



2019 T-6 PRS GROUND SCHOOL SYLLABUS

GROUND SCHOOL

Introductions

Handouts

Goals

- SAFETY 1st.
- Learn to fly the T-6 course safely, efficiently, predictably.
- Develop friendships within our racing community.
- Sharing of information for mutual benefit.
- Enjoy Sunday night banquet together.

General

- RARA and T-6 Schedules.
- Be early and sign in.
- No brief No fly
- T-6 ground school, briefs/debriefs, and lunches in our Club House.
- Competition/Friendship... not about the money.

RARA and T-6 Requirements

- PRS within 24 months or have flown a Reno T-6 race within 3 yrs.
- Current FAST card (unless raced at Reno in T-6's in the 2 previous yrs.).
- Commercial Pilot's License, Current Biennial, Pilot- 1st/ 2nd Class medical within 6 months of September Races.
- 500 hrs. PIC SEL, 40 hours in T-6 in 24 mo.
- Safety Issues/Equipment required.
 - Arrive prepared.
 - Pilot – good mental mindset/attitude, proper rest & hydration,
 - Nomex flight suit **and** gloves, (helmet recommended).
 - Aircraft - airworthy, fire ext., good radio, parachute (recommended).
 - For PRS, parachute and headset for the Instructor required.
 - EKG and stress test recommended.

T-6 Pilot Qualification

- Pilot Qualifications and other additional information is available on the T-6 Racing Association Website at: www.racingt6.org, section: Polices and Procedures.
- With emphasis on safety and proficiency, all pilots must satisfactorily demonstrate to the instructors their ability to perform the following skills including but, not limited to:
 - a. Formation flying skills: re-joins, wing-tip, and line abreast, breakout maneuvers,
 - b. Certain aerobatic maneuvers: rolls in each direction without appreciable altitude loss; a left and right roll to inverted immediately followed by a recovery in the opposite direction without appreciable altitude loss.
 - c. At least five consecutive satisfactory laps around race course. The emphasis will be on flying the designated T-6 race course, safe and predictable flying around pylons, pylon cuts, remaining inside the race course boundaries, on the final lap, abort the race course from race altitude demonstrating a successful simulated power-off landing on selected runway.
 - d. Successfully complete the RARA Pylon Racing Seminar at the Reno NCAR within the last three years.

T-6 PRS Course Requirements - Rookie

- Pass Airborne Flight review prior to flying on the course.
 - Formation Flying, Station keeping wing, line abreast, Rolls Left & Right, Half rolls left & right and return with no altitude loss.
- Attend Ground School.
- Pass Race Course Flight review.
- Properly handle simulated emergencies.
Pass a written test.

Area Orientation

- Practice area
 - Used for air work and flight test.
 - 8000' msl minimum
 - Be on T-6 discrete frequency.

- Race Course
 - T-6 Pylons are RED... #1 has lights
 - Dimensions/Layout. 4.9352 miles
 - SHOWLINE (Deadline) = 8/26 North Edge of Runway
 - Max altitude 250.
 - Min 50' AGL, above pylon, above R at Home Pylon,
 - Max 250' at Home for qualification and checkered lap.

- Holding
 - Hold = Airspace West of the airport over the foothills, 7000' msl
 - Request the Course from Race Control ready to exit Hold.
 - Race Control keeps list of Racers in the Hold waiting for the course.
 - Use Hold while waiting for the course, waiting to land, cooling down, troubleshooting, taking a break, etc.
 - North entry only. Call entering and departing the Hold... SA.
 - Left turns, North boundary = house/junk yard has been cleaned up.
 - South of hold boundary = gravel pit.
 - Caution North edge 8/26 SHOWLINE (deadline). Keep head on a swivel.
 - Report entering & leaving the hold for SA. Don't expect Race Control response.

- Cool Down- cool down prior to landing,
 - 7000 msl, ' over course, left turns.
 - Not as frequently used by T-6s.

On the race course – 3 Ways

1. Race Start
2. From the Hold (request course from Race Control)
3. Direct onto course after takeoff from Runway 8 only (request from Race Control)
 - Rookies not allowed.

Off the race course – 3 Ways

1. Home pylon.
 - Home pylon (announce to Race Control between pylon 3 & 4, unless a race).
 - *Technique* - convert A/S to altitude, approx 10 degree pitch up **at** Home Pylon and turn left **beyond** pylon 1, don't over fly course, reduce power **only after** altitude gain, cooling considerations.
 - No formation pull ups.
 - Recovery - don't get too far away or too low, keep aircraft ahead in sight.
2. Mayday.
3. Per request from Race Control.

