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Mach 2 Dream Job

by Lt. Col. A.A. “Jan” Jancauskas
(excerpt from autobiography)

knock – knock – knock
“May I help you?”
“Can you tell me where the Army personnel are living?”
“No, I’m sorry.”
“Thank you.”
knock – knock – knock.....

I never dreamt that my Air Force dream job would start out by knocking on doors looking for Army personnel, but that is how it began:

After graduating from the Air Force Institute of Technology at Wright Patterson AFB with a Master of Science in Aeronautical Engineering in 1957, I was assigned to the Sidewinder (GAR-8) Weapon System Program Office (WSPO) as an R&D Assistant. In July of 1959 the F-104 WSPO was combined with the Sidewinder WSPO and this allowed me to study more extensively and to become proficient in fire control and armament such as multi-mode radar with terrain avoidance, contour mapping, air-to-air and air-to-ground features. I also became well versed with the 20mm gatling gun and the GE J-79 turbojet engine. The F-104G aircraft being planned for the German Ministry of Defense by Lockheed was to have all of the above features.

Shortly thereafter I was notified that I was being assigned to the Lockheed Air Force Plant Representative’s Office which was located in the California Lockheed Headquarters building located at the Burbank, California airport. I had to sell our little home in Ohio and find a new home somewhere in the Los Angeles area.

Although I had been to the Los Angeles area frequently, I had never priced the housing and really knew very little about living conditions. The first day of searching for affordable housing was shocking and by evening I was near despairing of chances to ever find us a decent place. I had started house hunting in

the South end of the San Fernando Valley and discovered that homes were cheaper on the North side of the valley in the Granada Hills area. Everywhere I went I was advised that there were no rentals available. I wasn't getting anywhere when I happened to drive by a Catholic Church and school and I decided to go into the rectory and ask for rental information. A lady advised me there were no rentals in the area but that there were some Army personnel living in the next block and that those homes had not been bought.

So I went up a block and started walking door to door asking if they knew where the Army personnel were living. About the sixth or seventh house the lady advised me there was a young Army couple living across the street. I went across the street and knocked and a very young lady answered. I inquired if they were military and if the house was leased. She didn't have any details other than that the Army gave them the housing. She didn't have the Army phone numbers (I learned that the soldiers were remotely located at Nike sites towards Palmdale). So I asked her whom she called when something went wrong with the house. She advised she had a Bank number that took care of any problems. I asked her for the phone number and thanked her and went to find a phone booth.

I called the bank and told them my circumstances and asked whether they had any lease or rental homes available. They said they had three rental homes available and I could pick up the keys at the bank. I visited all three rentals and the first one was the best. These homes were less than two years old and the first one had a marvelous floor plan. Surprisingly the rent was quite reasonable and I signed the necessary papers. I then called the Van line that had picked up all our belongings from Ohio and found that the truck had just pulled into their local freight yard and could come to the address I gave them the very next morning.

The van came as promised the next morning and all our belongings were brought inside. I then began a thorough house cleaning, vacuuming, plus window and dirty clothing washing. I established an account at the local supermarket because LA wasn't booming at that time and, having had many bad checks, they insisted on verified local accounts. I stocked the kitchen pantry and fridge with many supplies. I also learned that regular good beer was very hard to find. Anything called beer was really only "near" beer and then there were high alcohol malt liquors which generally had strange names like stite. I inquired at a liquor store regarding the beer and they advised me that California was a wine state and if I wanted a good deal then I should drink wine. Eventually I started buying beer and booze at the Pt. Mugo Naval Air Station or the El Toro Marine "wine mess." One of the biggest games was trying to correlate the strange brand names on the liquor labels with their normal names such as Seagrams, Red Label, etc.

I was stationed at Lockheed Aircraft Headquarters building at the Burbank Airport. The full Colonel that ran the Program Office was not of the caliber of the Colonels we had at Wright Field. In Southern California where the daily temperature is at least 85 F he insisted on us wearing a blouse. Most of the Lockheed employees had a jacket but didn't wear them. I compared him to Captain Queeg. He had a staff meeting almost every day and made us drive our own cars to Palmdale or Edwards since he alone would drive the staff car. We peons were just Captains and not rolling in the money.

I had to drive to Palmdale practically every day by way of Soledad Canyon (about 2 years before the winding road was improved to a freeway) since that is where the final assembly and flight test was

performed. I complained to my boss and to the WSPO and formally requested I be reassigned to Palmdale. The move was approved and we again fortunately found a nice home with a swimming pool.

The bright spot in this assignment was that by seeing and monitoring the Palmdale F-104 assembly I was able to document what, why, and how everything was done. I was able to identify the hi-value items and got excellent support from the inspectors. I also managed to get involved with the Flight Acceptance of all the aircraft. I attended all the flight debriefings and gradually developed an understanding of the test procedures. Because I represented the WSPO I received much information and because I was learning about Lockheed, I requested printouts of all their daily summaries. Little by little, I wore out my leather briefcase as I devotedly daily brought home and scanned all the documents that were going through the program. Little by little the information began to gel and I was able to understand how they operated. This brought me into practically daily contact with the Lockheed Contracts personnel and I was able to provide information to the WSPO which resulted in significant cost savings on several lots of airplanes.

There were only two test pilots assigned by the Air Force for the F-104G program. The Flight test document was very thorough and we were getting behind on the currently established schedule. I advised the Colonel that the schedule would slip more unless we got more experienced pilots and the only way to get the experience was to be trained for the test flying. I volunteered myself since I did have a significant number of flight hours and I did understand the test spec. What I needed was experience which I could get on the test flights of the two-place aircraft. Both test pilots realized that we had more than 100 aircraft to test and if they wanted any time off then they needed at least one additional pilot. I was very fortunate to be there at the right time and Captains Hupp and Hunt volunteered to train me in the multi-place aircraft.

