BALLOON SERIES

Cornelis van Helden

# COMPETITION DIRECTOR'S INSIGHT

## OR HOW TO PICK THE BRAIN OF A CD

my-e-book
E-PUBLISHER WITH A DIFFERENCE



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# Contents

# Preface

This booklet is written for at least three purposes, and maybe even more. The three purposes are as follows:

***One***

To appeal to more pilots everywhere to become interested in competition ballooning.

***Two***

To educate newbie competition pilots, and to refresh old hands in order to make them better competitors.

***Three***

To share my personal experiences with everyone involved in competition ballooning, whether director, competitor, scorer, observer, steward, safety officer, measurer or crewmember.

What you are about to read is not just about flying itself. Flying is what the competitor has to do; however, I may refer to flying at times.

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This booklet consists of the following chapters:

**Chapter 1: The Rules**
The most important ones are explained or highlighted.

**Chapter 2: Preparation**
Preparing at base, competition area and during competition.

**Chapter 3: Tasks**
All tasks are explained.

**Chapter 4: Instruments**
A round-up of those commonly used.

**Chapter 5: Tactics, Reasoning and Logics, Conclusion –**
Tasks + (m)any combination(s).
Use your gut and brain and I hope it will bring you what and where you want to be.

Of course, I will not neglect my personal philosophy in this booklet. For the convenience of writing, when I mention “he” I also mean the numerous “she’s” that are involved in ballooning, so please no offence!

At the awards ceremony, we all should strive to have a winner who can be a true champion and a complete balloonist, meaning he has overall skills that excel in various kinds of disciplines, not just precision flying.

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For someone to be a true winner we should be able to say yes to the following questions:

- Has he given proof of good airmanship?
- Does he demonstrate clear and logical thinking?
- Is he well prepared, well equipped?
- Is he a good precision flyer?

- Is he a good planner?
- Is his crew skilled and capable?
- Does he know and interpret the rules correctly?
- Does he use his intellect to make the right decision at the right moment?
- Does he have enough insight in conditions, such as terrain, meteorological, time of day?
- Does he contribute to Crew Morale, Fatique Management, etc.?

We all know that precision flying is a skill that most competition pilots have developed to almost an art. But, isn't it very frustrating to be at 98 cm from the centre of the target with your marker? So now, as a result, you are no.25 in that task and only obtain half of points of the best result, because the best result was, for instance, 7 cm.
This makes me a strong supporter of an Event Director (ED) who is willing to do the following:

- acceptable risks in a task setting;
- set interesting tasks for competitors, and not forget the interests of
- crews;
- observers;
- and all officials involved.

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As a result of the last 10 years of important competitions, like Continental and World Championships, I have drawn the conclusion that those competitions have excelled in simple task settings that could have been prepared from the study den of the ED.

For these task settings, the ED only to be there to see the weather, the terrain and the environment.
This does not mean an ED's task is limited to task setting only, no way; he needs to have an overall picture of the event, which requires a lot of other skills.
But that's not what this booklet is about.

Please send on your comments and suggestions. I will treat them with care and respond to them all.

Joyful reading and many happy landings.

I especially want to thank David Levin for his comment on my work, because without it, it would have been not as valuable as it is now.

Furthermore I would like to thank MaryAnne Donovan, who has prevented me from making many mistakes in my English language.

A big thank you to the guys at Balloon-E-Zine who are responsible for the compilation of my work in the form as you see it in front of you.

**Cornelis van Helden**
PS. Take care, especially when not flying.

# Chapter 1

# The AX Model Event Rules

Some parts in the rulebook relate to the Sporting Code. These sections are generally applicable to each sporting event that takes place under the FAI supervision.
These sections are indicated by mention of the article of the relevant document.

The rules consist of 3 sections:

*Section 1*
is about event details and will be variable, depending on each event.

*Section II*
is about the competition details and will also be variable.

*Section III*
is about the event rules; only chapter 15 in this section can be modified by the Event Director (ED).
Where relevant, comment or explanation will be given.

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*Section 1 – Event Details*

Here, the organisers of an event write down their details regarding the event, including:

- The title of the event.
- The organisers, addresses.
- Personnel, such as directors, safety and jury.
- Where, when, language, closing entry date, etc.

If you are waiting for an entry in a World or Continental Championship, keep close watch on entry deadlines and make sure your CIA delegate is on top of the entry process for your country. Otherwise, you could lose a slot at no fault of your own.

*Section II – Competition Details*

Also performed by the organisers in close cooperation with the event director.

These details include:

- The contest area:
  *Maps that will be used, map datum, grid system, magnetic variation, Grid North, True North.*
- Out of bounds area:
  *Generally to be indicated at Official Competition Map before the start of the event.*
- Prohibited zones:
  *List to be announced and provided, generally before the start of the event.*
- Common launch area's (CLA) and points (CLP):
  *CLA and CLP position to be given with map co-ordinates and meters AMSL.*
- Landowners permission, live stock and crop policy:
  *General conditions during the event.*
- Air and driving law:
  *ATC restrictions to be drawn on the competition map.*
  *Local driving laws to be provided.*

- Recall procedure:
  *Several methods, can also be combined.*
  *Radio communication over radio or local radio station.*
  *Via sms, mobile phones or pagers.*
- Goals to be used and those not because of safety limitatons:
  *How to assess the centre point of an intersection.*
  *Certain roads, railway and built-up areas.*
  *Or within 200 meters from a (indicated as) Motorway and Power lines on the Map.*
- Communication times:
  *Generally 15 minutes before task briefing the director or his assistant is available.*
- Official notice board:
  *To be announced at general briefing where it will be.*
- Publication times on the last flying day:
  *This should be watched carefully for shortened time limits for complaints and protests.*
- Details for the use of GPS loggers:
  *These details are crucial for obtaining results when loggers are used for scoring. Most important is to make sure the logger is attached to the balloon and turned on.* ***Otherwise, no result.***
- Time limits for complaints and protests.
- Balloon size category that can be excluded.
- Worst score(s) exclusion.

*Section III – Rules*

The author would like to stress that this comprehensive interpretation of the rules is strictly personal and cannot be used as a reference to the real rules; the latter prevail at all times.

These rules are generally fixed so they can only be changed, as agreed upon during competition rules sub-committee meeting, when they are to be used in a sanctioned event.
*In local events these rules sometimes are modified before the event starts.*

And the rules, as laid down in Chapter 15 (tasks), can be changed during the competition provided the changes are in writing. This will be discussed in Chapter 3 of this booklet.

**Chapter 1 – Objectives**

Number 1 objective is to determine who will be the champion pilot.
Number 2 objective is to define the champion.
Number 3 objective is to clarify language interpretation.
Number 4 objective is to designate the documents that will be inspected at check-in.

**Chapter 2 – Entry Conditions**

- A competitor should have the right to represent his NAC in the event, with some exceptions.
- A competitor should be qualified to act as pilot-in-command for the event (generally a license for 12 previous months and at least 50 hours of experience as pilot-in-command).
- A competitor should:

  - hold a sporting license;
  - send in his entry form and pay his entry fee in time;
  - receive an acknowledgement;
  - accept the sporting code;
  - accept a waiver by the organizers;
  - be aware of his liabilities;
  - be aware of safety in his responsibility at all times.

- Behaviour – Entrants, competitors and their crew should behave in a sportsmanlike manner and comply with the direction of event officials. Inconsiderate behaviour shall be penalized.

**Chapter 3 – Balloon**

- What a balloon is (i.e. no vents are allowed to be used, upon possibility of penalization, unless tasks are completed).
- Take enough fuel (tanks) with you.
- Be aware of balloon documents for registration and airworthiness.
- If there is damage and if repair is possible, it should be reported to ED, replacement of envelope only with discretional consent of ED.
- No automatic flight controls are allowed.
- Must have altimeter, to be seen and read by observer.
- Basket number is to be displayed outside the basket; same number on chase vehicles.
- Retrieval crew/vehicles are to be at distance of any set goal or target.

**Chapter 4 – Organization Officials**

Describes the tasks, duties, and responsibilities of:
- Event Director,
- Stewards,
- International Jury,
- Safety Officer.

**Chapter 5 – Complaints and Protests**

This chapter describes the order and protocol of how protests should be handled and how to avoid them altogether, including:

- how to ask for assistance;
- how to file a complaint;
- how to communicate and what is to be published before the protest;
- how to handle a protest and how it is treated;
  Be aware of time limits.
- a written complaint should be filed within 8 hours of official publication;
- the answer to the complaint does not change the 8 hour limit;
- if dissatisfied, the pilot should tell within one hour that he wants to protest;
- publication of a new score or protest will only effect the time limits for the score concerned;
- all other scores will be on the 8 hour time limit!

**Chapter 6 (1) – Observers**

This chapter examines what an observer is and what his/her duties are, including:

- how to be appointed;
- how not to assist the competitor;
- how to witness other balloons;
- how to behave and where to be during retrieval;
  *Pilot should tell their crew to not let the observer out of their sight during flight. Competitor being observed comes first.*
- how to file a report;
  *Competitor should ask for copy.*
- the use of loggers.

**Chapter 6 (2) – Loggers**

The articles explain:

- what a logger is;
- how to handle them during competition;
- who is responsible for the good care of the loggerand when;
- what to do when logger fails; use you own GPS as a backup;
- FRF, a flight report form to be used about the conditions and remarks of the flight, comparable to the former Observer Report Sheet, but with less information requested;
- most important is to make sure logger is turned and attached to the envelope. **DON'T FORGET**. Best to have backup logger like geko 201 or e-trek.

**Chapter 7 – Maps**

This chapter covers:

Definition of the contest area, where the competition will take place.
Out of bounds are areas where results cannot be achieved.
*Generally at the border of the competition map (preferably in blue).*
Prohibited zones are areas of restricted airspace: red, yellow and blue.
*Yellow means no take off or landing:*
*- you can fly there at any altitude, even set goals or mark.*
*Red means no fly through and goals set, has upper limit:*
*- you are allowed to mark in that area.*
*Blue means no fly through, has lower limit:*
*- ATC restricted, can only be properly checked when using loggers.*
PZ are not always in force, per flight to be announced.
*Written on the task sheet.*
Penalization of violating PZ's in force.
*Depending of offence, up to 1000 competition points.*
Competition map, with all PZ's and Out of Bounds Area's on it plus an aeronautical map to be carried in the basket during the flight.
Map co-ordinates are eight-digit, west-east first (4 digits), then north/south (4 digits).
*Example 34256857.*
Competitor should know if target numbers are allowed instead of coordinates.
For scoring purposes, the earth is flat.

**Chapter 8 – Program Briefings**

Director decides upon amount and frequency of tasks, flights and rest periods.
*Flight program is published on official notice board.*
Valid task definition.
*Where all competitors have been given a fair opportunity to make a valid take-off.*
Director may cancel task(s) for safety reasons at any time, but before publication.
Tasks are chosen from Chapter 15, and can set more than once.
There can be multiple tasks in one flight.
*Penalties during landing and take off apply to the applicable task.*
Task setting should aim to win each task separately/
*This is not always the case, but the director should avoid that.*
Tasks should be flown in order, unless indicated otherwise.
*The information will be on the task sheet.*
Markers should be used for task indicated.
*Wrong marker order 25 task points per task.*
Rules agreed upon before the event cannot be modified except for Chapter 15, Task Rules.
General briefing will be held before the event with all participants and officials present.

*Compulsory for all.*
*Late entry may be accepted by director in consultation with jury before publication of first scores.*
*After roll call official entry list to be compiled and published.*

Task briefings are held before the flight.
Task data to be found on the task sheet, consisting of compulsory items, when applicable.
*See task sheet example.*
*Competitors should ask questions during the briefing if they have any questions about the task sheet or the rules.*
Supplementary briefing directive.
*Pink flag at common launch field, competitor may send crewmember.*
*Often about change of task specifics, weather etc.*
The way to enter the flight/task.
*Answering roll call.*
GPS time is official time.

**Chapter 9 – Launch Procedures**

Definition of Common and Individual Launch Areas (CLA, ILA) and Common and Individual Launch Points (CLP, ILP).
Also includes:
Landowner's permission procedures for take off or landing.
*Don't drive on someone else's property without permission.*
*Be aware of crops of livestock on fields. Don't cause any damage.*
Regulations about vehicles to be used by CP.
Where to prepare the balloon.
*At marked spots on CLA or instructed by launch masters.*
Tie-offs to be used.
*Always.*
Signals point and coloured flags to be used.
*Learn flag colours and their meaning by heart.*
Launch period is strictly regulated, but time can be extended by launch master.
*Don't start to inflate before proper signal.*
*Don't take off without permission or too late.*
*However, when you choose your own launch field, you can start inflating anytime as long as you don't take off before launch period starts.*
Take off regulations.
Clearing of launch area.

