-2. At the Flight Readiness Review in June, we briefed an expected fuel flow of 468 lb/hr at 30,000 ft and 188 KIAS (300 KTAS).

At 25,000 ft and 170 KIAS, several pitch doublets were made in an attempt to check a previous anomaly seen with a fuel pressure drop. Following the anomaly a few weeks ago, the right fuel boost pump was changed. On todays flight, the pitch doublets did not elicit a fuel pressure drop. With a large slow doublet, both oil pressures dropped enough to illuminate both engine low oil pressure indicator lights on the caution panel, but no fuel pressure drop (caution light) illuminated.

Maj Riche completed his initial qualification flight check and is now fully qualified in the T-46A.

MDE IFTR115

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO G58529	B. FLIGHT NO/DATA POINTS 115 PER TIS	C. DATE 7/16/86
D. FRONT COCKPIT *(Left Seat)* GAMBLE	E. FUEL LOAD 1150	F. JON 2591AO
G. REAR COCKPIT *(Right Seat)* SHAWLER	H. START UP GR WT/CG 8826 / 20.40	I. WEATHER CLEAR/HOT
J. TO TIME/SORTIE TIME 1341 / 1.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 220/18G26
M. CHASE ACFT/SERIAL NO T33/N 84TB	N. CHASE CREW RICHE/GAMBACORTA	O. CHASE TO TIME/SORTIE TIME 1341 / 1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Operational Test & Evaluation: climb to 20,000. One G power on stalls, accelerated stalls clean and in PA configuration. Acrobatics: Loop, Cuban 8, Cloverleaf, Aileron roll. Simulated single engine pattern and overhead patterns from 1000' and 1500' AGL.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Capt Gamble

1. First time I've flown over the top acrobatics. Maneuvers were easy to accomplish. It was very easy to maintain precise vertical tracking. Because of minimal stall warning, secondary stalls are possible if you don't pay close attention to back pressure during low speed portions of maneuver. The airplane felt very solid at 100-120 KIAS inverted.
2. Simulated single engine straight in highlighted the fact that there is very little excess power available. Level flight with gear down and flaps 20 deg requires almost max power. Yaw with max power on one engine easy to control.
3. Landings easiest if you fly shallow final with minimum flare. Higher sink rates associated with steeper finals made smooth landings more challenging.
4. Very comfortable temperatures possible in cockpit with OAT 90 deg.
5. Insufficient right aileron trim authority at higher airspeeds.

Mr. Shawler

6. Fuel quantity has a potential problem possibly due to the larger inverted fuel tank. Fuel readings are slightly in error below 200 pounds due (maybe) to trapped fuel in the inverted tank and sloshing of fuel. The average error is approximately ±20 pounds. The fuel quantity probes being outside the inverted fuel tank does not record this fuel. In all cases, we have more available fuel than indicated. FRC should investigate possible fixes.
7. The VOR has had problems with azimuth drift. It was evaluated during this flight, and it does drift excessively and usually greater going away from the station. This may be an antenna problem. The T-33 chase aircraft was solid.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

IFTR 116 file

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PFQ/G0716	B. FLIGHT NO/DATA POINTS 116/PER TIS	C. DATE 22 JUL 86
D. FRONT COCKPIT (Left Seat) MARTINEZ	E. FUEL LOAD 1280	F. JON 2591AO
G. REAR COCKPIT (Right Seat) MANKE	H. START UP GR WT/CG 8899/17.4	I. WEATHER 50SCT/30
J. TO TIME/SORTIE TIME 1124/1.8	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 050/08
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW BUSH/PAX	O. CHASE TO TIME/SORTIE TIME 1124/1.8

4. PURPOSE OF FLIGHT/TEST POINTS

1. Pitch mechanical advantage evaluation (increasd ~ 10%)
2. Hydraulic systems tests.

5. RESULTS OF TESTS (Continue on reverse if needed)

1. Wind up turns (up to 4.0 G) were flown at airspeeds of 275, 250, and 225 KIAS at 15,000 (Hp).
2. Speed stability points were flown from trim airspeeds of 250, 200, and 150 KIAS at 15,000 (Hp).
3. Elevator trim tab effectiveness data obtained at airspeeds of 110, 125, 150, 200, 250, and 275 KIAS in clean configuration and at airspeeds of 110, 130, and 150 in PA configuration.
4. Longitudinal dynamic stability data (stick fixed and stick free) obtained at 15,000' Hp and 250 KIAS.
5. Pressure survey data points (scannivalue) obtained at speeds of 120, 150, 200, and 250 KIAS.
6. Hydraulic system evaluation data obtained at 15,000' Hp and 140 KIAS.
7. Aircraft could be trimmed in the PA configuration at 110 KIAS, however in the clean configuration, the minimum airspeed for trim was 113 KIAS.
8. Landings with the forward CG configuration were easily accomplished with possibly a lighter AFT stick force at flare (really too close to tell).

Capt Manke

1. Lightweight takeoff rotation - rotation stick forces seemed slightly lighter than previous forward CG flights. Task was relatively simple and no overshoot tendencies noted.
2. Landings - stick forces increase rapidly going into flare as a result of running out of elevator trim below 110 KIAS and the forward CG. These heavier forces in the touchdown phase of the landing reduces the "feel" required to make consistantly smooth landings.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

FLIGHT 117 HYDRAULIC SYSTEM ANOMALY

This engineering addendum to IFTR 117 provides postflight stripchart data corresponding with the right hydraulic pump discharge overtemperature, hydraulic system checkout, instrumentation changes, and the results of attempts to determine the problem.

The aircraft hydraulic system was serviced to the minimum allowable level to perform hydraulic system tests. While performing pressure survey test points at 15,000 feet and airspeeds of 120 to 250 KIAS the right pump discharge temperature climbed from 150 to 320 degrees F in 10 minutes and 50 seconds then descended to 185 degrees F seven minutes later. Strip chart data provides the following flight information:

PARAMETER	TIME			UNITS
	0:00	10:50	17:50	
System supply pressure -	2850	2850	2850	psia
System return pressure -	100	100	100	psia
Heat exchanger outlet temperature -	50	40	50	deg F
Left pump discharge flow -	1.1-3.2	0.8-2.7	1.9-2.9	gpm
Right pump discharge flow -	0	0	0	gpm
Right pump discharge pressure -	3100	----	----	psia
Right pump discharge temperature -	150	320	185	deg F

The right pump discharge pressure instrumentation parameter failed 8.5 minutes into the temperature rise.

Postflight tests were conducted to investigate the problem. Tests included checks of the instrumentation and engine runs. Thermocouple operation was checked and found to be correct. Three engine runs were conducted without hydraulic system overtemperature indications. The maximum pump discharge temperature during ground runs was 200 degrees F. and occurred with the following hydraulic system temperature indications:

Right Pump Discharge	200 deg F
Right Pump Return	130 "
Left Pump Discharge	127 "
Left Pump Return	118 "
Reservoir	161 "
Heat Exchanger	161 "

Hydraulic system instrumentation changes since the high temperature indication include adding an orifice and a thermocouple. A 0.060 inch orifice was installed before the pump discharge pressure transducer. This orifice is to prevent damage to the pressure transducer by surpressing pressure spikes. Also, a thermocouple was installed on the right pump discharge line. This thermocouple installation appears to respond to temperature transients better than the original temperature probe location.

The overtemperature indication of the right hydraulic pump discharge occurring on flight 117 could not be duplicated during ground tests. However, until this problem is solved, hydraulic pump discharge temperatures will be monitored real time in the ground control room during flight.

add to 118

FLIGHT 118F FUEL SYSTEM ANOMALY CHECKOUT

This engineering addendum to flight 118 provides the changes to the fuel system after flight 99, and the flight 118 test procedures, test conditions, and test results, and a recommendation.

Changes to the system since the last inverted flight test was the removal and replacement of the right fuel boost pump. The removed pump was sent to FRC, NY and was tested in the fuel system simulator. The replacement pump had successfully completed fuel simulator tests. The problem discovered in flight 99F was duplicated. FRC sent the pump to the vendor (Crane, Hydro-Aire, CA) for a teardown inspection. The problem with the pump was a bad o'ring in the base near the bottom seat of the inverted flight shuttle valve. The o'ring prevented the valve from seating when placed in the inverted position and allowed air to enter the pump. Acceptance test procedures at the vendors provided for an inverted check with a full inverted flight simulator. This allowed the pump to function properly since both inlets were covered by fuel. When the simulator was partially filled, exposing one end of the fuel pump stand pipe, the loss of pump pressure was repeated.

Data were obtained for inverted flight times of 10, 20 and 28 seconds. The test procedure provided for a 180 degree roll, maintain minus 1 G for the specified time, then roll upright. A ten second inverted flight was obtained by left rolls to the inverted position hold for 10 seconds and then a left roll to normal flight. Another 10 second test point was conducted using right rolls into and out inverted flight. Twenty second inverted flight was obtained by left rolls to the inverted position hold for 20 seconds and then a left roll to normal flight. The 28 second inverted flight was obtained by a right roll to inverted flight hold for 28 seconds then a left roll to normal flight.

Inverted fuel system checkout test points were conducted at 15K' HP and 200 KIAS. The engine parameters were set at the following conditions prior to all inverted flight maneuvers.

PARAMETER	ENGINE Left	ENGINE Right	UNITS
N2	44K	41K	rpm
Fuel pump inlet temperature	66	61	degree F
Fuel flow	400	260	lbs/hr
Fuel pump inlet pressure	28	27	psia

The 10 second inverted flight maneuver performed with left rolls sustained negative G's for 9.5 seconds. The fuel remaining was 410 pounds. The engine and fuel system responded to this inverted flight maneuver as follows:

RH eng - the fuel pressure dropped from 27 to 12 psia half a second after negative Gs were obtained, then recovered to 27 psia within one second. During the roll out, the pressure dropped to 7.5 psia and recovered to 27 psia within 2 seconds. All other parameters remained unchanged.

LH eng - the fuel pressure dropped from 28 to 23 psia half a second after negative Gs were obtained, then recovered to 28 psia within half a second. During the roll out, the pressure dropped to 9 psia and recovered to 28 psia within 2.5 seconds. All other parameters remained unchanged.

The 10 second inverted flight maneuver performed with right rolls sustained negative G's for 10.5 seconds. The fuel remaining was 400 pounds. The rollout of inverted flight was uncharacteristic in that positive Gs were obtained then a return to a negative G condition occurred prior to stabilizing at normal flight. The engine and fuel system responded to this inverted flight maneuver as follows:

RH eng - the fuel pressure dropped from 27 to 20 psia half a second after negative Gs were obtained, then immediately recovered to 27 psia within one second. During the roll out, the pressure dropped to 8 psia and remained for 2.5 seconds then recovered to 27 psia 1 second later. All other parameters remained unchanged.

LH eng - the fuel pressure dropped from 28 to 22 psia half a second after negative Gs were obtained, then recovered to 28 psia within half a second. During the roll out, the pressure dropped to 14 psia and recovered to 28 psia within 1 second. After the rollout and half a second after returning to 28 psia, the pressure dropped to 25 psia then recovered to 28 psia within 1 second. This post rollout pressure drop corresponded with the return to a negative G condition. All other parameters remained unchanged.

The 20 second inverted flight maneuver performed with left rolls sustained negative G's for 20.2 seconds. The fuel remaining was 360 pounds. The engine and fuel system responded to this inverted flight maneuver as follows:

RH eng - the fuel pressure dropped from 27 to 20 psia half a second after negative Gs were obtained, then recovered to 27 psia within one second. During the roll out, the pressure dropped to 8.0 psia and recovered to 27 psia within 1.5 seconds. All other parameters remained unchanged.

LH eng - the fuel pressure dropped from 28 to 22 psia half a second after negative Gs were obtained, then recovered to 28 psia within half a second. During the roll out, the pressure dropped to 9 psia and recovered to 28 psia within 1.5 seconds. All other parameters remained unchanged.

The 28 second inverted flight maneuver performed with a right roll in and a left roll out sustained negative G's for 27.2 seconds. The fuel remaining was 340 pounds. The engine and fuel system responded to this inverted flight maneuver as follows:

RH eng - the fuel pressure dropped from 27 to 21 psia less than half a second after negative Gs were obtained, then recovered to 27 psia within one half a second. During the roll out, the pressure dropped to 6 psia and recovered to 27 psia within 1 second. All other parameters remained unchanged.

LH eng - the fuel pressure dropped from 28 to 22 psia less than half a second after negative Gs were obtained, then recovered to 28 psia within half a second. During the roll out, the pressure dropped to 9 psia and recovered to 28 psia in less than 1 second. All other parameters remained unchanged.

RECOMMENDATION - The fuel pump vendor should revise there acceptance test procedures to include a more thorough test of the inverted flight shuttle valve.

FILE MDL 80 IFTR 119

DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T-46A	84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PFQ/G7057	B. FLIGHT NO/DATA POINTS 119/Per TIS	C. DATE 28JUL86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1280	F. JON 2591AO
G. REAR COCKPIT *(Right Seat)* MOSS	H. START UP GR WT/CG 9148/24.6	I. WEATHER CLR/65
J. TO TIME/SORTIE TIME 1015/1.5	K. CONFIGURATION/LOADING Per TIS	L. SURFACE CONDITIONS 220/02
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW RICHE/GAMBACORTA	O. CHASE TO TIME/SORTIE TIME 1015/1.5

4. PURPOSE OF FLIGHT/TEST POINTS

1. Aft CG Flying Qualities Eval
2. Pressure Survey
3. Hydraulic Systems Eval
4. Initial Checkout Flight for Capt Moss

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. Wind up turns (to 4.0G) were performed at F.L.150 and airspeeds of 275, 250, and 225 KIAS.
2. Speed stability points were flown at 250 KIAS, 200 KIAS, and 150 KIAS.
3. Elevator Trim Tab effectiveness points were flown at airspeeds of 110, 125, 150, 200, 250 and 275 KIAS in the clean figuration and at 110, 130, and 150 KIAS in the PA configuration
4. The hydraulic system evaluation consisted of a series of Max Nzw wind-up turn maneuvers while exercising the rudder and speed brakes. The flight was terminated at this point due to Ground Observed 5.0 G loading, although the maximum indications in the cockpit were 4.3 G (left) and 4.2 G's (Right) which were within the allowable 4.4g limit for the gross weight.

Capt Moss:

Cockpit Evaluation - The cockpit is generally well laid out. Obvious prior thought was given to cockpit layout with the UPT mission in mind.

I was tickled to see the INS/AHRS switch on the ADI. I wonder what the INS mode is used for?

There were, however, some inadequacies:

1. No room for storage of maps, charts, approach plates, etc.
2. The red light in the gear handle was far too dim. The failure of the light to go out would most likely never be noticed by a pilot, much less a student pilot.
3. The nosewheel steering was far too sensitive. I taxied at about 15-20 knots at the fastest and a faster taxi speed would have been dicey at the best. Because of this, I was unwilling to use the nosewheel steering for takeoff past 20 knots.

SEE CONTINUATION SHEET

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

4. Wheel brakes were too "mushy." This may have been due to recent brake changes and hydraulic fluid bleeds. However, after substantial pumping of the brake pedals, the angle of ankle deflection required to obtain full brake pressure was excessive. In addition, the brakes were not adequate for one pilot to hold the aircraft stationary during the line up check.

5. The VOR/ILS and TACAN take-command buttons did not indicate which seat had control of the HSI. This could lead to daily confusion about who has control of the display - something for which a procedural solution would be inadequate.

Ground Operations -

The engine start sequence was easy and straight forward. I thought that placing the throttle to idle before motoring the engine was strange but not objectionable.

At the the beginning of taxi-out, I noticed that the checklist did not require an ops check of the brakes, except to check for positive brake pressure prior to pulling the chocks. I would think that a brake ops check would be in order.

Takeoff -

The lineup check was rather easy, with the exception that one pilot could not hold the aircraft with the engines at Mil power.

