

VT-10 Emergency Procedure Brief



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****EMERGENCY BRIEF GUIDE****

This product is meant to be a guide and is not expected to be recited verbatim with the exception of NATOPS Critical Memory Items. The intent of any brief is to take into considerations all aspects of the flight and utilize ORM to mitigate risk where applicable. A thorough understanding of NATOPS procedures is paramount in the successful completion of any Emergency Situation. NATOPS provides the best possible operating instructions under most circumstances, but is not a substitute for sound judgement. Multiple emergencies, adverse weather, terrain etc. may require deviations from NATOPS procedures. Each IP will have different techniques of dealing with certain emergencies and ultimately the decision lies with the individual IP.

References:

- a. T-6A NATOPS
- b. CNAF M-3710.7
- c. FAR / AIM
- d. FIH

During any emergency situation that occurs we will comply with three basic rules

1. Maintain Aircraft Control – Ensuring the continued flight of the aircraft and crew is essential to completing any EP. We will ensure we prioritize tasking by Aviating, Navigating and Communicating.
2. Analyze the situation and take proper action – After the emergency condition has been identified, we will complete the Critical Action Items for the EP, utilize the checklist to ensure the critical action and noncritical action items have been performed and ensure we review any associated Notes, Cautions, and Warnings for the EP.
3. Land as soon as conditions permit – We will determine the landing criteria for the particular EP and land the aircraft as applicable.

ABORTS

1. Aborted Start (RECITE CRITICAL ACTION ITEMS) – the start will be aborted manually if any of the following situations are present during the start.

- a. ITT rate of increase appears likely to exceed 1000 degrees C or if ITT appears likely to remain between 871-1000 degrees C for greater than 5 seconds (hot start)
- b. Normal N1 increase is halted (hung start)
- c. No rise of ITT is evident within 10 seconds after fuel flow indications (no start)
- d. BAT BUS annunciator illuminates during the start sequence
- e. PCL is moved or the ST READY annunciator extinguishes during the start sequence

2. Aborted Takeoff – (RECITE CRITICAL ACTION ITEMS) “The takeoff will be aborted, at the IP’s discretion, if we do not have the minimum calculated power at 60KIAS, fuel flow greater than 799 lbs / hour, Master Warning, Master Caution, Bird Strike, Prop Strike, or any other situation prior to rotation speed. The call for Abort will be “ABORT ABORT ABORT” made over tower frequency and/or CTAF frequency. If we anticipate departing the prepared surface we will call for the Emergency Engine Shutdown on the Ground check list and verbalize “PCL-OFF, Firewall Shutoff Handle Pull” The PIC will make the call whether to stay

with the aircraft or eject. If the decision is to stay in the aircraft, we will wait for the aircraft to come to a complete stop and assess the situation. At the IP's discretion, we will execute the Emergency Ground Egress Procedure. (RECITE CRITICAL ACTION ITEMS). If the canopy will not open or right side egress is required the IP will call for "CFS, CFS, CFS". The first CFS is CFS handle safety pin remove, second CFS is CFS handle rotate counter clockwise 90 degrees, and the third CFS is CFS handle pull. Once the canopy is off of the aircraft we will then release our shoulder straps, lap straps, and leg restraint garters. The IP will turn off the GEN / BATT / AUX BATT and we will egress the aircraft. During egress ensure both crew members avoid areas of smoke, fumes, flames, or emergency ground vehicles.

DIVERT FIELDS

Per the VT-10 SOP, at the IP's discretion, the minimum runway length for emergency field selection is a 3000 foot hard surface runway for airfields below 3500ft PA (4000ft for PA greater than 3500.) In the event of an emergency that leads us to divert, we will utilize the nearest function on the GPS to select the most appropriate divert field for the nature of the emergency. For today's planned route of flight we have the following airports that can be utilized: (List applicable airfields)

WAVEOFF / GO-AROUND

Wave off and Go-Arounds are always "free" and the decision to waveoff / go-around should be made as early as possible. At any point, if any member of the crew determines a safe landing cannot be made they will call "WAVEOFF WAVEOFF WAVEOFF" and state the reason, if able. (ie. WAVEOFF Birds / Traffic / airspeed etc.) the IP will immediately execute the waveoff. Priority will be to "Climb, Clean, Turn, Talk" with the crew completing the NATOPS After Takeoff Checklist. Once the aircraft is in a safe position we will then discuss the conditions that led to the waveoff.

MIN AND EMERG FUEL

Minimum and Emergency fuel will be declared IAW the TW-6 SOP. Minimum fuel will be declared if we anticipate landing below 200lbs of fuel and we will not expect any priority handling from ATC by declaring minimum fuel. Emergency fuel will be declared if we anticipate landing below 120lbs. Declaring Emergency fuel is declaring an emergency and we will be directive with ATC and communicate our intentions for a priority landing.

