



**MIKE
BECKER**



Autorotation Series

45-minute presentation

Touch down Autorotations

A guide to crashing gently



Captain Mike Becker

- Flying helicopters since 1984
- Over 16,500 helicopter hours in more than 20 types.
- Head of Training at Becker Helicopters Pilot Academy
- Experience in Day, Night, NVG, IFR, single and Multi Engine
- Operations include high altitude long line and exploration work, cattle mustering, instructing, fire fighting, charter, utility, rescue, and everything else in between in multiple countries including PNG (6 years).
- Author of more than 40 titles in helicopter training



Presentation objectives

3

By the end of the 45 minutes, you will be able to:

- List in order, the actions on entry
- Recall the descent checks
- Recall what the flare does
- State when to flare
- List the 3 flare effects
- Discuss the termination
- Discuss within the group options for maneuvering during the autorotation

Entry

1. Lower Collective – all the way, positively
2. Look outside – Horizon
 - Attitude – 60 kts – Cyclic
 - Keep straight – pedals
3. Turn into wind and pick a spot.

Enter

- The entry needs to be coordinated
- It can vary based on the rotor system
- It can vary based on flight condition
- It is important to maintain the energy in the rotor system until a rate of descent is established

Descent Checks

1. N1 – Engine idling
2. NR – Rotor RPM in the green
3. Balance
4. Speed
5. Mayday call

If time permits

1. Trouble checks and secure aircraft
2. Passenger Brief

Enter

Descent
Checks

Decision Height

Passing through 500 feet, the instructor decides and communicates to either:

1. Go around
2. Power termination
3. Full touchdown Auto

Enter

Descent
Checks

Decision
Height

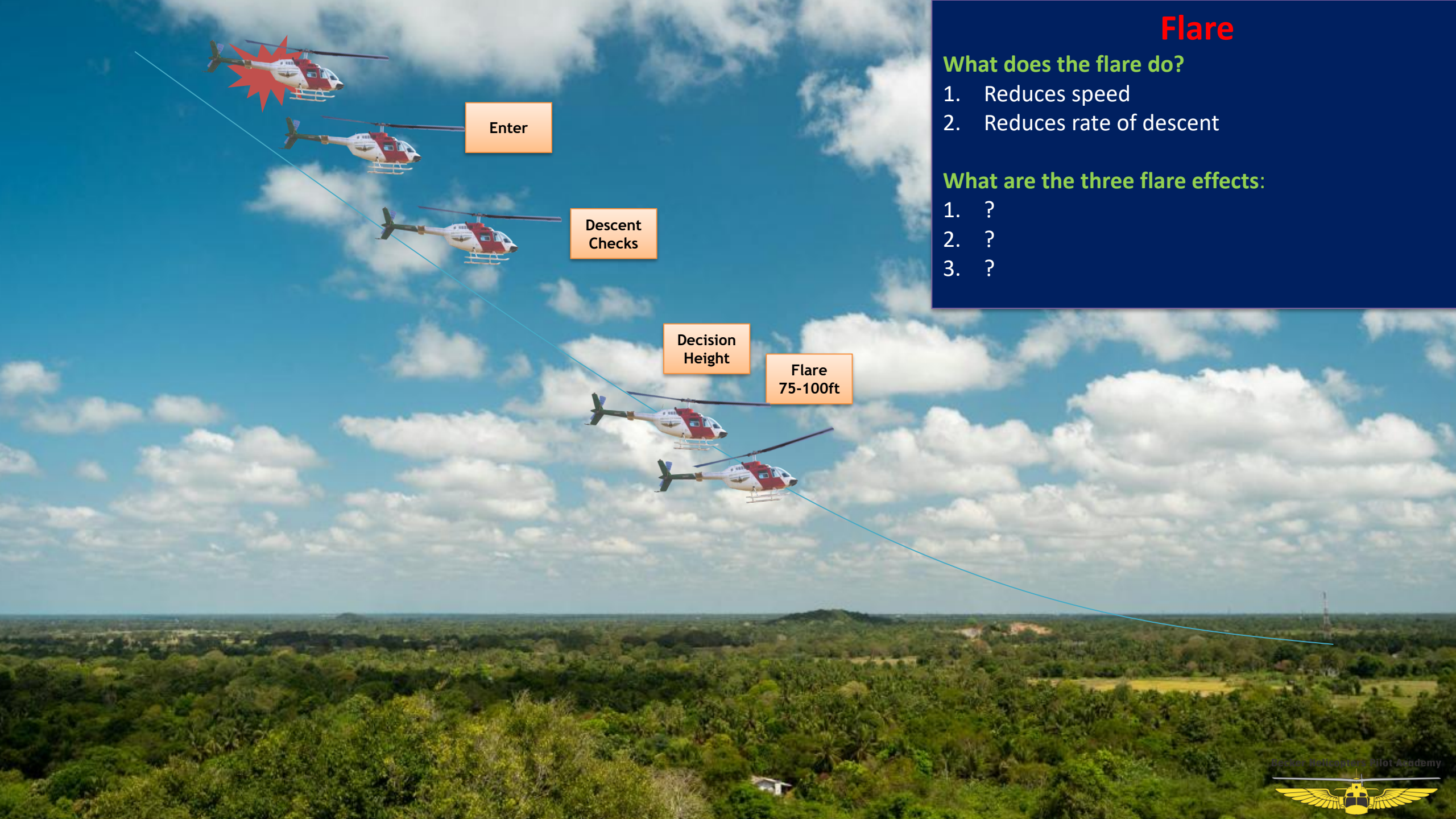
Flare

What does the flare do?

1. Reduces speed
2. Reduces rate of descent

What are the three flare effects:

1. ?
2. ?
3. ?



Let's take a closer look at
what is happening...

