



NESA MAS

Advanced MP/MO Course
July 2017



Overview

Basics

1. Introductions and crew assignments
2. Course goal, approach, rationale
3. Schedule
4. Physical Logistics – class, ops, ground
5. Information sharing – Dropbox

Universal GPS Method



Introductions

Course Leadership Team

Course Director:
Instructors

Students

Align by crews, instructors, flights

Key players not in this kickoff

MAS Commandant Eric Templeton
MAS Operations
MAS Admin



Objective and approach

Objectives

- Learn a simple, standard method to do all search patterns across wide range of CAP GPS units at high levels of accuracy and repeatability
- Discuss and practice flight strategies that respond to emerging technology opportunities.

Approach

- Describe
 - Explain
 - Practice
 - Perform
 - Manage/Decide
- Classroom
- Simulator and Inflight



Sunday Schedule

Airport all day.

- Ground training in the morning
- Flying in the afternoon

Note: Ops will not be set up for regular flying until Monday. As the Advanced Course, we're jumping the gun. Be patient and be helpful.



Schedule

We will begin each day at 0800 with a morning briefing at the University. Then we will go to the classroom assigned to our class. There we will get any ground training required and plan our sorties for that day. Those crews flying will then go to the airport.

Ops

- Computers are available for WMIRS, W&B, ORM, fuel slip
- Brief and get keys
- Turn in keys immediately after flight – first thing.
- Hand complete 104, de-brief (w/ fuel slip)
- Close WMIRS

Non-flight time – If you are not scheduled to fly don't hang around the airport. The classroom is always available.



Class information

Dropbox

Schedule

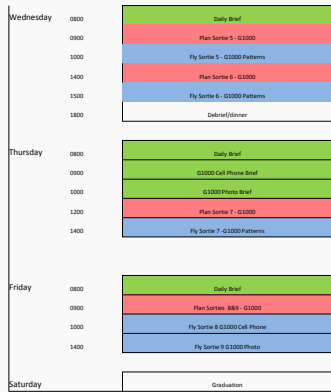
Rosters for all with names, phones, email

Curriculum

Printer capability



Schedule



Universal GPS method

Why ???

- Many CAP aircraft do not have SAR software (G1000 KAP 140 units, GPS 400 units etc.).
- Lat-Lon methods are inflexible and take time to plan.
- Universal method is flexible, easy to use and can be planned "on the fly".



Universal GPS Method

All you need is a GPS unit that has...

- User-defined waypoint capability
- OBS (Course Selection)
- Displays distance from Waypoint
- Displays Cross Track Error (XTK, XTE or >)

All GPS units in CAP airplanes have these capabilities.



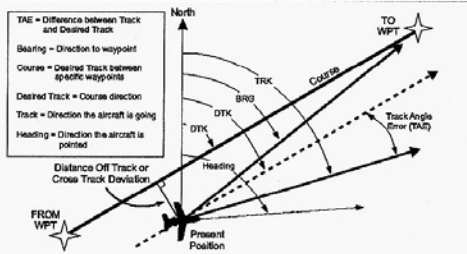
Universal GPS Method

Advantages of the Universal method:

- Set up on-the-fly. Almost no planning (except for the usual safety stuff). And EXTREMELY ACCURATE.
- Set up **one waypoint** for **Parallel track, sector search and expanding square (two for Creeping line)**, push OBS button, set course to the first leg course. Touch NOTHING afterward for the entire search.
- Minimum "heads down" time. No need to look at moving map. Must glance from time-to-time at four readouts:
 - Distance
 - Bearing
 - Xtrk
 - Track



Basic GPS Parameters



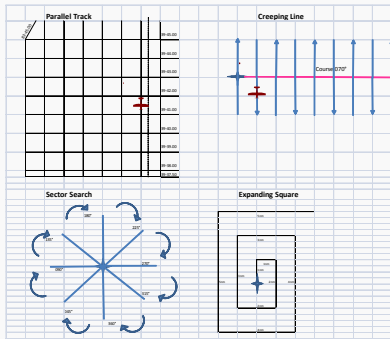
Universal GPS Method

A few setup thoughts...

- If doing Parallel Track search (grid), configure system to True vs Mag North.
- For display use North Up vs Track Up
- Display Distance, Cross Track Error, Bearing, Track on one page if possible.
- Align Lat/Long settings to CAP standard (DD - MM.mm).