After about 10 or 15 flights in the two seat aircraft I felt very confident regarding the aircraft. I felt I was a pretty good student and they showed me what they did and how they did it. Before too long, I was flying on a daily basis in the single seat and two seat aircraft. I showed them that making the supersonic runs from East to West would save us much fuel and airborne time. I did not tell them that this insight came from one of my first solo test flights where after investigating a slight anomaly on the supersonic run I found myself way to east near the Colorado River with just barely enough fuel to get back to Palmdale even at optimal altitude and speed for maximum fuel efficiency – a high pucker factor can really encourage innovation. I brought up a lot of suggestions regarding the radar and the inertial navigation equipment and the sequence of some of the tests. I also provided a seven page descriptive document to Lockheed which described the test pilot actions on a typical F-104 acceptance flight. My aerodynamic training allowed me to intelligently argue when necessary with the Lockheed engineers. We were three happy pilots flying the F-104 aircraft which was dubbed "The missile with a man in it."

Where before there had been many disputes between manufacturing and the test pilots as well as disagreements between the Lockheed flight test pilots who flew the first flights and the Air Force test pilots who flew the acceptance flights, these disagreements were more easily resolved since I could get all the information from the AF Plant Rep or the F-104 WSPO. I also managed to get over 330 test flights partially because I made myself available on weekends and holidays. From August 1963 to August 1965 I was an Aeronautical Engineer and Test Pilot at Palmdale, California. It was a pilot's dream to flight test

the F-104's and we fellow pilots were really saddened to see the end of the test flying approaching with the completion of the program.

Additional biographical information at www.4catstudio.com/jan

Test Flight Description Transcript

A
United States Air Force
Test Pilot
Describes His Activities On A
Typical F-104 Acceptance Flight

A. A. Jancauskas, Capt. U.S.A.F.

Transcribed from a tape dictated on 31 August 1964

The primary purpose of this report is to familiarize personnel at the Lockheed Palmdale Aircraft assembly facility with the procedures agreed to by the Air Force and Lockheed by which the acceptability of a newly assembled aircraft is determined. The flight test procedures are tailored to determine whether the various aircraft equipment is functioning properly. Each aircraft is required to be 100% functional before it can be released to the customer. The customer in this case is a consortium consisting of the Federal Republic of Germany, Netherlands, Belgium, and Italy. The detailed procedures are well understood by Lockheed supervisory personnel and flight test personnel. This report is intended to familiarize the assembly workers with the need for diligence in the assembly process to significantly reduce the number of flights required to accept the aircraft.

I am going to describe what Acceptance Pilots do on normal acceptance flights. I will describe a flight of a single place F-104G aircraft. The two-seat trainer version is the TF-104G and has less equipment installed than the single seat F-104G.

Prior to taxi I go to the flight line and review the paperwork to make sure that all the corrective actions have been performed and, to as great an extent as possible, that the equipment has passed all ground testing satisfactorily. I then perform a walk-around inspection and a cockpit inspection. These will not be described in detail since they are readily witnessable at any time with prior pilot approval.

The cockpit inspection is thorough and practically all switches and functions in the cockpit are checked. These include the seats, map lights, thunderstorm lights, dimming functions, warning lights, cockpit instrument readings and complete checks of the radar optical sight, the Position Homing Indicator (PHI), the Inertial and Dead Reckoning Computers (INDR), the Tactical Air Navigation Instrument (TACAN), the

gatling gun rounds counter, depressible reticle, manual reticle, caging functions, dual timers, etc. The radar optical and PHI checks are normally performed after the engine has been started.

After completing all the Technical Order (TO) checks in the chocks, I then taxi out and perform nose wheel steering checks. I verify that the proper brake pedal is connected to the proper brake and that the manual and power brakes are functioning correctly. Checking the brake pedals might sound obvious but I had one aircraft where the brake pedals were reversed on two sequential acceptance flights even though it had been written up in my "squawks." I also write down on my clipboard the engine idle reading and complete the pre-takeoff checklist. Once in position for takeoff, I select manual brakes and run the power up smoothly to 6,500 pounds/hour fuel flow. After completing this check I retard the power, switch back to normal brakes, and make a burst to military power noting the time it took to complete the burst and record the readings at military power.

I then do a slow retard to 81% power and then am ready for takeoff. Most of our flights are normally made with an F-86 target aircraft for radar evaluation. I obtain a two minute spacing with the target (about 10 miles) and then initiate takeoff. During takeoff the primary items noted are the engine readings, the amount of time it takes for the gear to come up, and the amount of cabin pressure drop when the gear is lifted.

Once clear of the ground I call the tower and ask for permission to switch to Palmdale radar, and on approval, switch by selecting the manual function of the radio which is preset at 379.2. I then check in with Palmdale radar and begin my turn out of traffic at about 350 knots while coming out of afterburner and noting the nozzle tracking. I then engage the automatic pilot control stick steering function and turn the radar from standby to air-to-air. As I pass through 350 knots I remove my parachute lanyard which ensures immediate chute opening at low altitude or runway eject and note that the turn and bank needle is operating in the turn out of traffic.