Enter

Descent
Checks

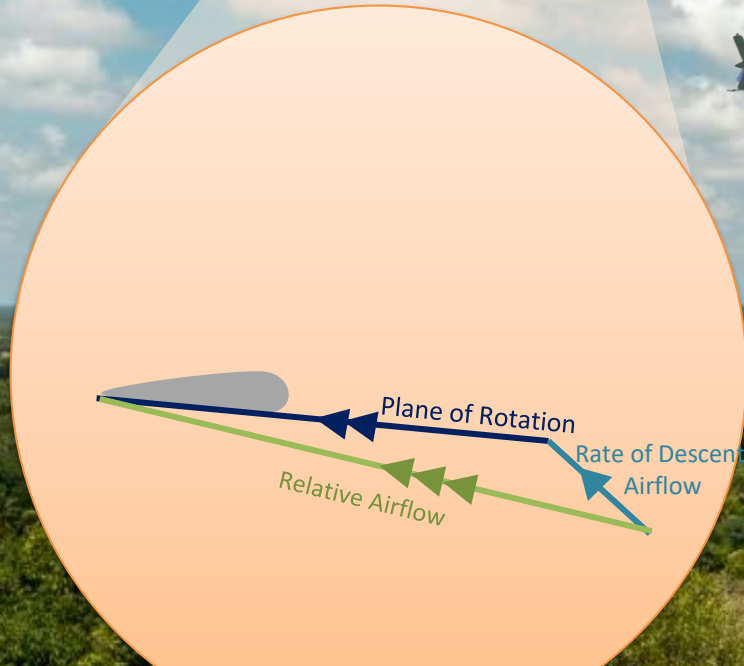
Decision
Height

Flare
75-100ft

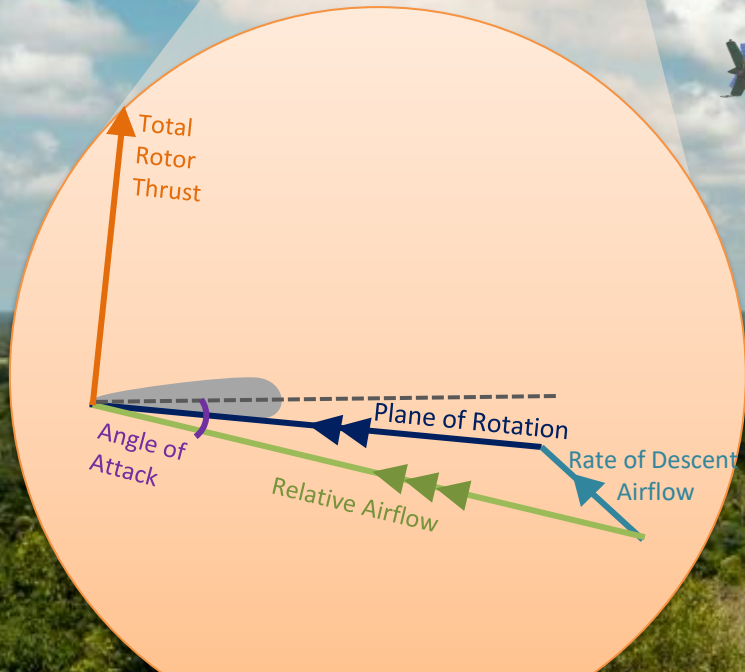
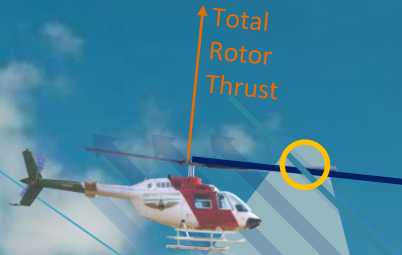
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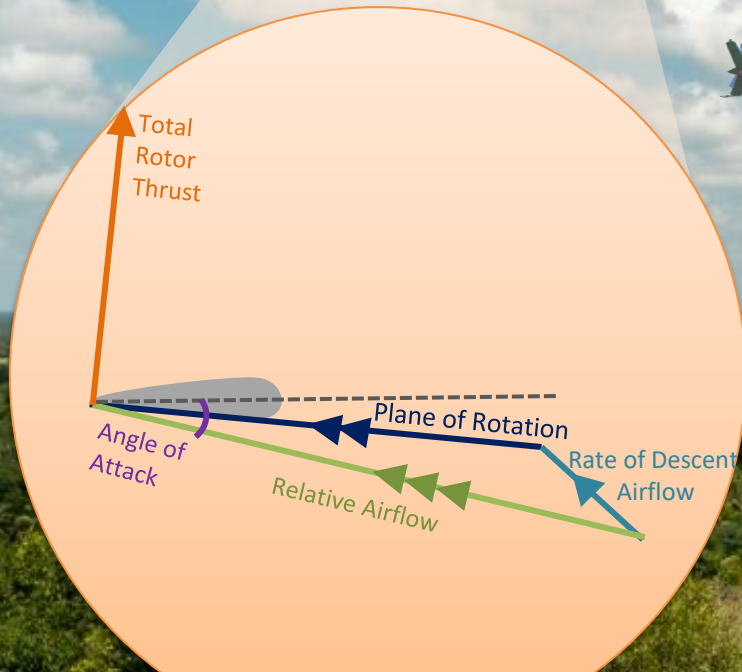
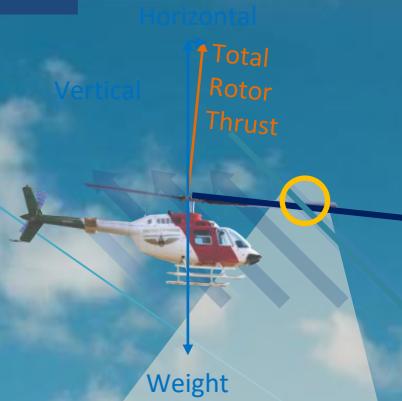
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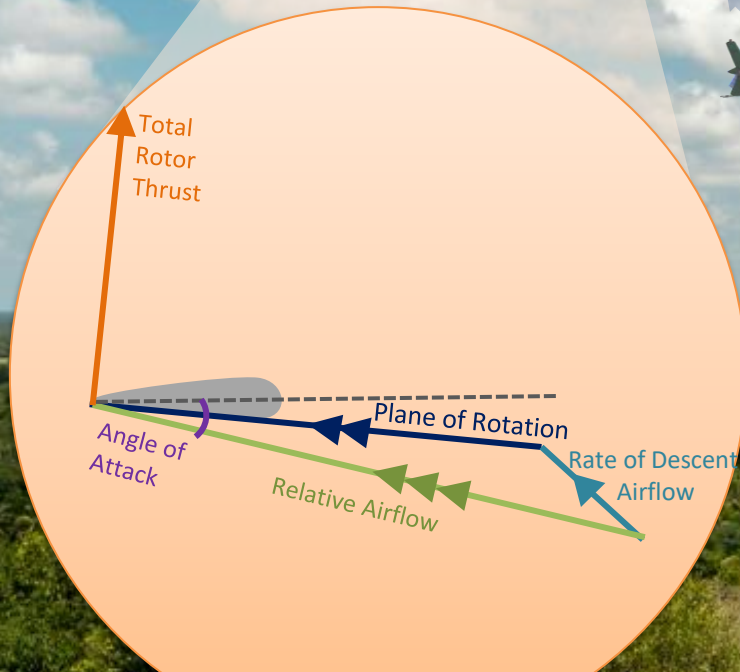
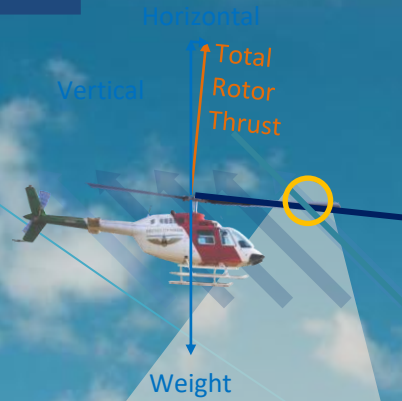
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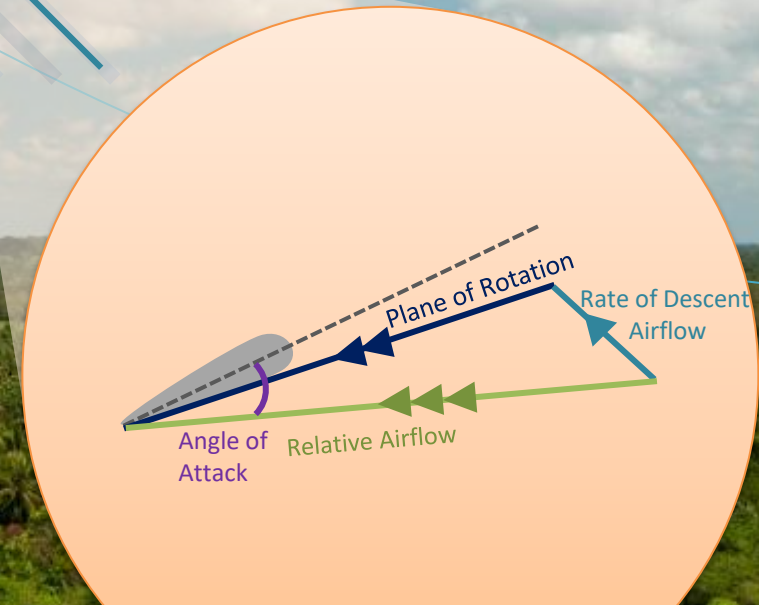
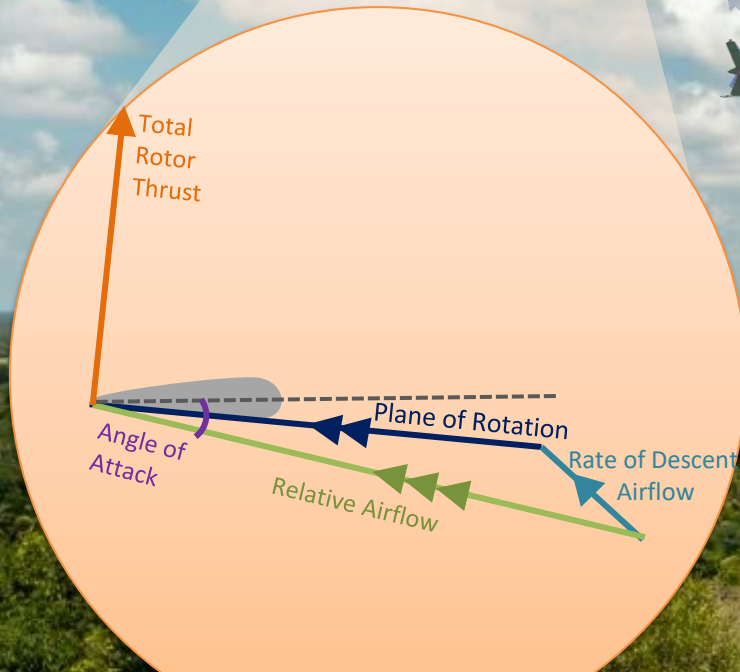
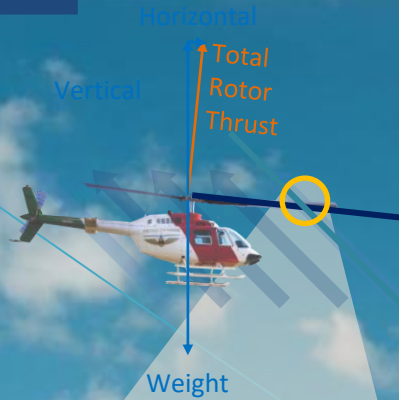
Let's take a closer look at what is happening...



Let's take a closer look at what is happening...



Let's take a closer look at what is happening...



Flare

Let's take a closer look at what is happening...

What does the flare do?