Review of Patterns

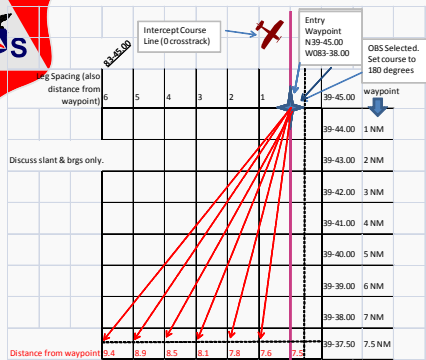
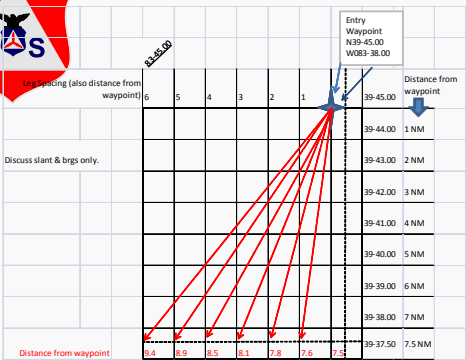


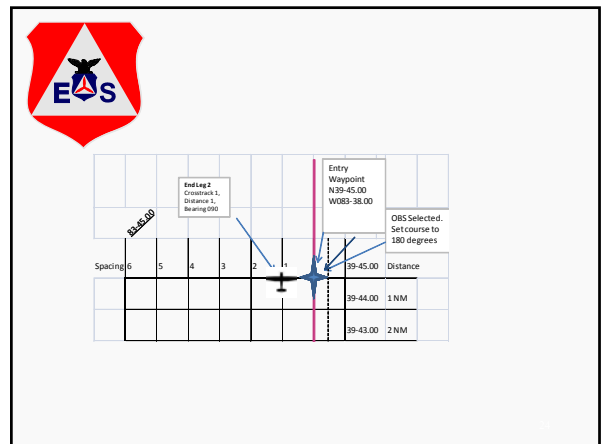
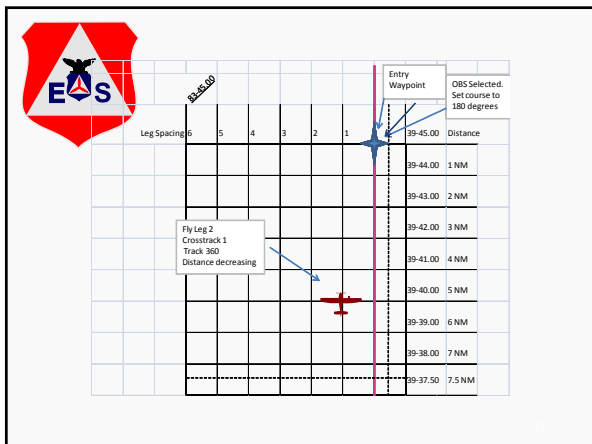
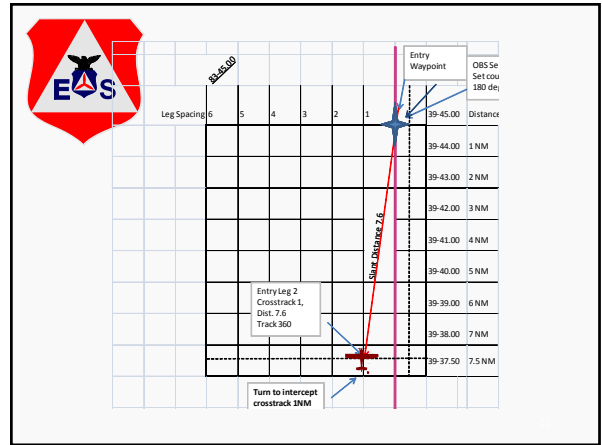
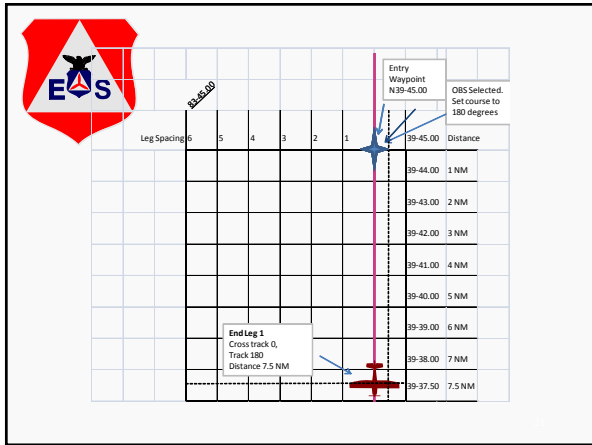
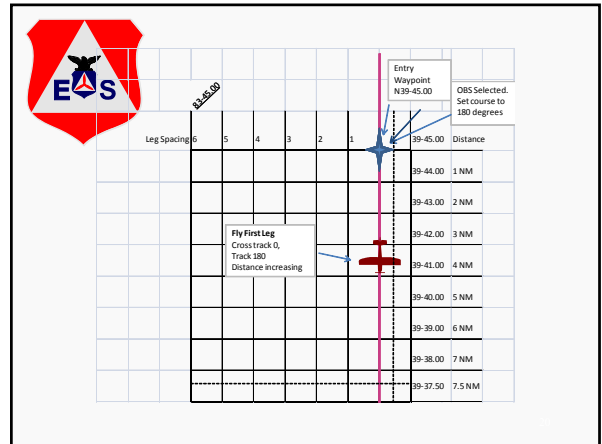
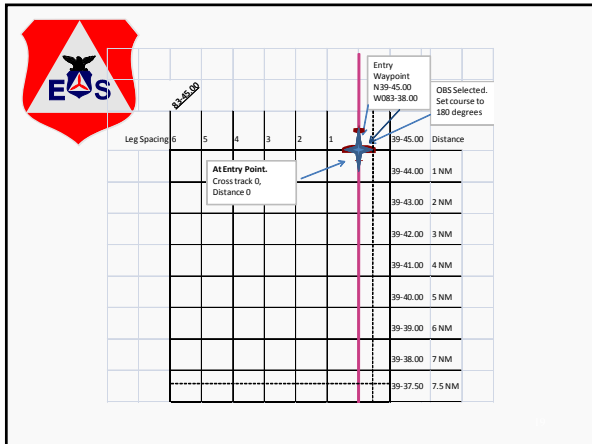
Flying the Patterns