I then roll out on a heading towards Tehachapi and engage the Nav Mode of the auto-pilot, having preselected Channel 2 (Tehachapi) prior to takeoff. I continue in a gradual climb until I accelerate to 0.8 Mach and at this point engage the Mach hold function of the auto-pilot. Passing through 5,000 feet, I check if to see if 5,000 foot cabin pressure is being maintained. At 10,000 feet I make a note of the aircraft stability. During the climb I attempt to pick up the F-86 target and any other traffic on the radar. While leaving the climb corridor on Palmdale radar I switch back to normal UHF and contact Lockheed Palmdale to advise that I am airborne and that my lanyard is disconnected.

I then contact Edwards Approach Control (APC), turning the Identification Friend or Foe (IFF) from standby to on and give an ID. squawk on SIF 3-0-5. Having received clearance from Edwards I then proceed towards Tehachapi where I take readings of INDR, TACAN and time. I also note that I am departing the 5,000 foot cabin pressure schedule at 18,500 feet and take the engine readings when passing through 20,000 feet. Having passed Tehachapi I turn towards Lake Isabella, select Channel 3 on the PHI, and select Channel 108 on the short range of the TACAN. It should be noted that the TACAN reading taken over Tehachapi is Miramar, Channel 31, on the normal range of the TACAN.

I continue my climb to 30,000 feet and select altitude hold. During the climb I pay particular attention to obtain the maximum full fuel reading obtained during the climb. I check the oxygen, and then lock and re-lock onto the target using the various modes of the radar. During the radar checks I maintain full control of the target aircraft. I then begin the pressurization check by rotating the cabin pressure up to full hot in automatic and wait for the heat to increase in its normal fashion.

I make another lock onto the target and allow the target to reach maximum range of approximately 13 miles. By this time I am normally at Isabella and again write down the INDR, TACAN and time readings. I then turns towards Olanche Peak, select Channel 4 on PHI and IN modes, select Channel 48 normal on the TACAN, and instruct the target to turn for a rockets pass. This is usually a 90 to 100 degree turn and I have the target slow down to 0.6 Mach. About this time the cockpit should be getting very hot from the automatic heat control and I switch to manual cold and check that it goes to full cold. After going to full cold I check the manual hot position.

I continue tracking the target and complete the rocket pass and turn as necessary to proceed to Olanche Peak. The target is then advised to proceed to the predetermined check point just east of Lone Pine. I then check the defrost function and again check the electric windshield. At Olanche I note the INDR, TACAN, and time readings, select Channel 5 on the UHF and begin my UHF checks of the top antenna, bottom antenna, auto antenna and also the tone. I then have Lockheed Palmdale give me a call on alternate UHF and once I receive it I switch to transmit on alternate UHF.

At Lone Pine I note the INDR and time readings and if there is a significant error due to wind at Lone Pine I make a DR wind find. I complete my turn to approximately 090 degrees, select Channel 6 on PHI, find the target on the radar and complete the gun and missiles pass. I normally allow the target to drift in on a 90 degree beam pass to approximately 4 miles and give him a hard turn towards Furnace Creek while slowing down to 0.7 Mach. I check that the analog bar on the optical sight tracks between 6 o'clock and 9 o'clock and perform the 2G check. I also check that the missile steering on the optical sight agrees with the missile steering on the radar. I normally don't follow the missile mode clear in to the target because of the high overtake required to get a breakaway in missile mode.

I then switch to the guns mode of the radar and ask the target to cut any timer smoke and go to 100% plus speed boards. This allows me to check the IR function and get the required lock-on. Boring in to the target I again check the optical, IR, and radar steering in the guns mode and proceed into a breakaway. I break to the left and instruct the target to accelerate to at least 0.8 Mach. I turn off about 60 degrees, turn back into the target and make a visual acquisition radar lock-on. Turning back into the target permits me to again check the tracking of the guns mode during a maneuver, both on optical and on radar.

By this time a single place airplane tip tank fuel should be finally consumed whereas in the two place aircraft this occurs just as soon as we turn away from Lone Pine. While the tip tanks were usually problem free, I did have one flight where immediately upon touchdown both tip tanks separated and flew formation with me for quite a ways down the runway.

Having arrived at Furnace Creek I usually release the target and note the INDR and time readings as usual. If necessary I make another wind find. At this point I usually begin climbing to 34,000 feet and ask for an IFF check with Edwards APC. The IFF check normally involves 05, 06, 07, 21, an emergency squawk on 05, and also the mic identification feature of the IFF. At 34,000 feet, if it is a camera door equipped aircraft, I'll check the camera doors. If I haven't completed them during the radar checks, I'll do the gun twitcher checks in missiles, guns, and rockets, as well as rotating the gun. When rotating the gun I pay particular attention to the "peek and panic" panel, noting whether I have lost any circuit breakers, effects if any on the radar, and if it has caused the autopilot to disengage.

While at 34,000 feet I take military power readings and then make a pressure check by chopping to idle. I then record the 93% power readings and follow with another chop of the throttle. Still coming into Zabriskie, Channel 8, I then go through a cursory check of the damper system. I check out the disconnect modes of the autopilot by alternately turning off the roll damper, pitch damper, yaw damper, automatic pitch control off, and auxiliary trim. This check is done at this time to make sure that on the supersonic run I am going to have functioning dampers and auxiliary trim. I also check out most of the autopilot disengage functions. One last check on the autopilot is to press the warning lights test button to see if it is working properly. This too might improperly disengage the autopilot.