Reduces speed
Reduces rate of descent

What are the three flare effects:

1. Increase in Rotor Thrust
2. ?
3. ?



Horizontal
Vertical
Total Rotor Thrust

Weight

Total Rotor Thrust

Total Rotor Thrust

Angle of Attack

Plane of Rotation

Rate of Descent
Airflow

Relative Airflow

Total Rotor Thrust

Angle of Attack

Plane of Rotation

Rate of Descent
Airflow

Relative Airflow



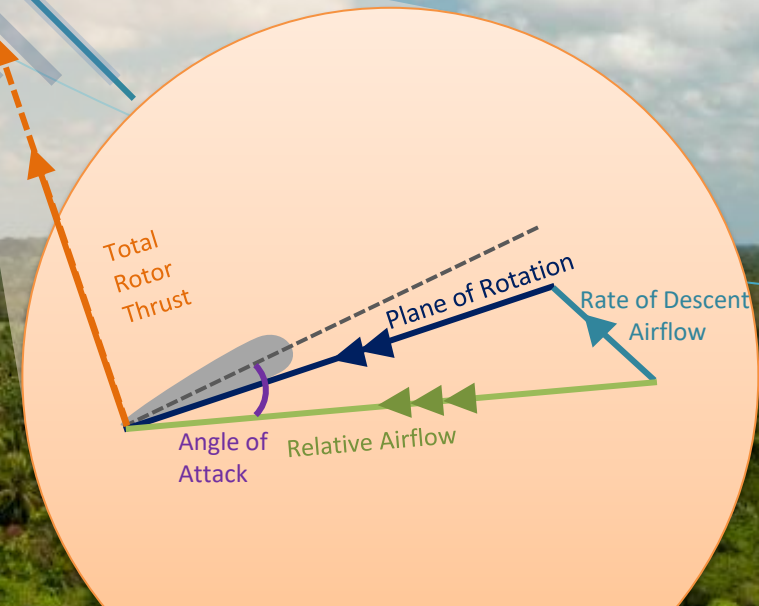
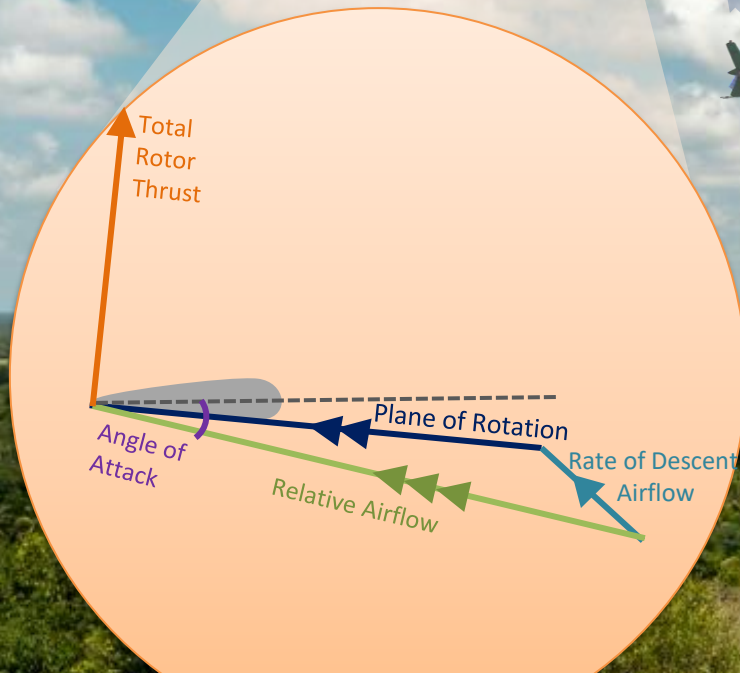
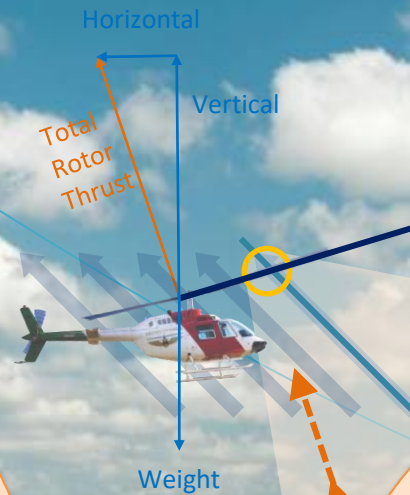
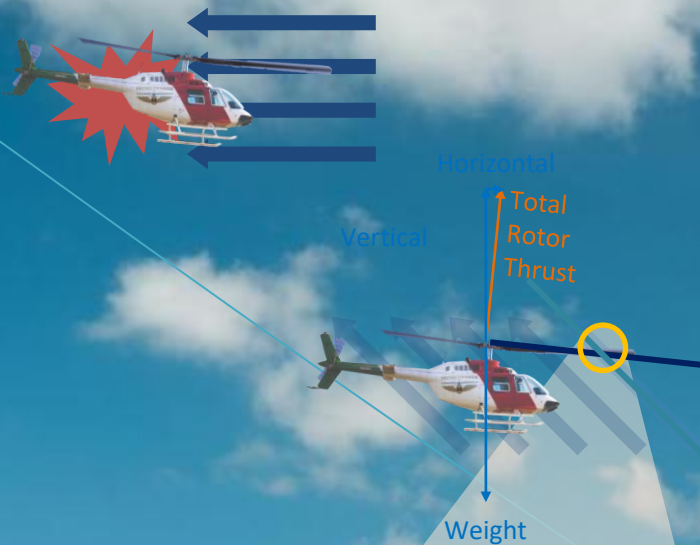
Flare

What does the flare do?

1. Reduces speed
2. Reduces rate of descent

Three flare effects:

1. Increase in total rotor thrust
2. Thrust reversal
3. ?



Flare

What does the flare do?

1. Reduces speed
2. Reduces rate of descent

Three flare effects:

