

Welcome To:  
Soaring Ground School Part 1  
Presented By:  
Josh & Greg



# What Is Soaring All About?

- Flight in it's purest form; no engine and no second chances.
- Quick Video



Roe300.asf

# Why Would You Want To Become a Glider Pilot?

- Better Stick and Rudder Skills.
- Improved handling of all aircraft.
- Helps you become a safer pilot.
- Better Situational Awareness.
- The Air Force does it.
- Precision Flying
- Another Rating!
- It's Fun & Challenging!



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# What Are The Requirements? Private Pilot - Glider

- Initial Private Certificate
  - 10 hrs of glider time
    - 20 flights
    - 3 flight to review for practical
    - 2 hrs solo with 10 solo flight
    - Written test



# What Are The Requirements?

## Private Pilot – Glider cont.

- Add On – Rating:
  - 3 hrs of glider time
    - 10 solo flights
    - 3 flight to review for practical
    - No written required

# What Are The Requirements? Commercial Pilot – Glider

- Initial Glider:
  - 25 hrs in Gliders w/ 100 flights
    - 3 hrs of instructional flights OR 10 instructional flights
    - 3 flights to review to practical
    - 2 hrs solo w/ 10 solo flights

# What Are The Requirements?

## Commercial Pilot – Glider cont

- Add On Rating (need 200hrs of heavier than air):
  - 20 flights in a glider as PIC
  - 3 hrs of instruction OR 10 instructional flights
  - 5 solo flights

# What Are The Real Requirements?

- FAR Initial Glider requirements normally are not enough.
- FAR Add-On Private/Commercial are close.



# What is this all going to cost?

- Private Initial (minimums): \$1200-\$1500
- Commercial Initial (minimums): \$2000 - \$2500
- Private Add-On (minimums): \$800 - \$1000
- Commercial Add On (minimums): \$800 - \$1000

# What Are The Solo Requirements?

- Pilot with no other experience normally solo's around 30-45 flights.
- Existing pilots solo normally in about 8 – 15 flights depending on their experience.

# Reading Material

- Soaring Flight Manual (PTS)– Jepp/Sanderson
- Joy Of Soaring – (people with no flight exp)
- Federal Aviation Regulations
- First Flight To Solo – Tom Knauff
- Solo to License – Tom Knauff
- Soaring Manuals Made Easy – Bob Wander
- Glider Practical Test Standards

# How Do We Launch?

- Aero Tow – Most Commonly used in US.
- Auto Tow
- Winch
- Self Launch







# AeroTow

- High Or Low Tow?
- Basic Principles of tow.
  - During Straight and Level
  - During Turns



PHOTO TOMMY MOGREN



# Types Of Lift

- Thermals
- Wave
- Ridge/Orographic

# Thermal Lift

- General Principles
  - Hot air rises
  - Cold air falls
- Marked by cumulus (Cu's) clouds
- Thermals drift with wind.
  - Flying more upwind of cloud the lower you are.

# Soaring Techniques - Thermaling

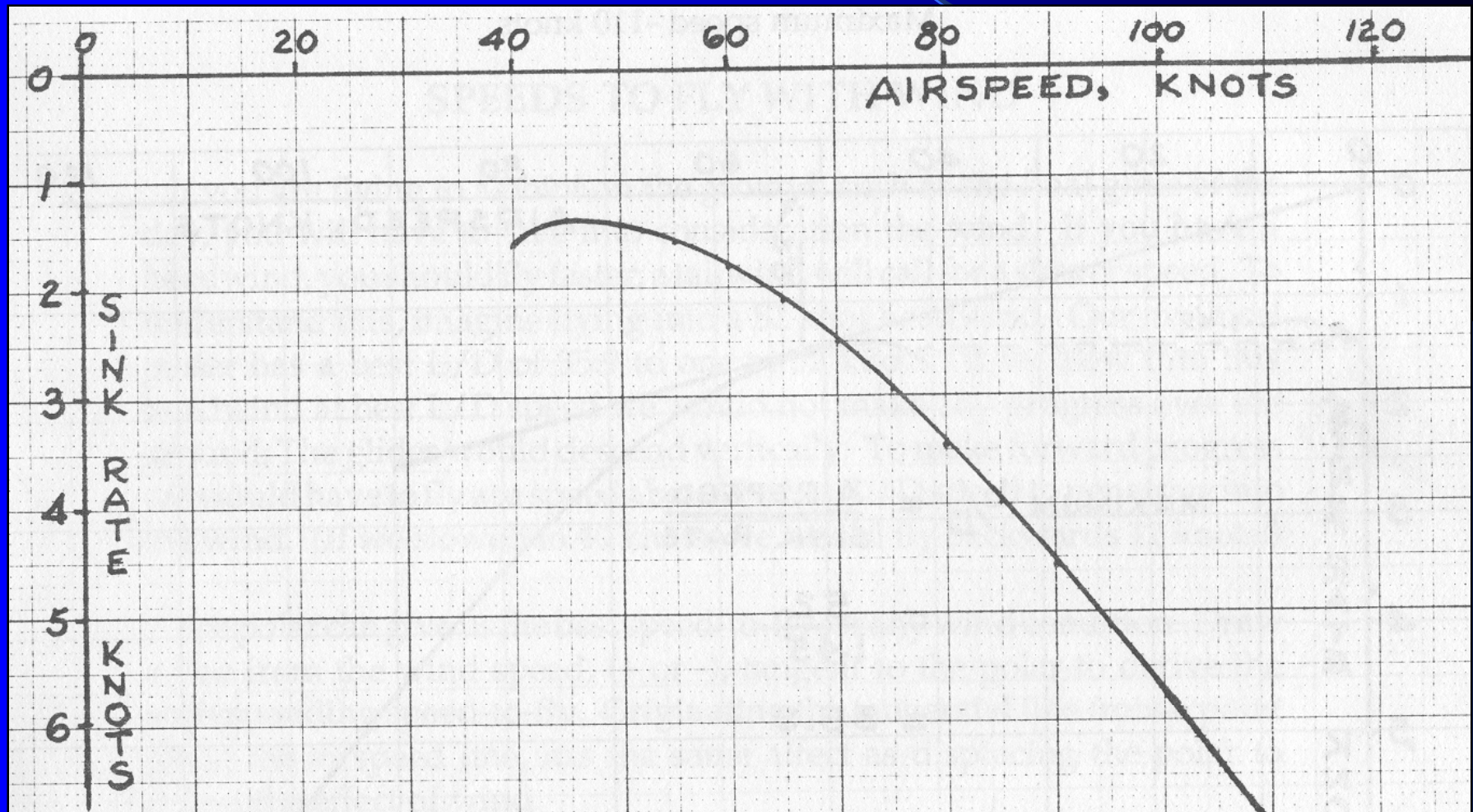
- Circle in lift.
- Centering Thermal
  - Several different techniques.
- Minimum Sink Speed
- Gliders are always gliding (falling) with respect to the air.