I take readings at Zabriskie, Channel 8, and ask for entry into the Supersonic Corridor. Having been cleared into the Corridor I select Channel 10, Silver Lake, and climb to 35,000 feet in preparation for the supersonic run. At Silver Lake I note the INDR and time readings, turn into the Corridor and accelerate. I select Channel 11, Three Sisters, on the station selector and maintain 35,000 feet in altitude hold autopilot mode. I note the time, the fuel, and the compressor inlet temperature at Mach 1.1 and 1.4, and record the time it takes to go between Mach 1.1 and 1.4. Passing Three Sisters I note the IN and DR readings as well as the time and select Channel 12, Soledad, on the station selector. I accelerate now to 750 knots, or the slow light, or Mach 2, noting down the T2 reset rpm, the oil pressure, and the slow light function. Having obtained maximum speed I notify Edwards that I am departing the Supersonic Corridor and turn towards Isabella while zooming to 45,000 feet. This allows speed to bleed off and permits taking the cockpit pressure reading at 45,000 feet. I then descend to 39,000 feet, performing a throttle chop and burst and afterburner checks. I then descend to 34,000 feet and below to perform the automatic pitch control check. I start in a clean configuration, noting the fuel at the beginning of the checks. I do the checks in a clean configuration, and note the speed at which I get the shaker and the kicker. I then drop the takeoff flaps and note the fuel and the shaker and kicker speeds and go into land flaps and note the shaker speed.

At this time I should be at Isabella and note the INDR, time readings, update the DR if necessary and advise Edwards APC that I am descending below the Special Operations Area. I perform the flight control checks while picking up the appropriate speed, check all the dampers, the aileron trim and the control stick centering checks. In performing these checks I first obtain autopilot off, hands-off flight and note that the aileron trim is in neutral and turn off the yaw damper. I then note how fast the ball goes out when I cause a yaw displacement by kicking a rudder pedal and then reengage the yaw channel to see how fast the oscillations dampen out. I turn off the pitch channel and note that the aircraft noses down,

introduce a pitch oscillation, then turn the damper back on and see that the pitch oscillations dampen out. Turning the roll damper off, I note that the aircraft does not go into any roll maneuver which requires more than two beep trims to be removed, and further note that the stick centering is positive with the roll damper off. Turning the roll damper back on again I recheck that the ball is centered and that the trim is in neutral and check the stick centering. Having passed this check I then check to see whether the washout circuitry is functioning correctly and also perform accelerated automatic pitch control checks. I also generally check the G disengage function of the autopilot.

At this time I have been proceeding from Isabella towards Tehachapi with Tehachapi selected and note the INDR and time readings. Having completed the control checks I then do the flap rig and boundary layer control check. This normally starts at 350 knots and I put out the speed boards and note that the aircraft maintains trim condition. Having slowed down to 295 knots I can drop the takeoff flaps and note any transient or steady state disturbances. Slowing down to 240 knots I drop the land flaps and note any transient or steady state conditions while maintaining 240 knots and at least 95% power.

I then induce a climb and let the speed bleed off at 95% power down to 160 knots and note any stick displacements. At this time I nose down and retard the throttle to idle, maintaining 160 knots and note any stick displacements. Having completed the boundary layer control flap rig check, I normally leave the takeoff flaps down while retarding the power toward idle, having noted that I return to the 5,000 pressure schedule at 185 knots. Maintaining 200 knots I descend to 10,000 feet for the landing gear checks. At approximately 10,000 feet I normally get the gear warning horn. I advance the power and note at what rpm on retard the horn re-engages, and then accelerate by lifting the speed brakes and note at what speed the horn goes out. Thereby I have checked that the horn functions properly with altitude, power setting and speed. At this point I have selected Channel 12, Soledad Mountain, on the channel selector and have switched to the Contour Map /Terrain Avoidance (CM/TA) mode of the radar.

I make my turn in towards Soledad Mountain and perform the 500 foot CM run on Soledad Mountain. I note the readings at 10, 7 ½, 5, and 2 ½ nautical miles, and perform a fly by past the mountain in case there is a suspected discrepancy between the altimeter and the preset altitude which I normally fly at 4,700 feet. If necessary at this time I also take the IN/DR reading at Soledad Mountain.

Turning off Soledad and returning back into the west valley, I perform the air to ground radar checks, and on a westerly heading perform standby compass and navigation checks for heading. In the case of the Columbus aircraft I also perform the C2G check at this time. Having returned to approximately 14 miles distance from Soledad, I turn inbound and perform our 2,000 foot check in CM/TA and this is normally run at 6,200 feet. I take readings at 10 miles and 5 miles both in CM and TA. I normally take CM readings from 12 miles in to 10, at 10 miles I switch to TA, take the TA reading and maintain TA down to approximately 6 miles, and then switch to CM for the final reading. At this time I recheck the air to ground lock-on function if I have had any trouble with it.

Normally I perform a turn toward the north, picking up a section line and again get standby compass and nav headings. I climb to 12,000 feet a few miles north of Mojave, turn to the east and again get standby and nav readings for record. When approximately due north of the Rosamond lake reflectors I turn

toward the south and run in checking ground map. Having obtained separation of the target in ground map pencil, I switch to ground map spoil and obtain separation of the targets once again.

Being on an approximately south heading I pick up a section line and get south standby compass and nav readings once more. At this time I advise Edwards APC that I am leaving their frequency and change the IFF SIF squawk to 3-0-6 and go over to tower frequency for the remainder of the flight. I obtain permission from the tower to perform a fly over the field at approximately 8,000 feet to 10,000 feet, and crossing the field I obtain an IN terminal reading for record. If, however, there have been any problems with the Litton LN-3 inertial navigation system, I would inform Lockheed-Palmdale to advise the flight line that I will be returning with an LN-3 problem and then take the LN-3 terminal reading in the chocks.

Assuming I have had no LN-3 problem I will turn to the east and proceed to dump the platform. The normal manner in which this is accomplished is by turning both the #1 and # 2 generators off and resetting them. This kills the platform and the radar and at this time I select the compass-only mode. I perform C2G checks on all four compass headings using section lines for reference and then am about ready for landing.