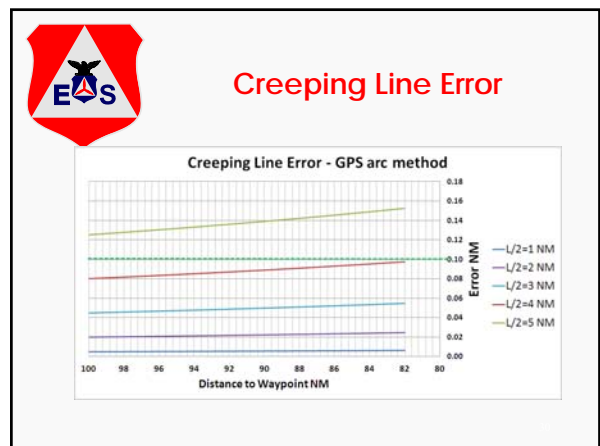
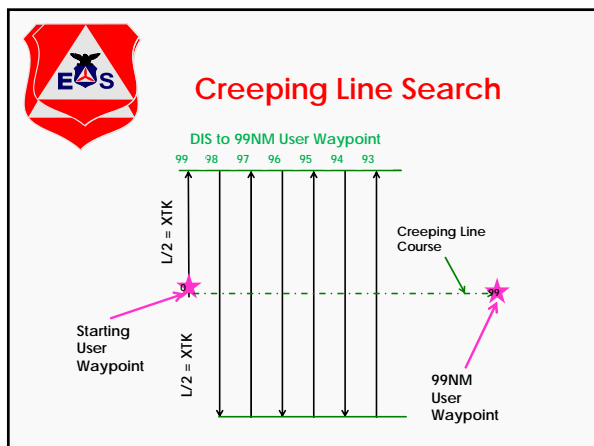
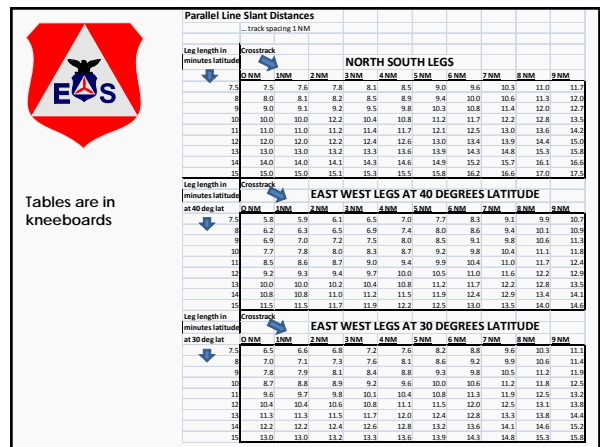
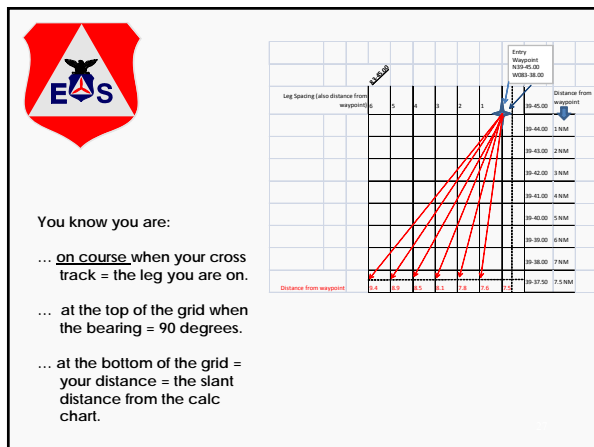
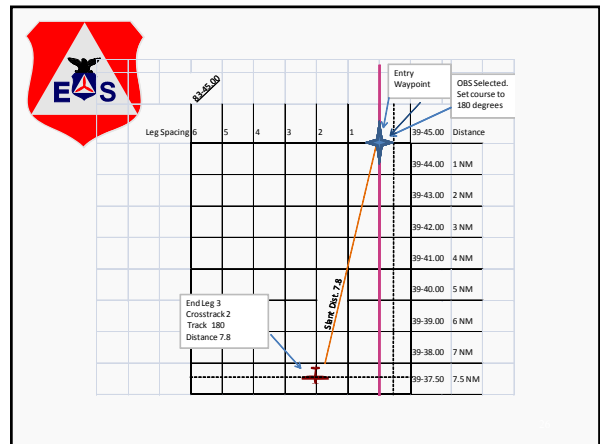
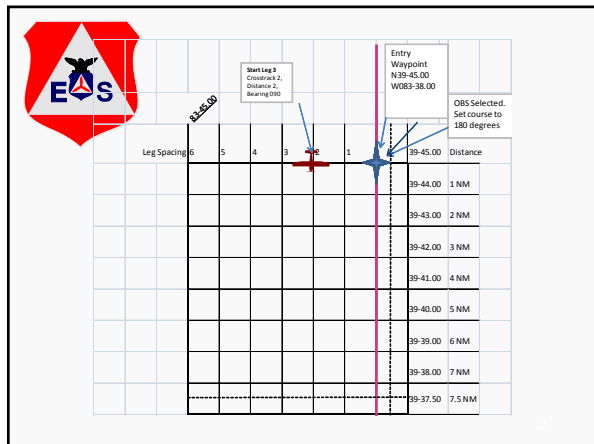
- Normally flown at 1000 feet AGL, 90 kts.
- Standard rate 180 degree turn @ 90 kts no wind = 1 NM track spacing.