The initial portion of the takeoff roll did not bring back memories of my first F-15 takeoff. The nosewheel steering was disengaged around 15-20 knots because I was hesitant to use it above that speed. Although there was very little crosswind, I felt that the rudders were adequately effective.

I started moving the stick at 70 KIAS. The stick forces required to do this were heavy and surprising. This was immediately followed by an even more surprising nose rise to an attitude greater than desired. I quickly pushed the stick forward to avoid over rotating. I considered this characteristic to be very objectionable.

Inflight -

I had only a small amount of time to analyze the "up and away" characteristics due to the need to accomplish the test card.

I accommplished pitch and rudder doublets and found these axes to be deadbeat. Bank to bank rolls exhibited comfortable roll mode time constants and aileron power. Although the T-46 wing has anhedral, the aircraft exhibited diheral characteristics during loaded maneuvers.

Pattern and Landing -

During recovery, it was difficult to keep the airspeed down below 276 KIAS. Use of the speedbrake was overkill and required multiple fanning. A center-neutral position for the speedbrake should be considered as a possible option.

The overhead pattern was sporty, pitching out at 250 KIAS & slightly before the approach end. Slowing the aircraft down was difficult, but it eventually happened. The final turn and approach was reminiscent of the T-37. The roundout to flare was nice, however, I found a lack of positive feedback in the longitudinal axis of stick in my attempt to find the proper pitch attitude for touchdown. The stick forces here were exceptionally light with an apparent large natural frequency. The combination of light stick forces and slow response, exacerbated by an aft CG induced several pilot induced oscillations (PIO) in pitch. I was eventually able to control this and effected a touch down.

Taxi Back & Shutdown - Uneventful, no comments.

ND E IFTR 001

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T 46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO Preliminary Airworthiness	B. FLIGHT NO/DATA POINTS 001	C. DATE 29 Jul 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1200 LBS	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* NONE	H. START UP GR WT/CG 8546 LBS/19.89%	I. WEATHER 50 SCT
J. TO TIME/SORTIE TIME 1148/1.4	K. CONFIGURATION/LOADING 102 LBS BALLAST	L. SURFACE CONDITIONS NA
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/HINSON	O. CHASE TO TIME/SORTIE TIME 1148/1.4

4. PURPOSE OF FLIGHT/TEST POINTS

First flight of T 46A S/N 84-0493 was flown in accordance with the preliminary airworthiness plan, but only went to 28,000 ft.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. All the pre-flight ground tests were completed on 27 Jul 86. The bus tie relay had failed causing several electrical problems. This was replaced and checked out OK later in the day.

2. During the alternate gear extension the speed brakes closed slowly after the system was reset.

3. The aircraft had a lateral roll off that could not be corrected by trim.

4. The left attitude indicator precessed 3-4 degrees during normal turns.

5. The stick raps were completed from 150Kt-200Kt at 10Kt increments with large inputs. No problems.

6. All other events and systems were normal. T2 had the same handling qualities as T1 from a qualitative evaluation.

6. RECOMMENDATIONS

Aircraft ready for Air Force flight.

COMPLETED BY	SIGNATURE	DATE

MD 2 IFTR 003 file

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO Preliminary Airworthiness	B. FLIGHT NO/DATA POINTS 003	C. DATE 2 AUG 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1200 LBS	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* CLINCH	H. START UP GR WT/CG 8745 LBS/17.32%	I. WEATHER
J. TO TIME/SORTIE TIME 1533Z/1.3	K. CONFIGURATION/LOADING 102 LBS BALLAST	L. SURFACE CONDITIONS
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/HINSON	O. CHASE TO TIME/SORTIE TIME 1533Z/1.4

4. PURPOSE OF FLIGHT/TEST POINTS

FMDL check out flight after hydraulic inst. failure on Flt 2.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. The alternate gear extension was checked through two complete cycles and worked perfectly.

2. The pitch attitude on the attitude indicator was hooked up backwards.

3. The UHF radio had a continual clicking during the early part of the flight.

4. Airspeed and altitude checks completed with T-33 chase. Good agreement.

5. All systems operated normally.

6. RECOMMENDATIONS

Aircraft ready for ferry!

COMPLETED BY	SIGNATURE	DATE

File mDE IFTR 120

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO BASELINE DRAG/G0735	B. FLIGHT NO/DATA POINTS 120/PER TIS	C. DATE 5AUG86
D. FRONT COCKPIT *(Left Seat)* RICHE	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* GAMBLE	H. START UP GR WT/CG 8952/20.46	I. WEATHER CLR/30
J. TO TIME/SORTIE TIME 0729/1.9	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 210/02
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW MARTINEZ/PHOTO	O. CHASE TO TIME/SORTIE TIME 0729/1.9

4. PURPOSE OF FLIGHT/TEST POINTS

BASELINE DRAG TEST (SPEED-POWER)
7,500' HP 150, 130, 110 KIAS, CLEAN
10,000' HP 150, 130, 110 KIAS, GEAR, NO FLAP, NO SPEEDBRAKE
10,000' HP 150, 130 KIAS, GEAR, 20 DEGREES FLAP, NO SPEEDBRAKE

5. RESULTS OF TESTS *(Continue on reverse if needed)*

All test points successfully completed.
All test points required 1/3 to 1/2 of available left rudder trim to maintain coordinated flight (ball centered).
Left fuel flow indicator fluctuated as much as plus or minus 50 pph with no other engine effects (INTERMITTENTLY).
Rudder pedal angle when brakes are fully depressed results and excessive plantar flexion. This is uncomfortable and reduces the effective angle of pressure on the pedals, which could allow a foot to slip off a brake, particulary it if was exposed to oil or water.
Stick forces to affect rotation seem to high in light of observed stick forces once airborne. Compensation to prevent over-rotation is moderate.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

mjc File IFTR 121

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO BASELINE DRAG/G0736	B. FLIGHT NO/DATA POINTS 121/PER TIS	C. DATE 6AUG86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SCHULZ	H. START UP GR WT/CG 8977/20.14	I. WEATHER 200SCT/40
J. TO TIME/SORTIE TIME 0711/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 230/05
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW RICHE/PHOTO	O. CHASE TO TIME/SORTIE TIME 0711/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

LANDING GEAR DRAG INVESTIGATION

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. Speed power point at 10,000' (Hp) and 110 KIAS (Gear down, flaps 20 degrees).
2. Speed power points at 15,000' Hp and speeds of 110, 120, and 130 KIAS (P.A. Config)
3. Split throttle speed power points at 15,000' Hp and 175 KIAS in clean configuration.

In all cases excellent stabilized data obtained.
Maj Schulz:
With today's CG and the elevator mod, the takeoff characteristics were better than on my previous T-46 flights. I applied back pressure at approximately 90 KIAS. I held a constant back pressure, and after some delay the aircraft rotated at a very controllable rate. I arrested the pitch up easily, and there was no overshoot. Liftoff occurred at approximately 105 KIAS.

Flight characteristics on the simulated single engine straight-in using 110 KIAS on final (gear down, 20 degrees flaps, speed brake on short final) were very good.

The overhead pattern flown at 1000 feet AGL was also easy to fly using 140 KIAS in the final turn and 120 KIAS on final. The speed brakes provided plenty of drag in the overhead pattern.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

FILE MDR IFR 122

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO OT&E/G0737	B. FLIGHT NO/DATA POINTS 122/PER TIS	C. DATE 7AUG86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1280	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MINK	H. START UP GR WT/CG 8997/19.91	I. WEATHER CLR/50
J. TO TIME/SORTIE TIME 1034/0.8	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 230/06
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW MARTINEZ/CLINCH	O. CHASE TO TIME/SORTIE TIME 1034/0.8

4. PURPOSE OF FLIGHT/TEST POINTS

IOT&E FLIGHT
1. TAKE-OFF AND CLIMB
2. ACROBATICS-LOOP AND CUBAN 8
3. AVIONICS EVALUATION

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. The take off and climb were normal without difficulty.
2. The loop was flown starting at 250 KIAS 16,000 ft. The "G" on set was slow to insure staying far away from the "G" limit (maximum of 3). This caused a fairly slow airspeed over the top, but was not a problem. During the Cuban 8 the same condition existed, but this time we waited until 120 KIAS to roll the 180 degrees. This put us further nose low, consequently, during the pull out observing the conservative "G" limit, the airspeed went to 290 KIAS. (Flutter limit is 279 KIAS.) The ground station called out the airspeed passing 270 KIAS but not early enough to prevent the airspeed exceedance.
3. The ILS worked normally. The VOR was erratic and unusable 5-7 miles from the station on an outbound heading.

MAJ MINK (ATC) made the following observations:
1. With the increased deflection (60 deg) on the side speedbrakes, the drag in the Power Approach configuration was significantly higher. Maximum speed on a 1000 AGL downwind with gear, speed brakes and 20 degrees flaps with max power was 135 KIAS.
2. The cockpit temperature was comfortable, but seemed a bit warm in the traffic pattern with the total temperature probe registering an outside air temperature of 103F.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE
SHAWLER		

File mD E IFR 123

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO Lndg Gear Drag/G0706	B. FLIGHT NO/DATA POINTS 123/PER TIS	C. DATE 11AUG86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MANKE	H. START UP GR WT/CG 8938/19.86	I. WEATHER 100SCT/40
J. TO TIME/SORTIE TIME 0722/1.8	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW RICHE/GAMBACORTA	O. CHASE TO TIME/SORTIE TIME 0722/1.8

4. PURPOSE OF FLIGHT/TEST POINTS

1. Landing Gear Drag Investigation (Configuration III)
2. ILS Approach
3. Overhead Patterns and Landings

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Speed power stabilized points obtained at 10,000' Hp at 110, 130, and 150 KIAS gear down, and also with both gear and flaps down.

CPT MANKE, OT&E

1. ILS approarch - aircraft is very stable on instrument final approach at 110 KIAS, speed brake in or out. Adequate elevator trim at Mid CG at 110 KIAS. ILS equipment operated flawlessly.
2. Overhead Patterns and Landings - The 43 degree top/60 degree side speedbrake configuration provides excellent drag/power characteristics for normal patterns from 1000' to 1500'.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

MDE IFTR 124

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T46	492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
Gear Drag/G7061	124/PER TIS	12AUG86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
RICHE	1240	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
SCHULZ	8872/20.98	120SCT/40
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0724/1.6	PER TIS	200/01
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/84TB	MARTINEZ/PHOTO	0724/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Landing gear drag investigation - All gear doors off
10,000' PA at 115, 130, 150 KIAS gear down,
10,000' PA at 115, 130, 150 KIAS gear down, flaps 20 degrees.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

RICHE -

Takeoff - During engine run-up at max power, brake effort was moderate and required approximately 3/4 to 7/8 pedal deflection to hold the aircraft in position (without "pumping" the brakes).

- Slight pitch-up tendency during rotation. Pilot compensation noticeable since my first flight as takeoffs are smoother.

All test points completed with valid data.

Very stable final approach, fully configured.

OT&E COMMENTS (SCHULZ)

Simulated Single Engine ILS - Equipment and handling characteristics were excellent. I flew the approaches with the speed brakes retracted until landing was assured.

Simulated Single Engine Landing - I extended the speed brakes as I was beginning the flare (43 deg top/60 deg side) and the nose pitched up. Over correction resulted in pitch oscillations so I went around.

Speed brakes - Provided excellent drag for normal patterns.

Air Conditioning - Temperature control was outstanding but the air conditioning spit snow, especially out of the duct on the right glare shield.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FERRY	B. FLIGHT NO/DATA POINTS 006	C. DATE 12 AUG 86
D. FRONT COCKPIT *(Left Seat)* CLINCH	E. FUEL LOAD 1100 LBS	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* EDMONDSON	H. START UP GR WT/CG 8645 LBS	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1558Z/1.0 HRS	K. CONFIGURATION/LOADING 102 LBS BALLAST	L. SURFACE CONDITIONS NA
M. CHASE AC/SERIAL NO T33/83TB	N. CHASE CREW SHAWLER/MARQUES	O. CHASE TO TIME/SORTIE TIME /1.0 hrs

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Pittsburgh PA (PIT) to Wright-Patterson AFB OH (FFO).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Sortie flown at Fl 280, IAS 185, TAS 300 KTS FF 480 pph total. Short leg (183NM), 590 LBS at shutdown. Birdstrike on short final. Small bird impacted lower left quadrant of wind screen. Speed approx 110 KIAS, 100 ft AGL. No damage noted. Landing was made short of arresting cable. Passed over cable at approx 80-90 Kts in three point altitude without incident.

Aircraft lacks adequate trim authority on final.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
FERRY	008	13 AUG 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
SHAWLER	1100 LBS	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
CLINCH	8645 LBS	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1534Z/1.3 HRS	102 LBS BALLAST	CLR/75 deg F(EST)Winds calm
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	EDMONDSON/MARQUES	/1.3 hrs

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Blythville AFB Ark (BYH) to Barksdale AFB LA (BAD).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Sortie flown at FL 280, 300 KTAS, FF 480 pph total, 185 KIAS, -29 degrees C OAT. 323 NM Leg. Planned fuel at IAF 390 LBS. Winds at altitude 350/15. Recovery Via enroute descent to initial. 450 LBS at shutdown.

Climb at warmer than standard day (+13): 84 NM, 280 LBS, 23 MW. Winds for climb estimated 300/10.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FERRY	B. FLIGHT NO/DATA POINTS 009	C. DATE 13 AUG 86
D. FRONT COCKPIT *(Left Seat)* CLINCH	E. FUEL LOAD 1100 LBS	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SHAWLER	H. START UP GR WT/CG 8645 LBS	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1.4 HRS	K. CONFIGURATION/LOADING 102 LBS BALLAST	L. SURFACE CONDITIONS
M. CHASE ACFT/SERIAL NO T33/831B	N. CHASE CREW EDMONDSON/MARQUES	O. CHASE TO TIME/SORTIE TIME /1.4 hrs

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Barksdale AFB LA (BAD) to Randolph AFB TX (RND).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

FL 280, IAS 185, TAS 300 KTAS, winds 350/15, -29 degrees C.
Mission flown as planned, but terminated with an enroute descent to initial. During the descent the chase aircraft reported small streams of hydraulic fluid coming from the area of the panel covering the accumulator and around the left main gear door. However, all cockpit indications were steady and all hydraulic systems operated normally for landing. Prior to shutdown of both engines a visual check of both locations showed nothing abnormal. The right engine was shut down first and the hydraulic pressure stayed at 3100-3200 PSI.

During taxi-in both engines surged. The fuel controls were switched to manual and the surges stopped.

6. RECOMMENDATIONS

a. Continue to investigate the hydraulic system for leaks.
b. Examine the cause for the above normal hydraulic pressure from the left pump.
c. Change the ECU software to eliminate engine surges during low speed operations.

