

## Maneuvers Package for Tora Tora Tora – 2019

Tora Tora Tora is an airshow act with eight to fourteen aircraft in a choreographed pattern. The aircraft fly these patterns with a maximum of 110 degrees of bank and 90 degrees of pitch. Altitudes are a minimum of 20 ft AGL and a normal maximum altitude of 1500 feet AGL. Tora operates with defined markings on the field with up to six each ten foot square tarpaulins marking the flight lines and break points.

Included in this package are the diagrams of the flight paths of each group.

Basic pilot qualifications for the Tora Act are the requirements for a Senior Pilot Rating from the Commemorative Air Force. Tora Tora Tora is a unit of the Commemorative Air Force and operates under the CAF rules and regulations:

- A. One Thousand (1000) hours flight time with appropriate FAA requirements including commercial pilots license.
- B. Initial check ride with CAF check pilot.
- C. Current Fast Card
- D. Commemorative Air Force 24 month flight review with CAF check pilot or attending an annual Tora Practice and completing a review.

Additional pilot qualifications for the Tora Act:

- A. Ten (10) observances of the act from the back seat of one of the dual control aircraft during air shows.
- B. Attendance at a Tora Practice for evaluation by Tora Lead, Deputy Lead, and Tora Training Officer.
- C. Every air show performance is briefed one hour before engine start and debriefed immediately after the performance.
- D. The pilots report any deviation from flight lines, altitudes, or variance from performance as briefed. A pilot will be grounded by a serious deviation and/or variance and the pilot must receive additional training and approval before return to active status.

Tora Practice:

Held each year in the spring at an airport with waived air space. This is a two-day event. The following items must be accomplished:

- A. All pilots flying in the Tora Act must attend. If a pilot is unable to make the practice, the pilot will receive special practice arranged by Tora Lead. This pilot is required to attend the next Tora Practice.
- B. Fast Card currency with appropriate ground school and flights of four aircraft with Fast instructors are flown until each Tora Pilot has new currency.
- C. Each pilot's flies the prescribed pattern in groups of two with debriefs.

- D. Additional flights are added until each Tora Pilot has received a satisfactory current evaluation.
- E. One American Fighter Warbird performance is allowed to fly in this act. The qualified pilots are required to practice with the group and must attend a Tora Practice before flying with the group.

The named pilots of the Tora Act with address, type of certificate, certificate number and Fast Card date are included with this package as an attachment. Annually the named pilots of the Tora Act will be updated for the FAA and may be updated any time a change takes place.

Attachments: 7 page Tora patterns, list of all qualified pilots for the Tora Act, and Tora Flight Path details

### **Tora Tora Tora Flight Path Details:**

Tora weather minimums are 1000' altitude and 3 miles visibility. Tora demonstration requires a 5 mile radius of the airport. Tora's maximum altitude during the performance is 1000' AGL and the lowest required altitude is 20' AGL.

The typical passes are described by the following 5 descriptions. Zero Strafe Pattern, Kate Pattern, Val Pattern, Zero Chase Pattern, and qualified B-17.

The Tora flight is in a holding pattern three to five miles from the designated flight lines as marked by the tarpaulins on the airfield. The flight is at 1200 ft AOL and 120 kts. The B-17 is holding at 2000 ft AGL. The typical passes are described by the following 5 descriptions.

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Tora approaches from behind the crowd at 1000' AGL in 2 echelons. The lead echelon is in a right echelon. The second echelon is in a left echelon. When both echelons are beyond the 500' show line, lead echelon breaks left and descends to 50' to begin the strafing pattern designated by 2 tarpaulins placed 1200' apart.

Each Zero Strafe aircraft breaks left and enters the Zero Strafe Pattern, As the Zero Strafe aircraft reach the marker on the ground for the downwind turn the aircraft turns left and reaches a bank angle of approximately 90 degrees and rolls out on the Zero Strafe flight line a minimum of 20 feet AGL and at the marker makes another left turn pulling up and reaching another 90 degree bank turn climbing back to 600 feet. This racetrack pattern continues.

The Kate aircraft pass the Kate break point and break in a climbing left turn to 600 feet AGL and begin a right turn descending at up to 90 degrees and rolling out on the Kate flight line at a minimum of 20 feet AGL. At the

other end the Kate repeats except the aircraft is making the first turn to the right.

One of the Zero Strafe aircraft breaks out of the downwind pattern after the second pass and proceeds to the end of the flight patterns and breaks into the Zero Fighter Chase pattern and is chased by an American Fighter aircraft that departed the runway as the flight arrived. Target speeds for all the aircraft are 160 kts on the low level passes and 110 minimum speeds on the downwind.

The B-17 during the mid-point of the act makes a straight in approach for landing, leveling at 50 feet above the 500-foot show line, and then makes a straight out departure. During this time the Zero Strafe and the American Fighter are following the B-17.

Approximately at the 8 minute mark all Tora aircraft break it off and rejoin into 2 right echelons and approach from crowd right for a formation pass including a wall of fire. Following that pass all Tora aircraft break into trail for photo passes at 50'. At the conclusion of photo passes all Tora aircraft enter downwind in trail for landing.