Runway 8/26 departure & Landing Profiles

- Runway 26 departure may require offset to the South due to Racers on Course.

Landing

- 6500' Pattern Altitude for all runways.
- Memorize runway profiles.
- Report - "Race #, **Abeam** Runway ____". Do not expect reply.
- Report - "**Race Control**, Race #____, Base with gear". Expect landing clearance.
- High approach (low power), displaced touchdown zone (near A2), Wheel landing on alternate sides, (no hot/cold side), if need centerline "announce it". Roll to "end" for appropriate turnoff (no midfield turnoff at A2).
- To standardize and facilitate recovery when using Runway 8/26, cross approach end of the runway at 500-600' AGL, configured and on speed (approx 100 mph). Touchdown near A2. This was tested at PRS 2014 and worked well.
- **From the Hold, call "Call Race #__ base with gear from the Hold"**
- Go arounds - do not overfly the Race Course or spectator area.
- After landing, change to and monitor ground control. Do not call.
- **Point finger at parking marshaller (Jimmy) when he begins to direct your Ramp entry.**

Race Control Communications

- Say, “Race Control Race #___” (and expect a response from Race Control) when:
 1. Requesting takeoff
 2. Requesting the course
 3. Announcing intentions to leave the course
 4. Base with gear.
- State just your Race Number when entering the Hold, leaving the Hold, or “Abeam” on downwind. (**Do not** say “Race Control”. *Do not expect a response from Race Control.*)

Aborts

- KNOW who is ahead of you.
- PREVENTION
 - Proper preflight and Runup.
 - DO NOT RUSH.
 - NORDO = No Fly.
- TAKEOFF
 - Control your aircraft.
 - Maintain runway side.
 - Announce “Race #___ is aborting”.
 - Clear runway if possible but avoid crossing centerline.
 - Coordinate problem and runway exit with Race Control.
- AIRBORNE- Announce Race #___, state intentions, and Return To Base.

QUESTIONS ???

LETS GO FLY!

Ramp/Start Procedures

- Brief 1:15 hour before takeoff.
- (Briefs/Debriefs at T6 Clubhouse)
- Ramp Boss knows aircraft sequence... Try to coordinate early pull if possible.
- No maintenance on flight line unless approved by **T**echnical **I**nspection **C**ommittee
- Prop vertical position = ready to start.
- Fire guard required... right side... you provide.
- Engine start approx 15 min prior to takeoff, per brief... Race Control may modify.
- Early starts are permitted if necessary.

After Start/Taxi Sequence Button 1 = T-6 Discrete, 2 = Race Ground, 3= Race Control

- Pace calls “**T-6 Racers Check in**” on Button 1 (T-6 discrete), start time + 2 min.
- After all respond, Pace calls flight to “**Change to Button 2, now**” (Ground Control), Switch freq... NO check in.
- Pace requests taxi, flight follows in weave, avoid riding brakes, watch aircraft ahead.
- Perform runup, do not rush, be aware of prop blast, no wing overlap.
- Pass “thumbs up” above canopy rail when ready.
- Pace calls for flight to “**Change to Button 3** (Race Control), **acknowledge**” After all respond, Pace calls, “**Change now**”. Switch freq. NO check in on Race Control.
- Pace advises Race Control that T-6 Racers are ready for takeoff.

Line Up and Wait/Launch

- When cleared, the flight will taxi to opposite sides of the runway edge, tails out.
- When cleared, Pace will announce “**T-6 Pace is on the roll**”
- Power up when aircraft ahead rolls, break release when aircraft ahead is tail up + 1 sec.
- **Keep your outboard wing over the runway edge.**
- Keep all aircraft ahead in sight.
- Last aircraft calls “**Race # is off**”. (Usually Raffle)

Flight Profile

- Pace will maintain 120 mph in climb till level off altitude.
- **KEEP AIRCRAFT AHEAD OF YOU IN SIGHT AT ALL TIMES.**
- Memorize runway flight profiles.
- Fly Extended Trail initially to configure and prepare aircraft. (Not airshow formation)
- Follow Pace, use cutoff as appropriate, know where flight is headed and where you need to be.
- Advise other Racers if you observe a problem... (gear hanging, smoke, etc)
- You will be brought up to Close Trail, then Right Echelon.
- Turning base, prepare aircraft for the chute... don't get behind. **NO HEADS DOWN-
EVER**

The Chute

- Line abreast with Pace, co-altitude, proper spacing with the aircraft to the left.
- **NO HEADS DOWN... EVER.**
- Your responsibility to follow Pace.
- Avoid hanging back too far.
- Leave space for a lagging Racer.
- If problem, advise intentions.
- Know your "outs"... have one.
- No slingshotting.
- Watch showline.
- Pace commentary... advisory in nature.