At this time the low level light should be on and it has been noted at what fuel level indication the low level came on. Before entering the pattern, and preferably below 5,000 feet, I check the ram air scoop by first moving it to the first detent to see that all pressurization is dumped and then by moving it to the second and farther detent to get ram air into the cockpit. I also check the rain remover by slowing down below 295 knots and assuring that it extends and retracts properly. If I haven't checked it previously I will also punch the "G" valve to make sure it is providing air through the "G" hose and if necessary, pull a couple of "Gs" to verify that the valve functions automatically. During the flight I have also noted whether the turn and bank needle is operating properly and carefully checked all of the auxiliary instruments to see that they are indicating properly or have indicated properly during the flight.

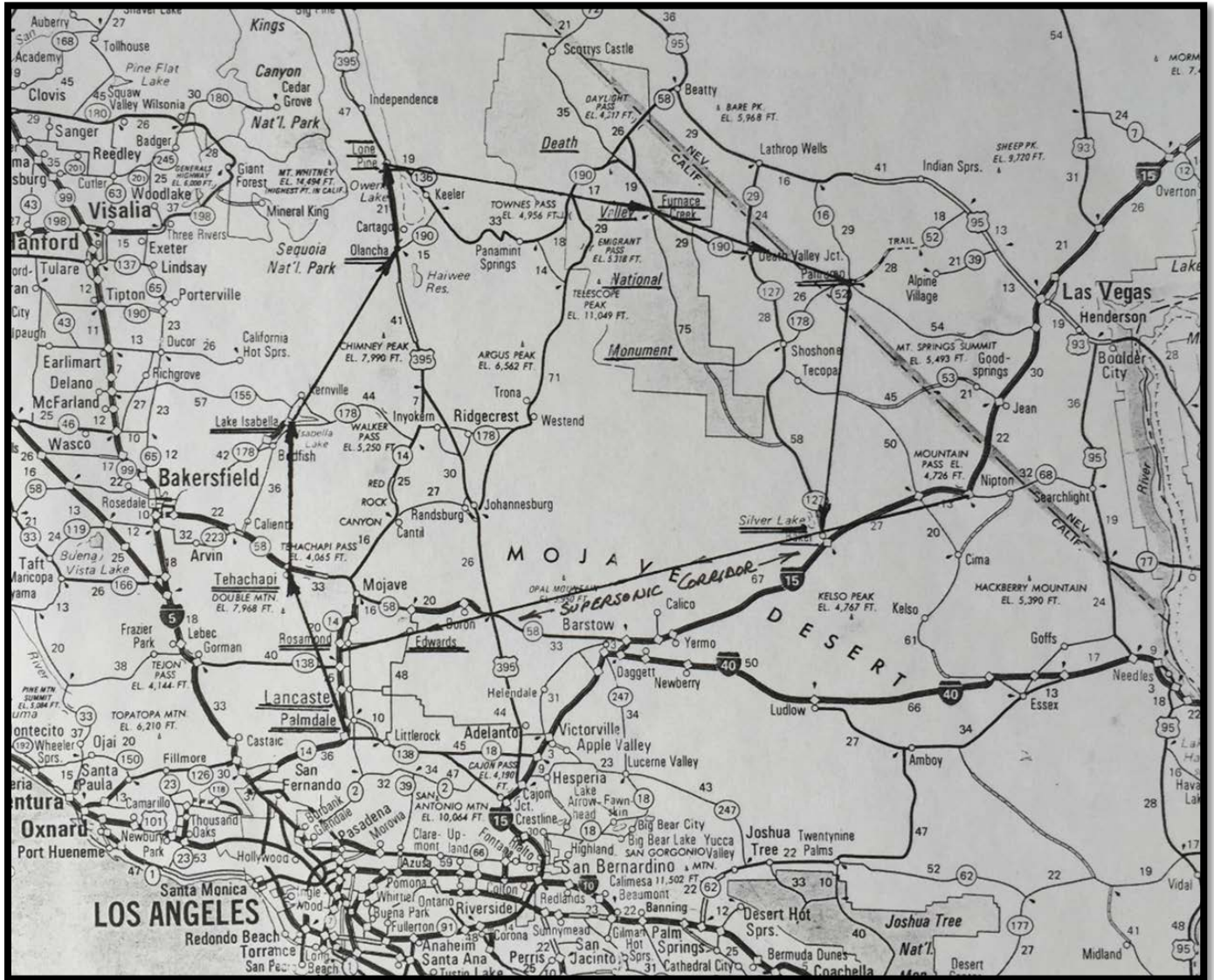
Prior to landing I will attach the low altitude lanyard and advise the tower when on initial for landing. In the traffic pattern I check the landing gear latch prior to lowering the gear, lower the gear and the land flaps and on final approach release the ram air turbine at 190 knots air speed minimum. *(And I would go as low as possible directly over our house which was located just to the southeast of the field to let my wife know that I would be home soon).* On landing I use maximum braking after deploying the chute. I go to ground UHF frequency off the runway and taxiing in to the Lockheed area I switch to Lockheed-Palmdale and advise them that I have completed my flight. In the chocks prior to stop I normally drop the hook and check its operation, and if we are being parked properly we will have the primary DC circuit breaker tripped to see whether we still maintain operation of the emergency DC bus. In the chocks I record a final DR reading and if I haven't done a C2G check at this point I will take a reading for LN-3 terminal.