**Chapter 10 – Flight rules**

Includes:
Rate of climb
*Be aware what is above or under you.*
Right of way
*The higher balloon must give way.*
Behaviour, live stock and crop, landowner
*Don't do to others what you would not like done with you.*
*Don't pick goals close to livestock, because you cannot descend below 500.*
Collision between balloons and also with power lines, etc.
*All may be penalized.*
Some articles about crew, passengers, driving on retrieve, assistance to pilot.
Air law.
*Be aware of restrictions and regulations.*
*Use of loggers can be easily checked afterwards.*

Recall procedure!

*It's compulsory to listen on given frequency or method.*

**Chapter 11 – Landings**

Covers:

Type of landing, at will, contest landing (landing with marker on board).

*Keep proper distances.*

*Contest landing is with marker aboard and landing spot will be taken for measuring.*

Rules about ground contact, various types for penalty reasons.

*A commonly made mistake is to descend too fast or too long in vicinity of the goal.*

*Ground contact within 200 meters is heavily penalized.*

*Ground contact also happens very often during minimum distance tasks.*

About permission to retrieve.

**Chapter 12 – Goal, Marker**

Goal definition, identification, and selection

*Goal has a reference to the coordinates on the map.*

*When you have done your homework, (see Chapter 2), you will have found quite some suitable goals.*

*Sometimes the event director has prepared fixed goals to be chosen from.*

*For measuring a result, be aware of method of measuring centre of intersection, (explained in Section II).*

*When declaring a goal, pilot may give additional information about which goal he means, by making a drawing; it can be very useful to put that on the marker when FON task.*

Target, marker, mark

***Target** is a cross displayed near a goal or at specific coordinates.*

*Its size is 10 x 10 x 1 m. and it can have different distinctive colours.*

*A **marker** is a streamer of generally balloon fabric material with specific length, weight and different colours.*

*Marker(s) must be visible in the basket before take off.*

***Mark** is the position of the weighted part of the marker.*

***Observed mark** is measured mark. Crew is to help observer find the marker; only officials may touch a marker when on the ground.*

***Lost marker**, when it is not found and in hands of the official in time. Director may grant an extension for searching if there is enough evidence to believe the marker will be found in the extended time. Director should not lenghten the extension to the next day.*

*You should always have some spare marker(s), in case you lose them. they can fall unexpectedly from your basket or pocket, or, even worse, you forget to take them with you!*

*The spare marker(s) should be recognizable as such, same size and weight, but halfway change of colour(?), you should use for the end a very light or even flashy colour, to find it easier in the dark.*

*Write your name on them in full.*

*When you have no marker, use a glove or something; if you throw nothing you have no score, but with an alternative, you might!*

Methods of Marker Drop

***Free dropping method***

*Unfurl the marker and throw it as close to the goal or target as possible.*

*An often used method, when you are at a distance from the target/goal, is to take the marker at 1/3 from the end, propel it vigorously so that it curls to a type of rope and then release it at the correct moment towards the centre of the goal or target.*

*A commonly made mistake is to release at the wrong moment, which makes the marker end up going into the fly wire;, therefore practice this method when on the ground or in fun flights.*

*Some say whoever can throw the best can win, because this way you may cover 20-30 meters.*
*Common mistakes are the marker is not unfurled, or you have the wrong marker colour.*

***Gravity drop***

*This method has evolved over the course of time.*
*The reason to require a gravity drop is to distinguish competitors in real precision flying.*
*This is generally used in light weather conditions or when the previous scoring results are very tight.*
*One of the first methods was to have a PVC tube on the outside and you had to let the marker fall down; this was not always fair as the basket can be 1,5 x 1,5 meters, so you would need 4 tubes, one on the other side. For some time this was the only method.*
*After that came the method to have it hanging free from your hand by the tail on the proper side, not moving the marker itself at all, so you can optimize your score; when you are long and have long arms you definitely also have an advantage.*
*Now the latest method is a drop from inside the basket and no hands visible when the marker hanging outside is released.*
*A commonly made mistake is to forget about the gravity drop, but also to make a movement or a change of position and a movement. This is penalized when seen by officials.*

Search period, scoring period and scoring area

***Search period*** *is from the start of the launch period.*
***Scoring period*** *is the time frame within a goal or target (area) that is valid.*
***Scoring area(s)*** *is an area(s) within a valid mark that can be achieved.*
*In a scoring area with a gravity drop, competitors who see they are not getting above the scoring area often prefer to get in a free marker drop, thus accepting a penalty over a no score!*

**Chapter 13 – Penalties**

Unsporting behavior

*Unsporting behavior can vary largely, but is mainly a severe infringement of the rules of the competition such as real cheating, falsification of documents or markers, deliberate attempts to mislead officials etc. Could result in disqualification.*

Unspecified penalties

*For the infringement of a rule, that by itself specifies no penalty, a penalty may be applied.*

Infringements

*Distance infringement will be calculated and added twice to the result of the competitor.*
*For angle and elbow, a special formula is applied to decrease the achieved angle.*
*For land run and race to an area the penalty will be 1 point per meter of infringement.*

Penalty points

*Two types*
***Task points penalties*** *are subtracted from the task score, which cannot be below zero.*
***Competition points penalties*** *are also subtracted, but may result in a negative score.*

Event officials are to prove that a competitor has made an infringement.

**Chapter 14 – Scoring**

The result of a task

*Can be represented in different expression: meters, square kilometers, minutes or degrees, all with a two decimal accuracy.*

The score is the number of points achieved in a task.

Publication of tasks

*Should be published as soon as possible after the flight on the official notice board.*
*Competitors should always check their results. Mistakes are often made in scoring and only discovered by competitors.*
*Rules are specified, what publication of results must contain.*
*CvH: it would be advisable for a director to publish:*

A. *an overview/table of the status of all tasks.*
B. *preliminary results based on pilot's estimates or from observers as is done now with measuring team result.*

Ranking order, formula, measuring and precision

*Three groups are defined,*
***Group A*** *All measured results (or assessed)*
***Group B*** *Task flown but no result*
***Group C*** *No valid launch or disqualified.*
*Each group will be treated differently in the calculations, for which there are several formulas*
*Precision that will be adopted depends on the method of measuring.*

Total scores

*Overall result of the competition, eventually when applied excluding worst score(s).*

Exclusion of worst score(s)

*Quite a new rule, discussion started after Worlds 2002, where some competitors would have scored one or two places better in the overall ranking if the worst score(s) would be taken out.*

**Chapter 15 – Tasks will be discussed in Chapter 3 of this booklet.**

# Chapter 2

Although every Competition Pilot is able to fly in competition upon arrival it is wise for him to prepare before his arrival even if he has been to or flown in the area previously.

My advice is as follows:

ALWAYS PREPARE AND DO IT IN TIME.

We have 3 phases in preparation and each can be subdivided.

Phase 1 will be at home base where you must prepare the materials and equipment as well as the map and its features.

## Phase 1 – Preparation at home

## Material's checklist

*A. Balloon Papers*

- Certificate of Registration
- Certificate of Airworthiness – current and expiration date
- Insurance policies for the balloon, carrying passenger
- Pilot's license
- Pilot's logbook
- Balloon logbook
- Sporting license

*B. Balloon Equipment*

- Basket – no major damage or missing parts, trim all broken wicker to avoid tearing fabric in the event of basket to envelope contact
- Sufficient gas cylinders, filled (enough for long flights)
- Grease for easy coupling
- Envelope – preferably no burned panels or small holes
- Fly wires, connecting material, well running, no sharp parts
- Top- Crown line secured
- Quick release in good condition
- Ventilator – good sparking and sufficient fuel (reserve)
- Burner frame and uprights not bent
- Burner valves and pilot lights tested and working
- Fire extinguisher ready for use
- Helium bottle filled and sufficient pi-ball balloons. At important championships, it's a good method to use a forward vehicle to get to goals before the crew and check the winds, using a (smaller) helium bottle. The extra car could be used to return pilot (and observer) to competition centre while Crew Chief refuels
- Silicon grease aerosol for hose couplings
- Sharp large knife
- Scissors
- Spare "0" rings
- Small repair material
- Screwdrivers
- Jack pliers
- Repair fabric and repair tape

- Sewing machine (if you are certified)
- Spare envelope (if you have one)

*C. Retrieve Vehicle(s) Papers*

- Plates of Matriculation plus papers
- Insurance for vehicle, third parties and passengers
- Insurance for trailer
- Insurance for transport of equipment
- Valid driving licenses for all who drive a retrieve vehicle
- Spare key

*D. Retrieve Vehicle(s) Equipment*

- Brakes ok
- Oil level ok, spare oil bottle
- Tires – good shape and pressure at level and tested
- Spare tire available, on pressure and secured
- Jumper cables
- Car clean – inside/out
- Sufficient water for windshield wiper
- Extra wiper for windows on humid mornings
- Lighting working inside out
- Big flashlight for emergency and search of markers
- Spare bulb and batteries for same
- Connection to trailer working and ball
- Greased

*E. Retrieve Vehicle(s) Trailer*

- Spare tire – stowed and correct pressure
- Tires, correct pressure and tested
- Release equipment functioning
- Electrical connection tested
- Clean inside and out
- Balloon equipment securely stowed
- Brake tested
- Brake cylinder tested
- Matriculation plate properly attached
- Connection device tested and greased
- Remove the cover (if possible) from the trailer, so the balloon can be set up with uprights and burner ready, while looking for pilot's choice of launch site!

*F. Flying/Competition Material*

- GPS
- cable to connect to PC
- batteries
- fixture during flight
- Software Ozie Explorer installed (latest version)
- Competition map digitized
- Plywood plate or support for physical map in balloon during flight
- Altimeter (batteries)
- Radio set (recharge adaptors)
- Frequency list of competition environment

- Mobile telephone + adapters
- List of mobile telephone numbers of crewmembers
- Binoculars
- Wind/anemometer
- Compass
- Charging material for electrical equipment

*G. Small Material*

- Portable PC/notebook
- Printer
- Spare ink cartridges
- Sufficient printing paper
- Internet connection
- Pencils
- Colour markers for writing on maps
- Set of pliers
- Template for circles
- Water resistant black marker to write on marker
- Triangle
- Calculator
- Enlarging glass
- Spare competition markers in different colours, with your name clearly on them (eventually with tail end in lighting colour (yellow fluorescent, for easy finding)
- Sunglasses
- Spare for your normal glasses and for sunglasses

*H. Map Evaluation and Preparation*

For proper preparation before the competition actually starts, organizers should provide the CD with the following:

A. Competition map(s).
B. Digitised version of competition map.
C. List of known PZ's.
D. List of CLA's with coordinates and AMSL.

If organizers are not doing this, be sure to acquire the map(s) of the competition area from them as soon as possible. Also, ask for a digitised map.

Study the real map for the road system, types of roads, and become familiar with the map's legend. Be sure to note the map datum and grip.
Sometimes you may have a proper map but with a user defined grid.
If so, this should be indicated in writing and displayed on the Official Notice Board
Make sure also to note this in your GPS later.
It means a correction to the grid and references of the GPS system.
Be aware of the local magnetic variation.
Reference to the Northing is relevant (of importance with the Angle task)
Put in the known PZ's and eventual CLA's.

If the organizers don't have the map digitized, go to the local copy shop and see if they can do it for you.

Put the digitized map in your computer (preferably in the notebook you will have with you during competition) and with the aid of Ozie Explorer you can find your goals.
It would be handy to pick the brain of the Competition Director, divide the roads you would choose in categories such as yellow, white and single line (as an example).

The numbering system of intersections:
Yellow intersection (one road at least is yellow) start with 1, white with 2 and single line with 3.

Work systematically on the map from left to right starting at the top. Be aware of safety aspects, such as built-up areas, railroads, power lines and motorways. Use the cursor to get the exact coordinates and save them in your computer; also write the number on your physical map.
In the end you'll have a list that can be sorted in many ways, on type of road, in which square on the map etc.

This list is your basic material before you go to the competition.
Another way favoured by Americans is to work with quadrants and start numbering with NE as 101, SE as 102, and number them in order according to bearing from CLP.

This list is your reference when the CD sets the tasks, with a FON, a PDG, or a certain type of HW.

# Phase 2 – Preparation at the Competition Area

Second Stage in Preparation of the Map.

When you are on site, be sure to have the physical map available with all the known goals so you can study and investigate the situation.
Be sure to know the types of roads you can use.
See if your map information is the same as that of the map on the Official Notice Board.
Take your navigator, your Crew Chief and your notebook with you to start your search of qualified goals.
Use your list and work systematically.

Make notes about each goal on your list, and be sure to note down the situation.

Decide if the goal would be fit, meaning clearly and openly approachable.

If not, what are the negative aspects, such as:

1. crops around it;
2. trees;
3. power lines that are not on the map;
4. terrain:
    - water in the vicinity;
    - hilly (uphill or downhill, from which side);
    - ditches or canals;
    - bridge in the vicinity.
5. conditions of the road: hard surface, sand, dirt;
6. centre easy to be marked;
7. live stock (500 ft. limitation).