1. Increase in total rotor thrust
2. Thrust reversal
3. **Increase in Rotor RPM**



Horizontal
Vertical
Total Rotor Thrust



Weight

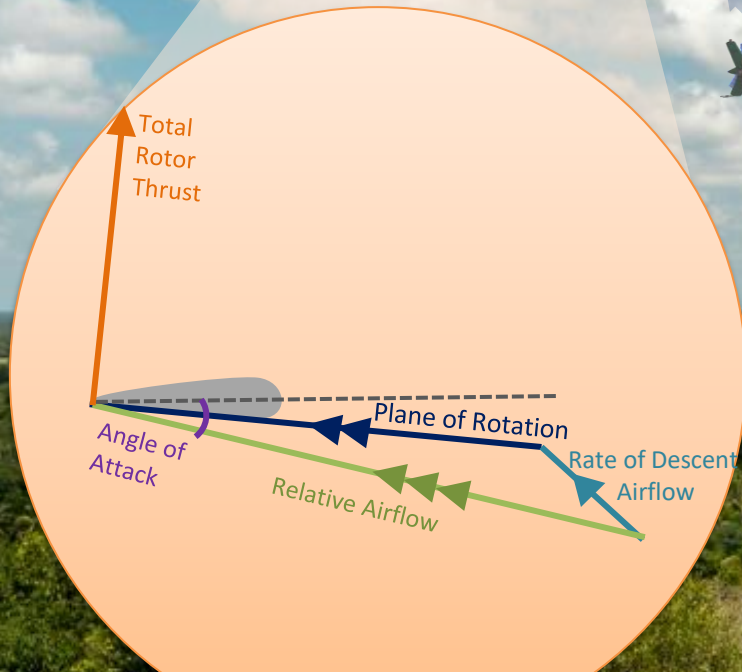
Horizontal

Vertical

Total Rotor Thrust



Weight



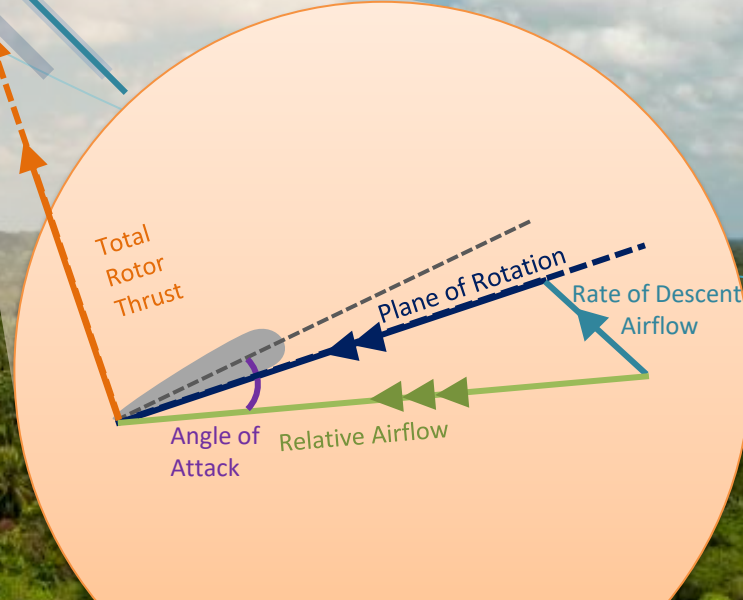
Total Rotor Thrust

Plane of Rotation

Rate of Descent

Relative Airflow

Angle of Attack



Total Rotor Thrust

Plane of Rotation

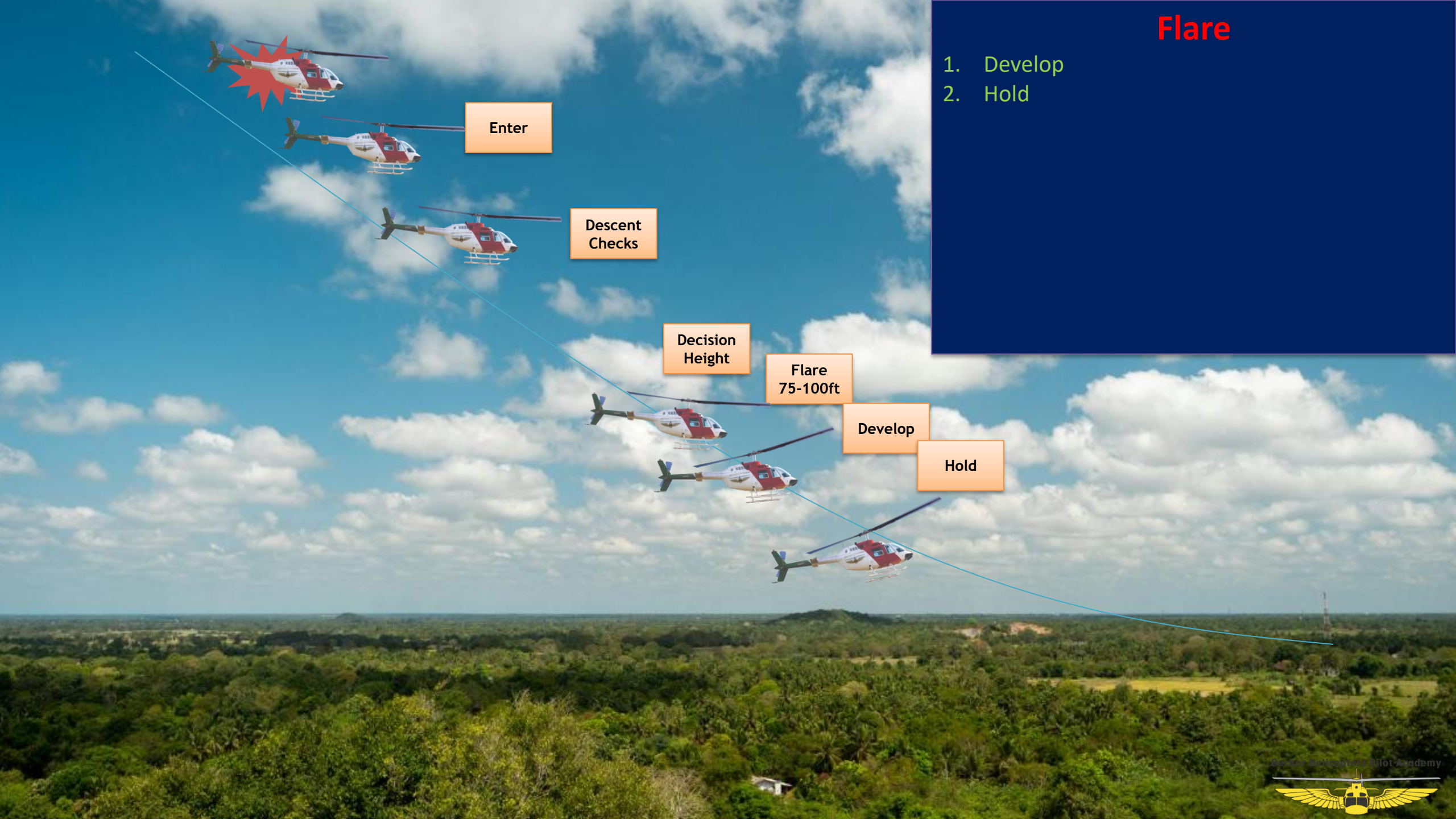
Rate of Descent

Relative Airflow