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
FERRY	007	13 AUG 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
SHAWLER	1100 LBS	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
CLINCH	8645 LBS	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1203Z/1.7 HRS	102 LBS BALLAST	CLR/60 degrees F
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	EDMONDSON/MARQUES	/1.7 hrs

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Wright-Patterson AFB OH (FFO) to Blythville AFB ARK (BYH).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Mission again flown at FL 280, 300 KTAS.
Form 70 for this sortie was as follows:
Climb winds: 300/10KTS, Cruise Winds 310/20KTS, OAT - 30 Degrees C.
IAS - 185 KTS, TAS - 300 KTS,

	DIST	TIME	PLANNED	ACTUAL
			1200	
START/TAXI/T.O./			110	
			1090	
CLIMB/L.O.	60	21	250	
			840	910
KURTZ	50	10	90	
			750	820
POCKET CITY	100	21	180	
			570	650
DODDS (IAF)	121	24	200	
			370	
PAL		(10)	100	
LAND			270	370

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

MDE IFR 125

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T46	492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO OT&E/G7063	B. FLIGHT NO/DATA POINTS 125/PER TIS	C. DATE 14AUG86
D. FRONT COCKPIT *(Left Seat)* GAMBLE	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MARTINEZ	H. START UP GR WT/CG 8947/19.94	I. WEATHER CLR/45
J. TO TIME/SORTIE TIME 0924/1.6	K. CONFIGURATION/LOADING PERTIS	L. SURFACE CONDITIONS 210/04
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW RICHE/SCHULZ	O. CHASE TO TIME/SORTIE TIME 0924/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

OT&E Plus avionics eval
Contact area work: Slow flight, rolls, chandelle, lazy 8
VOR Eval at 11,500' MSL
Instrument area work: Steep turns, vertical S, unusual attitude recoveries, confidence maneuvers.
Patterns and landing

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. 90% core and 220 KIAS insufficient entry parameters to maintain energy in 8M' - 13M' block.
2. VOR was unreliable so no data on VOR evaluation.
3. Very stable instrument platform for basic instrument work.
4. Pattern Work: Shallow finals appear to work better than steep. 140 KIAS in final turn is too fast. I prefer the 43 deg/60 deg speed brake deflection over what I flew today. (Today's SB configuration was 43 deg/35 deg.)

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
FERRY	011	14 AUG 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
CAMPANO	1100 LBS	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
EDMONDSON	8645 LBS	80 SCT
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1721Z/1.4 HRS	102 LBS BALLAST	
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	SHAWLER/FULLER	1721Z/1.3 HRS

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Reese AFB TX (REE) to Albuquerque NM (ABQ).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

SID departure flown out of REE. Time to climb to FL 280 was minutes. Cruised enroute at 185 KIAS/300TAS with fuel flow between 500-480 pph (OAT 10 degrees or more higher than standard.) Navigational equipment (VON/TAC) worked well with no problems noted on flight. Enroute descent to visual approach and landing accomplished at ABQ. Overall cockpit environment functional and comfortable for cruise flight.

Aircraft performance disappointing. Range very restricted by excess drag and weight of aircraft.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
FERRY	012	15 AUG 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
CAMPANO	1100 LBS	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
SHAWLER	8645 LBS	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1518Z/1.3 HRS	102 LBS BALLAST	DRY
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	EDMONDSON/FULLER	1518Z/1.3 HRS

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Albuquerque NM (ABQ) to Williams AFB AZ (CHD).

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Overall observations/comments similar to Flight #10. Takeoff ground roll at Kirtland AFB (ABQ), 5350 ft elevation, was 4200-4500 ft (low 80 degrees F). Climb/cruise performance no different for other sorties. ILS approach flown at CHD with no problems. Air conditioning performed well on ground and inflight. Enroute aircraft control (pitch, roll, and airspeed) overall solid.

6. RECOMMENDATIONS

See FLT #10.

COMPLETED BY	SIGNATURE	DATE

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2 IFTR 013

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
FERRY/NA	13	15 AUG 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
CAMPANO	1100	2591AO
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
SHAWLER	8645 LBS	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1300/1.6 HRS	102 LBS BALLAST	HOT
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	EDMONDSON/FULLER	1300Z/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Aircraft ferry from Williams AFB, AZ (CHD) to Edwards AFB, CA (EDW)

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. The right eng. went to manual during taxi, but reset OK. During takeoff it went to manual again and also reset OK, but only lasted a few seconds this time. The takeoff was continued in manual, but the right throttle had to be retarded approximately two inches to keep ITT within limits. (Maximum ITT was 790 degrees with time above 780 less than 5 sec). Remainder of the flight was flown in manual until back in the Edwards area. The engine reset normally and checked out OK. The right engine was switched to manual and worked OK at idle, but could be overtemped at max throttle. Switched back to auto and continued descent. A short time later the right engine went to manual and the RPM decreased below 50%; the throttle was immediately moved forward. The landing was made in manual.

2. The two hydraulic leaks were written up. The nose gear area and the left wheel well.

3. The hydraulic pressure was 3250 psi with the right eng and 3100 with the left.

4. The UHF guard has an intermittent clicking not associated with the instrumentation system.

5. The flight was uneventful except for the above.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T46	492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FUNCTIONAL CHECK (FLUTTER)	B. FLIGHT NO/DATA POINTS 126/PER TIS	C. DATE 22AUG86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* EDMONDSON	H. START UP GR WT/CG 8948/19.9	I. WEATHER 60SCT/45
J. TO TIME/SORTIE TIME 1258/1.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 250/03
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW SHAWLER/PHOTO	O. CHASE TO TIME/SORTIE TIME 1258/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Functional check of flutter vane excitation system

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Successful flight.

Test points flown at 11,500' Hp and airspeeds of 190 and 250 KIAS. All systems and parameters operational.

Steve Mathis - The flutter excitation system displayed a much improved frequency stability in the manual mode based on real time pilot calls. However, two new problems surfaced. The first was the vane which showed erratic behavior below 8 HZ. (Since there are modes of interest below 8 HZ, this is not acceptable.) The second problem was in the vane shutoff. The system would turn itself back on for a couple of cycles in less than 1/2 second after it was stopped. This destroys any free response condition and is unacceptable.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T46	492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO OT&E/G0758	B. FLIGHT NO/DATA POINTS 127/PER TIS	C. DATE 25AUG86
D. FRONT COCKPIT *(Left Seat)* MINK	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MARTINEZ	H. START UP GR WT/CG 8997/19.9	I. WEATHER CLR/35
J. TO TIME/SORTIE TIME 1000/1.5	K. CONFIGURATION/LOADING PER	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW RICHE/GAMBACORTA	O. CHASE TO TIME/SORTIE TIME 1000/1.5

4. PURPOSE OF FLIGHT/TEST POINTS

VFR Nagivation (1500' AGL). Straight-in Pattern.
Overhead Patterns with Steep and Shallow Finals.
Pressure Survey Point at 250 KIAS 15,000' MSL.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Forward visibility was comparable to that of a T-37. Visibility to the side was much better. Fuel quantity gauge was not reliable below 200 pounds. Fluctuations were observed from 210 to 170, back to 210, and then down to 170 pounds in a short period of time while maintaining a constant pitch and bank. The fuel low level light activated at 170 pounds and cycled on and off three times during the last 90 seconds prior to the full stop landing. Final approach angles in excess of 4 degrees cannot be controlled (airspeed cannot be kept at 110 KIAS with idle power) with gear, flaps (20 degress), and the current speed brake configuration (top 43 degrees and sides 35 degrees). Corrections to glide path from above are impossible also for the above mentioned reasons without sideslipping the aircraft or accepting a high final approach speed.

The VFR navigation route was planned using data provided by the Digital Performance Simulation (DPS) computer program. Altitude variations necessitated by changing terrain elevation resulted in planned fuel flows used which corresponded to Mach Number cruises between 0.38 and 0.40. Actual cruise on the flight was between 0.35 and 0.37 in the planned altitude band. Fuel consumed at these lower cruise Mach Numbers was equal (+ or - 5 pounds) to the planned amounts at the higher cruise Mach Numbers.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
OT&E/G0759	128/PER TIS	26AUG86
D. FRONT COCKPIT (Left Seat)	E. FUEL LOAD	F. JON
RICHE	1240	2591A0
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG	I. WEATHER
MANKE	8916/20.3	140SCT/30
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1113/1.7	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/84TB	MARTINEZ/GAMBACORTA	1113/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

Operational Test and Evaluation - Instrument Capabilities Evaluation

a. Simulated instrument takeoff and departure
b. Ground controlled and localizer approaches
c. Instrument area work
d. VOR Evaluation
e. Pressure survey

5. RESULTS OF TESTS (Continue on reverse if needed)

a. Simulated Instrument Takeoff - AFM 51-37 procedures can easily be performed in T-1. Only a slight overshoot of desired pitch attitude on ADI.
b. Ground Controlled Approaches and Localizer Approach - The aircraft is bounced around on final by convective lifting (thermals) which adversely affects heading and glidepath control.
c. Instrument Area Work - Very little,if any, ADI precession noted on instrument steep turns. Verticl Velocity Indicator is very small, making it very difficult to make small adjustments (+ or - 100 fpm) on instrument finals.
d. VOR Evaluation - T-1's VOR is mostly unreliable. Occasionally received good bearing/course and identification. No trends noted.
e. Pressure Survey - 15,000 ft clean: 150 KIAS, 200 KIAS
15,000 ft gear only: 130 KIAS, 115 KIAS
Stable points, good data obtained

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO •	B. FLIGHT NO/DATA POINTS •	C. DATE 3 Sep 86
D. FRONT COCKPIT *(Left Seat)* RICHE	E. FUEL LOAD •	F. JON 2591AO
G. REAR COCKPIT *(Right Seat)* EDMONDSON	H. START UP GR WT/CG •	I. WEATHER CLR, SLIGHT TAILWIND, 25KT
J. TO TIME/SORTIE TIME •	K. CONFIGURATION/LOADING •	L. SURFACE CONDITIONS DRY
M. CHASE ACFT/SERIAL NO •	N. CHASE CREW •	O. CHASE TO TIME/SORTIE TIME •

4. PURPOSE OF FLIGHT/TEST POINTS
80 percent loads

5. RESULTS OF TESTS *(Continue on reverse if needed)*
Ground abort due to left engine tail pipe fire on start. Start began normally. A loud bang was heard approximately 5 seconds into the start. Approximately 5 seconds later, a second bang was heard, and ground crew chief reported a tail pipe fire. The throttle was cut off, and the engine motored. Fire did not extinguish immediately. Fuel shut off T-handle was eventually pulled, and the fire finally went out (probably not related to T-handle being pulled).
Inital inspection reveals paint blistering and possible minimal buckling in tail-cone section. More detailed inspection of engine and starter/generator to be done.
Interim recommendation: 1) use APU - assisted starts (no battery only starts)
2) no tailwind during starts

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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FLIGHT 15 SUMMARY

1. MISSION OBJECTIVES

   FLUTTER ENVELOPE EXPANSION - SAS ON/OFF, NORM/MAN RUDDER

2. CREW: T-46 HANSEN/MARTINEZ
   T-33 BUSH/ENGINEER

3. FLIGHT PROFILE

   A. CLIMB TO 11,500 FT AT 150 KIAS

   B. 15,000 FT 206 KIAS

      STICK RAPS
      FREQ. SWEEPS/BURSTS WING AND TAIL - SAS OFF
      FREQ. SWEEPS/BURSTS TAIL - SAS ON
      FREQ. SWEEPS/BURSTS TAIL - MANUAL RUDDER

   C. REPEAT ABOVE AT 228 KIAS

   D. REPEAT ABOVE AT 248 KIAS

   E. REPEAT ABOVE AT 270 KIAS

   F. REPEAT ABOVE AT 279 KIAS

   G. RTB BINGO FUEL 250 LBS

   H. TOUCH & GOES, FUEL PERMITTING, AND FINAL LANDING

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80 percent loads/G0777	B. FLIGHT NO/DATA POINTS 015F/PER TIS	C. DATE 8 Sep 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8748/18.0	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1101/1.4	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 210/06
M. CHASE ACFT/SERIAL NO T-33/83TB	N. CHASE CREW SHAWLER/G+9	O. CHASE TO TIME/SORTIE TIME 1.4/1101

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS SURVEY

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MARTINEZ - Loads survey test points were flown at 11,500 Hp, 15,000 Hp and at FL 250. Maneuvers included symmetrical pull-ups and push-downs, bank to bank rolls, (SAS on and off) and sideslips out to max rudder deflection. Excellent data obtained.

RICHE - First flight for me with small elevator trim tab and 55 upper/60 sides speed brake. Trim is insufficient to maintain final approach speed "hands-off", and requires approximately 5 pounds of aft force with full nose up trim to maintain glidepath. Speed brake extension/retraction at airspeeds between 130 and 170 KIAS produce a noticeable pitch down/up, respectively, and noticeable buffet. Buffet is tolerable, and speed brakes are very effective.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO LOADS/G0778	B. FLIGHT NO/DATA POINTS 016/PER TIS	C. DATE 9 SEP 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1230	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* NORDIN	H. START UP GR WT/CG 8736/18-16 PERCENT	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 0939/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS GUSTY WINDS
M. CHASE ACFT/SERIAL NO T-33 N83TB	N. CHASE CREW RICHE/G+9	O. CHASE TO TIME/SORTIE TIME 0939/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS SURVEY

1. 360 degree rolls at 11,500 ft 157K and 186K.
2. Abrupt sym pull ups 15,000 ft 147K; 25,000 ft 117K, 186K.
3. Rudder kicks at 25,000 ft 118K, 160K & 186K.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. External power ground starts were made. Left eng 32 sec and 680 degrees; right eng 31 sec and 675 degrees.
2. All data points were completed in a build up manner and good data obtained.
3. Col Nordin will provide an additional pilot report.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

FLIGHT REPORT - T-46

by: Colonel Fred R. Nordin

1. General: On 9 September 1986, I accompanied Wendy Shawler on flight number 16F for aircraft number 493. The flight was primarily an 80% loads survey, but there was also ample time available for me to conduct a qualitative evaluation of the aircraft. Because of a 200 knot limitation on the aircraft (further restricted to 190 knots for the flight), the evaluation was limited, however, I had the opportunity to look at several areas that are important for the training mission.

2. Ground Operations: As has been widely acclaimed, the cockpit is roomy and comfortable. The low noise level with the canopy closed is a great plus. When I adjusted the seat height to a position that I preferred for outside reference, I found that the instrument panel hood masked the upper half of the fan RPM gauges. I had some difficulty in balancing the interphone and UHF radio volume levels. With the UHF set at a level where I would not miss radio calls, I found that even max interphone volume was not enough to enable me to understand interphone comments when there were UHF transmissions. At first, I found nosewheel steering to be overly sensitive when performing a high gain task, such as precisely tracking a straight line. There seemed to be excessive "snaking", even with no conscious steering inputs. Brakes provided better small inputs, but I was concerned with excessive brake use. I did note that I adapted to the nosewheel system as I gained experience with it. A small addition of power started the aircraft rolling and idle power was sufficient for taxi at high gross weight. At lighter weights however, idle thrust is excessive and frequent brake applications were necessary to prevent excessive taxi speed. Visibility for taxiing is excellent.

3. Takeoff: The brakes held the aircraft during runup with no difficulty. Directional control was initially with brakes, then rudder as it became effective. Very few corrections were necessary to maintain the centerline. I performed the takeoff as briefed by Wendy and encountered no surprises. The nose did tend to rise fairly quickly but seemed to be easily controllable. Subsequent touch-and-go landings seemed equally easy. I noticed no pitch changes with gear retraction and the airplane settled into a 170 knot climb quite nicely. Rate of climb, even at the heavy weight, was very adequate.

4. Airwork: Because of the airspeed limitation, only basic handling characteristics were examined. Control harmony was acceptable. Trim speed was much too slow and pitch trim authority was inadequate, particularly during final approach and landing. Visibility was excellent forward and to the side, however the inlet and wing significantly impaired rearward vision. The mirrors were useful, however, consideration should be given to add an additional mirror overhead. The canopy produced some distracting reflections of the instrument panel hood, particularly brightly colored objects, like the fire handles. I also often noticed small dark spot reflections that at first looked like airplanes. Engine response throughout the flight was excellent. The speed brake produced the objectional pitch input and buffet that are currently being addressed. The lightly damped

lateral-directional characteristics did not seem overly worrisome. The sharp g-break at the stall was desirable, but the lack of better warning should be addressed.

5. Landing: The airplane handles very nicely in the pattern. Stick forces were reasonably light, however, as mentioned above, the inadequate amount of pitch trim authority was objectionable. I flew the first pattern with a downward speed of 190 knots. This resulted in a steep, faster-than-desired base and initial final approach. Adequate room was available to establish the desired 110 knots on short final, and the touchdown was reasonable. The first go-around was made by keeping the nosewheel off the ground and reconfiguring with power up. The takeoff transition was easy to perform, and less pitch up tendency was felt. Subsequent patterns were flown at 150 knots until turning base and the speedbrakes were deployed sooner, resulting in progressively less-steep final approaches. The go-arounds were accomplished after lowering the nosewheel to the runway--a very soft impact--and at a more leisurely pace. These more closely resembled a normal takeoff.