# Minimum Sink Speed

- Increases with bank just like a stall speed
- Increases with weight
- Least amount of altitude loss per unit of time.
- Our Blanik L-23 Sinks at 2.5 fps/1.28 knots @ 39kts.
- Competition Sailplanes sink at less than 1.5-1.25 fps in some cases.

# Minimum Sink cont.

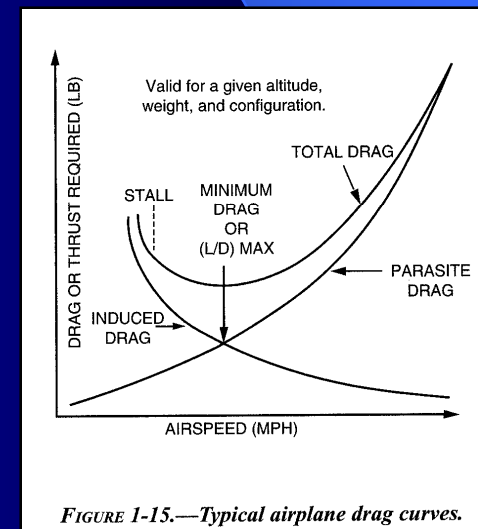


# Going Somewhere

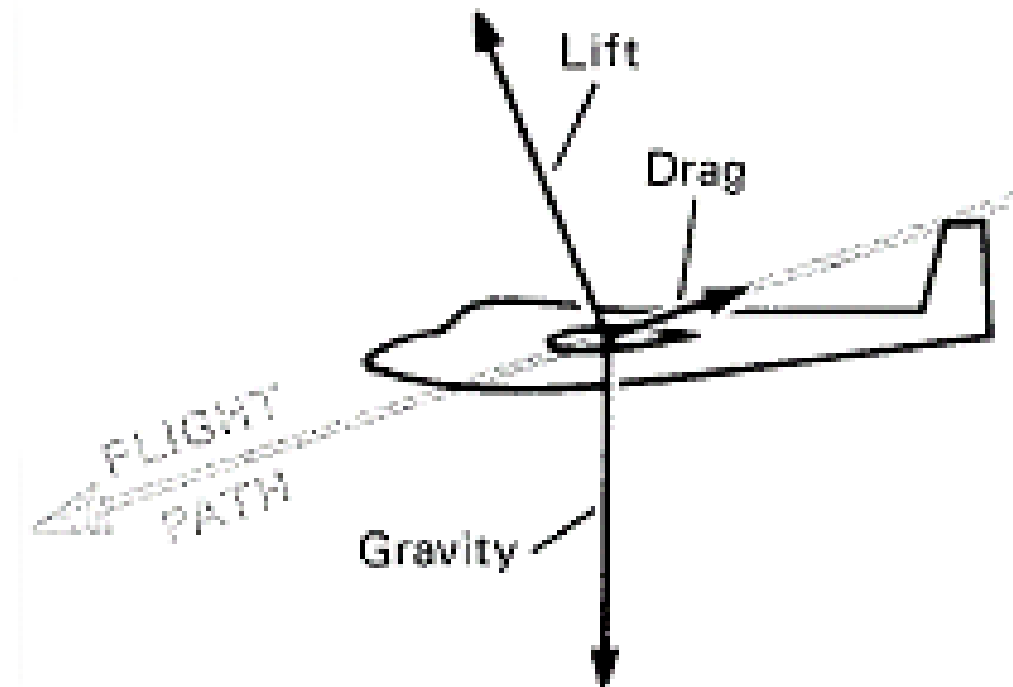
- We use “Speed-To-Fly”.
- Best L/D + variables of wind, lift and sink
- In Sink – Push – Go Faster
- In Lift – Pull – Go Slower
- Cloud to Cloud
- What if there are no clouds?

# Best L/D Speed

- L/D – Glide Ratio
- The 3 Forces
- Best L/D plus  $\frac{1}{2}$  Wind Velocity
- McCready Ring
- Flight Computers



# L/D Explained



# The Pattern/Landing

- Many people don't understand how we can control where we land --- We Can't, we're just lucky!
- We use Spoilers/Dive Brakes which increase Drag, thus lowering our glide ratio to control our rate of descent.
- Requires much judgment to do properly.



Questions?

# Thank You

Part 2 Nov 6<sup>th</sup>, after meeting  
More In-Depth!



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