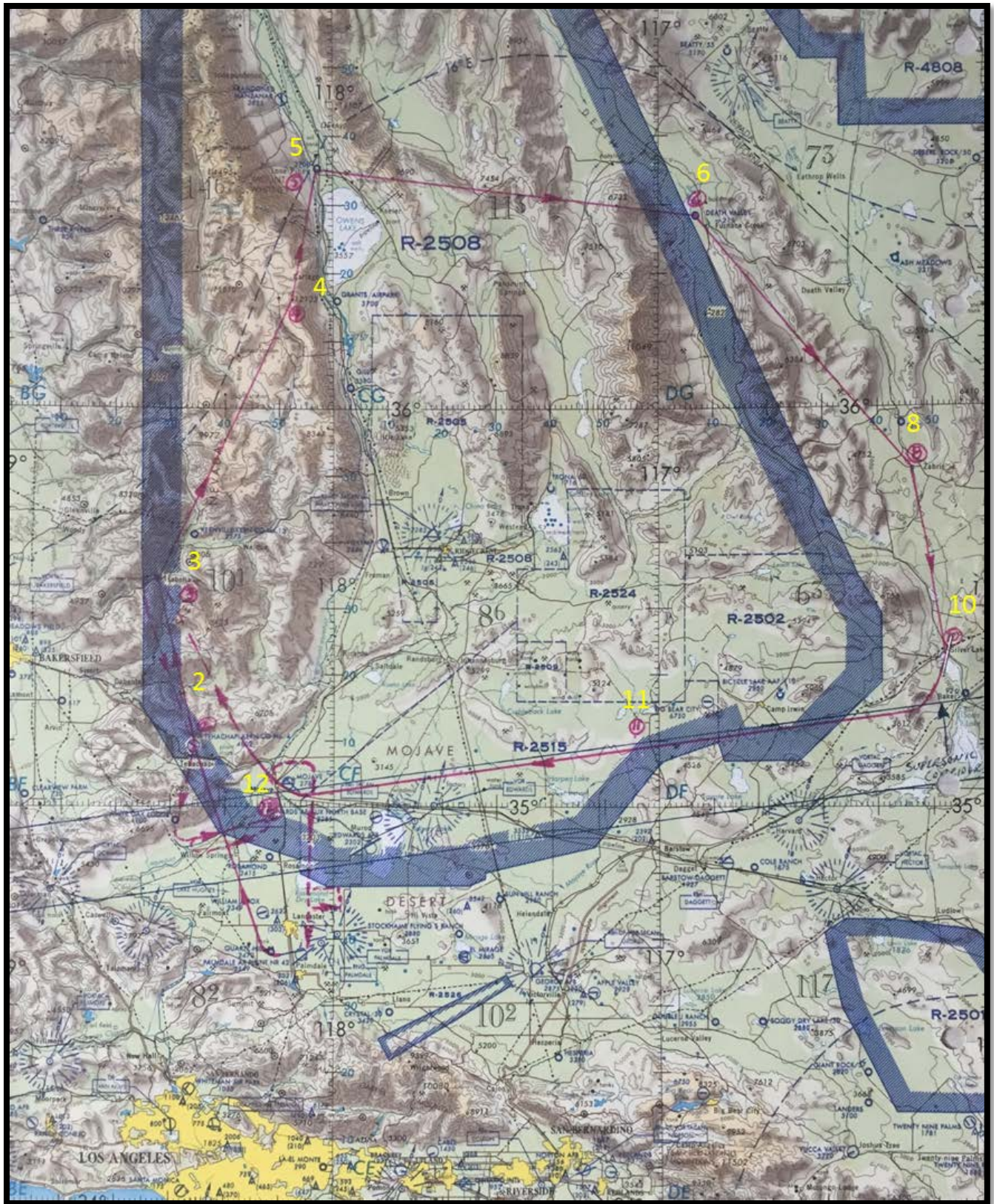
On engine shut down I check the battery by testing the fire warning lights and automatic speed brake closing by leaving the speed brakes extended. Leaving the airplane I check that the ram air turbine is extended, check the general condition of the airplane, and find out the quantity of engine oil remaining. I then proceed to the debriefing shack and writes my squawks.

This completes the short description of the typical first acceptance flight on a single place aircraft. I have intentionally omitted basic TO, walk-around, chock checks, etc. You may have noted that talking through the first acceptance flight without going into very much detail has required some 30 to 40 minutes. Our normal first acceptance flight last approximately one hour and fifteen minutes. It should be noted that in this first acceptance flight I have checked all systems specified in the Flight Acceptance Spec with the exception of the emergency gear operation which is normally conducted during the production flight test.