Put all the goals you deem to fit in your GPS, under the same name (number) that they are in your notebook, on your map, and on your print-outs.

Prepare a thorough description of each goal so that you are prepared when the tasks are set where you need to chose your goals.
Print the whole set for reference for yourself, your Crew Chief and your Navigator.
When your team up with friends from the same club or same country, you can divide this time consuming work among all of you.

Sometimes there is no reward for all your efforts:
while the CD is not setting one of the tasks these goals are designed for;
when the competition is too small or too insignificant to bother, or;
when the CD presents a list of permitted goals himself.

Still you have performed a useful exercise. It's always good to train, and be serious and precise, all of which can help you win a championship.

*Crew Chief's Responsibility.*
Check on all balloon equipment and instruments.
If possible perform test flight. Check on refueling and methods.

# Phase 3 – Daily Preparation at Competition

Crew Chief:

Be sure to have everything you need for the competition ready and available before the first and every flight.
Be sure that the balloon and all equipment are ready and charged, in proper shape and clean.
Check that gas cylinders are filled and secured in the basket.
Ensure that the piball is ready for release, and equipment for measuring is ready.

**During the Flight:**

Do not disturb the pilot, unless he asks for assistance. Keep him informed about situations that you consider important, like "it's gravity".
Drive moderately, comply with speed limitations and be careful, especially on dirt roads and/or where measuring takes place!
During the tasks, only be underneath the balloon when the pilot asks you to, otherwise be at the (intended) goal; don't park the car too close to the goal. Make sure you know the distance limitations.

When at the goal itself, be sure to have your observer with you! If it hasn't already been done, ask the observer to mark the centre before the marker is dropped. Then take that as the centre, because the pilot will aim to it, so be sure to inform him about it.

Putting up a piball on a string can be useful to watch surface winds.
Always have at least two piballs ready for launching.
Park where you can observe approaching balloons and report to the pilot on their progress and accuracy.
Note the approach track of accurate balloons and report to pilot, eg "come in over red barn and approach low."
As balloon approaches goal, remind the pilot of the type of drop and not about power lines.

When the observer is in the basket, ask beforehand if you can mark the marker when it is on the ground, unless there is another official available who will want to do it!

When the pilot has scored and the result is close so that measurement can be quickly taken, measure only with the observer. But don't let the observer take time to make a drawing, because then you will be late at the next marker!
You are in charge, not the observer; once you have the marker, the mark and the result, you can always come back later for the drawing!
When there is a target and a measuring team, don't let the observer go to the target to find out about the result unless the pilot is curious and wants to know. The result does not change during the rest of the flight, so don't lose unnecessary time.

One important thing, be as close as possible to the pilot when he lands, because that will speed observing or debriefing.
But don't touch the basket until requested by the pilot, it might be a competition landing!

**After the Flight:**

When there are measurement teams on all targets and the result is within 100 meters only, try to establish whether it was marked and measured.
Be aware of the search period (beginning of launch period + a certain amount of time!).

After measuring in the markers, get back to the competition centre to deliver pilot and observer, and go for the gas refueling site.

During refueling, take the waiting time to get your balloon equipment in order to be ready for the next flight.
Keep chase vehicle clean and orderly.
All equipment in vehicle should have a specific location.

The pilot lets the observer complete the observer sheet, but the pilot should check everything as his signature suggests, that he agrees.
Request that the observer use a pen (not an erasable pencil)
Many an inexperienced pilot has gotten poor results because he did not check the observer sheet properly.
North should be clearly indicated on the drawing!

When finished, ask for a copy before the observer is debriefed; same goes for Flight Report Sheet, which is a similar document for the competition where loggers are used.
It is less informative.

# Chapter 3

## Tasks

In this chapter we will do the following for each task that can be used in a competition:

Explain what the task is about:

- Write out the text of Chapter 15 of the AXMER Rule book.
- Make a diagram or drawing of the task to be carried out.
- Discuss possible variations.
- Give a resume for all involved.

We will also teach you:

- How to use your options to have the best possible result.
- How to recognize where officials are placing their emphasis.

After completion of this chapter you will possess a basic but vital knowledge of:

- What the tasks consists of.
- Where to pay attention.
- And especially, what not to do!

All tasks have one thing in common:
Precision Flying.
Try to fly exactly over the weathervane of a church and you get a picture.
If you are good at it, you have a fair chance of winning in competition.

Most pilots who fly have a feeling with their balloon.
In general aviation we call that flying by the seat of your pants.
You feel what the plane does in your butt.
In ballooning a pilot feels it even when there is a slight change, whether in up or down movement, or more or less speed.
The pilot knows without even seeing an instrument.
This is the basic sense needed for competition flying.
When a pilot doesn't have that feeling, he still can win.
However he has to compensate by technical virtue and skill.

The tasks consist of 19 or 20 different possibilities for a Event Director **(ED)** to choose from.
He may make changes to them, or even make them virtual, (eg. Set a goal up in the sky), all to make the tasks more interesting.

However, an ED should be aware that when setting tasks, the flight can be performed in such a manner that a Competition Pilot **(CP)** can win each task separately and independently.
(I would call that "fair" practice)

When a CP decides not to fly a certain task, because he knows he will not do well, and decides instead to go for the next one, we do not call that "mal" practice but rather smart tactics, which I will further explain in chapter 5

Watch minimum distance rules when doing this.

In all tasks, every flight, every competition, -before, during and after-, the most important person is the CP, he is no 1, and his interest should be served.

I will also look at each task from different angles as well as at each discipline involved in competition flying.

Sometimes the description of later tasks will not be as extensive, because they may already have been described earlier in this chapter.

You will also find more about tasks in Tactics, Reasoning and Logic in Chapter 5 of this booklet.

**Remarks About the Rules of the Competition in Chapter 15**

First, what are tasks?
Tasks are the disciplines in hot air balloon competition.
Several tasks are generally carried out in any one flight.
There are 20 types of prescribed tasks.
Decisions on the type of tasks to be set are made in light of the local geographical and meteorological conditions at the time, and then provided in print to the participating teams at the task briefing.
Tasks can be separated into 3 main skills:

1) Flight accuracy with respect to pre-determined targets.
2) Speed, time, and distance.
3) Precision in flight movements during changes of course, etc.

In all cases markers are used and the common basic rule is that points are calculated in relation of the measurements of where the markers fall.

***Event Director***
The task sheet has a recommended layout, but it shall contain minimum information (as per R. 8.8.2 and R.8.8.3).

***Competitor***
Get as much information as possible on wind force and direction at different levels. Write this all down!
Be aware of wind change, in both direction and speed, and note also the difference in magnitude between morning or evening.
Draw a line with a pencil from the start position along a line that represents the prevailing wind direction.
Repeat that from task to task from the position of the last mark.
In important events it is a good idea to work as a team with other balloonists and have a windreader operator available to the teams.

When there are distance constraints, draw circles on the map from the launch point or previous goal/mark.
Put your goal(s) in your GPS.
When you drop your marker, fix the position in your GPS as close to the time and position when and where the marker hits the ground.
When an observer is in the basket, tell him/her to make a sketch of area where you dropped the marker from above. This will save you time at debriefing!

***Observing***

**Chief Observer:**
Before the task briefing explain the tasks to be flown and the particulars that are important for the proper observing of those tasks.

**Observer:**
Always check the map for the goal(s)/
When you have done this, put the goal(s) in your GPS.
When flying, note the position of the marker as close as possible with the GPS.
Make a sketch of the situation from above (on blank paper); this saves time later!
When at the goal, write down an impression of the environment and refer to North when describing.

Make a drawing according to the map and be sure to designate North in your drawing.
If you have a digital camera, take a picture.
If possible mark the centre of the goal with your spray can.
Note the time when and where the marker is dropped.
Be aware that the chase vehicle should be far enough away and the crew should not be at the goal without you.
If possible mark the marker properly and take it with you! (write down your pilot number at the mark)

***Crew***
Ask the pilot for his goal(s); write them down if they are not on the task sheet and then search them on the map!
Compare with the pilot.
Do not follow the balloon, but after launch go to the goal, or the one that the pilot has indicated, unless he instructs otherwise.
When at the goal, which has not been inspected before the competition started, inform the pilot what you see in the goal area. Be aware of special circumstances like power lines, bushes, trees, (height and size), field type etc.
Let the chase vehicle be at a distance from the goal area.
Only go to the goal area with the observer.
Let the observer be at the goal, mark the centre with a crewmember, and follow the instructions given by the pilot; a good method is to be 100 meters behind the goal and give assistance to the pilot if necessary (up, down, left, right). But always follow the instructions of the pilot.
Be aware of time constraints for all tasks.

***Measuring Team***
Have a clipboard, tape, and small flags with pins available.
Be at the target or goal long before the balloons arrive, or at least go there directly after the task briefing.
When feasible, make a drawing of the relative positions of markers.
When the Measuring Team has the equipment (theodolite), they can go out to the most likely goals (when there are more goals possible in a task), to see if markers can be measured.
Prepare a list with results for publication at the goal (have a pole to attach it to) + a copy as a first unofficial publication.

***Jury***
Check on the validity of declared goals, related time constraints, and distances.

***Debriefing***

**Chief debriefer:**
When available, distribute the list of the measuring team's results among your debriefers.

**Debriefer:**
Check on the validity of goal(s) when self-declared (PDG and FON).
Within safety limits, if no list is compiled of valid goals, check on all distance constraints and time limits for scoring.

Check time of marker drop, to verify scoring period.
GPS coordinates, may be needed for the following task(s).

***Scorer***
Put in results as they arrive from Chief Debriefer.

***Safety Officer***
After launch at CLA, you or an assistant need to check safety considerations for the most likely goals and targets.

***Task No. 1***

## 15.1 PILOT DECLARED GOAL (PDG)

15.1.1 Competitors will attempt to drop a marker close to a goal selected and declared by him before flight.

15.1.2 Task data:
a. declaration time and place;
b. number of goals permitted;
c. minimum and maximum distances of goal(s) from launch point

15.1.3 The result is the distance from the mark to the nearest valid declared goal. Smallest result is best.

15.1.4 Each competitor will declare his goal(s) by coordinates in writing and his declaration shall be deposited before declaration time at the place specified in the briefing data, clearly identified with his name and/or competition number. If more goals are declared than permitted, the competitor will not achieve a result.

15.1.5 A competitor who wishes to revise his declaration may deposit a further declaration, within the declaration time, provided it is clearly marked to distinguish it from any previous declaration(s).

15.1.6 The timekeeper will close the declaration box precisely at the declaration time, and will accept late goal declarations, writing the time in minutes and seconds on each.

15.1.7 The penalty for late declarations is 100 task points per minute or part minute late.

15.1.8 Declarations and late declarations may not be made after take-off.

**Task description**

Here the competitor chooses the target, instead of the Event Director.
Goals have to be chosen within certain distance limits from the launch site.
The pilot has to declare the goal before launching and wil not know where other pilots gave chosen their goals.

**Example on Task sheet**

**Task Nr., R 15.1 - PILOT DECLARED GOAL (PDG)**

| | | |
|---|---|---|
| a) Marker(s) colour | **YELLOW** | |
| b) Task/Marker order | **R.8.4.2** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **06:00 – 07:00** | |
| e) Scoring area | **Contest area** | |
| f) Task data R15.1.2 | **a. Declaration time / place:** | ***Box at signals point before green flag*** |
| | **b. Number permitted Goals:** | ***2*** |
| | **c. Min/Max distance from goal(s) to Launch Point:** | ***5/8 km*** |

*Director's Perspective and Motivation*
**CLA** – To control declaration with a given time, sometimes before the green flag.
Advantage, goals can be checked before debriefing starts, fair chance to everyone under same conditions.

**ILP** – Before take off on observer sheet. Time stamped and signed by CP
Can be set any time, but most often in variable wind conditions.

Objective is to test skills regarding meteorological interpretations.
Generally set as a first or second task in a flight.

*Variations*
Goals to be set in an area.
Distance between goals if this task is set twice in same flight.
Time constraints in scoring period.
PDG before a FIN, requires good planning!

*Organizational*
Prepare forms to declare goals.
Box for forms, marshal at flag post, note time of declaration per pilot.

*Competitor*
Use your compiled list of goals, if more then one permitted. Preferably choose your goals with a variation of maximum 15 degrees from the prevailing wind!
Example above: Markers In Order
Free Marker Drop
Declaration within 5 minutes after yellow flag

*Observer*
At CLA, ask CP for his goal(s) before take off.
At ILP wait for CP to declare his goals.

*Crew*
Double check on validity and position, recheck with CP if possible!!!
Look at your list too!

*Debriefer*
Chief Debriefer:
When CLA, do take the box with declared goals to the Debriefing Room immediately after declaration time/or launch, to check for validity and note it on the individual declaration forms. While doing that, compile a list of valid goals declared to be distributed to each debriefer before debriefing starts.