6. Conclusion: The airplane is an excellent trainer, providing a comfortable, safe environment for both student and instructor. Improvements and modifications now in progress should make it even better.

Fred R. Nordin
FRED R. NORDIN, Colonel, USAF
Commander, 6520 Test Group

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80 PERCENT LOADS/G0779	B. FLIGHT NO/DATA POINTS 017/PER TIS	C. DATE 10 SEP 86
D. FRONT COCKPIT *(Left Seat)* RICHE	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MARTINEZ	H. START UP GR WT/CG 8748/18.0	I. WEATHER CLR/40
J. TO TIME/SORTIE TIME 0941/1.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 080/01
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW SHAWLER/PHOTO	O. CHASE TO TIME/SORTIE TIME 0941/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS:	ABRUPT RUDDER KICKS/RELEASES	160 KIAS/25,000 FT
	SAS OFF	186 KIAS/25,000 FT
		168 KIAS/8,000 FT, CLEAN & FLAPS 20
	BANK TO BANK ROLLS	186 KIAS/30,000 FT
		142 KIAS/30,000 FT
	ABRUPT SYMMETRIC PULL-UPS	168 KIAS/18,000 FT

5. RESULTS OF TESTS *(Continue on reverse if needed)*

RICHE - Ground operations normal. Engaging nose wheel steering system caused the aircraft to turn right with neutral rudder pedal (to be corrected).

All test points accomplished, and valid data obtained. Maximum power was required to maintain the 186 KIAS/30,000 ft test points. The aircraft overshoots approximately 5-7 times before damping out during the abrupt rudder kicks, SAS off.

FIRST START:
- LT ENGINE/POWER CART
- BLEED ON/ECS OFF
- WIND CALM
- 30 SECONDS/685 DEGREES C MAX ITT

SECOND START:
- RT ENGINE/POWER CART
- BLEED ON/ECS OFF
- 30 SECONDS/675 DEGREES C MAX ITT

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80 PERCENT LOADS/G0781	B. FLIGHT NO/DATA POINTS 018/PER TIS	C. DATE 12 SEP 86
D. FRONT COCKPIT *(Left Seat)* MOSS	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MARTINEZ	H. START UP GR WT/CG 8727/18.25	I. WEATHER 200 SCT/35
J. TO TIME/SORTIE TIME 0940/1.8	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 220/08
M. CHASE ACFT/SERIAL NO T33/84TB	N. CHASE CREW SHAWLER/CAMPANO	O. CHASE TO TIME/SORTIE TIME 0940/1.8

4. PURPOSE OF FLIGHT/TEST POINTS

Conduct an 80 percent loads survey and upgrade qualification ride for Capt Moss. Test techniques to conduct the load survey were slow symmetrical pull ups and push downs, abrupt pull ups, and abrupt pull ups with checks. These were accomplished both with and without the speed brakes extended (modified, 43 degrees top/35 degrees side). Wind up turns were flown prior in order to calibrate the new pilot. The test points used were at 15,000' Hp and 25,000' Hp, with airspeeds of 118, 147, 160, and 186 KIAS.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

For engine starts, the left engine was motored for 15 secs prior to activating the ignition switch due to previous fuel puddling. The engine start parameters were: Left - 690 degrees/ N/A sec. Right - 680 degrees/32 sec. Relative winds - calm.
All test points were satisfactorily accomplished. There were significant delays when telemetry was lost due to unidentified jamming source.
It was determined that doing wind-up turns prior to each new test condition was not justifiable; the incremental benefit to overspeed risk ratio was too low for a 200 KIAS airspeed limit.

On all the recent 80 percent loads missions, the order of the test points was changed by the test pilot during the brief in order to make the flow more efficient & comfortable. The original order of the test points were established on a perceived concept of "build- up" approach. I recommend that the concept of "build-up" approach be reevaluated & the test cards should be written in the same order the points will be flown in. That is, accomplished all the required events at one altitude and airspeed before advancing to any other altitude or airspeed.

The criteria for some of the abrupt symmetrical pull-ups originally specified trying to obtain a particular longitudinal stick deflection (e.g. 1/4 or 1/2 stick). This criteria was changed during the briefing to a particular g loading (e.g. 1.6g, 2.2g). By the pilot referencing g, the maneuver is much more repeatable and is much less susceptible to overstressing the airplane.

During the RTB and landing, the longitudinal forces during landing were still felt to be too light, leading to acute pitch sensitivity. In my opinion, this high degree of pitch sensitivity is unacceptable for the UPT environment. I believe it would take substantially increased training time to teach student pilots how to cope with it. During touch and go's, the nose fell toward the runway when below 100 KIAS and it took excessive stick force to raise the nose. However, when the nose did rise, an abrupt forward stick motion was required to capture the desired pitch attitude.

6. RECOMMENDATIONS

1. Consider annotating alternate test points not requiring telemetry that can be flown if the TM frequency is jammed again for significant periods of time.

2. Do not do wind up turns just for pilot practice when the test condition might put the airplane in an undesirable situation.

~~(Cont'd see attached)~~

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3. Orchestrate the events of the test cards to accomplish all the test points at a particular altitude and airspeed before moving to another altitude and airspeed.

4. Reference the abrupt symmetrical pull-ups with target g instead of longitudinal stick deflections.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO /G0790	B. FLIGHT NO/DATA POINTS 021F/PER TIS	C. DATE 18 SEP 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8748/18.0	I. WEATHER 40SCT 130SCT 250SCT 40
J. TO TIME/SORTIE TIME 0919/1.1	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 280 10G 16
M. CHASE ACFT/SERIAL NO T-33/83TB	N. CHASE CREW SHAWLER/G+9	O. CHASE TO TIME/SORTIE TIME 0919/1.1

4. PURPOSE OF FLIGHT/TEST POINTS

LONGITUDINAL & LATERAL STICK RAPS:

25,000 ft: 156, 176, 196, 206, 216*, 226, 236, 245*

11,500 ft: 196, 216, 226, 246, 255*, 275*

*Also speed brake cycle.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

25,000 ft: No flutter/damping problems noted.
Inner gear & outer gear door aft portions sagging slightly (approx 3/4") above 240 KIAS (same problem as originally in T-1).

11,500 ft: No problems noted through 226 KIAS. At 246 KIAS, decrease in damping observed on vertical tail. Mission terminated at this point for data analysis.

Power cart start/ECS off/Bleed on

1. LT - 700 degrees/28 sec

2. RT - 675 degrees/28 sec

Wind - RT quartering HW @ 10-15 Kts

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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MJR File

SUPPLEMENT TO IFTR 021F:

The flight was uneventful until run 9.8 (236 Kts/25,000 ft) when the fin tip longitudinal accelerometer indicated two modes interacting causing an obvious beat phenomenon. The observed damping was high at this condition.

As airspeed increased the beat phenomenon continued, but beat frequency increased. The fin tip accel showed marked signal clarity during the free response of the lateral stick raps at 216 Kts, 11,500 ft MSL. The damping was measurable at 3.7 percent. The frequency was 13.6 Hz.

At 226 Kts the same mode was prominent and damping had decreased. Post flight inspection showed damping at about 3 percent. At 246 KIAS damping was about the same. An intermediate speed of 250 KIAS was chosen in real time as a conservative airspeed increase to explore this damping trend. Damping at 250 Kts was not conclusive, although as little as 2.8 percent damping was interpreted. As a conservative measure the flight was terminated. Brush records will be reviewed and data from previous flights will be compared to see if any similar damping trends were evident in prior T-1 flutter tests. Based on the results of this analysis and review, an appropriate plan will be generated to clear T-2 out to T-1 airspeed/mach limits.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO LOADS/G0797	B. FLIGHT NO/DATA POINTS 023/PER TIS	C. DATE 22 SEP 86
D. FRONT COCKPIT (Left Seat) SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT (Right Seat) EDMONDSON	H. START UP GR WT/CG 8732/18.2 PERCENT	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 0947/1.8	K. CONFIGURATION/LOADING CLEAN	L. SURFACE CONDITIONS LIGHT
M. CHASE ACFT/SERIAL NO T-33/N83TB	N. CHASE CREW MARTINEZ/G+9	O. CHASE TO TIME/SORTIE TIME 0947/1.8

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS:
25,000 FT, 230 KIAS.
30,000 FT, 181 KIAS and 210 KIAS.
Pull ups, push downs, sideslips and bank to banks.

5. RESULTS OF TESTS (Continue on reverse if needed)

1. The test cards were not completed due to lack of fuel. The ones that were completed provided good data at the higher speeds and higher mach's. Stall buffet was achieved at 3.9 G's at 225 KIAS at 25,000 ft.

2. The nosewheel steering still goes to the right with rudders neutral. Also the steering to the left has a lag of 1-2 seconds then jumps hard left.

3. The left engine ITT was 35 degrees higher than the right at the health check, 20 degrees higher during the first half of the flight and 10 degrees higher during the remainder of the flight.

6. RECOMMENDATIONS

Continue 80 Percent loads.

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
80 PERCENT LOADS/G0798	024/PER TIS	23 SEP 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
MARTINEZ	1240	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
HOFFMAN	8748/18.0	CLR/45
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1726Z/1.7	PER TIS	270/10
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/N83TB	SHAWLER/GAMBACORTA	1726Z/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

80 percent loads plus familiarization flight for Col Hoffman.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MARTINEZ: Flight card included 360 degree rolls, bank to bank 60 degree rolls (at 2 G's) and symmetrical pull-up and push down maneuvers at altitudes of 20,000' Hp, 15,000' Hp and 11,5000'. Excellent data obtained.

HOFFMAN:

Cockpit: Very comfortable; well organized; outstanding a/c, quiet w/canopy down; excellent vis.

Taxi: Solid; smooth; NWS a little too responsive. Taxi w/brakes OK (preferred).

Flying Qual: Solid ride; very stable in trimmed flt. Excellent control response; very crisp, but smooth response to input; no deadband, no slop in controls.

Tendency to overcontrol power somewhat in formation (a/c coasts!).

Excellent speed stability; almost no trim required. No trim required for gear/flaps; slight aft for S/B.

Overall, great handling a/c! Stable in close form.

For stalls, more warning required (no buffet).

Patterns: Very nice overall. Stable, smooth ride in turbulence. Almost no speed stability. Do need trim in flare (ran out full aft at 110 Kts). Easy to control in flare/go-around. Plenty of power in pattern; need to monitor airspeed. Easy to land. (Have to remember S/B's on go-around.) Good cross-cockpit vis.

Wonderfully smooth, solid flying machine. Would make an excellent, comfortable, easy to fly trainer. A miser on gas!

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
IOT&E AVIONICS	026	25 SEP 86
D. FRONT COCKPIT (Left Seat)	E. FUEL LOAD	F. JON
CAMPANO	1240	2591A0
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG	I. WEATHER
MARTINEZ	8752/17.50	80 BKN 250 SCT
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0936/2.0		220-260 10G18 DRY
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	EDMONDSON/G+9	0936L/2.0

4. PURPOSE OF FLIGHT/TEST POINTS

OT&E Instrument Flight Evacuation. Points included: ILS, LOC and circling approaches, vertical S maneuvers, unusual attitudes/recoveries, instr steep turns, course intercepts and a LOC evaluation. Approaches flown at both Palmdale and Edwards AFB.

5. RESULTS OF TESTS (Continue on reverse if needed)

I initiated rotation at 90 KIAS by applying a slight aft stick pressure and steadily increased it as the airspeed increased. Aircraft rotated at 105 KIAS. Capture of pitch attitude was reasonably easy. Climbout and cruise to Palmdale was uneventful. At Palmdale, I flew two ILS (one was SSE) approaches to RWY 25 with the last approach being a circle to RWY 22. No problems noted during any of the above maneuvers. Overall instrument cockpit displays were clearly visible and crosscheck was functional. The marker beacon worked as advertised both visually and audibly. All area basic instrument maneuvers (steep turns, vertical S, etc.) were flown in 11,000 to 13,000 altitude ban and easily performed. A/C did, however, require a surprisingly high power setting of 95%N_2 for/1000' FPM climbs and 80-80% N_2 for/1000' FPM descents. Also, speed stability was such that ± 10 Kt changes in airspeed was imperceptible and only a glance at the airspeed indicator would tell the pilot he was off speed. This caused me to concentrate an abnormally large part of my crosscheck on the airspeed indicator, especially during instrument approach work.

During operational evaluation of the VOR (using Hector 282 degrees radial) the HSI bearing pointer and CI would "hunt" ± 3-5 degrees during turns and stabilize once the aircraft rolled out. This occurred during both turns; toward and away.

I flew several overhead patterns at both 1500' and 1000' AGL. For student training, I prefer the latter, as the potential for airspeed/altitude deviations is less and it permits the pilot to carry a higher power setting in the final turn. Gusty X-winds made landings somewhat sporty today, but the aircraft felt stable. I used the "wing low" technique and it seemed quite adequate for today's conditions. The "gooseneck" stick made stick postion awkward in the flare as it was fairly far back in my cap. Also, lack of adequate pitch trim caused unnecessary high stick forces during the landing phase.

6. RECOMMENDATIONS

Continue operational flights in instrument category. Recommend the OT&E pilot use visual restriction device to better simulate an IFR environment. Correct speed stability, improve trim capability and explore avionics performance.

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
T-2 FLUTTER/G0807	028F	30 SEP 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
EDMONDSON	1240 LBS	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
MARTINEZ	8753	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0.9/1720	FULL	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T-33/83TB	SHAWLER/GAMBLE	0.9/1720

4. PURPOSE OF FLIGHT/TEST POINTS

T-2 FLUTTER EXPANSION

5. RESULTS OF TESTS *(Continue on reverse if needed)*

This mission was terminated in flight, because real time TM data were not compatible with the Flight Test Center ground station. The data transmitted down to the Ridley Mission Control Center (RMCC) ground station could not be deciphered, and therefore, real time data reduction and monitoring could not be accomplished. After 45 minutes of real time trouble shooting, the mission was terminated. This was the first mission flown from the RMCC in the T-2 aircraft, but there has been ample opportunity to check data format capability before this flight.

6. RECOMMENDATIONS

Investigate and correct TM data compatibility with RMCC.

COMPLETED BY	SIGNATURE	DATE
LTC Edmondson	[signature]	30 Sep 86

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO T-2 FLUTTER	B. FLIGHT NO/DATA POINTS 029	C. DATE 2 OCT 86
D. FRONT COCKPIT *(Left Seat)* EDMONDSON	E. FUEL LOAD 1240 LBS	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MARTINEZ	H. START UP GR WT/CG 8753 LBS	I. WEATHER 100 SCT LIGHT TURB
J. TO TIME/SORTIE TIME 1539/1.0 HRS	K. CONFIGURATION/LOADING FULL	L. SURFACE CONDITIONS 270/SKTS
M. CHASE ACFT/SERIAL NO T-33A/N83TB	N. CHASE CREW SHAWLER/RICHE	O. CHASE TO TIME/SORTIE TIME 1539/1.0

4. PURPOSE OF FLIGHT/TEST POINTS

T-2 FLUTTER ENVELOPE EXPANSION

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Excellent mission! The T-2 flutter envelope was expanded to 280 KCAS and 0.6 Mach No. The mission was flown at 11,500 ft PA with test speeds of 196, 216, 226, 233, 246, 255, 265 and 275 KIAS. Stick raps were made by the pilot at each test speed by hitting the stick with his hand. Some rudder kicks were made, but this was very ineffective to excite the structural dynamics of the aircraft. The speed brakes were extended at 255 KIAS with little effect in exciting structural dynamics. The stick rap is the best technique. Real time data analysis indicate the tail to have a 13.2 Hz asymmetrical structural mode which is similar in characteristic to the 12.5 Hz asymmetrical structural mode on the tail of the T-1 aircraft. Both aircraft exhibit similar damping with velocity for this mode. Damping was high at low speed, but lightly damped above 200 Kts until reaching 275 Kts where damping began to increase. T-2 is now cleared to the same flutter velocity envelope as T-1.