Angle of Attack

Flare

1. Develop
2. Hold



Enter

Descent
Checks

Decision
Height

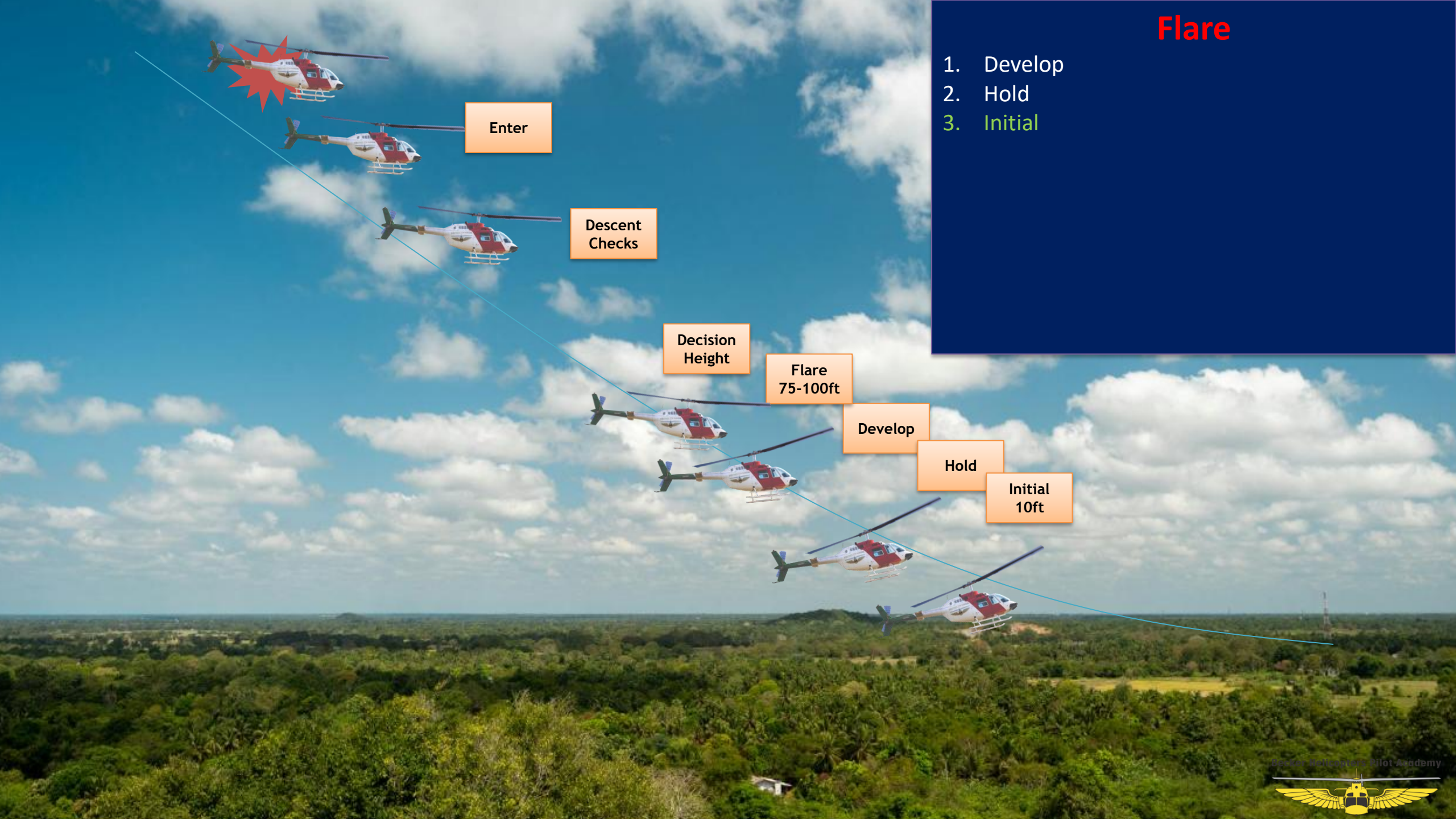
Flare
75-100ft

Develop

Hold

Flare

1. Develop
2. Hold
3. Initial



Enter

Descent
Checks

Decision
Height

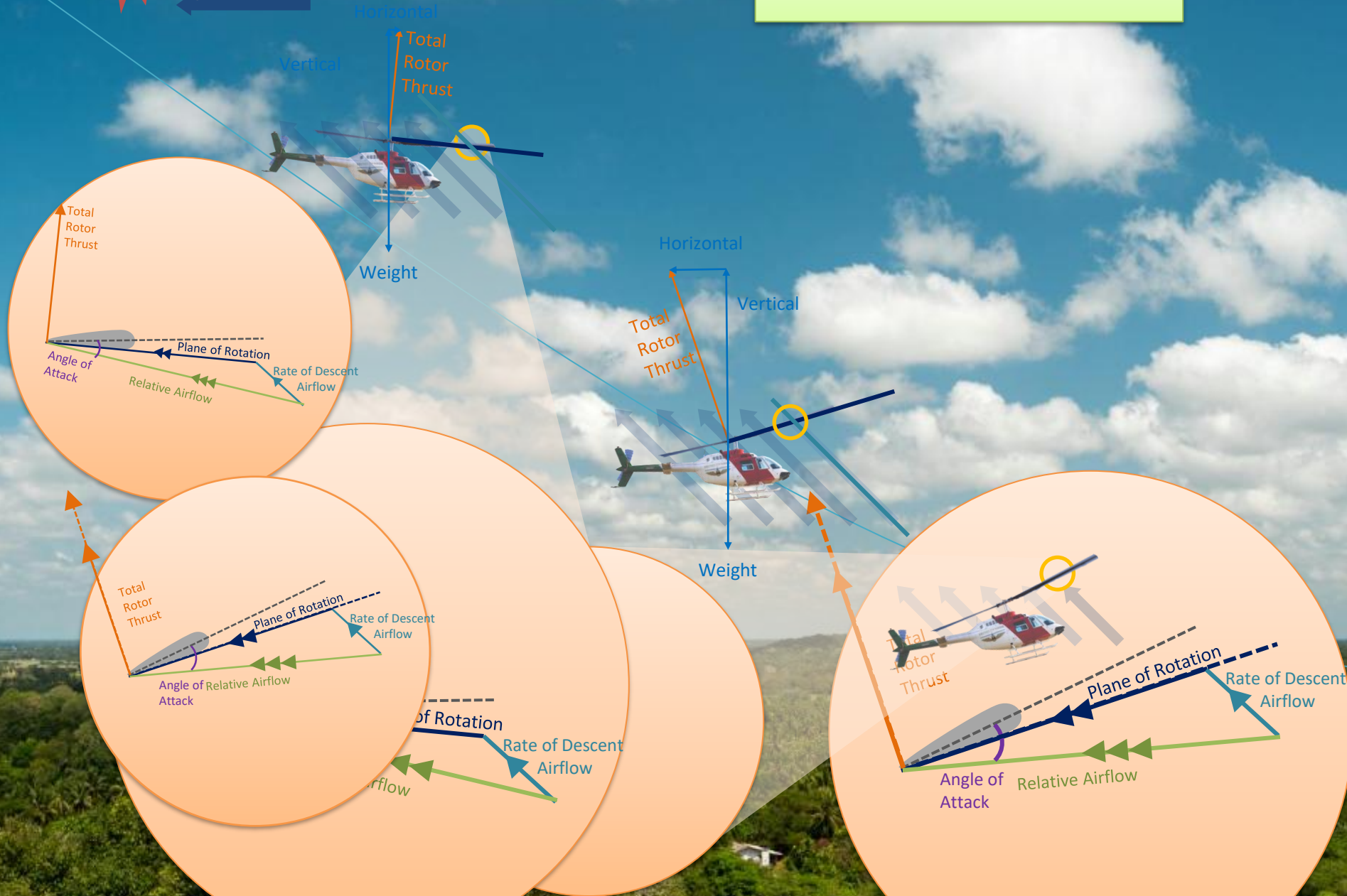
Flare
75-100ft

Develop

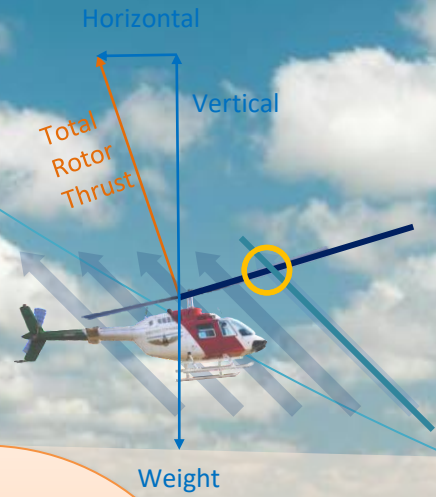
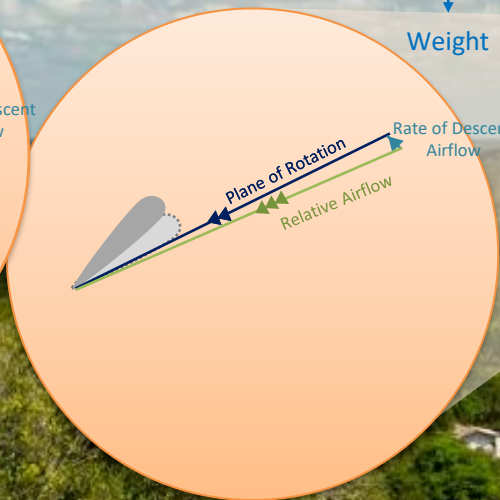
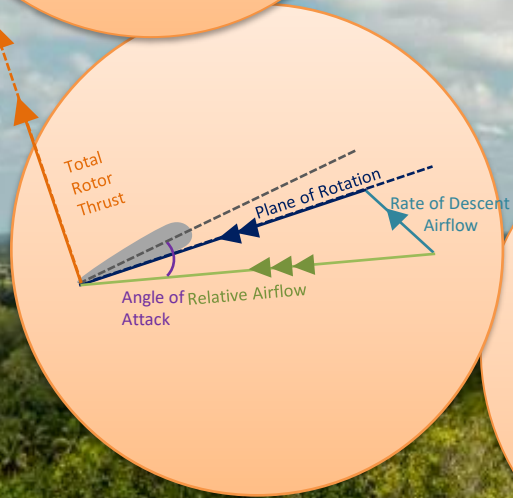
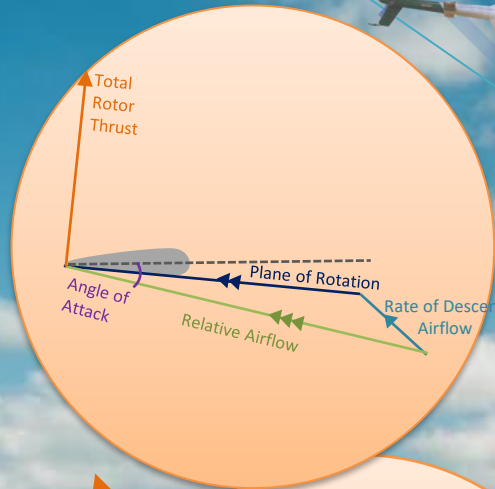
Hold

