

B. TASK**VISUAL SCANNING AND COLLISION AVOIDANCE****OBJECTIVE**

To determine that the applicant exhibit instructional knowledge of the elements of visual scanning and collision avoidance by describing:

KEY ELEMENTS

- Relationship between a pilots physical or mental condition and vision
- Practice of time sharing of attention inside and outside the basket
- Appropriate visual scanning techniques
- Importance of controlling ascents and descents
- Situation which involve the greatest collision risk

SCHEDULE

- Discuss objectives
- Review material
- Development
- Conclusion

EQUIPMENT

- White board
- Markers
- AIM
- References
 - AC 61-21
 - AC 90-48

INSTRUCTOR ACTIONS

- Discuss lesson objectives
- Present lecture
- Questions

STUDENT ACTIONS

- Participate in discussion
- Take notes

COMPLETION STANDARDS

- Participate in discussion
- Take notes

B. TASK**VISUAL SCANNING AND COLLISION AVOIDANCE****MENTAL &
PHYSICAL
CONDITION AND
YOUR VISION****WHAT CAN EFFECT YOUR VISION?**

- Diet and physical health have an impact on how well a pilot can see, especially in the dark.
- Anything that may affect a pilot's physical or mental condition will reduce visual acuity—illness, medication, stress, alcohol, fatigue, motion, hypoxia, etc.
- CO poisoning, smoking, alcohol, certain drugs, and a lack of oxygen can greatly decrease night vision.
- Deficiencies in Vitamin A and C have been shown to reduce night acuity.
- Small print and colors become unreadable unless adequate lighting is available— aeronautical charts and instruments become hard to read.
- Excessive illumination can produce glare—uncontrollable squinting, watering of the eyes, and even temporary blindness. Light reflected off canopy, surfaces inside aircraft, clouds, water, snow, and desert terrain.
- Smoke, haze, dust, rain, and flying toward the sun can reduce the ability to see other aircraft.

**TIME SHARING &
ATTENTION****PRACTICE OF “TIME SHARING” YOUR ATTENTION INSIDE AND OUTSIDE THE BASKET:**

visual lookout remains an important defense against loss of separation for all classes of aircraft. This is particularly true for pilots of light aircraft, many of which are single-pilot operated, are not equipped with ACAS or transponders and frequently operate VFR outside ATC radar cover and at low altitude. It is essential that these pilots develop sound visual scanning techniques.

Maintain adequate time of your attention split between what is going on in the basket and practicing good visual scanning for collision avoidance outside the basket.

the best practice to ensure this is implementing:

AVIATE**NAVIGATE****COMMUNICATE**

B. TASK**VISUAL SCANNING AND COLLISION AVOIDANCE****TIME SHARING &
ATTENTION****Situational
awareness****Practice of time
sharing &
attention****Situational Awareness:**

- Situational awareness is a skill necessary to both ground and in-flight operations
- Knowing where you are & where other traffic is operating
- Knowing where you will be and where other traffic will be

Recognize High Hazard Areas:

- Airways, especially near VORs, and Class B, Class C, Class D, and Class E surface areas are places where aircraft tend to cluster
- Remember, most collisions occur during days when the weather is good
 - Being in a "radar environment" still requires vigilance to avoid collisions
- Listening and looking: the Good Senses
- "Head's Down" decreases situational awareness - minimize as much as possible

Common Problems:

- When are you doing checklists? Do you have taxi diagrams when you land? Are your radios preset when you are "in-range?" Do you ensure you have weather before you land?

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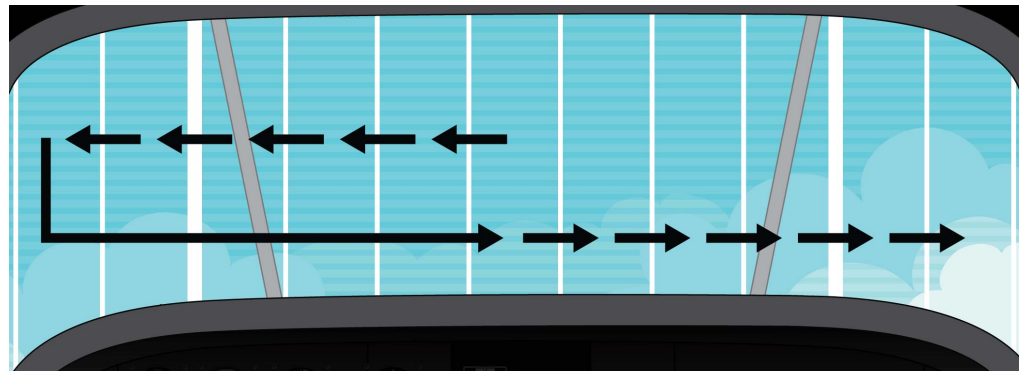
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B. TASK**VISUAL SCANNING AND COLLISION AVOIDANCE****VISUAL
SCANNING
TECHNIQUES****VISSUAL SCANNING TECHNIQUES**

- Scanning is a continuous process used by the pilot to cover all areas of the sky visible from the Basket
- FAR 91.113(b): When in VMC, it's pilot's responsibility to see and avoid
- Scan should be broken down into about 10° increments, spending about 1 second on each segment
- Must focus the eye at 10° increments at a time, about a second or 2 when looking for traffic



- During VMC: 75-80% of time looking outside, 20-25% spent scanning instruments
- When moving eyes from inside to outside, or vice versa, give eyes time to adjust
- The eye can see 200° at a time

BARRIERS TO VISUAL SCANNING IN A BALLOON

- Watch for blind spots caused by envelope (above you) or basket (below you) as well as passengers that may be taller
- Visibility conditions such as smoke, haze dust or sun glare
- Be mindful of your physical health; age and fatigue can effect your vision

Visual scanning
barriers

B. TASK**VISUAL SCANNING AND COLLISION AVOIDANCE****CONTROLLING
ASCENTS &
DESCENTS****§ 91.113 Right-of-way rules: Except water operations.**

- (a) Inapplicability. This section does not apply to the operation of an aircraft on water.
- (b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.
- (c) In distress. An aircraft in distress has the right-of-way over all other air traffic.
- (d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories
- (1) A balloon has the right-of-way over any other category of aircraft;
 - (2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.
 - (3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.
- However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

**IMPORTANCE OF CONTROLLING ASCENTS AND DESCENTS
WHILE MANEUVERING A HOT AIR BALLOON**

- Be vigilant of other balloons above and below you
 - A Balloon below you has the right of way
 - Aircraft below you in an uncontrolled ascent
 - may knock you out of the basket
 - Could tangle their crown ropes with the bottom of your basket
 - Could rip their own balloon on your basket
- Communicate with balloons around you with position reporting
 - When operating around a non-towered airport, make appropriate radio calls
- Maintain adequate spacing from other balloons
- Maintain steady burns and cool-off periods in order to make small corrections and maintain control in ascents and descents

**GREATEST
COLLISION RISK****POWERLINES**

- Electrocutation
- Fire
- Death