6. RECOMMENDATIONS

Change the T-2 partial flight manual to reflect the increased velocity envelope.

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MDE File

SUPPLEMENT TO IFTR029:

STEVE MATHIS COMMENTS:

Damping was high on brush records until the 226 KIAS point. Both Nx accelerometers at the vertical stabilizer tips displayed a marked decrease in damping down to 2.2 percent. The mode was identified as a symmetric horizontal stabilizer torsion mode at 13.5 Hz. This correlates with the same mode seen on T-1 at 12.5 Hz during flight test. The damping trend for this mode as a function of airspeed was well defined during previous flight tests on T-1. This enabled further airspeed expansion. Supplemental airspeed points were added in real time at 233 and 265 KIAS to provide a conservative build-up. The damping for this mode remained low, but constant. There was a slight rise in damping to just over 3 percent at the endpoint of 275 KIAS.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T-46A	84-0493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
80 PERCENT LOADS/2591A0	030/PER TIS	3 OCT 86
D. FRONT COCKPIT (Left Seat)	E. FUEL LOAD	F. JON
SHAWLER	1260	2591A0
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG	I. WEATHER
EDMONDSON	3732/18.21	CLEAR
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0927/1.6		CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T-33/N83TB	MARTINEZ/G+9	0927/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS
15,000 FT 248 KIAS: PULL-UPS AND PUSH-DOWNS
20,000 FT 265 KIAS: 360 DEGREE ROLLS, BANK-TO-BANK ROLLS
24,000 FT 244 KIAS: PULL-UPS AND PUSH-DOWNS, SIDESLIPS AND RUDDER RELEASES AND RUDDER KICKS.

5. RESULTS OF TESTS (Continue on reverse if needed)

Takeoffs with different trim positions:

RESULTS:

1. All the loads points were completed as planned up to 4.0 Gs symmetrically and 3.2 Gs asymmetrically.

2. The bank-to-bank high G rolls are the most difficult to perform to make lateral inputs without longitudinal inputs. In all cases a higher G spike is observed during abrupt roll out. This can be a serious problem. Loads need to be looked at to see where the highest loads are recorded.

3. Four takeoffs were made, 2 with full aft trim, one neutral, and one full forward. In each case the target NWLO was 95 KIAS and takeoff at 105 KIAS. The actual takeoffs were close to target using very close to the same technique on each. Good data should be available for review. From a qualitative sense, I could not see any differeence in force among the three trim positions.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T46	495

MDC File

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
80 PERCENT LOADS/G7070	032/PER TIS	6 OCT 86
D. FRONT COCKPIT (*Left Seat*)	**E. FUEL LOAD**	**F. JON**
MARTINEZ	1240	259140
G. REAR COCKPIT (*Right Seat*)	**H. START UP GR WT/CG**	**I. WEATHER**
RICHE	8748/18.0	40SCT/85
J. TO TIME/SORTIE TIME	**K. CONFIGURATION/LOADING**	**L. SURFACE CONDITIONS**
0920/0.6	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	**N. CHASE CREW**	**O. CHASE TO TIME/SORTIE TIME**
T33/83TB	KOSTELNIK/SHAWLER	0920/0.5

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS EVALUATION

5. RESULTS OF TESTS (*Continue on reverse if needed*)

FLIGHT ABANDONED AFTER FIRST 15 MINUTES DUE TO FIRE WARNING LIGHT ILLUMINATION ON CHASE AIRCRAFT.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 498

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80 PERCENT LOADS/G8539	B. FLIGHT NO/DATA POINTS 033/PER TIS	C. DATE 6 OCT 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8748/18.0	I. WEATHER 60SCT/85
J. TO TIME/SORTIE TIME 1202/1.5	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 070/05
M. CHASE ACFT/SERIAL NO A37/310	N. CHASE CREW MAUER/NICKLE	O. CHASE TO TIME/SORTIE TIME 1203/1.5

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS

20,000 ft 215 KIAS, 310 degree rolls, bank-to-bank rolls.
25,000 ft 201 KIAS, 233 KIAS - sideslips and releases, rudder kicks.
8,000 ft 224 KIAS - Sideslips and rudder releases and kicks.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. All load points completed as planned.

2. Four takeoffs were accomplished, two with neutral trim, one full nose up and one full nose down. No difference in force was experienced with any of the settings.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T46	493

File

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80 PERCENT LOADS/G7071	B. FLIGHT NO/DATA POINTS 034/PER TTS	C. DATE 7 OCT 86
D. FRONT COCKPIT (Left Seat) EDMONDSON	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT (Right Seat) SHAWLER	H. START UP GR WT/CG 8732/18.21	I. WEATHER 60SCT/70
J. TO TIME/SORTIE TIME 1058/1.3	K. CONFIGURATION/LOADING PER TTS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T38/135	N. CHASE CREW CLINCH/COUCH	O. CHASE TO TIME/SORTIE TIME 1058/1.3

4. PURPOSE OF FLIGHT/TEST POINTS

80 PERCENT LOADS SURVEY AT 8,000 FT AND 265 KIAS.

5. RESULTS OF TESTS (Continue on reverse if needed)

All test points accomplished as planned. Weather was not a factor and the atmosphere was calm. Test points included:

a. Steady state sideslips to full rudder pedal deflection.
b. Abrupt rudder pedal kicks up to full pedal.
c. Rudder pedal reversals from fullside slip.
d. Pull ups to 4.5 Gs.
e. Push overs to 0.0 Gs.

Each maneuver above was flown in the clean configuration, as well as, with speed brakes extended (43/45 degrees). The pull ups and push overs to less than one G were done smooothly and abruptly. Three takeoffs were evaluated with the elevator trim set at full nose up, neutral (takeoff), and full nose down. Each takeoff was performed with the same target rotation speed (95 KIAS) and liftoff speed (105 KIAS). Qualitative opinion is there was no significant difference between any of the three trim settings on the forces, or ability to complete the task at the planned speeds. My conclusion is that elevator trim position on T-2 (by the way, it is the "small" tab) has no effect on rotation force.

6. RECOMMENDATIONS

Fix the drag problem; performance is wanting.

COMPLETED BY	SIGNATURE	DATE
	[signature]	7 Oct 86

AFFTC FORM MAR 84 365 PREVIOUS EDITION IS OBSOLETE

File MDE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-0492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO NOSE WHEEL SHIMMY/G0845	B. FLIGHT NO/DATA POINTS 130.02G/PER TIS	C. DATE 27 OCT 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG	I. WEATHER
J. TO TIME/SORTIE TIME N/A	K. CONFIGURATION/LOADING PRODUCTION NOSE GEAR CONFIG	L. SURFACE CONDITIONS
M. CHASE ACFT/SERIAL NO N/A	N. CHASE CREW N/A	O. CHASE TO TIME/SORTIE TIME N/A

4. PURPOSE OF FLIGHT/TEST POINTS

Evaluate production nose wheel shimmy characteristics during taxi tests with and without nose wheel steering engaged.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

LT WATERS:

During the nose gear shimmy taxi test a shimmy instability was encountered while accelerating from 30 KIAS to 40 KIAS. At the instability, the nose gear vibrations went unstable, at approximately 25 Hz, in 2 cycles. The amplitude of the shimmy was greater than +/-20 G's in the lateral and longitudinal directions. Turning on the nose gear steering had little effect on the oscillations. The 20 KIAS and 30 KIAS points, showed very high damping when perturbed with brake and steering pulses. Real time strip chart operation was unacceptable, due to the very low chart speeds used while the airplane was accelerating between points.

MR MARTINEZ:

Taxi test points of 20 and 30 KTS were accomplished with well damped responses to the brake and nose-wheel pulse inputs. As the aircraft was accelerating to the next test point of 40 KTS, a light vibration was experienced at approximately 34 KTS. Turning on the nosewheel steering failed to arrest the vibration, as did the application of a minimum amount of nosewheel steering command. The brakes were subsequently applied and the aircraft was slowed to approximately 20 KTS with immediate cessation of the vibration.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
OT & E/G0851	55/PER TIS	28 OCT 86
D. FRONT COCKPIT (Left Seat)	E. FUEL LOAD	F. JON
CLINCH	1240	2591AO
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG	I. WEATHER
SHAWLER	8807/17.91	20SCT/40
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1247/1.4	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/85TB	EDMONDSON/MCCOLLUM	1247/1.5

4. PURPOSE OF FLIGHT/TEST POINTS

VIP DEMO PRACTICE
IOT&E

5. RESULTS OF TESTS (Continue on reverse if needed)

CLINCH: Stick forces mile high for rotation any time the nose is let down to the runway - initial T.O. or touch and go's. Crooked stick grip is awkward and particularly noticeable during stalls, and T.O. rotation.
Trim rate and trim authority were inadequate below 130 KTS in P.A. configuration.
Skies were overcast with relative humidity was reported to be 28 percent at 76 degrees F and the ECS spit a considerably greater amount of snow than I had seen previously.
During two patterns I had the power in idle from the start of the turn until just prior to the threshold. The limited deflection speed brakes do not give enough drag to keep the engines spooled up to a comfortable range.
Taxing back after the sortie with 380 pounds of fuel remaining idle thrust was high enough to break away from a dead stop and taxi approximately a mile without power addition. Breaks were used occassionally to keep speeds to an estimated 15 KTS.
SHAWLER:
1. Demo portion completed for practice for Lt Col Clinch.
2. Stalls were accomplished clean & PA
   Clean 95.5 KIAS 890 # Fuel
   Gear 94 KIAS 770 # Fuel
   Gear + 20 degrees Flaps 90 KIAS
   Gear + 20 degrees Flaps + S.B. 91 KIAS
   Gear + 40 degrees Flaps 85 KIAS
   Gear + 40 degrees Flaps + S.B. 85 KIAS 740 # Fuel
3. Taxi with 73 # thrust
   A. 8800 LBS required 75 percent core on one engine to start the A/C moving.
   B. This thrust setting is OK for an 8500 LB A/C.
   C. During taxi in with a 7900 LB A/C; the A/C would start rolling from a full stop with idle RPM, and continue to accelerate until wheel brakes were applied. Terminal velocity would be greater than 20K.
   D. 73# thrust is still too high for a production aircraft.
4. The landing loads instrumentation worked very well.

6. RECOMMENDATIONS

Continue investigation of the rotation issue.
Increase elevator trim rate and authority - as on T-1.
Put in the straight stick grips - as on T-1.
Reduce snow output of ECS - Going to be a real irritant in high humidity conditions.
Reduce idle thrust.

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO LNDG LOADS/G0847	B. FLIGHT NO/DATA POINTS 36/PER TIS	C. DATE 29 OCT 86
D. FRONT COCKPIT (Left Seat) MARTINEZ	E. FUEL LOAD 800	F. JON 2591A0
G. REAR COCKPIT (Right Seat) EDMONDSON	H. START UP GR WT/CG 8350/17.04	I. WEATHER 200SCT/35
J. TO TIME/SORTIE TIME 0949/1.0	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW SHAWLER/G + 9	O. CHASE TO TIME/SORTIE TIME 0949

4. PURPOSE OF FLIGHT/TEST POINTS
LANDING DYNAMIC RESPONSE

5. RESULTS OF TESTS (Continue on reverse if needed)
MARTINEZ:
Landings were performed utilizing the Navy Fresnel Landing Light System to monitor the required glide slopes necessary to produce the target sink rates at touchdown. Twelve landings were accomplished.
Sink rates at landing were as follows:

At 1 degree glideslope, 4.0 FPS, 2.5 FPS and 3.5 FPS
At 1.25 degrees glideslope, 4.0 FPS, 4.2 FPS and 3.0 FPS
At 1.5 degrees glideslope, 4.4 FPS and 3.0 FPS.
Taxi speed - At the "new" idle setting of 55 percent N1 the taxi speed is still too fast and requires frequent brake applications when taxiing with a light fuel load. (Approximately 200 lbs)

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO G0852	B. FLIGHT NO/DATA POINTS 37/PER TIS	C. DATE 29 OCT 86
D. FRONT COCKPIT (Left Seat) SHAWLER	E. FUEL LOAD 1140	F. JON 2591A0
G. REAR COCKPIT (Right Seat) BRIDGES	H. START UP GR WT/CG 8639/18.5	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1524/1.4	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS 270DEG/6K
M. CHASE ACFT/SERIAL NO T33/N83TR	N. CHASE CREW RICHE	O. CHASE TO TIME/SORTIE TIME 1524/1.4

4. PURPOSE OF FLIGHT/TEST POINTS

LANDING LOADS AND PARTIAL DEMO FOR COL BRIDGES

5. RESULTS OF TESTS (Continue on reverse if needed)

SHAWLER:

1. Demo portion completed as briefed.
2. Actual landing loads could not be accomplished due to sink rate parameter not working properly.
3. Col Bridges Comments: Take off very controllable. Flies well in formation, engines responsive. One g stalls; need stall warning. Accelerated stalls not well defined but no problem. Aircraft turns real well. Aerobatics very nice and crisp. Easy to fly in patterns and easy to land. He commented that it's not easy to see the performance problems in this cool weather; flew nicely all over the envelope.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE	2. SERIAL NUMBER
	T46	493

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3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
VIP DEMO/G0853	39/PER TIS	30 OCT 86
D. FRONT COCKPIT (Left Seat)	E. FUEL LOAD	F. JON
JACKSON	1140	2591A0
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG	I. WEATHER
EDMONDSON	8650/18.38%	40SCT/15
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1408/1.1	PER TIS	290/12G18
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	MARTINEZ/TULBERG	1408/1.1

4. PURPOSE OF FLIGHT/TEST POINTS

VIP DEMONSTRATION TO BRIG GEN JOHN JACKSON ATC/XP

5. RESULTS OF TESTS (Continue on reverse if needed)

Mission included formation, stalls, slowflight, areobatics, ILS approach and multiple touch and landings. The most significant aspect of the mission was the weather. It was one of those days at Edwards when the wind blew near hurricane force. Up and away flying was not affected but the landings were. The cross wind component was a full 20 knots. But in spite of this, Gen Jackson repeatedly flew very nice touch and go landings. He had to be impressed with the cross wind capability of the T-46. His debriefing comments were generally favorable with no negative comments. Over all it was a successful flight.

6. RECOMMENDATIONS

Improve the drag situation.

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO LANDG LOADS/G08G2	B. FLIGHT NO/DATA POINTS 40/PER TIS	C. DATE 5 NOV 86
D. FRONT COCKPIT (Left Seat) RICHE	E. FUEL LOAD 800	F. JON 2591A0
G. REAR COCKPIT (Right Seat) MARTINEZ	H. START UP GR WT/CG 8345/17.1	I. WEATHER 100SCT/85
J. TO TIME/SORTIE TIME 1155/1.1	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO NA	N. CHASE CREW NA	O. CHASE TO TIME/SORTIE TIME NA

4. PURPOSE OF FLIGHT/TEST POINTS

80% LANDING LOADS AT 1.25 DEGREES, 1.5 DEGREES AND 1.75 DEGREES (APPROACH ANGLE)

5. RESULTS OF TESTS (Continue on reverse if needed)

Taxi: Idle RPM good for 800-900 pounds of fuel. Slight power required, generally no brakes. With 200 pounds of fuel, occasional braking required.

Landing Loads: Eleven landings flown for data. Actual sink rate at touchdown consistently below the "desired rate published on the flight cards by a relatively constant amount. Sink rates appear to be repeatable for a given approach angle. Landing loads are reported to be low.