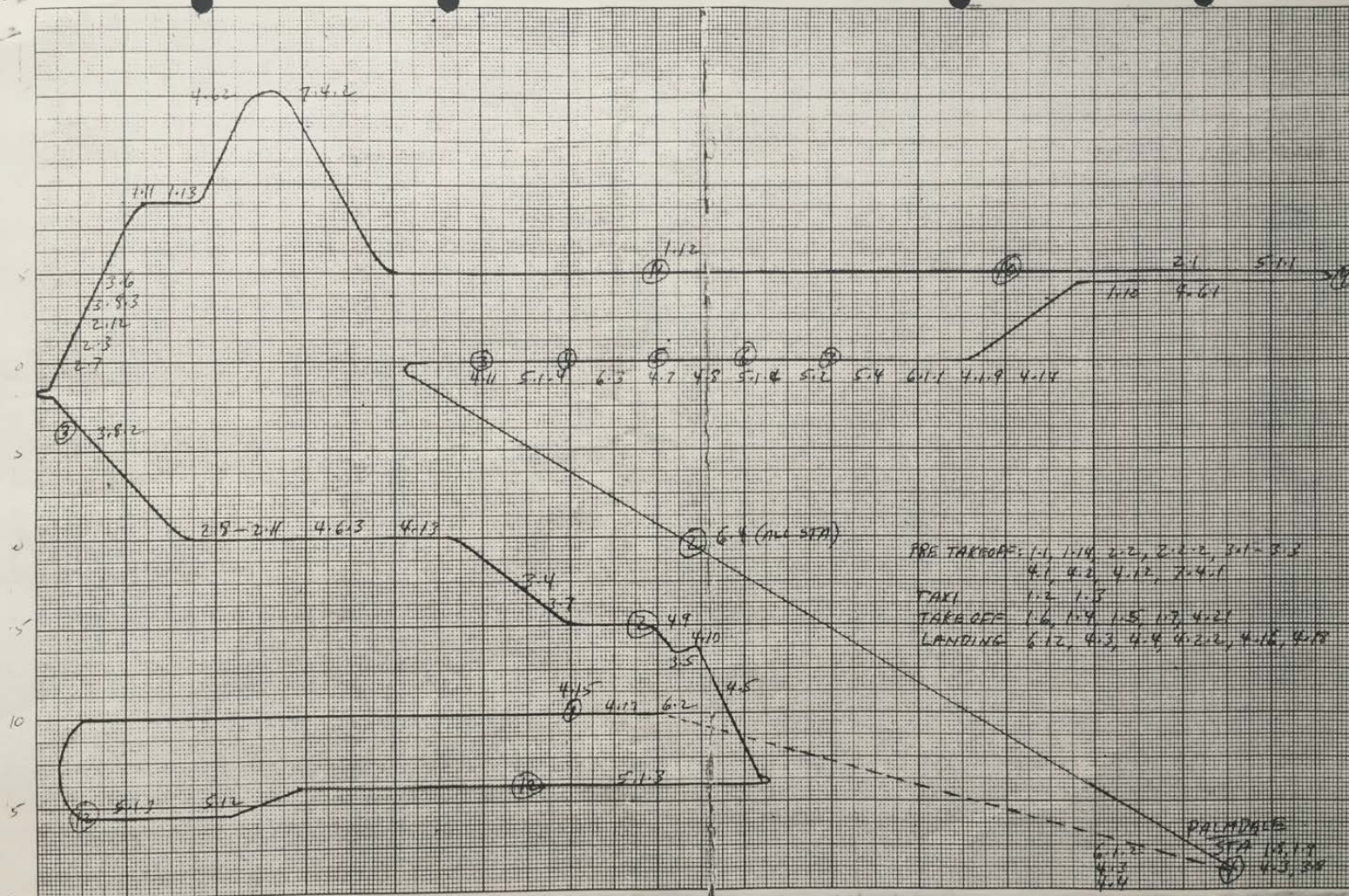
The first acceptance flight of a two place aircraft will repeat everything that is done on the first acceptance flight of the single place aircraft with the exception that we will not go to maximum speed. We will merely record the time we accelerate from 1.1 to 1.4 Mach because of the excessive amount of fuel required to go to maximum speed. The two place aircraft has 1,200 pounds less fuel and if we went to maximum speed we would be unable to complete many of the checks.

Flight Profiles and Maps





F-TF104G ACCEPTANCE PROFILE



Test Profile Description - December 11, 1963

NRBS

11 December 1963

Description of Flight Acceptance Tests

NRB

1. Reference is made to NRBS 26 November 1963 letter to ASD, Subject: "Changes to Flight Test Specifications IR-16200 and IR-15821."
2. Attached is a graphical illustration of the F and TF-104G flight acceptance profile (attachment one) and a written description of the flight acceptance checks (attachment two).
3. The flight profile and the descriptive wording are based upon Flight Acceptance Test Specification IR-15821 - the flight test specification for single place F-104G(MAP) aircraft. This specification was intentionally chosen as a basis for the descriptive material since IR-15821 is the most detailed and comprehensive. The other flight test specifications for the F-104G, TF-104G, etc., primarily delete requirements from IR-15821. The descriptive wording of the flight profile is by no means intended to be complete, but the provision of the applicable flight test specification paragraphs should assist those interested in the actual details. It is also suggested that attachments one and two be used in conjunction with attachment one to the above referenced letter (a map providing the flight acceptance course in the flight test area).

R.B. Hunt
RICHARD B. HUNT
Captain, USAF
Chief, Flight Test Office

2 Atchs
a/n

DESCRIPTION OF FLIGHT ACCEPTANCE CHECKS

PRIOR TO TAXI:

- Verify paperwork in order and corrective actions reasonable.
- Perform walk-around inspection.
- Perform cockpit inspection. 4.12.
- Start engine. 1.1.
- Complete normal pre-taxi checks. (More extensive than Dash One T.O. requirements.) 1.14, 2.2, 2.2.2, 3.1-3.3, 4.1-4.2, 4-12, 4.17, 7.4.1.
- Perform complete check of Radar, Optical Sight, and PHI (IN, DR, and TACAN).

DURING TAXI:

- Perform nosewheel steering checks.
- Perform brake checks (both normal and manual).
- Note all idle engine readings. 1.2, 1.3.

PRE-TAKEOFF:

- Perform burst to Military and note time and record readings. 1.4, 1.6.
- Perform fast chop to idle and note minimum fuel flow. 1.5, 1.7.
- Switch to manual brakes and check at 6500% fuel flow. 4.2.1.
- Perform slow retard to 81% and switch to normal brakes.

STATION 1 - Takeoff. 1.8-1.9.

