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EVERETT AVIATION (CHARTER) LTD

UPSET PREVENTION RECOVERY TRAINING (UPRT)

OBJECTIVES

This presentation aims to introduce to you the importance of Upset Prevention Recovery Training. The following topics will refresh your knowledge of the following key elements and recommended procedures during an Upset situation:

1 Definition
2 Upset Awareness
3 Causes of upsets
4 Upset recovery maneuvers
5 Nose high, wings level
6 Nose low, wings level
7 High bank angles

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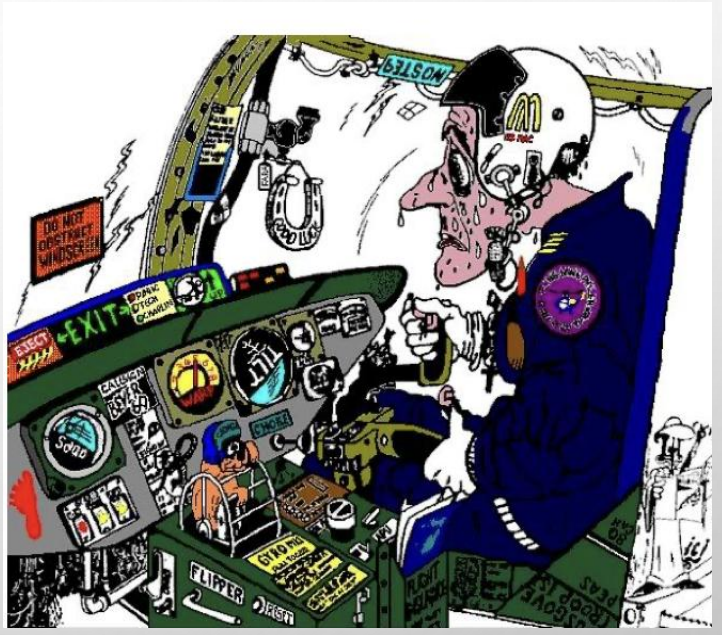
01 DEFINITION

An upset is defined as unintentionally exceeding any of the following conditions:

- Pitch attitude greater than 25° nose up
- Pitch attitude greater than 10° nose down
- Bank angle greater than 45°
- Within above parameters but flying at airspeeds inappropriate for the conditions.
- Airspeed below 30Kts AND rate of Descent above 1500 fpm.



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02

UPSET AWARENESS

Although flight crews in line operation rarely encounter an upset situation, understanding how to apply aerodynamic fundamentals in such a situation helps them control the aircraft.

Several techniques available for recovering from an upset are discussed in the example scenarios below:

Potential Helicopter Situations

- Nose high, wings level – Low Speed (Vortex Ring ?)
- Nose low, wings level – High Speed (Retreating Blade stall ?)
- High bank angles
- Nose high, high bank angles
- Nose low, high bank angles

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03

CAUSES

Pilot Induced

Environmental

System Anomolies

The following are causes/factors that may lead to an upset

Pilot-induced

Unintentional entry to IMC – Higher risk when using NVG
Insufficient instrument cross-check – Particularly when using NVG
Incorrect attitude and power adjustments
Distraction
Vertigo or spatial disorientation
Pilot incapacitation
Improper use of aircraft automation
Incorrect pilot techniques — i.e. Pilot Induced Oscillations (PIO)

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CAUSES

Pilot Induced

Environmental

System Anomolies

The following are causes/factors that may lead to an upset

Environmental

Turbulence (CAT, windshear, thunderstorms, microbursts, mountain wave)

Intermittent IMC at night on NVG

Wake turbulence

Aircraft icing

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03

CAUSES

Pilot Induced

Environmental

System Anomalies

The following are causes/factors that may lead to an upset

System Anomalies

Flight instruments

Autoflight systems

Flight control and other anomalies

NVG Failures – Single tube failures can lead to disorientation

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UPSET RECOVERY MANOEUVRES

If an upset situation is recognized, immediately accomplish the upset recovery maneuver.

It is possible to consolidate upset recovery maneuvers into two basic scenarios, nose high and nose low; And to acknowledge the potential for high bank angles in each scenario.

The maneuvers provide a logical progression for recovering the aircraft

To recognize and confirm the situation the crew must assess the aircraft attitude, airspeed, altitude and trend information through instrument crosscheck.

The PFD should be used as the primary reference in assessing aircraft attitude. The pitch scales and color coding above/below the horizon (blue/brown) should be used when making the pitch assessment.

When completing the upset recovery maneuver, roll to the shortest direction to wings level.

