C4801 Brief Guide

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Curriculum Basis: CNATRAINST 1542.156D

Dark Adaptation

FAA Airplane Flying Handbook Chapter 12: - Avoid bright light (especially white). - Takes at least 30 minutes for eyes to become fully adapted. - Can lose adaptation in a few seconds on exposure to bright light. - Eyeball anatomy: - Cones sense color and are concentrated in the center of the retina (fovea); - Rods sense light in black and white and surround the fovea; - Cones lose effectiveness under low light, however rods are still effective. - When fully adjusted to darkness, rods become 100,000 times more sensitive to light then they were under lighted conditions.

Night Hover Scan

- Similar to day but the out portion of the scan will move in closer to the aircraft where exterior lighting provides illumination.
- Altitude control can be done through reference to aircraft shadows.
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Night Visual Scan Techniques

FAA Helicopter Flying Handbook Chapter 13:

- Off-center viewing is used to focus on objects with rods.
- Short regularly spaced eye movements in 10 degree sectors.
- Scan from left to right or right to left starting at the greatest distance at which an object can be perceived and move inward toward the aircraft.

Vertigo

TH-57 NATOPS 17.1:

- NOTE: > Because of the inherent instability of helicopter flight, the possibility of > vertigo caused by sideward motion or oscillation is a more prevalent hazard > during night and instrument flight than it is in fixed-wing aircraft.

Use of lights

RWOP 3.1.2; TH-57 NATOPS 7.7:

- General Operations: POSITION - ON 30 min before sunset until 30 min after sunrise. Anti-collision lights on from engine start to shutdown.
- NDZ Ops: Below flight idle: POSITION - FLASH/BRT. In the line: POSITION - STDY/BRT, ANTI-COLLISION - OFF. Crossing hold short: ANTI-COLLISION - ON, POSITION - STDY/BRT.
- Maintenance required: POSITION - FLASH/BRT.
- Taxiing through pits without refueling: SEARCHLIGHT - FLASH.
- Cleared under rotor arc: LDG LIGHT - FLASH.

CNAF 5.1.1.2:

- Anti-collision lights may be secured at anytime their use adversely affects ground operations, or anytime the aircraft is in the clouds.

TH-57 Contact FTI 804:

- During pre-start checks, adjust cockpit lights to their lowest intensity.
- Non-tactical flights > 500 ft, instrument and panel lights may be illuminated.
- Adjust interior lights to their lowest practical level.
- When flying off instruments, adjust lights to higher intensity, but turn them back down prior to landing to enhance night vision.

VASI/PAPI

VASI

AIM 2-1-2.a:

- For three bar systems, normal glide slope is 3 degrees and the upper glide slope is normally 1/4 degrees higher.
- Visible 3 - 5 mi during the day and up to 20 mi at night.
- Provides obstacle clearance within plus or minus 10 degrees of extended runway centerline up to 4 NM from runway threshold.
- Descent should not be initiated until aircraft is visually aligned with the runway.

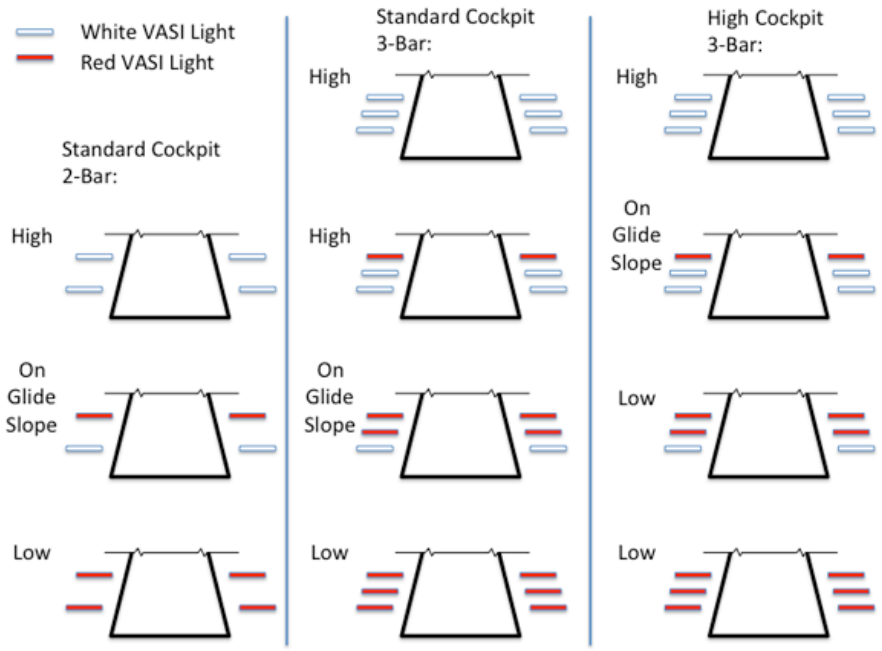

Figure 1: VASI

PAPI

AIM 2-1-2.b:

- Visible 5 mi during the day and up to 20 mi at night.
- Provides obstacle clearance within plus or minus 10 degrees of extended runway centerline up to 4 SM from runway threshold.
- Descent should not be initiated until aircraft is visually aligned with the runway.