Initial
10ft

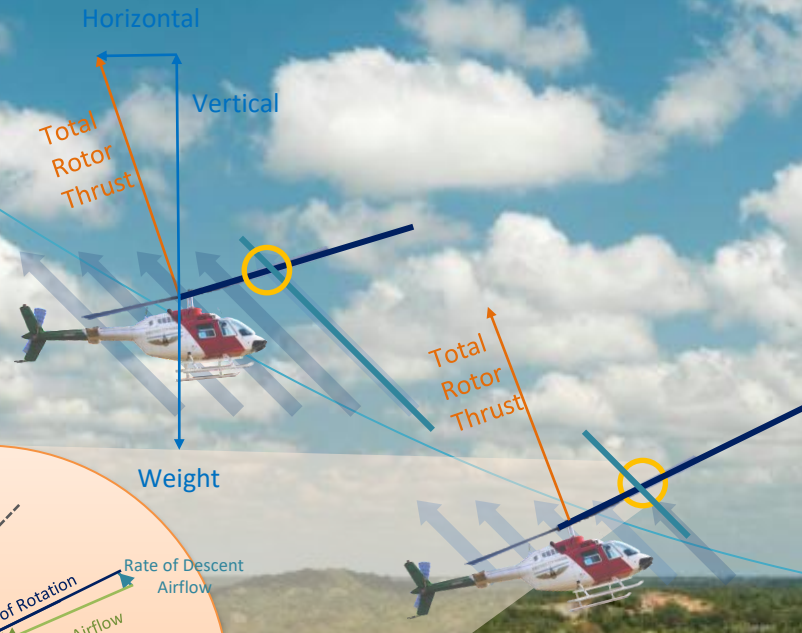
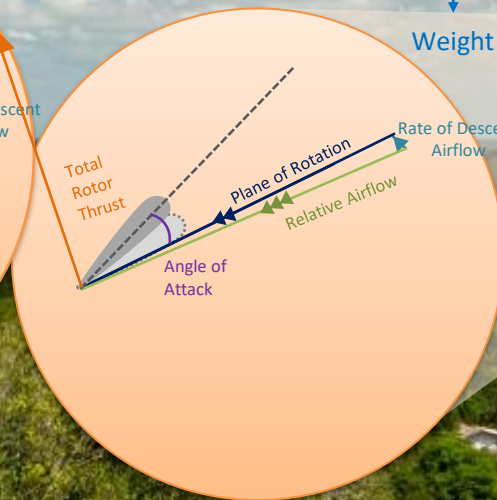
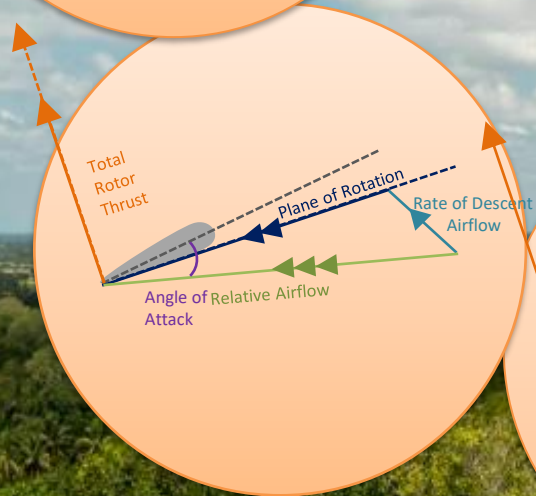
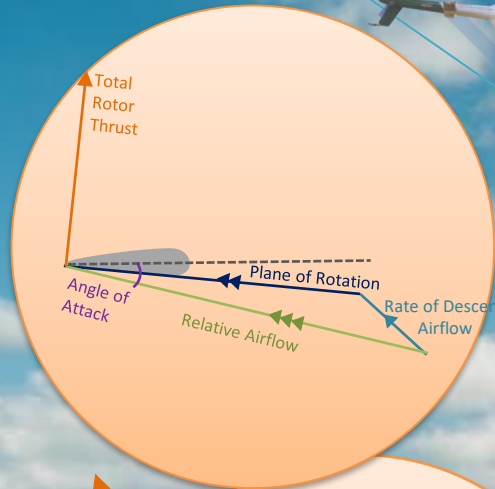
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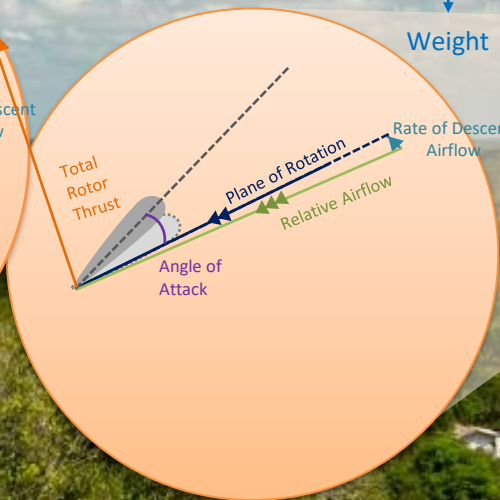
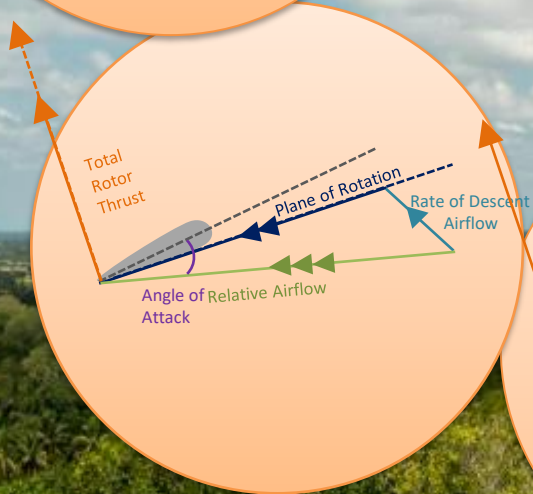
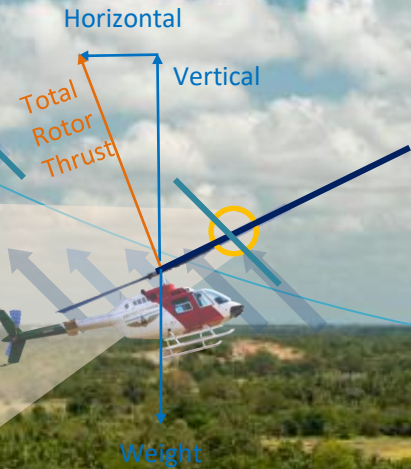
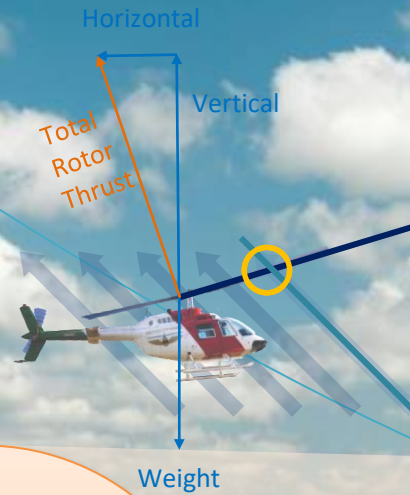
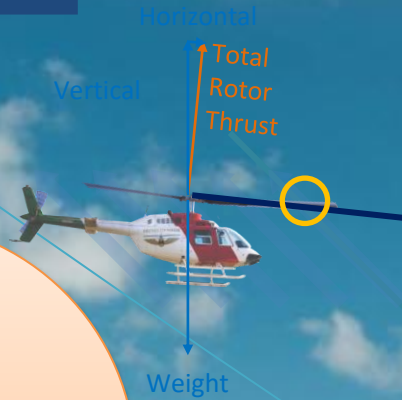
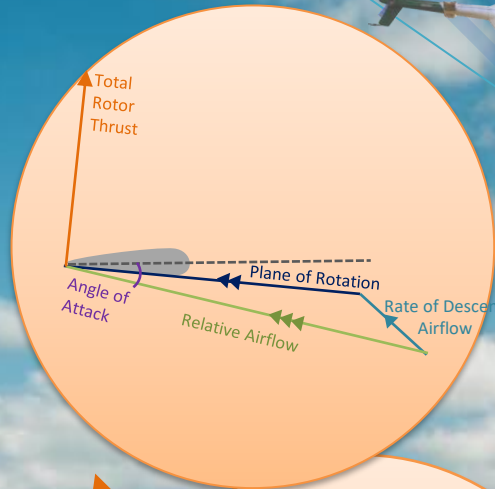
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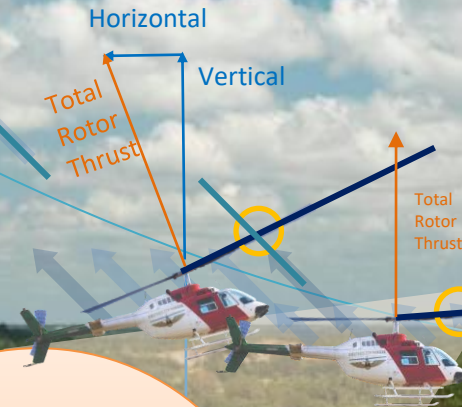
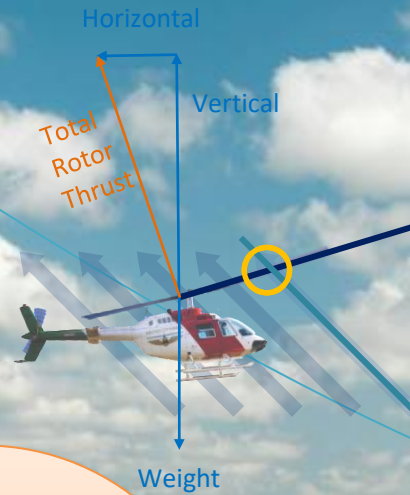
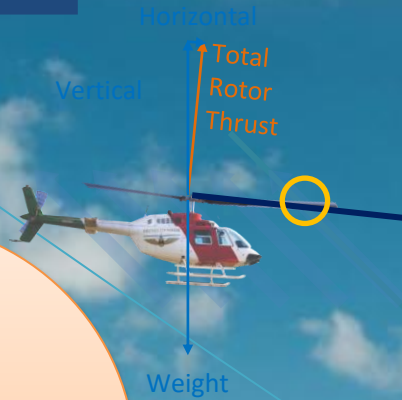
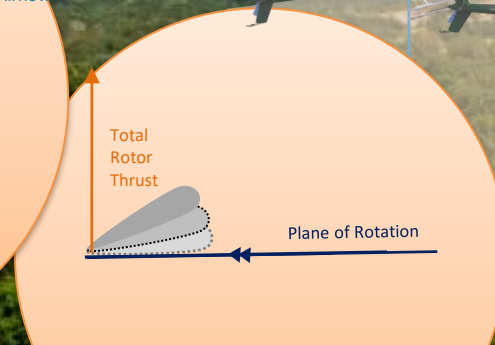
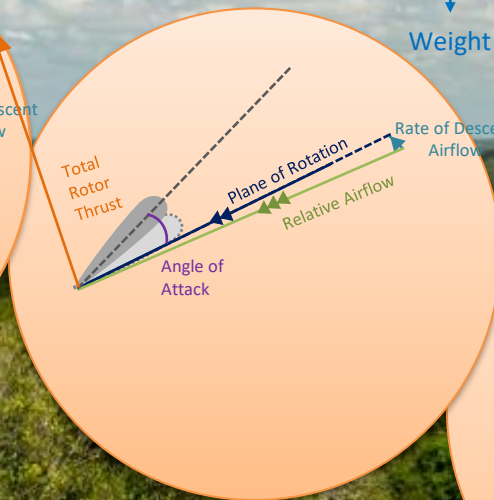
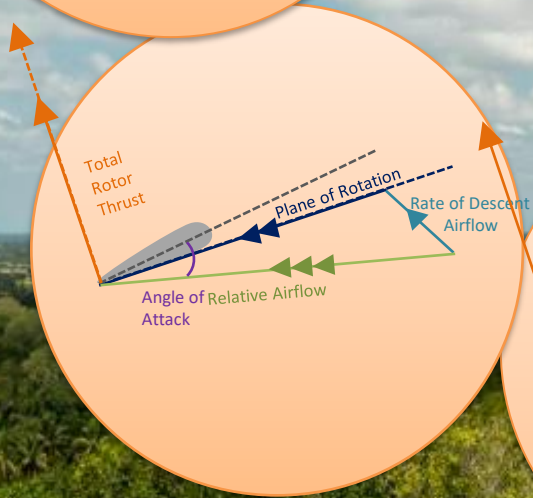
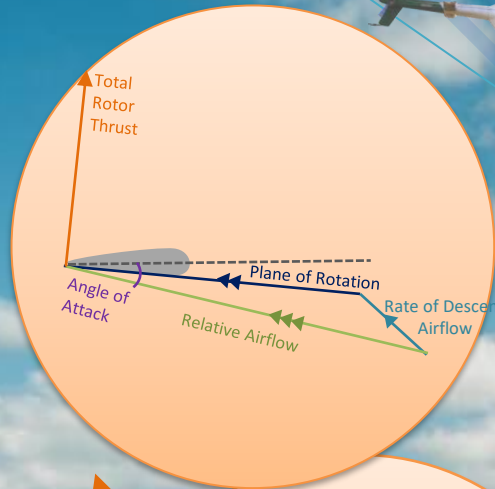


