T-6B Propeller System Brief

- The T-6B’s propeller system converts engine power into thrust
  - 1,100 shaft horsepower
  - 2,900 ft-lbs torque, 2,750 lbs thrust at sea level
- 97 inch, four bladed, constant speed, variable pitch, non-reversing, feathering propeller
- Designed to maintain 2,000 RPM (100% Np) during most flight conditions
  - The Power Management Unit (PMU) monitors propeller speed through a Phase Shift Torque Probe located in the Reduction Gearbox (RGB)
  - In the event of PMU OFF or failure, a backup over speed mechanical governor will maintain RPM at or below 106%
  - A Flyweight Over Speed Governor modulates oil pressure to maintain Np at or below 100 ± 2%
- **PMU to Propeller Interface Unit (PIU) to Pitch Change Mechanism**
  - The PMU coordinates with the PIU in order to deliver oil pressure to the pitch change mechanism
  - Without oil pressure, the feathering springs will push the propeller blades towards feather
    - In the event of engine failure, the PIU will attempt to maintain blade angle, which causes the propeller to feather more slowly
  - The PROP SYS circuit breaker on the left front console powers the Feather Dump Solenoid, which removes all oil pressure allowing the propeller to feather quickly
    - Placing the Power Control Lever (PCL) to OFF with the PMU NORM causes the PMU to send a signal to drain the propeller oil pressure
    - Placing the PCL to OFF also triggers the Feather Dump Solenoid to dump the oil pressure
  - If the PROP SYS circuit breaker is pulled, the Feather Dump Solenoid is not powered and therefore the propeller will feather more slowly

**Applicable EICAS Indications:**

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<tr>
<th>Torque</th>
<th>EXTENDED: 0 – 100 %</th>
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<tbody>
<tr>
<td></td>
<td>WARNING: ≥ 101 %</td>
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<table>
<thead>
<tr>
<th>N_p</th>
<th>EXTENDED (white text): 0 – 101 %</th>
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<tr>
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<td>WARNING (red text): ≥ 102%</td>
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Applicable Emergency Procedures:

Uncommanded Power Changes / Loss of Power / Uncommanded Propeller Feather

* 1. PCL - MID RANGE

NOTE
- Mid range is a physical PCL angle that approximates the midway position between IDLE and MAX.
- A PCL position above IDLE will provide the best chance for the engine to recover.
- A mid-range PCL position will minimize the potential of engine overtorque and/or overtemperature when the PMU is turned OFF.

* 2. PMU SWITCH – OFF

CAUTION
- There is a potential for ITT limits to be exceeded if the PMU switch is turned OFF with ITT ≥820 °C.
- Ground idle will not be available during landing rollout and taxi. Plan for increased landing distances due to higher IDLE N1 (approximately 67%).

* 3. PROP SYS CIRCUIT BREAKER (left front console) - PULL, IF Np STABLE BELOW 40%

NOTE
- With constant airspeed and torque, RPM can be considered stable if below 40% and no upward change for a 3-second period.
- If Np indicator is displaying red X’s, switching the PMU to NORM and back OFF will reset the PMU and should restore the Np indication.
- Propeller should come out of feather within 15-20 seconds.

* 4. PCL - As required

WARNING
- If rate of descent (indicated on the VSI while stabilized at 125 KIAS with gear, flaps, and speed brake retracted and 4-6% torque) is greater than 1500 ft/min, increase torque as necessary (up to 131%) to achieve approximately 1350-1500 ft/min rate of descent. If engine power is insufficient to produce a rate of descent less than 1500 ft/min, set PCL to OFF.

NOTE
- The pilot should consider moving the PCL through the full range of motion to determine power available.
IF POWER IS SUFFICIENT FOR CONTINUED FLIGHT:

* 5. PEL – Execute

IF POWER IS INSUFFICIENT TO COMPLETE PEL:

If loss of thrust is the result of uncommanded propeller feather and the engine remains within operational limits (ITT and torque), it is possible for the propeller to eventually unfeather and restore useful power. An operating engine will provide power to accessories functions such as OBOGS, DEFOG, pressurization, and hydraulic equipment. Consider leaving the engine running while monitoring descent rate.

CAUTION
- Consideration should be given to leaving the engine operating with PCL at mid range.

* 6. PROP SYS circuit breaker - Reset, as required

WARNING
- With the PROP SYS circuit breaker pulled and the PMU switch OFF, the feather dump solenoid will not be powered. The propeller will feather at a slower rate as oil pressure decreases and the feathering spring takes effect. Glide performance will be considerably reduced and it may not be possible to intercept or fly the emergency landing pattern.

* 7. PCL – OFF

* 8. FIREWALL SHUTOFF handle – Pull

* 9. Execute Forced Landing or Eject