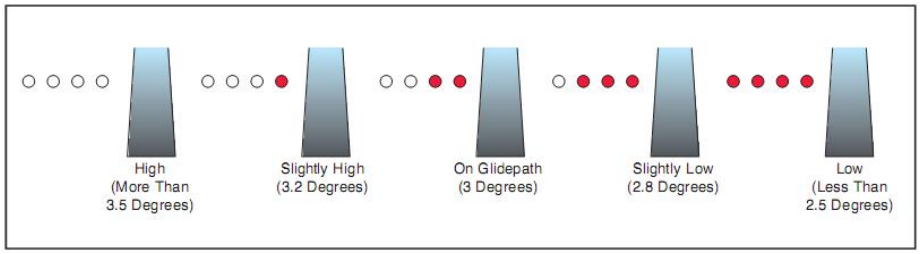

Figure 2: PAPI

Helicopter Procedures at Night

Required equipment for night flight

TH-57 NATOPS 4.21:

1. All instrument and circuit breaker panel lights.
2. All exterior lights.
3. Operable communication radio.
4. Attitude gyro.
5. Radar altimeter.

Preflight/Misc.

TH-57 Contact FTI 803/804:

- Same as day except will take longer.
- Use a white lensed flashlight due to hydraulic fluid and oil being colored.
- In addition to normal preflight, ensure the following are checked:
- Exterior lights operational in all modes (e.g. position lights);
- Landing light and search light (search light can be positioned);
- All gauge and panel lighting with correct response to rheostat and bright/dim switch;

- Cockpit lights;
- Cleanliness of windows, especially front windscreen.
- Perform Instrument Checklist while taxiing for takeoff.
- Set radar altimeter to 300' for all enroute phases of flight.

Vertical Takeoff/Landing

TH-57 Contact FTI 805:

- Shall be accomplished with search or landing light on.
- Pick reference points to the front and side prior to lifting due to lack of visual cues.
- Do not fixate on one point.

Landings (General)

TH-57 Contact FTI 806:

- Use a specific group of lights to identify landing point.
- Search light or landing light shall be turned on by 200 ft AGL and remain on throughout landing evolution.
- If possible, all landings should be made to a hover to assess landing zone.
- Do not hesitate to waveoff if ground references are not acquired.

Hovering

TH-57 Contact FTI 807:

- Same technique as daytime with landing light on.
- Without aid of search light or landing light, anti-collision lights provide illumination.
- Skid height can be determined by skid shadow size: larger shadow indicates further from ground.
- Reference points should be selected to front and side at varying distances.
- Avoid fixating on the runway centerline during takeoff to mitigate spacial disorientation.

Hover Taxi

TH-57 Contact FTI 808:

- All low work shall be conducted with the search or landing light on.
- Tendency is to hover too fast due to lack of visual cues.
- A reference must be made to the side to pick up taxi rate.

- If taxiing on a runway, runway lights and centerline provide good reference for rate.

Night Course Rules (South Whiting, Santa Rosa, Duke, Choctaw)

South Whiting (KNDZ)

Santa Rosa (KNGS)

Duke Field (KEGI)

Choctaw NOLF (KNFJ)

Emergency Procedures

TH-57 Contact FTI 809:

- Same as day except will normally take longer due to increase physiological stress and reduced vision.
- Know the location of everything in the cockpit to increase EP efficiency.
- Forced landings: use landing light and any power available to reduce descent rate to identify safe landing area.

Landing Site Evaluation at Night

TH-57 NTAOPS 17.7.2; TH-57 Contact FTI 810:

- Become familiar with the terrain you will be flying over.
- Use landing light to observe obstructions and select landing area.
- SWEEP checks:
- (S) Size, slope, surface, suitability;
- (W) Winds, loss of wind effect;
- (E) Elevation (AGL, PA, DA);
- (E) Egress route (including waveoff direction);
- (P) Power (required vs. available).

Engine Failures at Night

- Handled the same as during the day except landing sites will be harder to distinguish. Look for lighted fields, parking lots, or roads.