Approximate sink rates observed:

1.25 DEG GLIDESLOPE: 2.4, 3.5, 3.6, 4.0 FT/SEC
1.50 DEG GLIDESLOPE: 4.5, 3.8, 4.6 FT/SEC
1.75 DEG GLIDESLOPE: 4.6 FT/SEC

6. RECOMMENDATIONS

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MDE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO 80% Landing Loads	B. FLIGHT NO/DATA POINTS 41	C. DATE 4 NOV 86
D. FRONT COCKPIT (Left Seat) EDMONDSON	E. FUEL LOAD 1140	F. JON 2591A0
G. REAR COCKPIT (Right Seat) MOSS	H. START UP GR WT/CG 8634/18.57%	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1100L/1/6 HRS	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T-33/N83TB	N. CHASE CREW RICHE/WOODFORD	O. CHASE TO TIME/SORTIE TIME

4. PURPOSE OF FLIGHT/TEST POINTS

INITIAL QUALIFICATION FLIGHT CHECK
80 PERCENT LANDING LOADS

5. RESULTS OF TESTS (Continue on reverse if needed)

A very successful mission. Capt Moss completed his initial qualification flight check and is now fully qualified in the T-46. The landing loads test points went quite well with the exception that the actual sink rates at touch down were all approximately 30 percent less than those planned at each approach angle. Three approach angles were flown: 1.5 Deg, 1.75 Deg, and 2.0 Deg. Each angle was repeated for two or three landings before proceeding to the next higher angle to insure consistency and therefore control of the outcome. Each run was made at 110 KIAS with flaps 20 Deg and speed brakes out. The following table is a listing of the real time data:

GLIDE PATH ANGLE (Deg)	RADAR VERTICAL VELOCITY AT IMPACT (Ft/Sec) (Run 1)	(Run 2)	(Run 3)
1.5	2.4	2.6	2.5
1.75	4.3	4.0	---
2.0	3.9	4.6	3.6

The technique used was to stablize on target approach angle using the meatball lighting system and hold power and attitude constant all the way to touchdown. This technique included no attempt to compensate for ground effect. Ground effect did tend to cushion the impact somewhat, but more so at the lower approach angles. The results, radar vertical velocity at impact, were consistent, that is less than .5 Ft/Sec spread at each angle. The mission's greatest impact velocity was 4.6 Ft/Sec which is considerably less than the 80 percent test limit of 7.7 Ft/Sec. Power technique is as strong a variable in this experiment as planned independent variable, pitch angle. Power technique has an enormous influence and must be judiciously excerised to maintain control of this test if the limit of 7.7 Ft/Sec is not to be exceeded inadvertently.

The ground safety observer did comment after the mission that the nose tire appeared to be getting lower as the glide path angle increased. A post mission calculation indicated the pitch at 110 KIAS would increase approximately two degrees by

6. RECOMMENDATIONS

(1) All subsequent landing tests be performed flaps up to increase pitch attitude at touch down.
(2) Proceed to a higher approach angle, 2.5 to 3.0 degrees.
(3) Control pilots power technique.

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flying the same approach speed, 110 KIAS, but with zero flaps instead of the planned 20 degree flap setting. A two degree increase in pitch attitude will raise the nose tire approximately 4 to 5 inches and give a little better margin to avoid an unplanned three point touchdown. Recommend all subsequent tests be performed flaps up.

CAPT MOSS'S COMMENTS:

a) During formation wing work, the aircraft displayed a tendency to bobble in pitch (high pitch sensitivity and tendency to overshoot). The airspeed range was from 150 to 200 KIAS at around 10,000 ft MSL. Although the observed pitch bobble tendency was almost unperceptible, the maneuvering was limited to +30 degrees bank and about 1.2 G's. Therefore, at the higher G loadings I anticipate there may be a handling qualities problem in the longitudinal axis.

b) In my opinion, the location of the "radio mute button" is unacceptable. On aircraft T-2 (493) the radio mute button is the "pickle" button (button located on the stick grip, immediately to the left of the trim button).

A pilot (either student or instructor) using this button on a regular and daily basis will soon develope a habit pattern to depress this button subconsciously when trying to override radio transmissions when using the intercom. On operational fighters however, this pickle button is the weapons release button: used to launch missiles and release bombs. A scenario can be anticipated where a T-46 pilot transitions into a fighter aircraft and eventually launches an armed missile just because of an old habit pattern. I recommend the radio mute (or radio cut-out) function be moved to the button on the side of the stick (otherwise known as the air refuel disconnect button).

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO LNDG LOADS/G08G8	B. FLIGHT NO/DATA POINTS 42/PER TIS	C. DATE 4 NOV 86
D. FRONT COCKPIT (Left Seat) MARTINEZ	E. FUEL LOAD 900	F. JON 2591A0
G. REAR COCKPIT (Right Seat) RICHE	H. START UP GR WT/CG 8685/17.92	I. WEATHER CLR/85
J. TO TIME/SORTIE TIME 1400/1.0	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO NA	N. CHASE CREW NA	O. CHASE TO TIME/SORTIE TIME NA

4. PURPOSE OF FLIGHT/TEST POINTS

DYNAMIC LANDING RESPONSE

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Data landings were accomplished.

Sink rates at touchdown were as follows:

At 1.75 Degree Glideslope: 276 ft/min, 306 ft/min

At 2.0 Degree Glideslope: 354 ft/min, 288, 414, 390, 402 ft/min

At 2.25 Degree Glideslope: 372 ft/min, 384 ft/min

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T46	493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
LNDG LOADS/G08G9	43/PER TIS	5 NOV 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
RICHE	900	2591AO
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
EDMONDSON	8415/17.74	CLR/85
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0927/1/3	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
NA	NA	NA

4. PURPOSE OF FLIGHT/TEST POINTS

80% LANDING GEAR LOADS (DYNAMIC RESPONSE) AT 2.0, 2.25 AND 2.5 DEGREES, FLAPS 0 DEGREES, SPEED BRAKES OUT

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Ten data points obtained. Data was consistent at all three angles. Sink rates were well below maximum allowable. Aircraft is very stable; with less "float" noted at the steeper angles.
Approximate sink rates were:

5.1, 4.9 and 4.6 ft/sec at 2.0 Degrees
5.3, 5.1 and 4.9 ft/sec at 2.25 Degrees
4.8, 5.1, 5.2 and 5.5 ft/sec at 2.5 Degrees

This is the second mission that the right engine low oil pressure light has illuminated following a throttle reduction to idle in preparation for landing. It came on at 22 psi. Specifications call for 20 plus or minus 1 psi. Investigation and recommendations to follow.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G08GG	B. FLIGHT NO/DATA POINTS 130/PER TIS	C. DATE 5 NOV 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MOSS	H. START UP GR WT/CG 8891/19.6	I. WEATHER CLR/85
J. TO TIME/SORTIE TIME 1600/0.9	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 220/04
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW RICHE/G + 9	O. CHASE TO TIME/SORTIE TIME 1600/0.9

4. PURPOSE OF FLIGHT/TEST POINTS

FUNCTIONAL CHECK OF NOSEWHEEL DAMPING, WITH THE TWO-DAMPER NOSE STRUT FLUTTER EQUIPMENT FUNCTIONAL CHECK, FLUTTER AND FLYING QUALITIES

5. RESULTS OF TESTS *(Continue on reverse if needed)*

a) The taxi test was conducted as planned, there were no adverse taxiing or shimmying characteristics noticeable to the pilots with the nosewheel steering either ON or OFF.

b) Only a portion of the flutter test card was accomplished. The test point of 11,500' MSL and 147 KIAS was flown. Flutter investigation was conducted with the shaker system, and handling qualities were flown.

The aircraft maintained a roll-off tendency to the left throughout the flight, even with full right aileron trim. Otherwise, there were no significant handling qualities differences with the new configuration.

There were four instrumentation anomalies observed. All these must be rectified before any further flutter envelope expansion.

1) Parameter 1318 "Tail Vane" position was being displayed band edge to band edge.
2) Parameter 1318 indicated that the tail vane did not cut off within the required 1 cycle tolerance.
3) Parameters 1320 and 1321 "RT AIL Bend, LT AIL Bend" accelerometers are too sensitive.
4) Parameter 1317 "Wing Vane" position indicated the wing vane displayed erratic behavior at 8 Hz and below.

6. RECOMMENDATIONS

1) Fix the above instrumentation problems before further flutter tests.
2) Delay fixing the aileron roll-off problem until the exact aileron reshaping/orientation is determined.

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO AIR SHOW PROC/Z3629F	B. FLIGHT NO/DATA POINTS 44/PER TIS	C. DATE 7 NOV 86
D. FRONT COCKPIT (Left Seat) EDMONDSON	E. FUEL LOAD 1140	F. JON 259140
G. REAR COCKPIT (Right Seat) SCHULZ	H. START UP GR WT/CG 8649/18.39	I. WEATHER 40 SCT/45
J. TO TIME/SORTIE TIME 1200/0.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 270/15G19
M. CHASE ACFT/SERIAL NO NA	N. CHASE CREW NA	O. CHASE TO TIME/SORTIE TIME NA

4. PURPOSE OF FLIGHT/TEST POINTS

DRESS REHEARSAL FOR THE 1986 EDWARDS AFB OPEN HOUSE - T46A FLY BY

5. RESULTS OF TESTS (Continue on reverse if needed)

A wings level, 250 KIAS, pass was made over the base at 500 FT AGL.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO AIR SHOW/73627F	B. FLIGHT NO/DATA POINTS 45/PER TTS	C. DATE 9 NOV 86
D. FRONT COCKPIT (Left Seat) EDMONDSON	E. FUEL LOAD 1140	F. JON 259140
G. REAR COCKPIT (Right Seat) SCHULZ	H. START UP GR WT/CG 8649/18.39	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1140/0.5	K. CONFIGURATION/LOADING PER TTS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO NA	N. CHASE CREW NA	O. CHASE TO TIME/SORTIE TIME NA

4. PURPOSE OF FLIGHT/TEST POINTS

EDWARDS AFB OPEN HOUSE FLY BY

5. RESULTS OF TESTS (Continue on reverse if needed)

Mission was flown to perfection. It was a beautifully clear and calm day. The T-46A performed beautifully in its 250 KIAS, 500 FT AGL, wings level pass in front of nearly half a million spectators. Ground observers commented on the quietness of the engines and the unofficial rumor was it was the second quietest aircraft in the show. A glider/sail plane was the quietest.

Next year the T-46 should perform an aerial demonstration vice a wings level fly over.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO TAXI LOADS/G0875	B. FLIGHT NO/DATA POINTS 46.02G	C. DATE 14 NOV 86
D. FRONT COCKPIT (*Left Seat*) RICHE/MARTINEZ	E. FUEL LOAD 600	F. JON 2591A0
G. REAR COCKPIT (*Right Seat*) N/A	H. START UP GR WT/CG 7924/18.37	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME N/A	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO N/A	N. CHASE CREW N/A	O. CHASE TO TIME/SORTIE TIME N/A

4. PURPOSE OF FLIGHT/TEST POINTS

TAXI LOADS TEST, 1" STEP/BUMP

5. RESULTS OF TESTS (*Continue on reverse if needed*)

RICHE

20, 40, 60, 80 KIAS, 90 degree and 60 degree approach to single bump (4 inches by 80 feet): Very little apparent aircraft reaction to the bump at any speed. Most noticeable effect was left back-plate temperature exceeded right by 200-400 degrees on the first 40, 60 and 80 knot runs. On the second set of runs (60 degree approach) brake temperatures were similar. Aircraft was not pulling left during braking following the first set (20, 40, 60, 80 knots at 90 degrees) of approaches. All data appeared good.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0887	B. FLIGHT NO/DATA POINTS 133/PER TIS	C. DATE 18 NOV 86
D. FRONT COCKPIT (Left Seat) RICHE	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT (Right Seat) SHAWLER	H. START UP GR WT/CG 8891/19.64	I. WEATHER 10SCT/20
J. TO TIME/SORTIE TIME 1507/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 240/13G19
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MARTINEZ/HERRING	O. CHASE TO TIME/SORTIE TIME 1507/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

The following points were accomplished at 30,000 Ft PA:

199 KIAS: Tail Burst At 7.4, 9.7, 16.1 and 21.0 H_z

(SAS OFF) Tail Sweep 5 to 60 H_z, Manual Reversion

Tail Burst At 7.6, 10.1, 15.8, 15.6 and 20.8 H_z, Manual Reversion

(cont'd on next page)

5. RESULTS OF TESTS (Continue on reverse if needed)

RICHE

All points obtained. Several repeats required due to wandering of vane frequency during bursts. Canopy defog system extremely noisy when activated. Nose wheel steering is too sensitive at moderate taxi speeds ("Twitchy"). Flutter system operation is definitely a two-man operation.

MATHIS

Vane parameters indicated that vane was starting to wander, therefore, several bursts had to be repeated.

Aileron parameters were still unacceptably noisy. These parameters will be fixed and confirmed operational prior to the next points starting at 11,500 Ft, 207 KIAS.

6. RECOMMENDATIONS

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219 KIAS: Stick Raps, Lateral and Longitudinal
(SAS OFF) Wing Sweep 5 to 60 H_z
Wing Burst At 8.4, 13.3, 31.4, and 33.4 H_z
Tail Sweep 5 to 60 H_z
Tail Burst At 7.4, 9.7, 15.4, and 20.6 H_z
Tail Sweep 5 to 60 H_z, SAS ON
199 KIAS: Flying qualities, SAS ON - Pitch, rudder and lateral doublets, bank-to-bank rolls.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493
3. CONDITIONS RELATIVE TO TEST		
A. PROJECT/MISSION NO TAXI LOADS	B. FLIGHT NO/DATA POINTS GRD46.04 & 46.05	C. DATE 19 NOV 86
D. FRONT COCKPIT (Left Seat) SHAWLER	E. FUEL LOAD 600	F. LON 2591A0
G. REAR COCKPIT (Right Seat)	H. START UP GR WT/CG 7924/18.37	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 0900/4:00	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS 280/10K
M. CHASE ACFT/SERIAL NO N/A	N. CHASE CREW N/A	O. CHASE TO TIME/SORTIE TIME N/A

4. PURPOSE OF FLIGHT/TEST POINTS

ALL GROUND TEST - TAXI

1. TURNING AND PIVOTING TESTS
2. WHEEL BRAKING LOADS BOTH SYMMETRICAL AND ASYMMETRICAL

5. RESULTS OF TESTS *(Continue on reverse if needed)*

A. NWS turns completed at 15K and 20K developing approximately .4 "G" laterally at 20K.

B. NWS turns with symmetrical braking also completed at 15K and 20K.

C. Differential braking turns completed at 15K and 20K. Some skidding was seen at 15K, but much more at 20K including blowing the right tire while in the right turn, the aircraft tips rather drastically taking much of the weight off the inside tire which also helped to blow the tire. This is gross punishment for an aircraft and we should never ever consider going to higher loads. The tires would probably come off the rims.

D. The symmetrical and asymmetrical braking tests were completed from 80K down to zero. The ability to use one brake and NWS to stop the aircraft is relatively easy although there is some shaking.

E. The pivoting on one locked wheel at 3K resulted in the nose wheel going beyond NWS limits. This required opposite brake to get the NWS within limits.

F. Good data acquired on all tests. This completes the 80% ground taxi loads tests.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T-46A	2. SERIAL NUMBER 84-492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0889	B. FLIGHT NO/DATA POINTS 134/PER TIS	C. DATE 20 NOV 86
D. FRONT COCKPIT (Left Seat) MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT (Right Seat) EDMONDSON	H. START UP GR WT/CG 8917/19.31	I. WEATHER CLR/20
J. TO TIME/SORTIE TIME 0736/1.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW RICHE/HERRING	O. CHASE TO TIME/SORTIE TIME 0736/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

Phase I Flutter with composite flight controls.