Also note on information board or separate list, late declaration for application of penalty points.

When ILP, take the goals declared from the observer sheet before going to the debriefer, check on validity and report to the debriefer involved Also compile a list at the same time (it would be handy to have an assistant Chief Debriefer at large events).

***Task No. 2***

**15.2 JUDGE DECLARED GOAL (JDG)**

15.2.1 Competitors will attempt to drop a marker close to a set goal.

15.2.2 Task data:
a. position of a set goal/target.

15.2.3 The result is the distance from the mark to the target, if displayed, or goal.
Smallest result is best.

**Task description**

The competition director sets a target several miles downwind of the launch site.
The balloonists have to use the available winds to fly to and over the target, then to drop a marker as close as they can.

The target is usually at or near a remote cross-roads or junction.

**Example on Task sheet**

**Task Nr., R 15.2 - JUDGE DECLARED GOAL (JDG)**

| | | |
|---|---|---|
| a) Marker(s) colour | **PINK** | |
| b) Task/Marker order | **Any order** | |
| c) Dropping method | **R.12.9** | |
| d) Scoring period | **–** | |
| e) Scoring area | **Radius around Target** | |
| f) Task data R15.2.2 | **a. Target (Yellow) 200 m N. of goal** | **37352335** |

*Director's Perspective and Motivation*
This task is set as a goal when there is a Common Launch, and is very often an intersection with a target in a large field which enables organized measuring facilities.
The goal can be also set as just an intersection. If the target is laid out in a field, state the direction and distance between the goal and target.
In this task the ED needs to have done his homework regarding wind direction and goal allocation.

*Variations*
Sometimes, when at an intersection, only a sector is valid for scoring, or setting a scoring period, may affect take off times. Another variation is when using loggers, min./max altitude when scoring, eventually combined with a radius around the target.

*Organizational*
Prepare drawing, when setting sectional scoring area.
Let the target be displayed as close to the indicated position on the task sheet as possible. Write down the colour of target on the task sheet.
The Measuring Team must be on time at the target area and display target, take GPS and verify coordinates of target. Also, the eventual border is to be marked according to the drawing.

*Competitor*
This task is mostly from a common launch area. Look at the map and try to picture how the goal and target will appear.
If you arrive at the target and cannot find it (because it is not there), aim for the goal!!!

Example above:
Markers In Any Order.
Marker Gravity Drop.
No scoring period.
Marker to be within Scoring Area.
Target co-ordinates to be estimated.

*Observer*

*Crew*

Don't go to the target, especially if there are follow-on tasks and don't allow the observer to go to the target, unless the pilot says so! You will lose time! If your pilot wants you near the target, park in such a position, that you can easily get to the next target.
If the observer is in the retrieval vehicle and there is no target displayed, let the observer be at the goal, mark the centre with a crewmember, and follow the instructions of the pilot.

***Task No. 3***

## 15.3 HESITATION WALTZ (HWZ)

15.3.1 Competitors will attempt to drop a marker close to one of several set goals.

15.3.2 Task data:
a. position of various set goals/targets.

15.3.3 The result is the distance from the mark to the nearest target, if displayed, or goal. Smallest result is best.

**Task description**

Similar to the judge-declared goal except there are two or more targets.
The pilot has to fly to one target and can choose which one while in flight.

**Example on Task sheet**

**Task Nr., R 15.3 - HESITATION WALTZ (HWZ)**

| | |
|---|---|
| a) Marker(s) colour | **BLUE** |
| b) Task/Marker order | **R.8.4.2** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **16:00 – 16:45** |
| e) Scoring area | **50 meters around any valid goal** |
| f) Task data R15.3.2 | **a. any valid goal** |

**Min distance from previous mark 3 km**

*Director's Perspective and Motivation*
To let the competitor choose which goal to try to score best on.
A Hesitation Waltz is set when a variation in wind direction and/or speed is expected.
It is also used to present some variations in task settings.

*Variations*
Sector limits.
Just any valid goals within a certain distance range, with a limited scoring area of, for instance, 50 meters around the goal.
Time constraints in scoring period.

*Organizational*
When setting standard tasks, measuring teams should be at the most likely goals.

*Competitor*
When there is the "any valid goal" option take your list and choose some 3 or 4 goals in line with he wind with a maximum of 15 degrees variation to the left and to the right, with the distance constraint.
Example above: Markers In Any Order.
Free Marker Drop.
No scoring period.
Marker to be within Scoring Area.
Any valid goal can be used.
Distance Constraint (here from previous mark!).

*Crew*
When not a standard HW ask the pilot for his goals, write them down, and search them on the map. Do a double check on validity and position, and recheck with the pilot if possible!!! Look at your list too!

Do follow the balloon during this task unless the pilot instructs otherwise.

*Debriefer*
When the task flown with "any valid goal", during debriefing, the chief debriefer should compile a list of chosen goals.

***Task No. 4***

**15.4 FLY IN (FIN)**

15.4.1 Competitors will find their own launch areas and attempt to drop a marker close to a set goal or target.

15.4.2 Task data:
a. position of a set goal/target.
b. minimum and maximum distances from launch point to the goal/target
c. number of take-offs permitted.

15.4.3 The result is the distance from the marker to the target, if displayed, or goal. Smallest result is best.

15.4.3.1.1 Only one scoring attempt (marker drop or contest landing) may be made. A contest landing shall be declared as such to the appointed observer at the earliest opportunity.

**Task description**

The launch field can become the goal and the pilots are dispatched to take-off from a launch point of their choice a minimum distance away.
A large target is laid out on the launch field.
Pilots may be allowed to make more than one attempt.

**Example on Task sheet**

**Task Nr., R 15.4 - FLY IN (FIN)**

| | |
|---|---|
| a) Marker(s) colour | **YELLOW** |
| b) Task/Marker order | **R.8.4.2** |
| c) Dropping method | **R.12.9** |
| d) Scoring period | **16:00 – 17:30** |
| e) Scoring area | **Within Boundary of Race Track (see sketch)** |
| f) Task data R15.4.2 | **a. CLP 37352335** |
| | **b. Min/Max dist. L. Point to goal(s): *6/12 km*** |
| | **c. Number of take-offs permitted: *1*** |

*Director's Perspective and Motivation*
As a first or second task in a flight.
When a FIN is set, pilots have to find their own launch site (ILP).
Although pilots don't like this task very much, and may think the Director is lazy, it's purpose is to test yet another skill: making the right decision in a very short period of time!

When using a target, indicate the relative position of the target to the goal.

*Variations*
Sector/Area with limitations.
Time constraints in scoring period.
With loggers, min./max altitude when scoring, eventually combined with a radius around the target.

*Organizational*
Let the target be displayed as close to the indicated position on the task sheet, and take GPS coordinates. Write down the colour of target on the task sheet.
Measuring Team(s) must be at the goal.

*Competitor*
The easy part of this task is that there probably is a measuring team!
Finding your own launch, within a time constraint, may be a nerve wracking situation, but keep calm, you are not alone.
Be aware that the position of the target may differ from the goal.
Estimate coordinates of the target.

Example above: Markers In Order.
Gravity Marker Drop.
Scoring period effective.
Marker to be within Scoring Area (sketch of CLA).

*Observer*

Don't go to the target when you are on retrieve; pilots don't like to lose time with that, so stay with the crew.
The measuring team will do their job!

***Task No. 5***

**15.5 FLY ON (FON)**

15.5.1 Competitors will attempt to drop a marker close to a goal selected and declared by them during flight.

15.5.2 Task data:
a. minimum and maximum distance
between previous mark and declared goal;
b. number of goals permitted

15.5.3 The result is the distance from the mark to the nearest valid declared goal. Smallest result is best.

15.5.4 The competitor shall write clearly his declared goal(s) for the Fly On on the previous marker. If the previous marker is not dropped, no goal is written on it, or more goals are declared than permitted, the competitor will not achieve a result.

15.5.5 As a precaution, in case the previous marker should be lost, the competitor may personally write a provisional goal on the observer's sheet. He will be scored to this goal if the previous marker is lost. The competitor may make or revise this provisional declaration at any time up to the release of the previous marker. A verbal declaration of a goal to the observer is not valid and will not be recorded.

**Task description**

Usually combined with one of the above tasks, the pilot chooses a second goal in flight and notes its grid reference on the marker they drop on the first target/goal.
They then fly on to this predetermined point and drop a second marker to score.

**Example on Task sheet**

**Task Nr., R 15.5 - FLY ON (FON)**

a) Marker(s) colour **BLUE**
b) Task/Marker order **R.8.4.2**
c) Dropping method **R.12.10**
d) Scoring period **07:00 – 08:00**
e) Scoring area **Contest area**
f) Task data R15.5.2 **a. Min/Max dist. previous mark to goal: *4/10 km***

*Director's Perspective and Motivation*
At least as a second task in a flight.
When a FON is set, pilots have to decide n flight which goal to declare on the previous marker.
This is to test yet another skill – making the right decision in a very short period of time!

*Variations*
Difficult when set after HAH or WSD, because then decision is also critical.
Time constraints.

*Competitor*
When you have your list of goals, write down your possible goals on paper AND on your marker, don't forget to ERASE the goals you won't use before you release your marker.
When the observer is flying, don't forget to time stamp and sign your goals on the observer sheet as well, in case your marker is lost!!!
Verbal communication or "see" is not valid!
Be aware of the distance between the previous mark and the declared goal.
Example above: Marker In Order.
Free Marker Drop.
Scoring period effective.
Marker to be within Scoring Area (Contest Area).

***Task No. 6***

**15.6 HARE AND HOUNDS (HNH)**

15.6.1 Competitors will follow a hare balloon (non-competitive) and attempt to drop a marker close to a target displayed by the hare, no more than two meters upwind of the basket after landing.

15.6.2 Task data:
a. description of the hare balloon.
b. intended flight duration of the hare balloon.

15.6.3 The result is the distance from the mark to the target. Smallest result is best.

15.6.4 Variation from the intended flight duration of the hare shall not be ground for complaint.

15.6.5 The hare may deflate after landing and may be removed from the field.

15.6.6 The hare may display a banner hanging below his basket. No competitor shall display any banner hanging below the basket during this task.

**Task description**

The hare launches 5 to 10 minutes before the competing balloons, the hounds.

The hare tries to outwit the hounds with altitude changes that take them in various directions. The hounds do not have to copy the flight pattern, but must finally drop a marker as close to the hare's landing spot as possible.

**Example on Task sheet**

**Task Nr., R 15.6 - HARE AND HOUNDS (HNH)**

| | | |
|---|---|---|
| a) Marker(s) colour | **YELLOW** | |
| b) Task/Marker order | **R.8.4.2** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **19:00 – 20:25** | |
| e) Scoring area | **200 meters radius of target** | |
| f) Task data R15.6.2 | **a hare balloon:** | ***white with purple letters*** |
| | **b launch point:** | ***88756470*** |
| | **c take off moment:** | ***Yellow flag*** |
| | **d flight duration:** | ***approx. 30 minutes*** |

*Director's Perspective and Motivation*
A HAH task is generally set at a CLA, mostly in a soft competition or in an evening flight with public around the launch field.
Time is usually 5 minutes before green flag.

*Variations*
Two hare balloons with two markers, the best result counts.
One hare putting down two targets. Each is a separate task.
FON after HAH (is difficult, requires quick decision making!)

*Organizational*
Let the hare balloon take a measuring team(s) with him and target(s).
Take GPS co-ordinates after landing.

*Competitor*
The easy part of this task is that there probably is a measuring team!
Try to estimate co-ordinates of the target or instruct the crew to get it.

Rule #1 in a HAH: Don't catch up to the hare (unless there is a box and great steering) Leave yourself room to make a good approach.

Example above: Markers In Order.
Free Marker Drop.
Scoring period effective.
Marker to be within Scoring Area.

*Crew*
Follow hare balloon and when hare has landed estimated GPS position and inform pilot!

*Observer*
Don't go to the target when you are on retrieve, pilots don't like to lose time with that, so stay with the crew.
The measuring team will do their job!

***Task No. 7***

## 15.7 WATERSHIP DOWN (WSD)

15.7.1 Competitors will fly to the launch point of a hare balloon, follow the hare and attempt to drop a marker close to a target displayed by the hare no more than two meters upwind of the basket after landing.

15.7.2 Task data:
- a. description of the hare balloon;
- b. location of the launch point of the hare balloon;
- c. set take off time of the hare balloon;
- d. intended flight duration of the hare balloon.

15.7.3 The result is the distance from the mark to the target. Smallest result is best.

15.7.4 If the hare balloon does not take off within 5 minutes after the set time then this yask is considered cancelled.

15.7.5 Variation from the flight duration of the hare shall not be grounds for complaint.

15.7.6 The hare may deflate after landing and may be removed from the field.

15.7.7 The hare may display a banner hanging below his basket. No competitor shall display any banner hanging below the basket during this task.