LOSS OF POWER

Loss of Power can manifest in the T-6A in a variety of ways to include the following:

1. UNCOMMANDED POWER CHANGES/LOSS OF POWER/UNCOMMANDED PORPELLER FEATHER
 - a. RECITE CRITICAL ACTION ITEMS
 - b. We will execute the UNCOMMANDED POWER CHANGES/LOSS OF POWER/UNCOMMANDED PORPELLER FEATHER checklist if we experience an uncommanded reduction in power or thrust. Possible secondary indications, if the PMU remains operational, include: lower than expected fuel flow, uncommanded decrease in N1 and high raw ITT (RITT) on the AEDD. If the PMU does not remain online we can anticipate a step change in engine power as the fuel metering unit reverts to the nominal conditions for manual control. Np can be considered stable below 40% at a constant airspeed and torque, if there is no upwards rise within 3 seconds. Power can be

considered sufficient for continued flight if we have less than 1500FPM rate of descent with up to 131% torque. If we have greater than 1500FPM rate of descent, at the IPs discretion, we will consider power insufficient to complete PEL. The decision to consider power insufficient to execute PEL and securing the engine should be weighed with the loss of accessories functions such as OBOGS, DEFOG, pressurization, and hydraulic equipment. Consideration should be to leaving the engine running while monitoring descent rate.

2. COMPRESSOR STALL

a. RECITE CRITICAL ACTION ITEMS

- b. Compressor stalls may be initially identified by abnormal engine noise, increasing ITT, and decreasing N1 and torque possibly followed by fluctuations in these indications. Audible indications may include loud bangs, backfires, or engine sputtering. This represents a major difference between a compressor stall and uncommanded power change/loss of power/-uncommanded prop feather. At the IP's discretion power sufficient vs insufficient can be diagnosed by referencing rate of descent.

3. ENGINE FAILURE DURING FLIGHT

a. RECITE CRITICAL ACTION ITEMS

- b. If we lose the engine in flight the decision to eject, land, or attempt an airstart must be made. The altitude at which the engine failure occurs will determine the time available to perform the procedures. Indications of an engine failure/flameout are: loss of power and airspeed, rapid decay of N1, torque, and ITT. A zoom will be executed if airspeed is above 150KIAS by using a 2G pull up to a 20 degree climb angle until airspeed decreases to approximately 145KIAS, followed by a 0 to +0.5G pushover to capture a 125KIAS glide. Below 150KIAS NATOPS recommends a constant altitude deceleration to a 125KIAS glide. During the "Intercept ELP" step, the SNFO will utilize the nearest function on the GPS and a visual scan to identify what airfield to direct a landing at. Ensure GPS guidance is present to the selected airfield. At the IPs discretion we will attempt the airstart if the engine failure was not due to fire or mechanical failure (ie. Fire, FOD, Frozen, Fuel.)

4. IMMEDIATE AIRSTART (PMU NORM)

a. RECITE CRITICAL ACTION ITEMS

- b. The Immediate Airstart procedure should be used following an engine failure at low altitude when thrust requirements are critical, or when time and conditions do not permit completing a full airstart procedure. Consideration should be given to ensuring an airstart is attempted within the airstart envelope (125-200KIAS for Sea level to 15,000ft, and 135-200KIAS from 15,001-20,000ft). If N1 does rise within 5 seconds of initiating the starter the airstart attempt will be discontinued and proceed to IF AIRSTART IS UNSUCCESSFUL due to suspected mechanical failure. Expect 1200 feet of altitude loss with each start attempt and useful power to become available 40 seconds after starter engagement. Do not attempt an airstart below 2000ft AGL. primary focus should be on executing a safe landing or ejecting on.

5. ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF (SUFFICIENT RUNWAY REMAINING STRAIGHT AHEAD)

a. RECITE CRITICAL ACTION ITEMS

- b. If we experience an engine failure immediately after takeoff, and the IP decides we have sufficient runway remaining, we will ensure a minimum airspeed of 110KIAS and bring PCL to idle in order to maximize the drag from a not yet feathered prop, or off to minimize descent rate. Consideration should be given to pulling the Emergency Landing Gear Handle, regardless of gear position, to ensure flaps can be extended.
- c. If there is not sufficient runway remaining to land, the decision to eject should not be delayed. Consideration should be given to bring the PCL off and the gear and flaps should be brought up utilizing residual hydraulic pressure (if available) as the engines spools down in order to minimize drag. If there is sufficient altitude to reach some portion of the ELP to either an off duty runway or the opposite runway utilize for take off we will turn the aircraft to intercept ELP. Significant focus should be on Altitude, Airspeed (110KIAS Minimum) and AoA (less than 17.9 units). At any point during the turn there is doubt that the runway will be made the decision to eject should be made. Once landing is assured we will drop the gear utilizing the emergency landing gear handle and actuate the flaps as needed.