Flare

1. Develop
2. Hold
3. Initial
4. Level

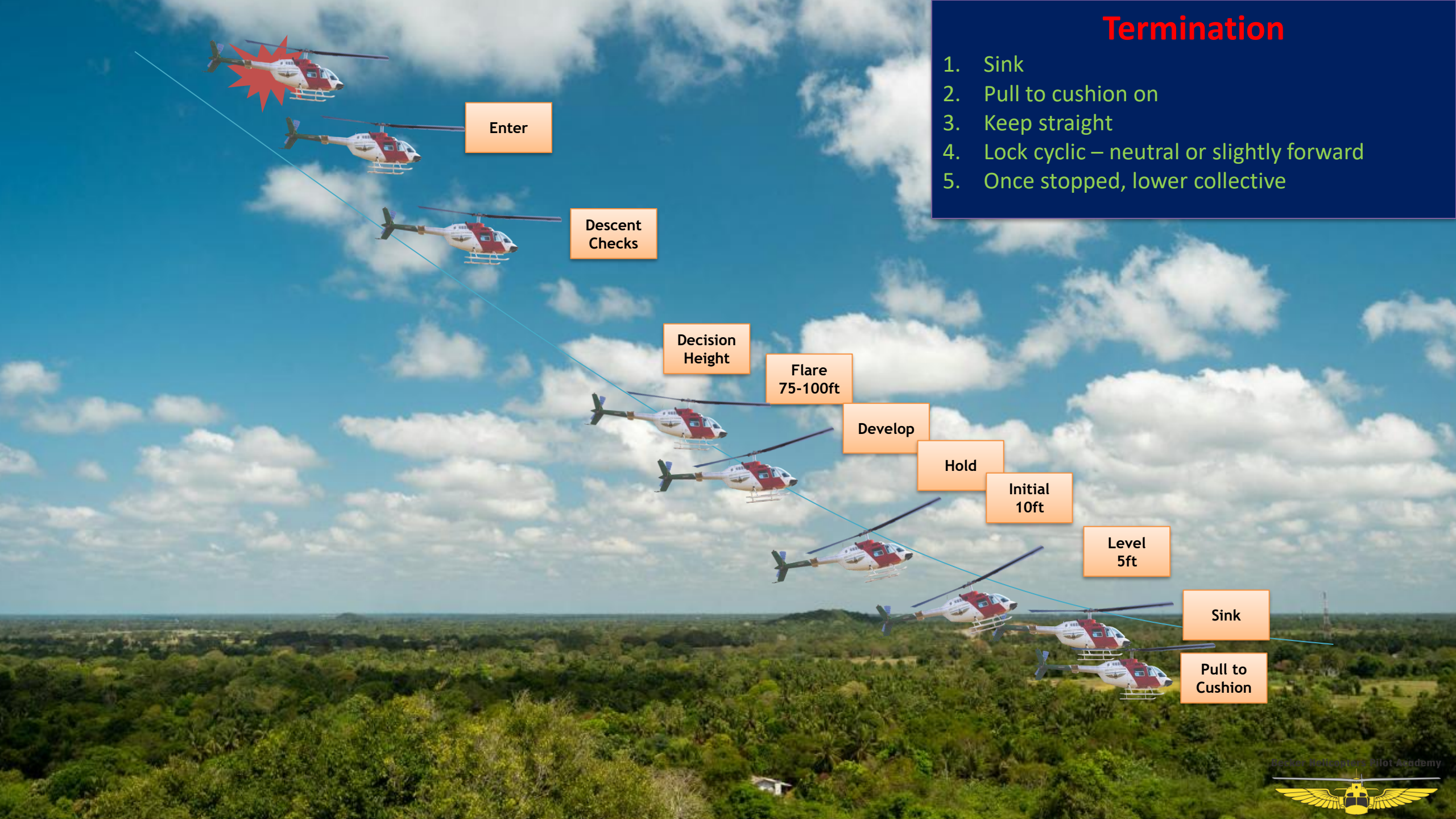


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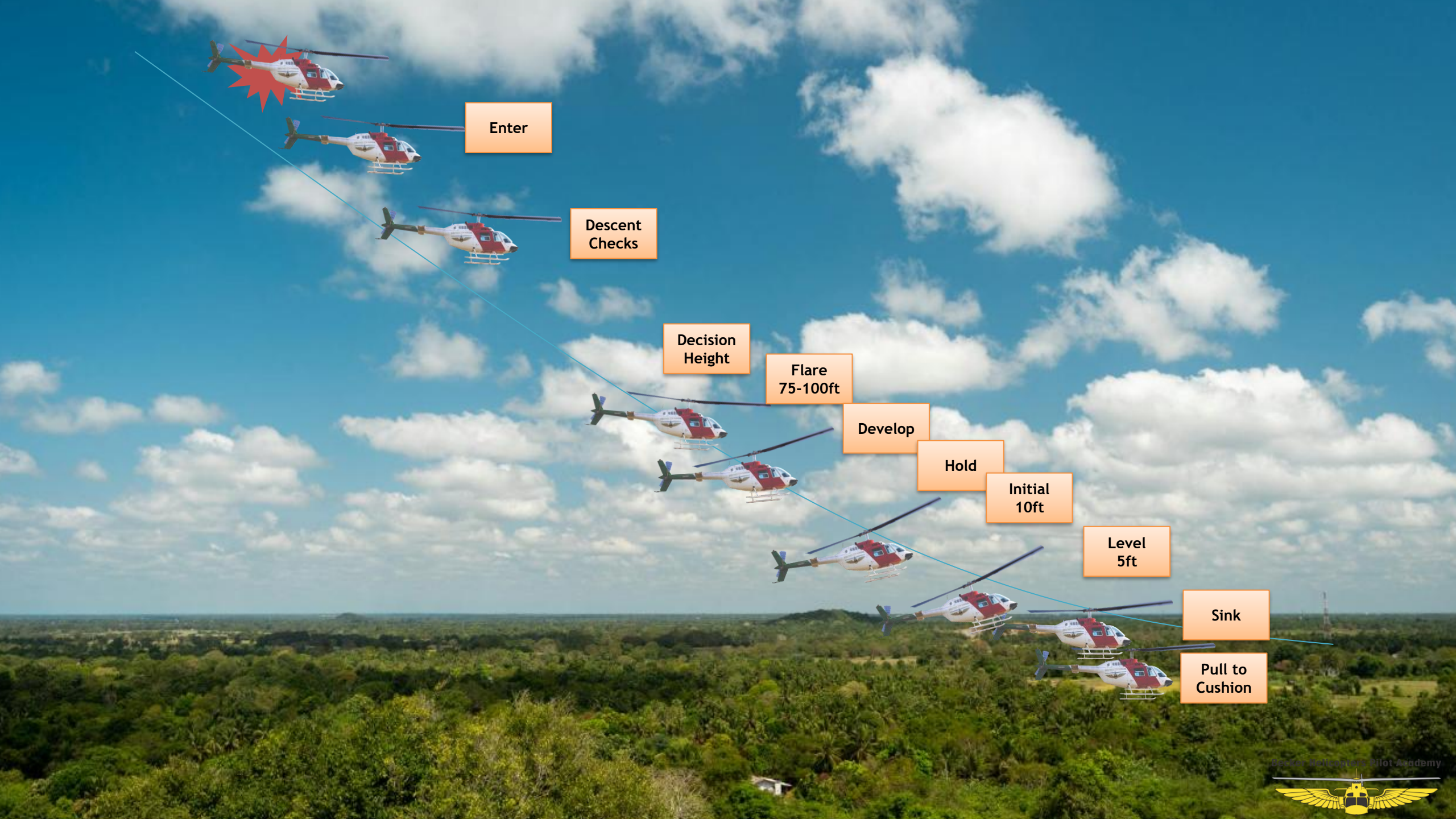


Termination

1. Sink
2. Pull to cushion on
3. Keep straight
4. Lock cyclic – neutral or slightly forward
5. Once stopped, lower collective