The Release

- Sight picture- hold straight line & constant Rate of Descent to Home Pylon
- **NO diving (will disqualify).** Should descend as a flight. Tendency IS to dive, **DON'T.**
- No lateral movement underneath (loss of sight).
- Keep aircraft ahead in sight.
- Aggressive, unsafe flying will disqualify.
- Uncooperative formation.
- Use radio when passing or if safety is an issue...acknowledge if called.

Course Line

- Fly optimum line (not wide, high, or defensive).
- Be smooth, predictable, consistent.
- Minimally loaded, continuous bank turns are optimum.
- Do not alter course to the right.
- Optimum course altitude is... near level as possible.

Race course techniques-

- 5 laps max for practice... then vacate the course.
- Avoid fuel tank changes near the Race Course.
- Know the wind, anticipate your turn.
- Avoid “g” loading the airplane.
- **NEVER** turn into your wingman - even slightly.
- Take a pylon cut if you must and sort out issues later.
- Forced pylon cuts are not penalized.
- Wing tip **always** above the pylon.
- Fly higher if necessary (traffic, turbulence) and fly your line.
- Use rudder for left and right positioning, avoid bank changes.
- Lead the turns with slight inside rudder (esp. at 2 & 3) to avoid increasing pitch and climbing at the East end of the course.
- Don’t reduce power in traffic.
- Practice... refine your line both low and high.

Passing – General

- **Must** see the **PILOT** you are passing.
- Overtaking aircraft must **always** keep slower aircraft in sight.
- Call your overtake and passes on the radio - use Race numbers.
- [Acknowledge if called.](#)
- Never pass over the top.
- Never (almost never) pass on the inside.
- Never “assume” you have the lead.
- Always leave an “out” for you and the aircraft you are passing.
- AIRCRAFT being passed should announce “Race# __ you have the lead”.

T-6 NASCAR PASSING RULES... EXAMPLE... #1 & #3 in trail with #2 outside and aft of #1. #3 does not have to make room for #2 since he has inside position and is maintaining his line. Can happen on start or during race when #2 is faster and approaching from rear.

Passing - After Release on Start

- After release and through pylon 3, each aircraft should maintain their line (and lane), which may enable an outside aircraft to move forward of an adjacent aircraft.
- However, the pass should not be “completed” until after Pylon 3, and be consistent with all general passing rules (adopted 9/15/11).
 - On the start, this procedure allows an aircraft to move forward but not complete a pass until after passing pylon 3.
- Lagging aircraft may move toward the inside of the course if they are not passing or being passed.

Situational awareness

- Straight-a-ways...check aircraft condition, traffic, wind.
- Be aware of course entry, exit, radio calls, maydays.

Emergencies

- FLY The Airplane First... FLY The Airplane First..
- Maydays are free. Call mobilizes 75-80 people and covers 85% of airport area.
- Be prepared to have an emergency from every/any point on the Race Course.
- ANY abnormal/safety issue call a MAYDAY.
- Give thumbs up to crash crew if OK.
- Call “Simulated Emergency” for a practice MAYDAY.
- Advise others in flight if you will practice MAYDAYS.
- Give Race Number, and intentions if possible.
- Race Control will give you current Wind Direction & Velocity.
- Airport is yours... announce runway if able.
- Race Control will notify Crash and Rescue once MAYDAY is declared.
- Real MAYDAYS cannot be terminated till at Parking.
- Flight Control Failure Procedures – If possible, consider climbing to a safe altitude and establishing a landing configuration, then determine a minimum controllable airspeed. You may want to leave the aircraft in this configuration when returning to land.
- Discussion...

Emergency fields

- Beckworth, CA (O02), 23.8 nm West of Stead.
- Reno International Airport (KRNO), 11.3 nm SE of Stead.
- Dirt strip on downwind for runway 8.
- Flight test area runways.

Race course etiquette and guidelines

- First and foremost do what is **safe**.
- You are racing with friends - keep an eye out for them.
- If a racer has a problem... advise.
- Use race numbers for all communications.
- Consistently fly your best, most efficient line.
- Do not block or fly defensively.
- Do not crowd other racers - puts both of you in danger.
- Know who is near you (S/A), keep your head on swivel.
- Plan fuel usage - no low fuel on course, no tank changes on course.
- Do “checklist” before leaving Holding for the course. (2013 had resulting Mayday)
- On landing, if able, clear aircraft ahead to cross for runway exit. Stating “OK to cross....
or...am I OK to cross?”

