Chapter 4 Maintaining Aircraft Control: Upset Prevention and Recovery Training (**UPRT**)

**Introduction**: “The pilot’s fundamental responsibility is to prevent a loss of Contol (LOC). Loss of control in flight (LOC-I) is the leading cause of fatal general aviation accidents in the U.S and commercial aviation worldwide.”

**Situations That increase risk of loss of control**

* Uncoordinated flight
* Equipment malfunctions
* Pilot complacency
* Distraction
* Turbulence
* Poor risk management

**Defining an Airplane Upset:**

* An event that unintentionally exceeds the parameters experienced in normal flight.
  + Pitch attitude greater than 25 degrees nose up or 10 degrees nose down
  + Bank angle greater than 45 degrees
  + Within normal attitudes but flying at an inappropriate speed.
  + Stalls are airspeed related but are also related to AOA
* **Upset Prevention Recovery Training includes (UPRT):**
  + Slow Flight
  + Stalls
  + Spins
  + Unusual Attitudes

**Coordinated Flight**

* Generally, occurs when the pilot is proactively correcting for any yaw effects on the plane.
* Nose should be yawed into the relative wind and slip/skid ball should be centered.
* Step on the ball or step on the rudder towards the side that has a pronounced leaning feeling to it.

**Angle of Attack**

* When the critical AOA is exceeded air flow over the top of the wing separates and eddies causing a **stall** which decreases lift and tremendously increases drag.
* Stall is the result of AOA, but the term “**stall speed**” is used to denote the minimum speed that the plane would have to fly at in a given configuration to maintain its altitude.

**Slow Flight:**

* Flight at an AOA just under the one that will cause buffet or a stall warning.
* This can happen during takeoffs and approaches so pilots must be proficient.
* Object is to understand how the plane reacts to an oncoming stall such as reduced control fidelity, and difficulty maintaining altitude.
* **2 Main Elements of Slow flight Training**

1. Slowing to and maneuvering at and recovering from a speed that barely does not activate the stall warning; typically, 5 – 10 knots above the 1g stall speed.
2. Slow flying in takeoff, descent, approach and landing

* Procedure: Pitch the plane until the stall warning happens, pitch nose down until it stops and make note of the attitude
* Controls will require increased input to maintain.
* When flying slow you are below (Lift/Drag)Max and on the “backend of the power curve ” which causes speed instability. If the plane is disturbed by turbulence in this state you will have to correct it with power or AOA decrease.
* In slow flight pitch is a better way to control speed than power; power is usually used to control altitude.
* The closer the plane is to 1G stall the more rudder will be needed to correct P-factor

**Procedure:**

* **Be above 1500 AGL before you do this.**

1. **Clear the area, gradually reduce power and maintain altitude.**
2. **Note the changing sound around the plane**
3. **Trim the plane to compensate for control pressures**
4. **Extend the gear and flaps if practicing for ai**