5. RESULTS OF TESTS (Continue on reverse if needed)

Good mission, but ended thirty minutes early due to flutter excitation system failure. Two new airspeeds flown, both at 11,500 ft. The first speed, 207 KIAS (.40M) was completed to include stick raps, wing sweep and wing manual bursts at 8.2 Hz, 12.5 Hz, 13.6 Hz, 31.0 Hz, and 56.0 Hz.

Tail sweeps were done with SAS on and off, as well as bursts at 7.6 Hz, 9.5 Hz, 14.6 Hz, 20.2 Hz, 7.6 Hz, 7.4 Hz, 15.2 Hz and 20.8 Hz.

At 228 KIAS (.45M) stick raps, wing sweep and wing manual bursts at 8.3 Hz, 12.8 Hz, 13.8 Hz, 30.7 Hz and 56.0 Hz were completed. The tail sweeps were performed, but the tail flutter vane began to operate erratically and the mission was cut short.

Lateral trim was checked at 200 KIAS, 11,500 ft and the aircraft rolled 30 degrees left in 6.0 seconds with full right trim and 30 degrees left in 3.0 seconds with full left trim.

6. RECOMMENDATIONS

Rerig the ailerons to eliminate the left roll off.
Repair the tail vane and proceed with flutter testing.

COMPLETED BY	SIGNATURE	DATE
		20 nov

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TEST DIRECTOR'S COMMENTS FOR FLIGHT 134/492
20 NOV 86

Quick look analysis indicated damping was adequate.
Parameter 1321 appears on the verge of failure.
Test was aborted due to failure of tail vane.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0900	B. FLIGHT NO/DATA POINTS 135/PER TIS	C. DATE 24 NOV 86
D. FRONT COCKPIT (Left Seat) SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT (Right Seat) MOSS	H. START UP GR WT/CG 8891/19.64	I. WEATHER CLR/50
J. TO TIME/SORTIE TIME 0702/1.8	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MARTINEZ/G + 9	O. CHASE TO TIME/SORTIE TIME 0702/1.8

4. PURPOSE OF FLIGHT/TEST POINTS

A. FLUTTER PTS 228 KIAS AND 248 KIAS AT 11,500 FT
B. HANDLING QUALITIES COMPLETED AT 228K, 11,500 FT
C. SCANI - VALVE PTS COMPLETED ON THE GRD AND AT 190 KIAS AT 15,000 FT

5. RESULTS OF TESTS (Continue on reverse if needed)

1. 228 KIAS - Tail Burst SAS OFF At 7.8, 9.6, 14.6 and 20.0 H_z
   Tail and wing sweeps completed at 5-10 H_z and 10-60 H_z
2. 248 KIAS - Stick Raps
   Wing Auto Sweep
   Wing Burst 8.4, 14.0, 29.9, 31.6 and 54.9 H_z
   Tail Auto Sweep SAS OFF
   Tail Burst SAS OFF 7.4, 7.6, 9.6, 14.8 and 19.6
   Tail Auto Sweep SAS ON
   Tail Burst SAS ON 7.6, 9.5, 14.8, 18.7, 20.0, 19.8 and 19.6 H_z
3. Handling qualities included doublets in all 3 axis, bank-to-bank rolls, and roll off check.
4. The flutter excitation system still jumps to a higher frequency intermittently both in auto and burst modes. It comes back down and stabilizes within 2-3 seconds.
5. Test Director Comments: Repeats due to vane skipping at low frequency. Vane still speeds up during operation. Not repeatable. With SAS ON at 248 Kts damping was around 2% on a 20 H_z empennage mode based on near real time autospectra plots. The mission was terminated at this time. A post flight analysis will provide better insight into this situation. It may be of value to gather data at 228 KTS/11,500 Ft with SAS ON to better define the aeroelastic characteristics of this mode. Overall this was a good mission.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
PRESS SURVEY/G0908	137/PER TIS	1 DEC 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
RICHE	1240	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
SHAWLER	8896/19.58	100SCT/85
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1242/1.6	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	MARTINEZ/WOODFORD	1242/1.6

4. PURPOSE OF FLIGHT/TEST POINTS

INLET PRESSURE SURVEY:
235 KIAS, 5,000 Ft PA, Lt Throttle at Max, 79%, 59%, and Idle; Rt Throttle as required.
198 KIAS, 15,000 Ft PA, Lt Throttle at Max, 79%, 62%, and Idle; Rt Throttle as required.

(continued on next page)

5. RESULTS OF TESTS *(Continue on reverse if needed)*

All data obtained and appear valid. Maximum power was required on the right throttle for most of the lower two left throttle power settings. With the left throttle at idle, and the right throttle at max power, rates of descent were approximately 900 fpm (5K), 600 fpm (15K), 500 fpm (25K) and 400 fpm (35K) at the test airspeeds. Approximately 300 fpm rate of climb at 35K, both throttles at max power, 130 KIAS, with 600 pounds of fuel was observed.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

162 KIAS, 25,000 Ft PA, Lt Throttle at Max, 82%, 67%, and Idle; Rt Throttle as required.
128 KIAS, 35,000 Ft PA, Lt Throttle at Max, 86%, 75%, and Idle; Rt Throttlle as required.

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0911	B. FLIGHT NO/DATA POINTS 138/PER TIS	C. DATE 3 DEC 86
D. FRONT COCKPIT *(Left Seat)* MARTINEZ	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MOSS	H. START UP GR WT/CG 8917/19.3	I. WEATHER CLR/85
J. TO TIME/SORTIE TIME 0918/0.6	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/G + 9	O. CHASE TO TIME/SORTIE TIME 0918/0.4

4. PURPOSE OF FLIGHT/TEST POINTS

PHASE I FLUTTER WITH COMPOSITE FLIGHT CONTROLS

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MARTINEZ: Several tail sweeps (SAS OFF) in manual reversion mode were accomplished at 228 KIAS prior to aborting the mission due to a problem with the chase aircraft. It appeared that the tail vane required approximately 10-12 seconds after initiation of the flutter excitation system to stabilize on the correct frequency.

MATHIS:
1. Wing vane inoperative.
2. Tail vane, in auto mode, starts at about 10Hz, target is 5Hz.
3. Tail vane still speeds up in both auto and manual modes.
4. Vane cut off erratic at only point(s) done at about 5Hz.
5. Frequency calibration needs work.

Tail sweeps had to be repeated due to erratic behavior of tail vane. Tail sweep in manual reversion mode at 228 kts/11,500 ft was complete.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT

1. AIRCRAFT TYPE	2. SERIAL NUMBER
T46	492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
VIP DEMO/G7080	139/PER TIS	3 DEC 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
ELLIS	1140	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
CLINCH	8823/19.1	CLR/85
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
1446/1.1	PER TIS	CALM
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	SHAWLER/DEAKIN	1446/1.0

4. PURPOSE OF FLIGHT/TEST POINTS

VIP DEMONSTRATION

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Col Ellis made the following comments:

1. Liked the cockpit layout and displays.
2. Liked simple and unconfining strap in.
3. Liked the nose wheel steering response.
4. Couldn't hold the brakes in Mil power for takeoff.
5. Was surprised at the abrupt rotation for takeoff.
6. Thought the stick was a little far forward.
7. Liked the visibility except the rearward visibility. Thought the lack of rearward visibility would be a significant problem in formation.
8. More stall warning definitely required.
9. Stall characteristics were especially good.
10. Acro was very easy, very similar to T-37.
11. Roll rates are a little sluggish.
12. Traffic patterns were especially easy though more drag on final would be better. Liked the cross-cockpit visibility for right hand patterns.
13. Landings were easy. Rotation for touch and go's was abrupt.
14. Was most impressed with the engine performance; thought engine response, fuel consumption and lack of noise were the strong points of the entire system.

6. RECOMMENDATIONS

1. Continue takeoff rotation investigation.
2. Look at methods of improving visibility rearward, reposition mirrors, and change type of mirrors.
3. Re-examine stick neutral point in light of stick grip change.

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO PRESS SURVEY/G0925	B. FLIGHT NO/DATA POINTS 141/PER TIS	C. DATE 10 DEC 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* EDMONDSON	H. START UP GR WT/CG 8896/19.6	I. WEATHER CLR/50
J. TO TIME/SORTIE TIME 1132/1.3	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 070/02
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MARTINEZ/RITCHEY	O. CHASE TO TIME/SORTIE TIME 1132/1.3

4. PURPOSE OF FLIGHT/TEST POINTS

1. STALL WARNING PRESSURE SURVEY
2. FLUTTER SYSTEM FUNCTIONAL

5. RESULTS OF TESTS *(Continue on reverse if needed)*

1. One "G" stalls were accomplished at 15,000 Ft and 7,500 Ft; clean, gear only, gear and flaps, and PA. Two each were completed at each altitude. Stablized points were completed at each altitude both CR and PA at Vs +5Kts, Vs +10Kts, Vs +15Kts, and Vs +20Kts.
Good pressure survey data obtained. Results unknown. Sometimes a rapid roll off was seen at stall.
2. Accelerated stalls were accomplished at 15,000 Ft at 130 KIAS CR and PA; 150 KIAS CR; and 180 KIAS CR. A total of 16 stalls were completed, 8 by each pilot. The accelerated stalls have a much more rapid right roll off than we have seen before. The natural stall warning for the accelerated stall case is adequate for the 180 KIAS point, and probably okay for higher speeds. It is not adequate for the lower speeds. (Both pilots' opinion).
3. The flutter excitation system did not operate properly. It was very slow to stablize on frequency during bursts, (approximately 10 seconds). It would start high at the lower frequencies and low at the higher frequencies and eventually stabilize on a frequency. During the start of the auto sweeps the frequency would jump 6-8 Hz then come back down close to the desired start frequency. After that initial jump, it was fairly close except for a hesitation one or two times. The ground calibration was not the same as the inflight calibration for the frequency.

Lt Col Edmondson's Comments:
1. The flutter excitation system still has the same problems identified previously and is marginally acceptable to continue Phase I Testing. The present capability of the excitation definitely requires a two man crew.
2. The stall characteristics of the aircraft have changed significantly. The aircraft rolls extremely rapidly at stall during both accelerated and unaccelerated entries. Flaps down to 20 degrees and flaps up seem to make no difference to the rapid roll rate. A one g stall in the landing configuration required full lateral

(continued on next page)

6. RECOMMENDATIONS

Investigate the cause of the rapid roll off at stall and correct the problem. It is a very undesirable characteristic.

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M. Edmondson	MDE	11 Dec 86

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control deflection to arrest the roll rate at stall. The following one g stall speeds at power for level flight are provided:

15,000 FT STALLS

GROSS WT LBS	CONFIGURATION	STALL SPEED (KIAS)	INDICATED AOA (DEG)
8650	Clean	95	20
8630	Gear Down	95	20
8610	Flaps 20 Gear Down	89	20.5
8580	Power Approach	89	20.5

The gear and speed brakes do not change the stall speed or characteristics. The flap extension to 20 degrees reduces the stall speed by approximately 5 knots.

MDE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO OT&E/G8552	B. FLIGHT NO/DATA POINTS 144/PER TIS	C. DATE 12 DEC 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MANKE	H. START UP GR WT/CG 8920/19.5	I. WEATHER CLR/50
J. TO TIME/SORTIE TIME 1019/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW MOSS/HERRING	O. CHASE TO TIME/SORTIE TIME 1019/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

IOT&E
FLUTTER SYSTEM FUNCTIONAL

5. RESULTS OF TESTS *(Continue on reverse if needed)*

SHAWLER
1. The flutter system operated very close to the previous flight. It took up to 30 seconds to stabilize on a frequency early in the flight. Later in the flight it improved but still not consistent. It is minimum acceptable to continue Phase I. The voltage to the moog valve was monitored and showed erratic values. The problems are being worked.
2. During the accelerated stalls the warning was adequate at 3 "G's". In fact, it was very difficult to stall the aircraft.
3. All but 2 stalls had a right roll off. One accelerated stall and the one PA 1 "G" stall did not have any roll off. 4. The fuel quantity check in the landing pattern showed fairly good recovery to the correct fuel reading after a deceleration. During a deceleration from 185 KIAS using gear, S.B., and idle the fuel quantity dropped from 190 lbs to 160 lbs, but returned to 190 lbs in approximately 30 seconds. This is certainly reasonable if repeatable.

Capt Manke
Accelerated Stall Warning - At 18,000' MSL the aircraft's natural stall warning is adequate in lead and intensity above 180 KIAS and 2 G's. The adequacy of stall warning at pattern altitudes was not tested and remains to be seen.
Simulated Single Engine Approaches - Stabilized on final at 110 KIAS with gear, 0 degree flaps, and speedbrakes, power on the "good" engine was about 90% core. This appears to allow an adequate power margin for proper airspeed control. Stabilized on downwind with gear only at 130 KIAS, it took military power on the "good" engine to maintain level flight.
Fuel System - The fuel quantity fluctuated ± 30 lbs below 200 lbs total fuel, but recovered to normal in 15-20 seconds.
Gear Warning Horn - I liked the gear warning horn just as it is configured on T-1.

6. RECOMMENDATIONS

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MDE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0934	B. FLIGHT NO/DATA POINTS 145/PER TIS	C. DATE 15 DEC 86
D. FRONT COCKPIT *(Left Seat)* EDMONDSON	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SHAWLER	H. START UP GR WT/CG 8896/19.6	I. WEATHER 100BKN/50
J. TO TIME/SORTIE TIME 0930/1.7	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW RICHE/G + 9	O. CHASE TO TIME/SORTIE TIME 0930/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

11,500 FT 228 KIAS MANUAL RUDDER (HYDRAULIC POWER OFF) - BURSTS
248 KIAS MANUAL RUDDER (HYDRAULIC POWER OFF) - SWEEP & BURSTS
258 KIAS MANUAL RUDDER (HYDRAULIC POWER OFF) - SWEEP & BURSTS

5. RESULTS OF TESTS *(Continue on reverse if needed)*

Col Edmondson
This was a very unproductive sortie and very little was accomplished because of A) The flutter excitation system and B) Ridley Mission Control Center (RMCC) hardware failure. The excitation system is a two man operation as it worked today, both pilots unanimously agree. The frequency stability was about average, but the calibration to dial up a digital setting was off and required pilot compensation. The auto sweep mode tended to start well above the start frequency and took 10 to 15 seconds to come down to the start frequency. The beginning error appears to be independent of the mode of operation and target frequency. That is, the error appears in both the manual and auto mode as well as at high and low frequency. The last 30 minutes of test time were lost to RMCC because of a strip chart. Another complication which slowed the mission was relatively low damping (about 3%) on the tail at 14 Hz. The following specific frequencies were tested on the tail in manual rudder power:

VELOCITY (KIAS)	TARGET FREQUENCY (Hz)
228	12.9, 14.4, 19.6, 22.2
248	7.0, 7.5, 7.7, 14.8, 14.5, 19.8, 21.4, 7.6, 12.8
258	14.6, 14.8

STEVE MATHIS
Parameter 1323 died early in mission. Parameter 1301 started to display erratic behavior mid-mission. Parameter 1305 started to display 2 g static shifts. Empennage modes (14.8Hz and 14.6Hz) showed low damping. Post flight data analysis will shed some light on situation. In tail mode, vane could not sweep below 8 Hz. This problem needs to be worked. Tail vane was erratic at below 8Hz in both manual and automatic modes. No change in A/C envelope.