Low Flying – Is not Safe

- Too high at 50' for ground effect. No benefit.
- **Can be above the Pylon but below 50' AGL between 3 and 4.**
- Can result in disqualification.
- RARA's call... cannot appeal.

Pylon Cuts

- Forced cuts are not penalized.
- Penalty = 2 seconds X number of laps.
- Be able to fly your high line for passing and turbulence.

Qualifying

- Monday thru Wed noon - 2 consecutive laps, best speed used.
- Call for clock passing pylon 3 (ask for radio check prior).
- Only **3** aircraft on course when on clock, otherwise 4 (6 with approval).
- Don't wait till late in week.
- From holding - Dive lap + complete one level lap before calling for the clock.
- **3 times by Home Pylon before calling for the clock.**
- Can abort a qualification if you announce and pull up prior to home (don't go off course).
- All aircraft will be permitted to make up to two qualifying attempts of one or two laps each.
- Sandbagging can result in disqualification.
- Tech must stick fuel prior to ramp departure... 50 gal/min

T-6 TIC (Tech) Issues

- TIC Inspection – Required before first flight on course.
- Re-inspection – After component change or upon request.
- Area flights – No landings away from Stead.
- No Flight Line maintenance without approval.
- Race mods... don't be creative without 1st consulting TIC.
- Fuel – 50 (+) gallons minimum - racing/qualifying. Tech must check.

Flags

- Green - start
- White - last lap
- Checker - finish
- Black - vacate the course
- Red - race cancelled
- Yellow - no longer used

T-6 Race Wind Limitations – Self Imposed

- Max Total Wind = 30 Kts
- Max Cross Wind = 15 Kts
- Max Tail Wind for Takeoff = 5 Kts
- Max Tail Wind for Landing = 0 Kts

Ramp Rules

- No prop turn line, tow early, 5 max tow/flight line crew... then 2 must leave.
- 2 max. crew on flight line, wrist + arm bands
- Oil disposal.
- NO SMOKING IN PITS
- RV's, golf carts, autos & their ramp passes.

RARA

- RARA highly recommends that all race pilots complete an EKG and a stress test and document same in the NCAR Race Entry Package.
- All race aircraft must be in-place at Reno Stead no later than 1200 hours on the Saturday preceding Race Week.
- ALL PILOTS must register, have their aircraft ready for inspection, and in place and ready to qualify no later than 1700 hours on the first Sunday of race week unless corrective maintenance actions are on-going on the aircraft.
- All pilots will be required to fly one practice session prior to attempting to qualify. The purpose of the practice session is to contribute to the G force tolerance buildup prior to qualification attempts. 4 uninterrupted laps are required.

Building your race team

- Delegation of authority.
- Airplane Crew Chief - maintenance, cleaning, fueling, towing.
 - Must attend RARA Crew Chief briefing
- Pit Crew Chief - food & beverage, fans, friends, hangers on.
- Alternate pilot.
- Fire guard.
- Avoid race week overload.
- Party time vs. business/safety.

T-6 Drag Races

- The Races will pit two aircraft against each other, with a flagged start and one lap around the course.
- This event will be in addition to our traditional Class Races and be on a voluntary basis, with limited participation.
- Contestants would receive additional compensation on each race.
- The “Dash for Cash” would be open to Veteran T-6 Racers, who would need to participate in an approved training program which would be conducted during Race Week.
- Drag Race format, it’s respective Race Rules, and Training.
- Rookies are not allowed in the T6 Race Class Drag Race series.

RARA Rules of Competition

- Read and review prior to arrival.
- Check the most recent version prior to leaving home.

Race Week Schedules

- **NO BRIEF = NO FLY.** Must attend RARA morning and T-6 pre-race brief.
- No tech = No fly... Tech starts Friday/Saturday, (arrive early).
- Qualifying - Mon thru Wed noon.
- Racing - 1st Race Wednesday pm.
- Activities - T-6 Assoc meeting, RARA party, McNeely Party, Salsa Contest, Crew Chief briefing, more friends than you knew you had.

MISC

- T-6 Racing Association
- Website: www.racingt6.org
- T-6 Policies & Procedures
- T-6 Technical Specifications
- Aircraft Verification Official, Tech Committee
- Flight Line Chief/Pilot Police
- Safety Committee
- Technical Inspection Committee
- Protests/Penalties
- Rules of Progression

QUESTIONS ???