**Task description**

A combination of fly-in and Hare and Hounds.
The pilots have to launch from a site remote to the launch point.
The idea is to time a fly-in to the launch point such that a hare balloon launching from the launch point at a pre-set time is then followed in a conventional Hare and Hounds task.

**Example on Task sheet**

**Task Nr., R 15.7 - WATERSHIP DOWN (WSD)**

| | | |
|---|---|---|
| a) Marker(s) colour | **YELLOW** | |
| b) Task/Marker order | **R.8.4.2** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **19:00 – 20:25** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.7.2 | **a hare balloon:** | ***white with purple letters*** |
| | **b launch point:** | ***88756470*** |
| | **c take off moment:** | ***when first balloon leaves at*** |
| | **d flight duration:** | ***approx. 30 minutes*** |

*Director's Perspective and Motivation*
A WSD task is generally set after a FIN or JDG, mostly in an evening flight with the public around the field where the goal is.
It's a good task when afternoon winds are shifting and unpredictable.

*Variations*
Two hare balloons with two markers, best result counts.
WSD after a HAH.

*Organizational*
Let the hare balloon take along a measuring team(s) and target(s), and do take GPS co-ordinates after landing.

*Competitor*
The easy part of this task is that there probably is a measuring team!
Try to estimate co-ordinates of the target.
Example above: Markers In Order.
Free Marker Drop.
Scoring period effective.
Marker to be within Scoring Area (Contest Area).

*Crew*
Follow hare balloon and when hare has landed estimated GPS position and inform pilot!

***Task No. 8***

**15.8 GORDON BENNETT MEMORIAL (GBM)**

15.8.1 Competitors will attempt to drop a marker within a scoring area(s) close to a set goal.

15.8.2 Task data:
a. position of goal/target;
b. description of scoring area(s).

15.8.3 The result is the distance from the mark to the target, if displayed, or goal. Smallest result is best.

**Task description**
A task name derived from the highest honour for a balloon pilot at the beginning of the 20th century, the Gordon Bennett Trophy. A target outside of a scoring area is identified for this task.
The pilot has to drop the marker as close as possible to the goal but inside the scoring area. Markers dropping outside the scoring area, even if closest to the target, do not score.

**Example on Task sheet**

**Task Nr., R 15.8 - GORDON BENNETT MEMORIAL (GBM)**

a) Marker(s) colour **YELLOW**
b) Task/Marker order **R.8.4.2**
c) Dropping method **R.12.10**
d) Scoring period **–**
e) Scoring area **See sketch**
f) Task data R15.8.2 **a. 63106700**
**b. Description scoring area(s) See sketch**

*Director's Perspective and Motivation*
This task can be set any time, using either a target or a goal, but the goal or target is not in the scoring area.

*Variations*
More then one GBM in one flight, where the scoring areas are opposite each other with at least some distance to the target.

*Organizational*
Measuring team(s) in place.

*Competitor*
The easy part of this task is that there probably is a measuring team!
Example above: Marker to be within Scoring Area (see sketch).

*Crew*
Keep distance from the goal or target.

***Task No. 9***

**15.9 CALCULATED RATE OF APPROACH TASK (CRT)**

15.9.1 Competitors will attempt to drop a marker within a valid scoring area close to a set goal. The scoring area(s) will have unique times of validity.

15.9.2 Task data:
a. position of goal/target;
b. description of scoring area(s) and their validity times.

15.9.3 The result is the distance from the mark to the target, if displayed, or goal. Smallest result is best.

15.9.4 A competitor who does not achieve a mark inside a scoring area during its time of validity will not achieve a result.

**Task description**
A goal is set within or near scoring area has a unique time of validity.
Successful completion of this task relies on the pilot's accurate assessment of the wind speed.
If the pilot does not launch at the correct time he may not reach the scoring area during the period of validity.
Markers dropped inside the scoring area when it is closed do not score.

**Example on Task sheet**

**Task Nr., R 15.9 - CALCULATED RATE OF APPROACH TASK (CRT)**

| | |
|---|---|
| a) Marker(s) colour | **RED** |
| b) Task/Marker order | **R.8.4.2** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **Individual Launch + 3 hrs** |
| e) Scoring area | **see sketch** |
| f) Task data R15.9.2 | **a. 89307964** |
| | **b. See sketch** |
| | **Validity times Area A 05:00 – 05.15,** |
| | **05:30 – 05:45** |
| | **Etc. until end of scoring period** |
| | **Area B 05:15 – 05:30,** |
| | **05:45 – 06:00** |
| | **Etc. until end of scoring period** |

*Director's Perspective and Motivation*
This task can be challenging, if properly set.
Take realistic valid time intervals between areas of 10 to 20 minutes.
Try natural areas that are adjacent.
Public parks with ball fields can make good scoring areas.
Be aware if there is nothing going on during the scoring period.

*Variations*
Two annexed and reachable football fields, divided in 4 or 2 areas with the target in between, are good alternative to natural areas.
Even more challenging is when a task(s) is set before.
With loggers: A virtual task.
This task and its variations are extremely good to test various qualities of competitors, next to precision flying.

*Organizational*
When areas are not adjacent, be sure to have sufficient spare observers, scorers or other officials in different areas for registration of the timing of the marker drop.
Make an enlarged copy of the map or a drawing with scoring areas for task briefing.

*Competitor*
The easy part of this task is that there probably is a measuring team!
Be even more aware of wind conditions. Draw a line of the wind direction from the target.
Calculate at what time you can be at the target area (wind/altitude).
Investigate about areas where you can "buy time" should your estimates not meet your calculations
Example above: Marker In Order.
Free Marker Drop.
Scoring period effective
Marker to be within different Scoring Area's at different Times.

*Observer*
Note the exact time of marker drop. Make a drawing.

*Crew*
Follow instructions from the pilot.

*Measuring team*
Make enlarged drawing of scoring areas for writing down position of marker and time.

*Debriefing*
Make several copies of measurement team's drawing for debriefers.
If the observer has observed the marker drop, interview him/her to compare results with the measuring team.

***Task No. 10***

**15.10 RACE TO AN AREA (RTA)**

15.10.1 Competitors will attempt to drop a marker in the shortest time within a scoring area(s).

15.10.2 Task data:
a. arrangement of timing;
b. description of scoring area(s).

15.10.3 The result is the elapsed time from the take off to the marker drop. Smallest result is best.

15.10.4 The timing ends the moment the marker is released, falling, or on the ground as seen by the observer or recovered in the hands of the observer, whichever is first. Observers must ensure that they have stop watches when observing this task.

**Task description**

A race to see who can reach a designated area and drop a marker in the fastest time.
As in other races, test of speed (elapsed time) and efficiency.

**Example on Task sheet**

**Task Nr., R 15.10 - RACE TO AN AREA (RTA)**

| | |
|---|---|
| a) Marker(s) colour | **PINK** |
| b) Task/Marker order | **R.8.4.2** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **–** |
| e) Scoring area | **see sketch** |
| f) Task data R15.10.2 | **a. On launch masters' "NOW"** |
| | **b. see sketch** |

*Director's Perspective and Motivation*
Task in standard description can only be carried out from CLA.
Test skill of making correct tactical decisions.

*Variations*
Race to a specific line (road), with marker drop on the line (road) or at max.10 meters from centre of the road, on the down wind side only. Then the road plus 10 meters beside the centerline is the area!
When a minimum distance is set after a challenging RTA, be aware that MDT should be between marks!!!
A race between two areas can be set after an initial task in a flight (FIN of PDG).

Areas can be field areas that are on the map, but also areas around valid goals; think of minimum distance between marks!
Eg. double drop between areas around any valid goal.
In all cases allow only one start in the flight.

*Organizational*
Make proper drawing of intentions. If necessary, rewrite some rules of the task. Launch master to note exact time of launch. Give extra instruction to the observer.

*Competitor*
The easy part of this task is that there probably is a measuring team, when standard RTA task is set!
Be aware of wind conditions at altitude!
When task is set between real areas make proper decisions along the wind component.
When set between valid goal areas, make a solid plan as to which goals to choose; don't go for just any goal.
Select them!!! Be aware of distance constraint.

***Task No. 11***

**15.11 ELBOW (ELB)**

15.11.1 Competitors will attempt to achieve the greatest change of direction in flight.

15.11.2 Task data:
- a. description of (track)point "A", "B" and "C";
- b. minimum and maximum distances from "A" to "B";
- c. minimum and maximum distances from "B" to "C".

15.11.3 The result is 180 degrees minus angle ABC. Greatest result is best.

**Task description**

The task involves changing course as greatly as possible. Balloons fly out for a specified minimum distance, for example three kilometers, the pilot drops a marker to indicate their position and then flies the second leg, attempting to change as much as possible before dropping the final marker.

**Example on Task sheet**

**Task Nr., R 15.11 - ELBOW (ELB)**

| | | |
|---|---|---|
| a) Marker(s) colour | **PINK – YELLOW** | |
| b) Task/Marker order | **B,C** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **07:00 – 08:30** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.11.2 | **a. Descr.point A, B and C** | **"A" Launch** |
| | | **"B" PINK** |
| | | **"C" YELLOW** |
| | **b. Min/Max dist. From A to B** | ***1/3 km*** |
| | **c. Min/Max dist. From B to C** | ***5/15 km*** |

*Director's Perspective and Motivation*
Can be set directly from launch, but also as a second or third task.
The joy of setting that task is that the morning wind, at low level, can vary considerably from the upper wind. Of course in the vicinity of a meteorological front there are other possible wind combinations.
The task setting after an Elbow is limited and it's more often a second or third task, with sometimes less possibilities.

*Variations*
An elbow can be flown within an area, such as a 6 km square, or within a circle with a radius of 5 km.

*Organizational*
When the task is set with areas, then proper instruction of debriefers is needed. Let each make a template of the area of hard board, to easily see if markers are within area, or let them draw the area on the map.

*Competitor*
The difficult part is to decide which tactic to follow.
First leg low and second leg in upper levels or vice versa.
When it is a morning flight, start early, so you can catch the lower wind to your biggest advantage.
In the morning, when the nightly wind maximum from a different direction dissolves because of rising temperatures caused by the heating of the sun, the wind will change significantly.
Be aware of time and distance constraints. Have a plan!
When the task is set in an area, always draw the area on your map!

*Observer*
Check positions of markers, check on appropriate colour used and times of marker drop.

*Debriefer*
Make a template when in an area! Draw the area on the map!
Check on GPS coordinates when available and make sure you have the correct marker with the correct coordinates!
Be aware of the minimum distance between markers of first and second Land Run.

*Crew*
Just follow the pilot's instructions!
Keep him informed about time and distance constraints, so double check before marker drop!

*Task No. 12*

### 15.12 LAND RUN (LRN)

15.12.1 Competitors will attempt to achieve the greatest area of a triangle "A", "B" and "C".

15.12.2 Task data:
- a. location of (track)point "A";
- b. method of determining (track)point "B";
- c. method of determining (track)point "C";
- d. description of scoring area(s).

15.12.3 The result is the area of triangle ABC. Greatest result is best.

**Task description**

To fly in the shape of a triangle whilst abiding by a fixed method.
A slightly odd task in which the larger the area of the triangle, the better the points.
As in the Elbow, sharp changes in direction are necessary.

**Example on Task sheet**

**Task Nr., R 15.12 - LAND RUN (LRN)**

| | | |
|---|---|---|
| a) Marker(s) colour | **RED** | |
| b) Task/Marker order | **R.8.4.2** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **09:00** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.12.2 | **a. Point A** | ***White marker*** |
| | **b. Point B** | ***Blue marker*** |
| | **c. Point C** | ***Red Marker*** |

*Director's Perspective and Motivation*
Can be set directly from launch, but also as a second or third task.
The joy of setting this task at launch is that the wind at low level, in the morning, can vary considerably from the upper wind. Of course in the vicinity of a meteorological front, there are other possible wind combinations too.
The task setting after a Land Run is limited and that is why it's more often a second or third task, with sometimes less possibilities.

*Variations*
Two Land Runs in one flight with an extra marker D, (ABC and ABD) and a minimum distance between markers.
A Land Run can be flown within an area, such as a 10 km by 10 km square, or within a circle with a radius of 5 km. Most of the time the coordinates of the centre will be provided.
This is quite challenging and requires good planning and timing!
More challenging would be all markers in a circle when two Land Runs are set.

*Organizational*
When the task is set with areas, proper instruction of debriefers is needed. Let each debriefer make a template of the area with hard carton board or see through plastic to easily see if the markers are within the area, or let them draw the area on the map.

*Competitor*
On a morning flight, start early so you can catch the lower wind to your best advantage.
When the task is set in an area, always draw the area on your map!
Have a plan and sufficient gas!!!
Calculate your time for your Land Run.
During the flight, be sure that your B marker can be found, because the loss of it may cost you a good Land Run result.
When two Land Runs in one flight are set and markers for both are shared (ABC and ABD), the best plan would be to come down for marker C and go up again to marker D.