Parallel Track - The Structure of the Grid



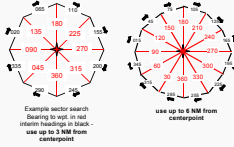






Sector Search

Sector Search



- Make user waypoint for center of search.
- OBS first course (e.g. 360)
- Fly up the leg – 0 crosstrack and mileage in and out.
- At top of leg, rotate OBS to next leg course.
- Turn, intercept course, and fly down leg.
- Repeat, repeat.



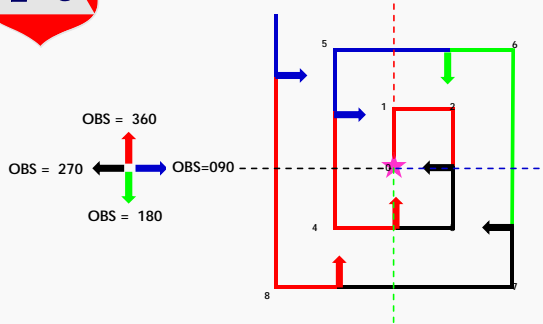
Expanding Square Search

One User waypoint, OBS, XTE, DIST, DTK data

1. Input user waypoint for center of expanding square search.
2. Load a "direct to" user waypoint flight plan
3. Set OBS to 360, intercept course line and cross waypoint at designated gs and altitude
4. At DIST=0.7, turn 180 right with 20 degree bank angle, roll out XTE=1.
5. Establish heading to stay on XTE = 1.0, use ground track bug if able
6. When ground track stable, set OBS=270; at XTE=0.7 turn right using 20 degree bank angle, roll out to achieve TRK=270 and XTE=1.0
7. Establish heading to stay on XTE = 1.0
8. When ground track stable, set OBS=360; at XTE=0.7 turn right using 20 degree bank angle, roll out to achieve TRK=360 and XTE=1.0
9. Establish heading to stay on XTE = 1.0
10. When ground track stable, set OBS=090; at XTE=1.7 turn right using 20 degree bank angle, roll out to achieve TRK=090 and XTE=2.0
11. Continue this process until the search pattern is completed



Expanding Square



Rest of Day

See schedule