- 1-2 - Time gear up. 4.3.
- Note amount of cabin pressure drop when gear lifted.
- Check manual UHF by going to Palmdale Radar manually.
- Autopilot engage control stick steering. (3.8 throughout flight.)
- Engage NAV (Channel 2 preselected on IN/DR)
(Channel 31 preselected on TACAN)
- Engage Mach Hold at 0.84.
- Switch to Edwards/Caleas on preset Channel 4 on UHF when released by Palmdale Radar.
- Notify Caleas airborne and lanyard released.
- Request SOA (Special Operating Area) clearance and squawk ident on 3-0-5.
- Note if departing 5,000 ft. pressure schedule at 18,500 ft.
- Note 20,000 ft. engine readings.

STATION 2 - At Tehachapi - note IN, DR, TACAN, and time readings. 3.8.7, 3.8.7.2, 6.4.

- 2-3 - Select Channel 3 on PHI (Lake Isabella) and IN Mode.
- Select Channel 108 short range on TACAN.
- A/P to NAV.
- At 30,000 ft., select Altitude Hold. Check oxygen. 4.11.
- Slow down to 250 knots.
- Lock on to target in Rockets Mode of Radar.
- Allow target to reach max. range.
- Increase speed to 0.9Mn - break lock-on and relock and note if within limits.

STATION 3 - At Isabella - note IN, DR, TACAN, and time readings.

- 3-4 - Select Channel 4 on PHI and IN Mode.
- Select Channel 48 Normal on TACAN.
- Instruct target to turn for Rockets Pass. 5.1.4.
- Complete Rockets Pass and instruct target.
- Begin IFF check. 6.3.

STATION 4 - At Olancha - note IN, DR, TACAN, and time readings.

- 4-5 - Select Channel 5 on PHI and IN Mode.
- Begin heating checks (auto hot, manual cold, manual hot, and defrost). 4.7, 4.8.

STATION 5 - At Lone Pine - note IN, DR, and time readings and make a wind find on IR.

- 5-6 - Select 6 on PHI and IN Mode.
- Complete Missile and Guns Pass. (Includes Optical and Radar Bore-sight as well as IR). 5.1.4, 5.2, 5.4.
- Release target.
- Perform one 360° roll left and right. 2.9.

STATION 6 - At Furnace Creek - note IN, DR, and time readings. (Make another wind find if necessary.)

- 6-7 - Select 7 on PHI and IN Mode. 7.1, 7.2.
- Make normal UHF checks on top and bottom antennas. 6.1.1.
- Make Emergency UHF check. 6.1.1.
- Check camera doors. 4.19.
- Operate Twitcher in Missiles, Guns, and Rockets Modes.
- Rotate Gun (single place aircraft only).
- Operate Camera Doors (single place aircraft only).
- Note tip tank feed out for normal operation. 4.14.

STATION 7 - At Pahremp - note IN, DR, and time readings.

- 7-9 - Select 9 on PHI and IN Mode.
- Climb to 34,000 ft.

- Perform 93% and Military engine runs and check readings. 1.10, 4.6.1.
- Check individual dampers off and note any abnormalities, for possible use on supersonic run.
- Check Anti-Ice for proper operation.
- Climb to 35,000 ft. as directed/cleared.

STATION 9 - At Clark Mountain - note IN, DR, and time readings.

- 9-10 - Select 10 on PHI and IN Mode.
- Turn on to Supersonic Corridor. 5.1.1.
- Note time, fuel, and CIT at Mh 1.1. 2.1.

STATION 10 - At Baker - note IN and time readings.

- 10-11 - Note time at 1.4.

STATION 11 - At Three Sisters - note IN and time.

- 11-3 - Complete supersonic run - note T2 reset and V-Max oil pressure. 1.12.
- Turn off Corridor to North and notify Edwards.
- Zoom to max. altitude (not over 50,000 ft.) in Zone 2. 7.4.2.
- Note 45,000 ft. cabin pressure readings. 4.6.2.
- Perform 39,000 ft. throttle chop, burst and A/B check. 1.11, 1.13.
- Perform AFU checks. 2.3-2.7, 3.6.

STATION 3 - At Isabella - note IN, DR, and time (update DR if necessary).

- 3-2 - Perform flight control checks. (Including auxiliary trim and dampers.) 2.8-2.11, 4.6.3, 4.13.

STATION 2 - At Tehachapi - note IN, DR, and time. 4.6.3.

- 2-1 - Perform BLC, flap rig, flap timing, gear warning (altitude, speed, and RPM) checks. 2.11, 3.4, 3.5, 3.7, 4.5, 4.9, 4.10, 7.3.
- Perform 500 ft. H₀ CM run on Soledad Mountain (Station 12). (Note IN, DR readings at Soledad if necessary.) 5.1.3.
- Perform A/G checks. 5.1.2.
- Pick up PHI and standby compass headings as available.
- Perform 2000 ft. H₀ CM and TA run on Soledad Mountain. 5.1.3.
- Perform GMP and GMS checks on Rosamond. 5.1.1.

STATION 1 - On flyover at Palmdale - note IN, DR, and time. 4.15.

- Switch IN-3 control to Compass Only. 4.17.
- Perform C2G checks. 6.2.

*Perf. Summary, Pressure Drop, G-force,
T & D readings*

- Enter landing pattern. 6.1.2.
- Check gear latch prior to lowering the gear. 4.3, 4.4.
- Release RAT at 190 knots.
- Chute and maximum braking on landing. 4.2.2, 4.16.
- In chocks, check hook operation. 4.18.

NOTE: Emergency gear operation normally conducted during second production flight.

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