6. RECOMMENDATIONS

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MDE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0937	B. FLIGHT NO/DATA POINTS 147/PER TIS	C. DATE 17 DEC 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* RICHE	H. START UP GR WT/CG 8891/19.6	I. WEATHER 70SCT/50
J. TO TIME/SORTIE TIME 0926/1.3	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 210/01
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/G + 9	O. CHASE TO TIME/SORTIE TIME 0926/1.3

4. PURPOSE OF FLIGHT/TEST POINTS

FLUTTER PHASE I

5. RESULTS OF TESTS *(Continue on reverse if needed)*

SHAWLER
Flutter Points Completed
1. SAS OFF 258 KIAS tail auto sweep.
   SAS OFF 258 KIAS Burst 14.2, 15.4, 19.0 and 20.9 Hz.
2. Manual rudder 258 KIAS burst 19.4.
3. Stick raps at 270 KIAS.
4. SAS OFF 270 KIAS auto sweep.
   SAS OFF 270 KIAS bursts 14.2, 15.2, 19.0 and 20.2.
5. Manual rudder 270 KIAS auto sweep.
   Manual rudder 270 KIAS bursts at 14.4, 14.8, 19.4 and 20.0.
6. Auto sweep 270 KIAS between 5-10Hz and 10-60Hz.

Wing flutter vane position not working consequently no wing points completed. The aircraft has a very slight right roll off at 270 KIAS with full trim opposing the roll.

MATHIS
Parameter 1312 erratic; started to die at end of mission. This should be replaced.
Parameters 1317 and 1323 were inoperative. No wing work could be done due to failure of 1317.
Aircraft is cleared to 250 KIAS.

6. RECOMMENDATIONS

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0938	B. FLIGHT NO/DATA POINTS 148/PER TIS	C. DATE 17 DEC 86
D. FRONT COCKPIT *(Left Seat)* EDMONDSON	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SHAWLER	H. START UP GR WT/CG 8896/19.6	I. WEATHER 50SCT/50
J. TO TIME/SORTIE TIME 1414/1.4	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33A/N83TB	N. CHASE CREW RICHE/HERRING	O. CHASE TO TIME/SORTIE TIME 1415/1.4

4. PURPOSE OF FLIGHT/TEST POINTS
PHASE ONE FLUTTER ENVELOPE EXPANSION AT 11,500 FT, 270 KIAS AND 279 KIAS WITH COMPOSITE FLIGHT CONTROLS, SAS OFF

5. RESULTS OF TESTS *(Continue on reverse if needed)*
Lt Col EDMONDSON:
Good Mission. We are now 99.9 percent complete of the Phase One envelope revisit with composite flight controls. Completed the 270 KIAS points and almost all of the conditions at 279 KIAS. The test points included wing and tail frequency sweeps from 5Hz to 60Hz as well as manual bursts at the following frequencies:

VELOCITY (KIAS)	WING FREQUENCY (Hz)	TAIL FREQUENCY (Hz)	MACH NO INDICATED
270	8.8, 12.1, 15.0, 31.0, 33.8, 31.1, 33.7		0.50
279	8.4, 9.5, 11.9, 29.3, 30.0, 31.6	9.6, 14.8, 19.0 19.2	0.52
279		14.0, 15.0, 18.5 19.4 (Rudder Boost Off)	0.52

The flutter excitation system works somewhat better with the "old" integrated circuit board reinstalled in the control panel for today's flight. But it still has problems and is still a two man crew operation. The problems include:
A. SHUT OFF - The vane coast down from shut down signal to motion stop takes too long and interfers with the free response decay envelope of the structure.
B. STABILITY - The vane frequency intermittently jumps in frequency and then corrects back.

(continued on next page)

6. RECOMMENDATIONS
Fix the flutter excitation system.

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C. WAVE FORM - At low frequency, below 10Hz, the wave form is not sinusoidal.

Real time data indicate satisfactory damping at both test speeds for both the tail and wing. There are very little data remaining to be gathered in Phase One. One average sortie should finish the job.

MATHIS:
1. A/C is cleared SAS OFF to 270 KIAS/0.60M.
2. Vane was acting erractically at shut off.
3. Card was almost complete. Only outstanding points are manual reversion sweep and bursts at 279 KIAS 11,500 ft.
4. Strain gage on wing vane inoperative.
5. Both wing vane and tail vane erratic below 8Hz.

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DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0940	B. FLIGHT NO/DATA POINTS 47/PER TIS	C. DATE 18 DEC 86
D. FRONT COCKPIT *(Left Seat)* RICHE	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SCHULZ	H. START UP GR WT/CG 8693/17.76	I. WEATHER 60SCT/30
J. TO TIME/SORTIE TIME 1417/1.4	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS 230/05
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/G + 9	O. CHASE TO TIME/SORTIE TIME 1417/1.4

4. PURPOSE OF FLIGHT/TEST POINTS
FLUTTER ENVELOPE EXPANSION TO 280 KCAS/0.6M

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MAJ RICHE
Stick raps (lateral/longitudinal) at 196, 216, 226 and 246 KIAS (SAS OFF and ON except 246 - SAS OFF only)
Speedbrakes and stick raps at 255, 265, 275 KIAS, SAS OFF
Aircraft flew well. All data obtained. Aircraft cleared to 270 KIAS. Handling characteristics appear similiar to T-1.
Aileron trim effectiveness minimal at 170 KIAS. No roll off with full left aileron trim. Six degrees right roll in 30 seconds with full right trim. At 275 KIAS, no roll off observed with full left trim. Full right trim produced approximately 12 degrees of bank in 15 seconds.

MAJ SCHULZ
GROUND OPERATIONS - Easy to accomplish, but to see in the nose wheel well , you must lie on the ground which will be objectionable in wet weather.
TAXI - The nosewheel steering seemed to be more sensitive than on aircraft 492, and it was difficult to taxi in a straight line without over controlling. I found it much easier to taxi with the nosewheel steering disengaged.
TAKEOFF - Pitch rate during the takeoff portion of touch and go's was rapid.
GEAR WARNING LIGHT - The lights in the gear handles were very difficult to see under all conditions.
PATTERNS AND LANDINGS - Normal overheads (right and left) from 1500 ft required idle power most of the way around the final turn. On both simulated single engine overhead patterns (no flaps, speedbrakes out, 130 KIAS final turn, 110 KIAS final) I overshot. 120 KIAS in the final turn would probably be easier to handle. I also flew a simulated single engine straight in. On this approach, while slowing from 120 KIAS to 110 KIAS, the aircraft required a significant back stick input to arrest. Yaw due to asymmetic thrust on all simulated single engine patterns was minimal.

(continued on next page)

6. RECOMMENDATIONS

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MATHIS:
A/C T-2 displayed similiar damping trends as T-1 up to 275 KIAS. T-2 has same envelope as T-1, 270 KIAS 0.6M. When T-1 is cleared to 280 KIAS T-2 will automatically be cleared to 280 KIAS.
Mission ran effeciently.

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO	B. FLIGHT NO/DATA POINTS	C. DATE
IOT&E/G0943	48/PER TIS	19 DEC 86
D. FRONT COCKPIT *(Left Seat)*	E. FUEL LOAD	F. JON
EDMONDSON	1240	2591A0
G. REAR COCKPIT *(Right Seat)*	H. START UP GR WT/CG	I. WEATHER
MANKE	8711/17.52	100SCT/4F
J. TO TIME/SORTIE TIME	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS
0936/1.7	PER TIS	020/02
M. CHASE ACFT/SERIAL NO	N. CHASE CREW	O. CHASE TO TIME/SORTIE TIME
T33/83TB	SHAWLER/HERRING	0936/1.7

4. PURPOSE OF FLIGHT/TEST POINTS

HIGH ALTITUDE SIMULATED INSTRUMENT HANDLING QUALITIES
UHF AND VHF RADIO CHECKS
LATERAL TRIM EVALUATION
PATTERNS AND LANDINGS

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MANKE

A. Marginal power capability to perform the syllabus training maneuvers at 30,000'. Discovered a small "hitch" or "hangup" in the stick longitudinally. Could be easily overcome but made precise handling certain regimes difficult. Hitch was only noticeable at high altitudes (30,000), and slow speeds (below 160 KIAS).

B. Attempted to contact and get radio checks from area facilities. Success was limited at best. Could not raise most of the facilities. Need to rework our approach to doing these radio evaluations. Using a communications van has potential.

C. Lateral trim was ineffective in rate and authority. Rolloff checks with full lateral trim revealed aircraft would roll in proper direction below 200 KIAS but very slowly. At 250 KIAS aircraft rolled right 15 degrees in 9 seconds, but did not roll left at all with full left trim.

D. Simulated single engine patterns. Considerable rudder required to coordinate aircraft on final. Would like more elevator trim authority in flare.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

MDC

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FLUTTER/G0953	B. FLIGHT NO/DATA POINTS 150/PER TIS	C. DATE 22 DEC 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* SCHULZ	H. START UP GR WT/CG 8888/19.7	I. WEATHER CLEAR
J. TO TIME/SORTIE TIME 1425/1.1	K. CONFIGURATION/LOADING CLEAN	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO T33/83TB	N. CHASE CREW EDMONDSON/MINK	O. CHASE TO TIME/SORTIE TIME 1425/1.1

4. PURPOSE OF FLIGHT/TEST POINTS
FLUTTER PHASE ONE H-Q AT 270 KIAS, 11,500 FEET

5. RESULTS OF TESTS *(Continue on reverse if needed)*
SHAWLER:
1. Phase One Flutter complete to 279 KIAS.
2. Points completed: 279 KIAS, 11,500 feet tail burst M.R. 19.8, 19.6, 19.7, 14.2 and 14.4 Wing Burst 13.8, 32.4 and 34.5.
3. Auto Sweeps: 279 KIAS, 11,500 feet
   Tail SAS Off 5 - 10 HZ and 10 - 60 HZ
4. Flutter excitation system still has problems.
5. Handling qualities completed at 270 KIAS, 11,500 feet.

MAJ SCHULZ:
TAKE OFF: I attempted to rotate at 95 KIAS. Pitch rate was rapid.
TRIM: Elevator trim was very effective. At 279 KIAS a very small trim activation made a significant change in stick forces. Overall, it was easy to keep the plane trimmed.
STRAIGHT-IN (110 KIAS, 20 degree flaps, speedbrakes out): I deliberately delayed the descent in order to fly a steep final, but we developed a sink rate that resulted in arriving on a normal glide path early. About two-thirds of final was flown on a normal glide path.
NORMAL OVERHEAD: No problems noted.
SIMULATE SINGLE ENGINE OVERHEAD: I used 130 KIAS in the final turn and 110 KIAS on final. Configuration was flaps up and speedbrakes out when landing was assured (short final). Power was idle all the way around the final turn, and most of the way down final. Yaw due to asymmetric power was minimal.
Landings and go-arounds were easy to perform (calm winds).

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 493

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO IOT&E/G0957	B. FLIGHT NO/DATA POINTS 49/PER TIS	C. DATE 23 DEC 86
D. FRONT COCKPIT *(Left Seat)* SHAWLER	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* MANKE	H. START UP GR WT/CG 8720/19.71	I. WEATHER 90 BKN
J. TO TIME/SORTIE TIME 0906/1.2	K. CONFIGURATION/LOADING	L. SURFACE CONDITIONS CALM
M. CHASE ACFT/SERIAL NO A-37/090	N. CHASE CREW STEWART/PHOTO	O. CHASE TO TIME/SORTIE TIME

4. PURPOSE OF FLIGHT/TEST POINTS

OT&E SIMILAR FORMATION

A. WINGWORK, CROSSUNDERS, ECHELON TURNS

B. PITCHOVERS AND REJOINS

C. CHASE

D. FORMATION APPROACHES AND LANDING

5. RESULTS OF TESTS *(Continue on reverse if needed)*

CAPT MANKE:

A. Wingwork - Aircraft handling qualities in fingertip are excellent. Power response is much better than in the T-37. The aircraft is very stable on the wing in pitch, roll and yaw. Use of speedbrakes on the wing produces a slight pitch "bobble", but is very controllable. The most difficult facet of wingwork is trying to fly cross-cockpit on the wing. The canopy bow restricts visibility on the "normal" fingertip line forcing the pilot to fly well in front or well behind the line in order to keep the lead aircraft and aircrew in sight.

B. Pitchouts and Rejoins - Excellent in all respects except lead aircraft visibility. The crew member "outside" of the turn in a turning rejoin can't monitor the progress of the rejoining aircraft because the engine inlet and wing obstruct the view.

C. Chase - Excellent in all respects except for lead aircraft visibility. The leader has a huge blind spot (5-7 o'clock) which makes monitoring a wingman in chase or trail nearly impossible. The mirrors could be improved.

D. Formation Approaches and Landing - Aircraft is rock solid in the lead and on the wing. Gear, flaps and speedbrakes were easy to use on the wing and created little if any position deviations.

SHAWLER:

The T-46 in formation is absolutely superior in all aspects. It is rock solid while flying approaches and configuration changes are extremely easy. This is one of the easiest aircrafts to fly formation with that I have ever flown.

The only negatives are the visibility to the rear, and cross-cockpit visibility. The cross-cockpit visibility, due to the canopy bow requires flying too far forward or too far to the rear to see properly.

6. RECOMMENDATIONS

Make the mirrors larger. Experiment with relocating the mirrors. Experiment with convex mirrors.

COMPLETED BY	SIGNATURE	DATE

3

DAILY/INITIAL FLIGHT TEST REPORT	1. AIRCRAFT TYPE T46	2. SERIAL NUMBER 492

3. CONDITIONS RELATIVE TO TEST

A. PROJECT/MISSION NO FORMATION/G0957B	B. FLIGHT NO/DATA POINTS 151/PER TIS	C. DATE 23 DEC 86
D. FRONT COCKPIT *(Left Seat)* EDMONDSON	E. FUEL LOAD 1240	F. JON 2591A0
G. REAR COCKPIT *(Right Seat)* CAMPANO	H. START UP GR WT/CG 8888/19.71	I. WEATHER 90BLN
J. TO TIME/SORTIE TIME 0906/1.2	K. CONFIGURATION/LOADING PER TIS	L. SURFACE CONDITIONS CALM+30
M. CHASE ACFT/SERIAL NO T-37/090	N. CHASE CREW STEWART/PHOTO	O. CHASE TO TIME/SORTIE TIME 0906/1.2

4. PURPOSE OF FLIGHT/TEST POINTS

OT&E FORMATION. FINGERTIP PITCHOUT AND AILERONS, ECHELON TURNS, CHASE, FORMATION APPROACH, LOW APPROACH AND FORMATION LANDING.

5. RESULTS OF TESTS *(Continue on reverse if needed)*

MAJ CAMPANO:

Overall handling qualities seem very good. Did not notice any uncomfortable or undesireable characteristics. Pitch sensitivity was not a problem and was better than the T-38, etc.

Visibility (both lead and wing) has some problem areas. The leader cannot adequately view the wingman from cross-cockpit. The mirrors are minimal help and need to be enlarged to offer a bigger field of view. A comfortable wing fingertip position is difficult to select as the high wing possesses an obstacle for clear viewing from the wing aircraft to see the lead pilot. May need to fly a "non-standard" position of aft and low for best visibility.

Formation approaches and landing seemed quite solid and stable. Pitch moments from gear speedbrake and flap transients were minimal, and did not disrupt fingertip. Although more thrust (low drag) would be an overall aircraft improvement, I felt the relative power response was adequate.

LT COL EDMONDSON:

This was the first formation flight with two T-46's. Previous formation work has been done with dissimiliar aircraft i.e. the T-33 and T-37. From the previous dissimiliar formation work we already knew the T-46 was good in formation, but today's flight with similiar aircraft convinced me it is even better than we expected. Not to over state the situation, I can only say it's great. Definitely in the category of the easiest formation aircraft I have ever flown. Closed loop handling qualities are excellent in all axis. Performance is somewhat lacking, that is, it is under powered, but this has little effect on formation, and is nothing new. The only negative aspect of formation in this aircraft is visibility. The high wing coupled with side by side seating make some tasks quite difficult for some occupants. For example, the lead aircraft in a turning rejoin can see the wingman only from the inside seat position. The cross-cockpit lead pilot can't see a thing. Some accomodation for optimum position will have to be worked out during OT&E.

6. RECOMMENDATIONS

COMPLETED BY	SIGNATURE	DATE