Enter

Descent
Checks

Decision
Height

Flare
75-100ft

Develop

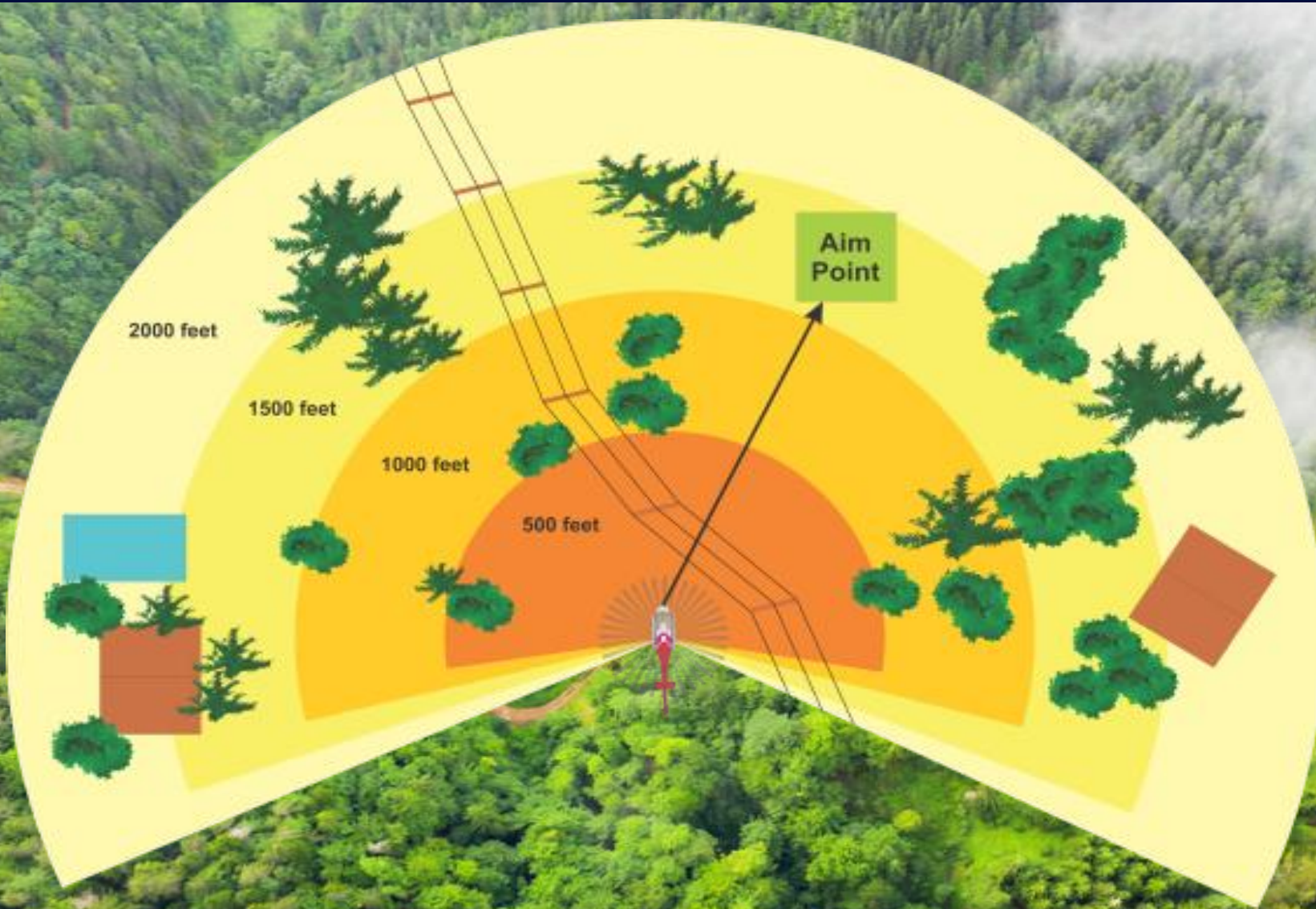
Hold

Initial
10ft

Level
5ft

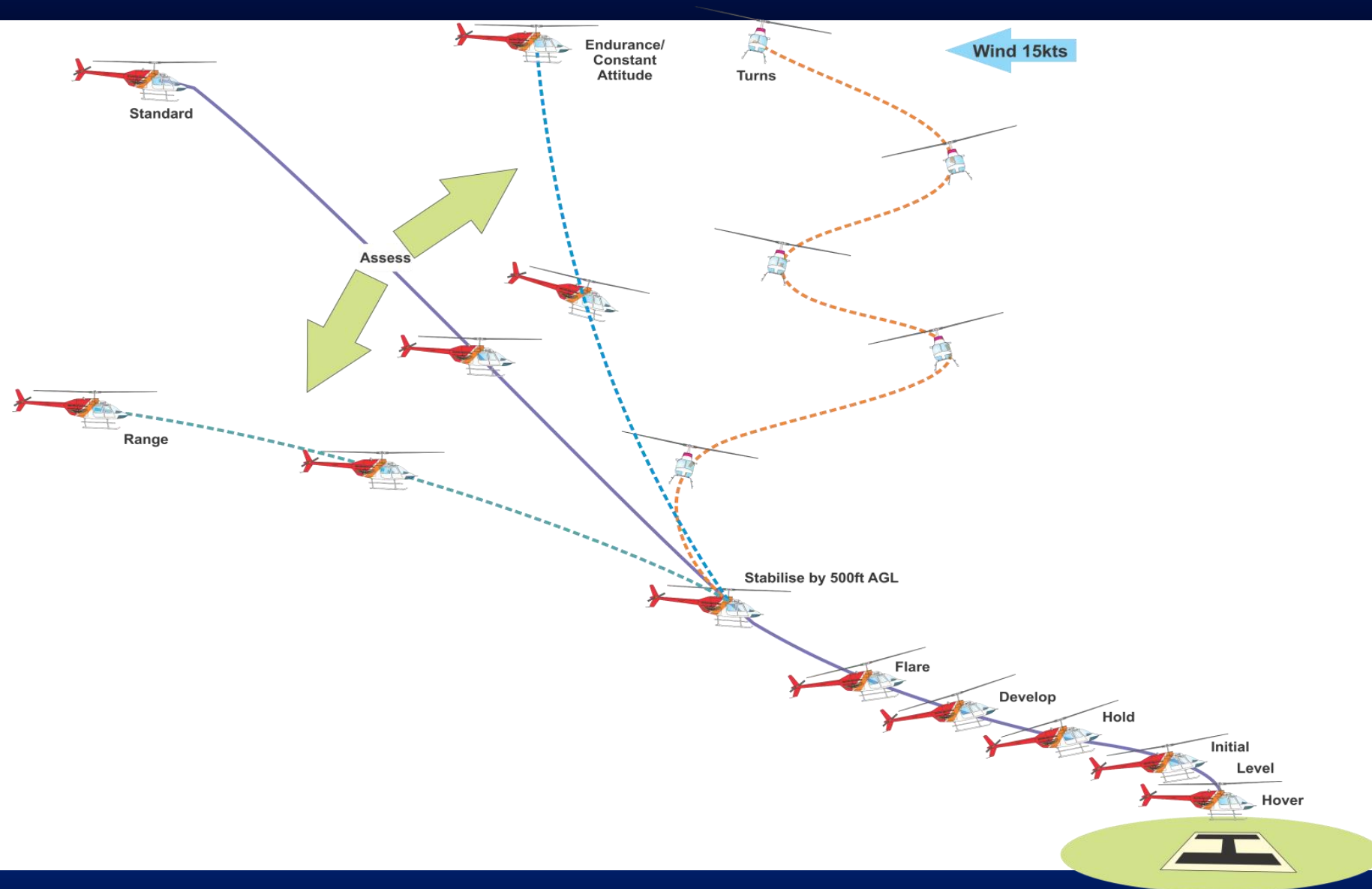
Sink

Pull to
Cushion



Advanced Manoeuvres

30



Advanced Manoeuvres

31



Review the Objectives

32

- List in order, the actions on entry
- Recall the descent checks
- Recall what the flare does
- State when to flare
- List the 3 flare effects
- Discuss the termination
- Discuss within the group options for maneuvering during the autorotation

Do a full Autortation course

33

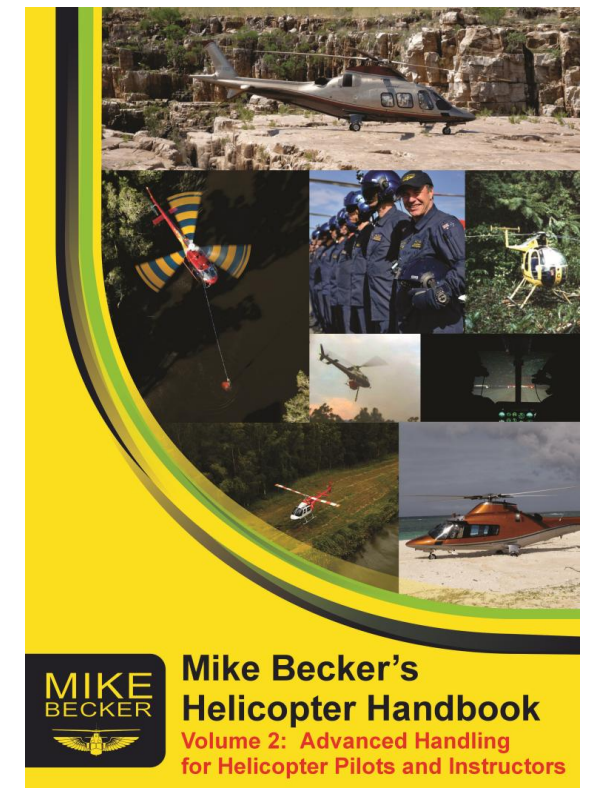
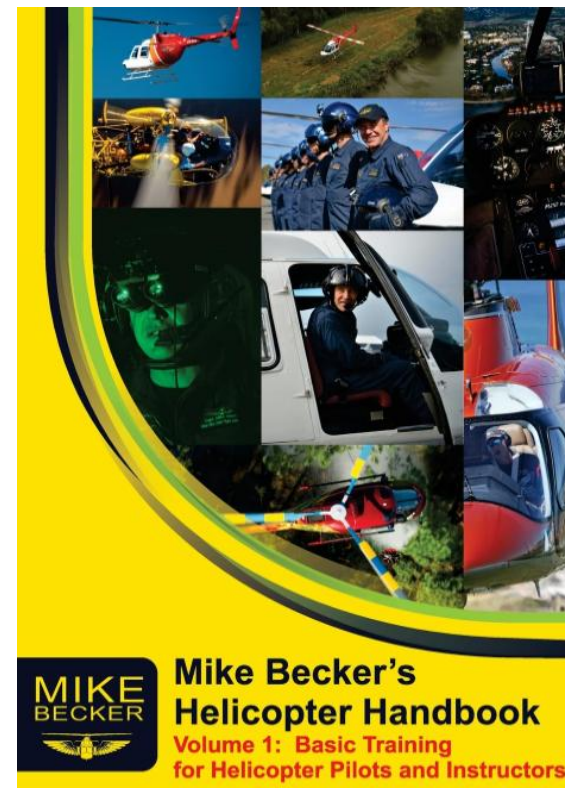
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**MIKE
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Autorotation Series

45-minute presentation

1

Thank You

