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&A, 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

Saturday 1700 Course Brief

‐ Students and Instructors

1800 Instructor Meeting

Sunday 0800 Daily Brief

‐ Atterbury

0930 Course Inbrief

‐ Airport

1000 Generic method

‐ Airport

1100 GX55 Brief

‐ Airport

1200 Plan Sortie 1

1300 GX55 Sim

1400 Fly Sortie 1

1800 Debrief/dinner

Monday 0800 Daily Brief

0900 Plan Sortie 2

1000 Fly Sortie 2

1400 Plan Sortie 3

1500 Fly Sortie 3

1800 Debrief/dinner

Tuesday 0800 Daily Brief

0900 G1000 Brief

‐ Classroom

1100 G1000 Sims

1400 Pln Sortie 4

‐ G1000

1600 Fly Sortie 4

‐ G1000 Patterns

Wednesday 0800 Daily Brief

0900 Plan Sortie 5

1000 Fly Sortie 5

1400 Plan Sortie 6

1500 Fly Sortie 6

1800 Debrief/dinner

Thursday 0800 Daily Brief

0900 G1000 Cell Phone Brief

1000 G1000 Photo Brief

1200 Plan Sortie 7

1400 Fly Sortie 7

Friday 0800 Daily Brief

0900 Plan Sorties 8&9

1000 Fly Sortie 8

G1000 Cell Phone

1400 Fly Sortie 9

G1000 Photo

Saturday Graduation

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...
1. User-defined waypoint capability
2. OBS (Course Selection)
3. Displays distance from Waypoint
4. 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

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).

Universal GPS Method

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
Entry Waypoint
N39°45.00' W083°38.00'

OBS Selected.

Set course to 180 degrees

At Entry Point.

Cross track 0, Distance 0

Fly First Leg Cross track 0, Track 180
Distance increasing

End Leg 1 Cross track 0, Track 360
Distance decreasing

Turn to intercept crosstrack 2NM

End Leg 2

Cross track 1, Distance 7.6 NM

Slant Distance 7.6 NM

End Leg 2 Cross track 1, Distance 7.5 NM

Bearing 090

End Leg 2
You know you are:

... on course when your cross track = the leg you are on.

... at the top of the grid when the bearing = 90 degrees.

... at the bottom of the grid = your distance = the slant distance from the calc chart.

Creeping Line Search

Creeping Line Error

Tables are in kneeboards
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 ge 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

OBS = 360
OBS = 270  OBS=090
OBS = 180

Rest of Day

See schedule