*Observer*
Check positions of markers, and check on appropriate colour used and times of marker drop.

*Debriefer*
Make a template when in an area! Draw the area on the map!
Check on GPS coordinates when available and the correct marker with the correct coordinates!
Be aware of minimum distance between markers of first and second Land Run.

*Crew*
Just follow pilot's instructions!
Keep him informed about time and distance constraints, so double check before marker drop!

***Task No. 13***

**15.13 MINIMUM DISTANCE TIME (MDT)**

15.13.1 Competitors will attempt to drop a marker close to the common launch point, after flying a minimum set time.

15.13.2 Task data:
a. minimum set time;
b. arrangements for timing.

15.13.3 The result is the distance from the mark to the launch point. Smallest result is best.

15.13.4 The scoring position is the mark the observer has seen the marker drop after the minimum set time. Otherwise the scoring position will be the landing position, provided an official has seen that the balloon is still airborne after the minimum time.

15.13.5 The penalty for violating the rule of CLEARING THE LAUNCH AREA is 100 task points per minute or part minute late.

15.13.6 The penalty for each ground contact in this task is 500 task points.

**Task description**

This task involves the competitors flying the minimum distance possible.
Pilots must not drop their markers until after a given time period.
A target laid out on the launch field is the goal.

**Example on Task sheet**

**Task Nr., R 15.13 - MINIMUM DISTANCE TIME (MDT)**

a) Marker(s) colour **RED**
b) Task/Marker order **Not Applicable**
c) Dropping method **R.12.10**

| | | |
|---|---|---|
| d) Scoring period | **20:25** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.13.2 | **a. Minimum time** | ***45 min*** |
| | **b. Arrangements of timing** | ***On launchmaster signal "NOW"*** |

*Director's Perspective and Motivation*
Task may be set best:
When there is a fair amount of wind, or;
When there is possibility to get close to or on the Launch Point (box wind).

*Variations*
After a FIN task, then the scoring distance can be taken as between FIN mark and MDT mark!
This is challenging, because, when a competitor can come back to the FIN goal area he has to remember where his FIN marker has fallen.
Or in a multiple task flight, take minimum distance between two marks as the best result!
However scoring distance between FIN Target and MDT is not such a good idea, because a bad result on the FIN is a bad result on the MDT!

*Organizational*
When a variation is set, MDT after FIN, be sure not to collect the markers of FIN until the last MDT is marked.
Set the scoring period on FIN.
No observers and no crew are allowed in the FIN field.

*Competitor*
When MDT after FIN is set, do remember exactly where your marker has fallen.

*Crew*
Nothing specific.

***Task No. 14***

**15.14 SHORTEST FLIGHT (SFL)**

15.14.1 Competitors will attempt to drop a marker close to the launch point within a set scoring area(s).

15.14.2 Task data:
a. description of scoring area(s).

15.14.3 The result is the distance from the mark to the launch point. Smallest result is best.

**Task description**

A task to determine the marker closest to the launch point after it has been dropped in a scoring area. The shorter the flight distance (direct distance) to the marking area, the higher the points.

**Example on Task sheet**

**Task Nr., R 15.14 - SHORTEST FLIGHT (SFL)**

| | |
|---|---|
| a) Marker(s) colour | **BLUE** |
| b) Task/Marker order | **Any order** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **None** |
| e) Scoring area | **Within 50 meters of any valid goal, East of the Road N352** |

f) Task data R.15.14.2 **a. Description of scoring area(s)** ***See sketch***

*Director's Perspective and Motivation*
This task is not used very often, the mark to be within the set areas; on the surrounding road is out of bounds.

*Variations*
The variation with a road and scoring area at 50 or 10 meters on either side can be set when there is not much variation in the wind direction and the road is at less then 90 degrees (preferably less then 60 degrees) angle on the wind direction.

*Organizational*
Make a print or sketch of the areas.
Have a measuring team along the road to establish positions with traditional instruments or with GPS and make a drawing where marks are made. Use just one type of GPS, to be sure to have the same EPE error at all times.

*Competitor*
The easy part of this task is that there probably is a measuring team! Otherwise let your crew be in the vicinity of the area you will be scoring in with the observer. Take GPS coordinates of your mark, if not measured.

*Debriefers*
Check on GPS coordinates for the following tasks.

***Task No. 15***

**15.15 MINIMUM DISTANCE DOUBLE DROP (MDD)**

15.15.1 Competitors will attempt to drop two markers close together in different scoring areas.

15.15.2 Task data:
a. description of scoring areas.

15.15.3 The result is the distance between the marks. Smallest result is best.

15.15.4 Competitors will not achieve a result if one or both marks are outside the scoring area or both marks are in one scoring area.

**Task description**

Two markers are dropped in two separate scoring areas.
The shorter the distance between the two markers, the higher the points.

**Example on Task sheet**

**Task Nr., R 15.15 - MINIMUM DISTANCE DOUBLE DROP (MDD)**

| | |
|---|---|
| a) Marker(s) colour | **RED/WHITE** |
| b) Task/Marker order | **See remark** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **none** |
| e) Scoring area | **RED marker outside area,** |
| | **WHITE marker inside area** |
| f) Task data R.15.15.2 | **a. Description scoring areas See sketch** |

*Director's Perspective and Motivation*
Good task for some variation in task setting.

*Variations*
Sometimes a full intersection, where both markers need to be thrown very quickly after each other in different areas around the intersection, this requires precision flying!
Another possibility is two opposite circles not too far away on both sides of a target. If the target is also in a different task, then this makes it possible to have two bad scores or two good scores. When you are good at the target, you are most likely also good at the MDD.

Using scoring period.

*Organizational*
Make a print of the areas.

*Competitor*
The easy part of this task is that when on both sides of an intersection, there probably is a measuring team!
But watch out, for touching grass as this may hurt your score!

If not, don't forget to take GPS coordinates of marks (eventually for following tasks) and try to measure directly too, if feasible.

*Crew*
Be available underneath the balloon to eventually mark the markers.

*Debriefers*
Check on GPS coordinates for eventual following tasks.

***Task No. 16***

**15.16 MAXIMUM DISTANCE TIME (XDT)**

15.16.1 Competitors will attempt to drop a marker far away from the launch point, within a maximum set time.

15.16.2 Task data:
a. maximum set time;
b. arrangements for timing.

15.16.3 The result is the distance from the mark to the launch point. Greatest result is best.

15.16.4 If the observer does not see the marker release, falling, or on the ground, or the marker is not recovered in his hands within the maximum set time, the competitor will not achieve a result.

**Task description**

A task to find the longest distance travelled within a fixed flight time.

**Example on Task sheet**

**Task Nr., R 15.16 - MAXIMUM DISTANCE TIME (XDT)**

| | | |
|---|---|---|
| a) Marker(s) colour | **RED** | |
| b) Task/Marker order | **R.8.4.2** | |
| c) Dropping method | **R.12.10** | |
| d) Scoring period | **None** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.16.2 | **a. Maximum time** | ***30 min*** |
| | **b. Arrangements of timing** | ***Take off time on observer sheet*** |

*Director's Perspective and Motivation*
This is often an evening task, as a single one or followed by an FON
Be aware of proper timing procedure.

*Variations*
With loggers an altitude restriction can be put, at the end of the scoring period

*Organizational*
Always a first or a last task.

*Competitor*
Find the most optimal wind direction in combination with the time and wind speed.

*Crew*
Be available underneath the balloon to eventually mark the marker.

*Debriefers*
Check on GPS coordinates for eventual following tasks.

***Task No. 17***

**15.17 MAXIMUM DISTANCE (XID)**

15.16.1 Competitors will attempt to drop a marker far away from the launch point within a set scoring area(s).

15.17.2 Task data:
a. description of scoring area(s).

15.17.3 The result is the distance from the mark to the launch point. Greatest result is best.

**Task description**

For this task, pilots fly as far as they can within a defined scoring area and sometimes within a certain time period.
Pilots who do not drop their marker within the scoring area do not achieve a result.

**Example on Task sheet**

**Task Nr., R 15.17 - MAXIMUM DISTANCE (XID)**

a) Marker(s) colour **BLUE**
b) Task/Marker order **R.8.4.2**
c) Dropping method **R.12.10**
d) Scoring period **16:00 – 17:45**
e) Scoring area **See sketch**
f) Task data R15.13.2 **a. Description scoring area(s) See sketch**
**Remark: In the task data it states Launch Point. For this task it is a Common Launch Point.**

*Director's Perspective and Motivation*

*Variations*
Area by means of coordinates.

*Organizational*
Make a reprint of the area.

*Competitor*
Find coordinates of longest distances and put them in your GPS; select several ones and steer to the best result.

*Crew*
Be available underneath the balloon to eventually mark the marker.

*Debriefers*
Check on GPS coordinates for eventual following tasks.

***Task No. 18***

**15.18 MAXIMUM DISTANCE DOUBLE DROP (XDD)**

15.18.1 Competitors will attempt to drop two markers far apart in the scoring area(s).

15.18.2 Task data:
a. description of scoring area(s).

15.18.3 The result is the distance between the marks. Greatest result is best.

**Task description**

The complete opposite of Minimum Distance Double Drop.
2 markers are dropped in two separate scoring areas. The longer the distance between the two markers, the higher the points.
Can be in one scoring area too.

**Example on Task sheet**

**Task Nr., R 15.18 - MAXIMUM DISTANCE DOUBLE DROP (XDD)**

| | |
|---|---|
| a) Marker(s) colour | **RED/WHITE** |
| b) Task/Marker order | **See remark** |
| c) Dropping method | **R.12.10** |
| d) Scoring period | **none** |
| e) Scoring area | **RED marker outside area, WHITE marker inside area** |
| f) Task data R.15.18.2 | **a. Description scoring areas See sketch** |

*Director's Perspective and Motivation*
Normally designate a large area, which is surrounded a long winding road.

*Variations*
Use two parts of two different roads and take 50 meters on each side of the centre of the road as scoring areas.
With loggers use areas by dividing coordinates.

*Organizational*
Make a sketch or reprint of the areas.

*Competitor*
Try to establish which is the most optimal distance; take the wind direction into consideration and make a plan of attack. Put the best coordinates in your GPS and fly to them! Take GPS coordinates of marks.

*Crew*
Be available underneath the balloon to eventually mark the markers.

*Debriefers*
Check on GPS coordinates for eventual following tasks.

***Task No. 19***

**15.19 ANGLE (ANG)**

15.19.1 Competitors will attempt to achieve the greatest change of direction from a set direction. The change of direction is the angle between the set direction and line "A-B".

15.19.2 Task data:
a. description of point "A" and "B";
b. set direction;
c. minimum and maximum distances from "A" to "B".

15.19.3 The result is the angle between the set direction and the line "A-B". Greatest result is best.

**Task description**

Similar to Elbow, but a basic course is established, and on which the angle measurements are based. The sharper the angle and greater the change in course the better.

**Example on Task sheet**

**Task Nr., R 15.19 - ANGLE (ANG)**

| | |
|---|---|
| a) Marker(s) colour | **Yellow** |
| b) Task/Marker order | **No order** |
| c) Dropping method | **No drop** |
| d) Scoring period | **Individual Launch + 4 hrs** |
| e) Scoring area | **Contest area** |
| f) Task data R.15.19.2 | **a. "A" Yellow Marker "B" Basket after landing** |
| | **b. Direction 120 degrees** |
| | **c. Min/Max 4/15 km** |

Do read to the section on Elbow task!

*Director's Perspective and Motivation*
The reason for this task emerged was that it was a waste of 3 markers in one flight, with just one result; now a ED can set an angle, similar to the Elbow task, but with one marker less.
In this task a direction (to) must be set.

*Variations*
Greatest angle between two markers and a direction result of a previous task, where the competitor can influence the previous direction, like HW, PDG or FON.

*Organizational*
Describe properly which marks are to be used in the task sheet.

*Competitor*
When a variation task is set, it's often the direction from launch or the previous mark to the PDG or FON mark.
This way the competitor is in control as to which tactic to follow.

*Crew*
Be at the first mark when it falls.

*Debriefers*
Check on GPS coordinates.

***Task No. 20***

**15.20 BOX**

15.20.1 Competitors will attempt to achieve the greatest distance within a set airspace.

15.20.2 Task data:
a. description of set airspace(s).

15.20.3 The result is the accumulated horizontal distance between valid track points in the set airspace(s). Greatest result is best.
This is a virtual task.
The relation of a box in a competition is a (often coastal) phenomena, (Majorca, but also Albuquerque are famous for it), that makes it possible to fly seaward in Majorca at the higher level and drift back ashore at a lower level but in the opposite direction, thus making a box.
In the competition you might call it a cubic, or set of cubes.