RADIO / ICS FAILURE

1. If we suspect a radio failure, we will first troubleshoot by checking communication cords, trying previous frequencies, trying both VHF and UHF radios. If our radio issues remain unresolved we will attempt communications on the back up UHF control. If we are still lost comms we will make all calls in the blind and comply with the following depending on our scenario:
 - a. Local area operations – if we are operating in the local area and we experience radio failure in one of the published working areas (South MOA / North MOA / TEXAN Box) we will comply with published lost comm procedures
 - b. If are VMC we will squawk 7600 and remain predictable (ie course rules, standard VFR traffic patterns, etc.) and comply with the ALDIS lamp signals from tower.
 - c. If we are IMC we will comply with AVEFAME. Any any point we regain VMC and are able to maintain VMC to the field we will do so, and comply with ALDIS lamp signals
2. ICS failure – we will communicate with we are down ICS via hand signals or dropping the mask and yelling if the cabin altitude is below 10,000ft. We will utilize the PCL and run the LOSS OF ICS/AUDIO checklist. If we are unable to regain ICS we will terminate training objectives and RTB.

LOSS SIGHT / LOST WINGMAN

If we have any ATC recognized traffic conflicts we will ensure both member of the crew have the aircraft in sight prior to reporting to ATC the aircraft is in sight. Any member recognizing an immediate traffic conflict will be directive with their calls (ie. Break right / left / climb / descend) and the IP will take the appropriate action.

DOWNED PILOT AND AIRCRAFT

If we come across an external down pilot and aircraft we will calculate a BINGO fuel to a suitable divert field and establish a MAX Endurance orbit over the top of the scene. We will utilize the DOWNED PILOT AND AIRCRAFT checklist in the inflight guide. The IP will fly the aircraft and will maintain the radios while assuming the role of On-Scene Commander and the SNFO will run the checklist and back up the IP ensuring safety of flight. We will remain on scene until the rescue is complete, we are relieved by a more

appropriate platform, we have an aircraft malfunction that requires us to depart, or we hit our BINGO fuel.

BIRDSTRIKE

If we encounter a Bird strike, the main priority is to maintain aircraft control. If the bird strike was outside of the prop arc, at the IPs discretion, we will conduct controllability checks, utilizing the PCL, at 6500 MSL (weather permitting) over the airfield in which we intend to land. If we have a bird strike inside the prop arc and engine damage is suspected (fluctuations engine instrument / abnormal vibrations / smoke / fumes) we will execute a PEL to the nearest suitable field.

OTHER AIRCRAFT EMERGENCIES

Any other aircraft emergencies the priority is to Aviate, Navigate, Communicate. We will complete any associated critical action items, and then utilize the PCL to complete all non-critical action items. We will defer to reading all Notes / Cautions / Warnings with the EP, determine the landing criteria, and land the aircraft as applicable.

OBOGS / PHYSIOLOGICAL EPISODES

1. RECITE CRITICAL ACTION ITEMS
2. If we experience an OBOGS light without any physiological symptoms we will execute the OBOGS annunciator EP. At any point any member of the crew experiences Physiological symptoms we will immediately execute the OBOGS FAILURE / OVERTEMP / PHYSIOLOGICAL SYMPTOMS checklist. At cockpit altitudes less than 10,000ft consideration should be given to dropping the mask in lieu of pulling the green ring. Once the aircraft has descended below 10,000ft MSL we will ensure we complete the remaining items of the checklist. If physiological symptoms persist and the IP feels unsafe to land we will maintain below 10,000ft as long as practical before considering ejection.

OUT OF CONTROL FLIGHT (OCF) / SPIN: RECOGNITION & RECOVERY

1. RECITE CRITICAL ACTION ITEMS
2. If we do depart controlled flight the NATOPS minimum altitude for ejection is 6000ft AGL. In the altitude check if the aircraft is below 6000ft the call of ejection will be made. If the aircraft departs above 6000ft the IP will call "Stay with it, Stay with it, Stay with it" meaning the aircraft has not yet descended below 6000ft AGL and the IP is actively recovering from OCF.

EJECTION (6,000 / 2,000 / LOSS OF ICS)

The call for Ejection will be "Eject, Eject, Eject". 6000ft AGL is the NATOPS recommended minimum Uncontrolled Ejection Altitude, and 2000ft is the recommended controlled ejection altitude. In the case of loss of ICS the call for immediate ejection will be three raps on the canopy. For an controlled ejection the IP will give 3 hand curtains over the face. The student will acknowledge with thumbs up and complete the controlled ejection procedures. Once the controlled ejection procedures are complete, the student will hold a thumbs up until the IP acknowledges with a thumbs up. The IP will then make a fist and complete three raps on the canopy. After the ejection sequence is complete we will ensure we IROK on the way down.