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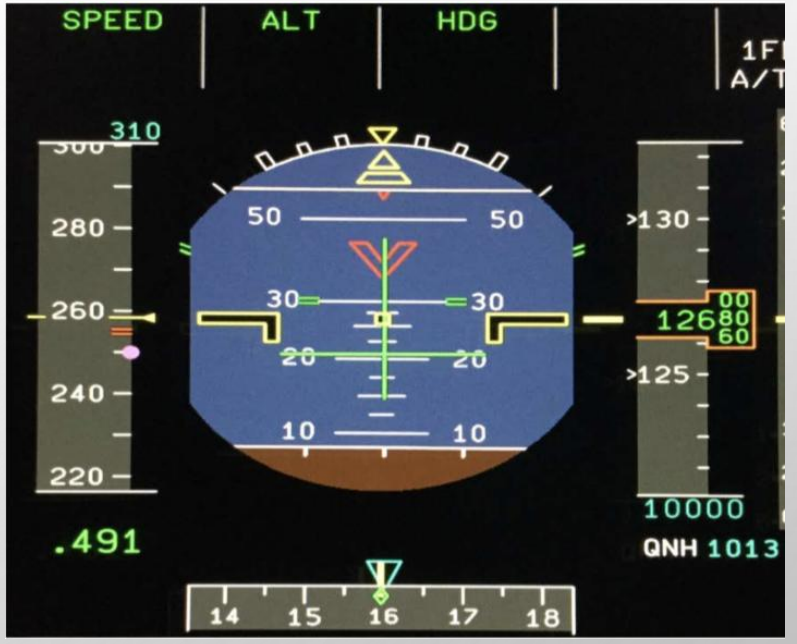
05

RECOVERY TECHNIQUES

Nose High Wings Level

Recommended recovery technique

- Recognize and confirm the situation
- Disconnect the autopilot.
- Gently reduce pitch to a target of 3 to 5 degrees above the horizon. Adjust as necessary.
- Check Airspeed– if Low (<30 Kts) Gently reduce pitch to a target of 5 to 10 degrees BELOW the horizon. Adjust as necessary.
- Check Rate of Descent – if High, Reduce collective pitch
- When Airspeed is above 40kts reset collective and cyclic pitch for level flight



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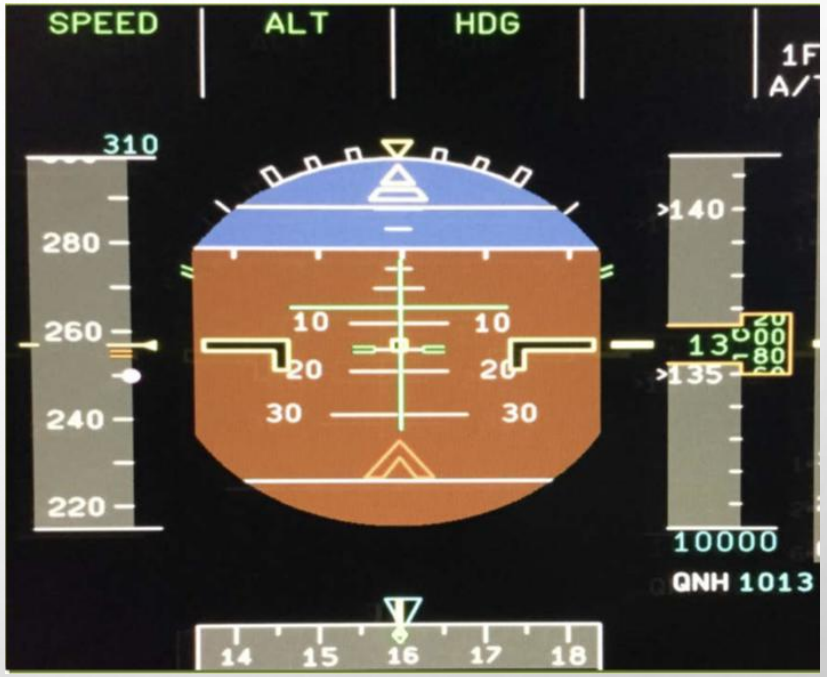
05

RECOVERY TECHNIQUES

Nose Low
Wings Level

Recommended recovery technique

- Recognize and confirm the situation
- Disconnect the autopilot.
- Gently increase pitch to a target of 3 to 5 degrees above the horizon. Adjust as necessary.



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RECOVERY TECHNIQUES

High Bank Angles

Recommended recovery technique

- Recognize and confirm the situation
- Disconnect the autopilot.
- Roll the airplane in the shortest direction to near wings level.
- Gently increase pitch to a target of 3 to 5 degrees above the horizon. Adjust as necessary.

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05

RECOVERY TECHNIQUES

Nose High High Bank Angles

Recommended recovery technique

- Recognize and confirm the situation
- Disconnect the autopilot
- Gently reduce pitch to a target of 3 to 5 degrees above the horizon. Adjust as necessary.
- Approaching the horizon, roll to wings level.
- Check Airspeed– if Low (<30 Kts) Gently reduce pitch to a target of 5 to 10 degrees BELOW the horizon. Adjust as necessary.
- Check Rate of Descent – if High, Reduce collective pitch
- When Airspeed is above 40kts reset collective and cyclic pitch for level flight

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05

RECOVERY TECHNIQUES

Nose LOW
High Bank Angles

Recommended recovery technique

- Recognize and confirm the situation
- Disconnect the autopilot
- Roll the airplane in the shortest direction to wings level.
- Gently increase pitch to a target of 3 to 5 degrees above the horizon. Adjust as necessary.