The advantage is, it can only be judged by GPS loggers.
The disadvantage is there is no reference to competitors.
Competition pilots who also try IFR in aircrafts have a slight advantage.
Attention:
It can be quite hazardous when the real box wind possibility is available and many pilots are trying to acquire more then one track in the same box.
The Blog section of **Balloon EZINE** (http://www.balloon-e-zine.com) is recommended for reading!

*Director's Perspective and Motivation*
To have a task that can be without observers or scorers, only to be judged by GPS results.

*Variations*
More than one box, choose different boxes before take off, more then one box but at different altitudes.

*Organizational*
Make a proper drawing!

*Competitor*
Look up and below and on your GPS and if possible on your map.
Draw the boxes on your map!

*Crew*
Nothing to do, just stay on follow.

# Chapter 4

# (Electronic) Tools for the Competition Pilot

## GPS

A competition pilot cannot do without a Global Position System Instrument. There are many brands and marks, all of which have specific function and representations.
It's not my intention of the author to discuss any one specific type.
Some pilots use 2, one for approaching the target and the other for the next goal, plus you have a back-up, prices are reasonable (plm. $100.-)

I will indicate, however, which features can be used for which purposes.

Each GPS, no matter how small or how big, has one main purpose:
To display the position where you are on earth.
For ballooning, a lot of functions are essential to navigate and optimize your chances for success.

1. **Set up the Map Datum and Map Grid**
   Not everywhere in the world do they use the same map system.
   In Western Europe we know the European or WGS-84.
   In former (aren't they still Eastern Europe?) Eastern European countries the system is used, but with a correction to the European or WGS-84 system.
   So always be aware of these differences.
   Check them out at your Map, at the Official Notice Board, or during the General Briefing. Put them in the set up of your GPS.

2. **Storing your self-surveyed goals**
   In the GPS these are known as Waypoints.
   Once you have done your homework on the map before you travel to the competition (see chapter 2), you should put all those goals in your GPS, and store them under the same name or number that relates to the intersection on your map.

3. **Activate your tracking**
   Loggers in competitions have not always been proven to be reliable. In fact, many causes of failure can be attributed to them, such as no battery power, wrong use, or it not having been checked.
   It is wise to have your own track available, either to prove you are right, or to have a backup and additional information in case of failure of the original one!

4. **Map display**
   When you have a map on your GPS, adjust the display to the proper scale and compare position + direction to your physical map.
   During the flight, note your marker drop moments in your GPS so you have extra checks when needed.

## Anemometer

There are various types of this wind speed meter.
The small hand models of today have many functions that you can't do without.
We sum up here the most sophisticated models that have all the options.
But it's up to you to select what's best for you:

- Instant wind speed.
- Maximum wind speed.
- Temperature.
- Wind chill factor.
- Electronic compass.
- Absolute and relative air pressure.

- Barometric tendencies over time.
- Altitude calculation.

**Variometer**

This instrument often has multi functions such as

**A. Real Vario Meter**

- The range it can cover, i.e from 0 to 2000 ft/min.
- The resolution i.e 20ft/sec/
- Average vario, every 1 – 30 sec.
- Acoustic sound, difference in sound when ascending or descending.
  Use it when descending, so you can pay attention to other things (falling shaving cream for instance).
- Range up to 20000 ft.
- Display in digits.
- Resolution.
- QNH (atmospheric pressure) in hPa (=mb).

**C. Time**

- Real time (24 h. mode).
- Flight time (hrs : min).

**D. Temperature**

- Display (1 degree resolution).

**E. Memory function**

- Read-out of peak values.
- Time.
- Altitude.
- Max. climb rate.
- Max. descending rate.
- Date.

**Radio transceivers**

Here the key is the purpose for which you need to use the radio transceiver.

Anything goes when using the radio transceiver just for crew/balloon contact as long as you are not using a frequency that disturbs any official use, and you have a license to use that type radio transceiver. When you are using a radio transceiver that is meant to communicate with airports or traffic controllers, then the radio has specific requirements, like the frequency range it operates in.
The main issue to look for among the many brands is reliability and battery life.
When you buy locally, you may get the best, but sometimes it is worthwhile to buy from a distant supplier because its product is the best.
Be sure that your radio is checked regularly by official institutes, which is sometimes compulsory when communicating with airports etc., but can also assure you of good and proper functioning.
A superior example is a Dittle, superb radio, hard case, power drain minimal and a battery meter.

**Compass**

They come in many sizes and models.

Traditional compasses are **sensitive to the earth's magnetic field** and can easily be disturbed by metal objects, like cars, burners, gas cylinders, especially powerlines and even by glasses.

So when you take a bearing, be sure you are at least some meters away from metal and such.
Also very important is that you have to keep these traditional compasses in a horizontal position as much as possible, otherwise the needle, which remains horizontal, will get stuck to the casing and could influence the direction of your bearing.

The simplest compass comes in a small copper case that you can open and which has a slide to look through so you can see your object and read the bearing in a mirror.
By following the object you can see the bearing change, which you will know how to interpret.
Be care not to let it drop or the glass may break.
Use a cord around your neck to prevent this from happening.

*Fluid compasses*

1. A little more sophisticated are the ones with a robust rubber protection around the housing so the glass won't break but this makes the compass unusable as the fluid flows out. Hang it around your neck with a cord so it cannot break.

   You look at the object the same way as with the simple compass, but be aware to keep it horizontal.
   It has a light for seeing your bearing in the dark.

2. The top range of the scale is binoculars with a compass. These let you follow your pi-ball till it explodes, and you can clearly see the change of direction for a long time.

*Electronic compasses:*

These come in zillions of types and sorts.
I will discuss just a few here.

1. One is a wrist-watch, rather bulky, but it has more functions, like an altimeter, barometric pressure etc., but also bearing capability.
   North is seen constantly and you can have a rough indication of the direction.

2. A handheld, which is commonly used for sailing sports. It has a rather good accuracy if you can follow the pi-ball.

**Wind reader**

A wind reader is a device, with which the wind speed and direction can be measured at different altitude levels.
(the name WindReader is a trademark of Victor Fraenkel).

Generally you release a pi-ball and follow the balloon with a theodolite by means of micro processing. The wind speed and direction is calculated and printed out.

However there are old fashioned ways where the wind results are calculated by hand, the pi-ball is measured and bearings with time intervals are written down by a bystander.
The figures from that pi-ball are compared on a scale (dish-type) and thus a list of results is compiled.
The results are not always that reliable, because the exact vertical speed component of the balloon has a big influence (and that depends on the size of the balloon).

The electronic devices are:

**WindReader**
This is the larger one and is generally used by professional meteorologists at competitions.
It consists of:

- an optical theodolite;
- two microprocessors;
- an electronic compass, and;
- a two axis accelerometer.

These devices continuously measure the azimuth and elevation angles to the pi-ball as it rises. The accelerometers act as a two axis tilt meter.
The pi-ball size is important as that influences the vertical speed, so size and speed should be the two components to pay attention to.
The results will be output to a printer.
The average costs for an instrument like that is in the region of $ 5500.
But its availability is sporadic.
Make sure to follow instructions for use and setup!

**Windsock**

This is a handheld device (can of course be put on a static).
Pilots often use it while sitting on some solid underground (ground?) or against a vehicle for stability.
Be aware of the type of compass used so that influences from metallic objects are diminished.
It consists of an electronic theodolite, with an advanced HP calculator with printing system; after the measurement, the results will be processed and printed by the calculator. (Price indication $ 2000, or less)

**Computer**

Almost any modern day laptop will do, but be sure to have Internet connection where you go.
The best is wireless connection, but not every hotel or accommodation, where you will be quartered during a competition has these facilities.
You can connect via a cable connection in most modern hotels, but be aware that some countries have 6 line connection and some 4. Check this when you see their telephone connection plug (6 lines is a wider plug).
If your computer has these capabilities, take 2 types of cable with you.

But as long as there is electricity or well-loaded battery, you can use your laptop off line.
Be sure to have the program Ozie Explorer on it, and know how it works
Store your digitized map and list of prepared goals on it and you will be set quite well. You can also download the tracks of your flight from your GPS and check against the moment of marker drop and your calculated distance.
Or calculate your maximum distance, or anything about your tasks that was relevant.

Although taking your laptop with you in the balloon is handy, it can also be risky for the equipment as you might damage or lose it.
But during preparation it surely is a valuable tool, and when you have a good crew chief or navigator, it may also be valuable when assessing certain aspects of your flight.

# Chapter 5

## Tactics, Reasoning and Logics

**Conclusion**

In this chapter I cover all the tasks with details about what to do under certain specified circumstances.
Then I explain some tactics, including the reason or logic behind them.
Finally, I wrap everything up.

**TASK Nr., R 15.1 – PILOT DECLARED GOAL (PDG)**

Use your compiled list of goals.
When more than one goal is permitted, it is preferable to choose your goals with a variation of a maximum of 15 degrees from the prevailing wind.

This task is mostly set when there is a common launch and sometimes when ILP is used.
Be in time for the declaration, generally at the flagpole, or when there is an ILP you must declare it on the observer sheet. Sign and time stamp it.
Write the goals down on your task sheet for yourself and your Crew Chief.
Double check on validity and distance constraints.
This task can be set with loggers when the event director (ED) lets you make a choice of a certain number of goals. The ED can instruct his scorers to go to these goals to watch markers being released.

When this task is set as a first before a FIN, it may be better to pick the 2$^{nd}$ choice in line with the first, rather then using a variation; if you miss the first you go to the second. You must fly the same line to get to the FIN. This tactic also works when there are good steering conditions.
Put your goals in line to the FIN; if you miss first, go for the second.

**TASK Nr., R 15.2 – JUDGE DECLARED GOAL (JDG)**

This task occurs mostly from a common launch area. But it can be a second task on some occasions, for instance, after a FIN. Look at the map and try to picture how the goal and target will appear.
If you arrive at the target and cannot find it (because it is not there), aim for the goal!
Always check if your Crew Chief has the same goal as you have!

The joy of this task is that there probably is a measuring team.

When set as a virtual task (with loggers), this may be called a STAR, because measurements will be taken directly from a flight path to a virtual point with normal coordinates at a certain altitude.
This is difficult because you don't have many references.
The best approach is to try to locate the goal on earth and make a plan as to how to get to the exact altitude of the goal. (not simple!)

**TASK Nr., R 15.3 – HESITATION WALTZ (HW)**

When the task is straightforward, just mark the goals on the map, but as always, check with your Crew Chief.

You can follow a certain tactical routine for those tasks that allow you to use any valid goal, for example, a scoring area of 50 meters.

Any valid goal is often taken *lightly*.
The reasoning is: if one does not fit, because it is nit within 50 meters, then there will be another one soon.

This reasoning is erroneous because many a time you will end up with no score at all. The way to handle this is to take your list and choose 3 or 4 goals in line with the wind with a maximum of 15 degrees variation to the left and to the right. With the distance constraint in mind, draw the distance circles on your map, to see the areas in between where your goals should be.
If there is a larger scoring area within which these goals should be, then draw that area on the map.

Very important is to put as many targets into your GPS, if they are not already there, so that you can make last minute decisions and your goals are already in place.

**TASK Nr., R 15.4 – FLY IN (FIN)**

The easy part of this task is that there probably is a measuring team!
Finding your own launch may be a nerve-wracking situation, but keep calm, you are not alone in this.
Be aware that the position of the target may differ from the goal.
Estimate coordinates of the target from the information on the task sheet, for example, the target is approximately 200 m. to the north of the goal. If you arrive at the target and cannot find it (because it is not there, eg. Measuring team got lost), aim for the goal.
When the ED has set a sectional scoring area, make sure you know which section and whether you can mark on the road.

Read the STAR part in the JDG comment.

**TASK Nr., R 15.5 – FLY ON (FON)**

When you have your list of goals, write them down on paper AND on your marker; don't forget to ERASE the goals, you won't use before you release your marker. Use a permanent pen and cross out goals not used.
When the observer is flying, don't forget to time stamp and sign your goals on the observer sheet as well! (definitely have (a) provisional goal(s) on the observer sheet; don't forget to cross out those that are not used! Make sure you have a goal selected, in case the marker is lost. Verbal communication or "see" is not valid! Be aware of the distance between the previous mark and declared goal.

*Note:*
When I was a director, I had a protest about a lost marker and I still feel sorry for the competitor, but the rule is quite clear.
In general the Rules Subcommittee of the CIA looks at those protests and decides whether or not to change or clarify the rule!

**TASK Nr., R 15.6 – HARE AND HOUNDS (HAH)**

Generally the hare balloon is piloted by an experienced pilot who should try to fool the hounds. Of course the pilot should fly the minimum time and set a target that the hounds can reach, but he can also use some of his tricks.
It's important not to get in front of the hare, so a quick start after the hare is launched can be risky (unless winds are light and variable).

A nice variation is two hare balloons with two markers where the best result counts. Another option is a double HAH task in one flight. The hare departs for a 20-minute flight and lands, a measuring team gets out, and the hare goes on for another 20 minutes.
Good cooperation with the crew is important because when they follow the hare, they can inform the competitor about the position of the hare when it has landed.
When you can see for yourself where it has landed, take a compass bearing, estimate the distance, and put the estimated position on your map and in your GPS (some GPS's have that facility, with a fluxgate compass).

Another variation is a FON after a HAH.

The follow-on task is difficult here because you don't know where the hare is going to land.
You have to decide which goal to write on your marker for the FON, which requires quick decision-making when you are close to the hare.
If this is the case, don't be too quick to start after the hare so you will have more time to decide which goal to choose for the FON.

**TASK Nr., R 15.7 – WATERSHIP DOWN (WSD)**

The standard task setting could have the same remarks as the HAH.
The important issue here is not to be at the goal area from which the hare balloon launches before it takes off.
Calculate the time to the goal, with the wind speed in mind.

**TASK Nr., R 15.8 – GORDON BENNETT MEMORIAL (GBM)**

A nice variation of task setting can be when the scoring areas are opposite each other with at least some distance to the target, with more then one GBM task in one flight.
This will require some planning as to which way to fly.

**TASK Nr., R 15.9 – CALCULATED RATE OF APPROACH TASK (CRAT)**

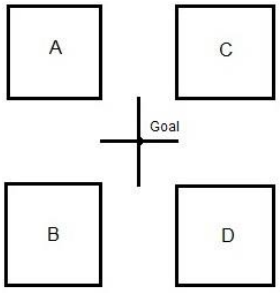
The standard here is for two or more areas with natural boundaries.
Two annexed football fields divided in 4 or 2 areas with the target in between is a good alternative to natural areas.

A task even more challenging is when task(s) (HW or PDG) are set before.

With **loggers**:

The following virtual task is quite challenging and exotic too.
Take a virtual target at 500 ft AMSL at the intersection of two lines on the map i.e. 43006800.
Scoring areas are 4 squares of 300 m by 300 m (A, B, C and D), but at a distance of 100 m from the E-W and N-S lines through the target.
Scoring altitude is between 500 and 800 feet AMSL.

**Graphical representation areas**




| **times example** | **validity scoring areas** |
|---|---|
| 06:00-06:10 | A-B |
| 06:10-06:20 | B-C |
| 06:20-06:30 | C-D |
| 06:30-06:40 | D-A |
| 06:40-06:50 | A-B |
| etc. till the end of scoring period | |

Calculate at what time you can be at the target area (wind/altitude).
Investigate about areas where you can "buy time" should your estimates not meet your calculations.

The calculation of time here is the important factor, especially when tasks are set before the CRAT.

In this task we are testing precision and time-speed related flying.
It would be wise to have your copilot or navigator with you!

**TASK Nr., R 15.10 – RACE TO AN AREA/LINE (RTA)**

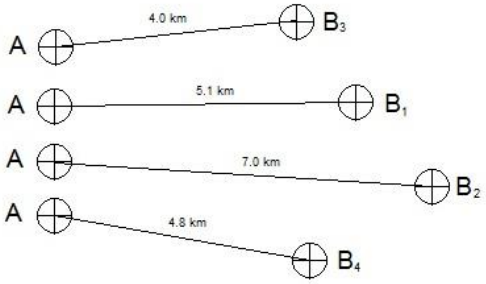
This task is a race to a specific line (road).
The marker drop is on the line (road) or at max.10 meters from the centre of the road, on the down wind part only.
Therefore, the road plus 10 meters beside the centerline is the area!

When a minimum distance is set after an RTA that can be considered challenging, be aware that MDT should then be between marks!!

A race between two areas can be set eventually after an initial task in a flight (FIN or PDG).
Areas can be field areas on the map, but also areas around valid goals; think of the minimum distance between marks!
Example:
Suppose the area is 200 m. around any valid goal, but the minimum distance between marks is 5 km.

**Graphical representation**

A – B3 not valid
A – B1 difficult
A – B2 too far
A – B4 most likely




Use your goal list.
The tactic to do this task is to select both your areas with care. When the minimum distance between the marks is sufficient, you may choose the higher wind speed to get a fast time.
But still, do choose some spare goals in case you cannot make it.
This way this task setting is quite challenging, especially after another task is set!

**TASK Nr., R 15.11 – ELBOW (ELB)**

An elbow can be flown within an area, such as a 6 km by 6 km square, or within a circle with a radius of 5 km.

The difficult part is to decide which tactic to follow, specifically first leg low and second leg in upper levels or vice versa.
When it is a morning flight, start early so you can catch the lower wind to the biggest advantage.
In the morning, when the nightly wind maximum from a different direction dissolves because of rising temperatures caused by the heating of the sun, the wind will change significantly.
Be aware of time and distance constraints.

Have a plan.

When the task is set in an area, always draw the area on your map!

**TASK Nr., R 15.12 – LAND RUN (LRN)**

Have a plan and enough gas!!

The difficult part is to decide which tactic to follow, specifically first leg low and second leg in upper levels or visa versa.
On a morning flight, start early so you can catch the lower wind to the best advantage.

In the morning, when the nightly wind maximum from a different direction dissolves because of rising temperatures caused by the heating of the sun, the wind will change significantly.

Do a lot of calculations;
The best result in a Land Run is always a 90 degree angle and two equal legs, but that needs some planning.

Example:
The wind at low level is East, 8 kts and at 2500 ft the wind is SSW, 24 kts.
Your best chance is to take the low leg to the west first; there is 3 to 1 in wind strength.
Calculate your time for your Land Run.
Suppose you have one hour to accomplish the task, assume that you will do approximately 35 minutes for the first leg, then 5 minutes to be settled in the upper level, 15 minutes at that higher level and again 5 minutes to come down. These up and down times differ on the type of balloon and the pilot's skill.
During the flight, be sure that your B marker can be found because the loss of it may cost you your good Land Run result.

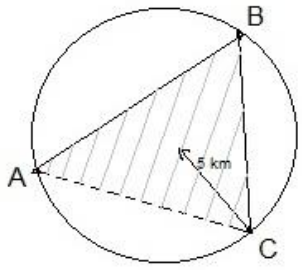
Two Land Runs in one flight with an extra marker D, (ABC and ABD) and a minimum distance between markers.
When two Land Runs in one flight are set and markers for both are shared (ABC and ABD), the best plan would be to come down for Marker C and then go up again to Marker D.

A Land Run can be flown within an area, such as a 10 km by 10 km square, or within a circle with a radius of 5 km. Most of the time the coordinates of the centre will be provided.

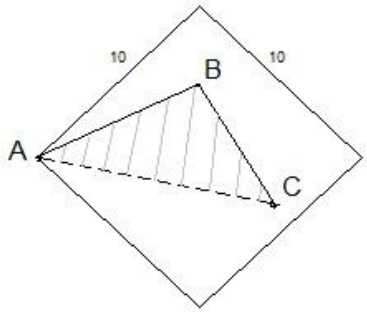
This is quite challenging and requires good planning and timing!
Most challenging is when two Land Runs are set in a circle, so all markers have to be within the circle.

Graphical Representation of Landruns

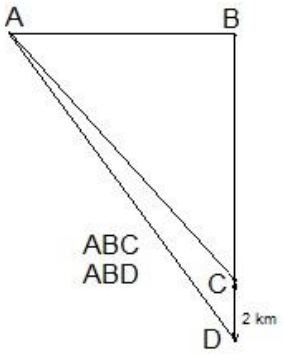
Landrun in Circle




Landrun in Square




2 Landruns




**TASK Nr., R 15.13 – MINIMUM DISTANCE TIME (MDT)**

This task may be set best:
when there is a fair amount of wind, or;
when there is a box wind and thus a possibility to get close to or on the Launch Point.

A number of variations are possible for this task!

After a FIN task, then scoring distance can be taken as between FIN mark and MDT mark.
The markers of FIN will remain in the scoring area until last MDT is marked.
There will be a scoring period set on FIN.
Generally no observers and no crew are allowed in the FIN field.

The first one can be challenging because, when you can come back to the FIN goal area, you have to remember where your FIN marker has fallen.

When this task is set, in a multiple task flight, there probably is a minimum distance between two marks as the best result!

**TASK Nr., R 15.14 – Shortest Flight (SFL)**

This task is not very often used.

When set, you have to find the closest scoring possibility to your launch, whether there is more than one area or not.
Also the wind factor is important.
A task set after a shortest flight is generally a CP dependent task, such as MDT, XDT, FON, HW (any valid goal).

With loggers, areas can be virtual!

When the variation of the task is set, have a plan!

**TASK Nr., R 15.15 – MINIMUM DISTANCE DOUBLE DROP (MDD)**

When the scoring areas are on the map, calculate which points will give you the best results, with the given wind direction in mind.
Put those positions in your GPS.
Fly to the first position, and drop your marker from a relatively low altitude.
Your marker must be inside the scoring area.
Next try to get to the second position.

Some variation:
Two opposite areas at an intersection: this requires precision flying and speedy reaction when throwing markers.
In a target area there are two circular lines of, for instance, 100 meters at 15 meters distance on both sides of a target.
I have also seen the target used in a separate task, but then, when you have a good score on the target task, you probably also have a good score on the MDD task or the other way around.

This task can be perfectly set virtually with loggers.

**TASK Nr., R 15.16 – MAXIMUM DISTANCE TIME (XDT)**

Start early in an evening flight, be aware of the time constraint, and be sure to see your marker on the ground.
If you can't find it later you will not have a result unless the observer was in the basket and saw the marker on the ground.
When set with loggers, you will probably have an altitude restriction at the end of scoring time.

**TASK Nr., R 15.17 – MAXIMUM DISTANCE (XID)**

The scoring area should have a challenging, but achievable max. distance.
With loggers, a virtual area can be defined.

**TASK Nr., R 15.18 – MAXIMUM DISTANCE DOUBLE DROP (XDD)**

Normally this will take place in a large area, which is surrounded by a long winding road.

Sometimes two parts of two different roads, and 50 meters on each side of the centre of the road, are used as scoring areas.

With loggers, areas with given coordinates may be used.

Plan of attack:
Try to establish which is the most optimal distance. Take the wind direction into consideration and make a plan.
Put the best coordinates in your GPS and fly to them!
Take GPS coordinates of marks.

**TASK Nr., R 15.19 – ANGLE (ANG)**

It's more or less the same as what has been said with the Elbow, with one essential difference. The result is measured between a given direction and your flight path where you dropped your marker.

A nice variation can be the greatest angle between a direction of two previous markers and the angle marker.
Without calling it an Elbow, it looks like it!
Let me explain:
Suppose you have after a PDG, a FON and then an ANG. The possible variation could be angle between PDG mark – FON mark and FON mark – ANG mark.
This would make it possible to optimize your PDG – FON direction by choosing a proper goal for your FON in relation to the direction you want to fly your Angle.
Since the choice of the FON is up to the pilot he can influence his result on the Angle, by making the right choice for his FON, which in my opinion should not violate rule 8.4.1

**TASK Nr., R 15.20 – BOX**

A complete virtual task.

The intention of the box here is to try as many horizontal metres in given box(es) as possible.

This requires a lot of attention because fast ascents and descents of various balloons in a small area can easily take place.

This task is known for its possibilities variations. Some of these are as follows:

a. choosing your 3 boxes out of 7 displayed;
b. a group of boxes, where one is take out and cannot be used or is off limits;
c. one box, with just one try;
d. one box, with more then one try, best result counts.

# Example Task Sheet

20th Polish National HAB Championship – 4th Polish Woman Championship – 13th Leszno Cup
**Leszno 15 – 19/9 – 2004**

| **FLIGHTDATA, Saturday, sept. 18th, morning** | | | |
|---|---|---|---|
| a) Sunrise / Sunset | **06:30/19:00** | e) Briefing times | **06:30/16:30** |
| b) PZ's in force | **All** | f) Observer | **Pilot's invitation** |
| c) Launch area | **Pilot's choice** | g) Solo flight | **Not solo** |
| d) Launch period | **07:00 – 07:45** | h) Search period | **AM4hrs/PM3hrs** |

| **TASK Nr. 16, FIN (R.15.4)** | | |
|---|---|---|
| a) Marker colour | **WHITE** | |
| b) Marker order | **in order** | |
| c) Marker drop | **R.12.9** | |
| d) Scoring period | **07:00 – 08:15** | |
| e) Scoring area | **NW Quadrant, 200 meters, see diagram** | |
| f) Task data R15.4.2 | **a. Position of set goal** | **27094419** |
| | **b. Min. dist. from ILP to target** | **1500 meters** |
| | **c. Number of take-offs permitted** | **1** |

| **TASK Nr. 17, PDG (R 15.1)** | | |
|---|---|---|
| a) Marker colour | **RED** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **07:00 – 08:30** | |
| e) Scoring area | **200 meters radius around declared goal** | |
| f) Task data R15.4.2 | **a. Declaration time and place** | **On form given by Observer, before take off** |
| | **b. Number of goals permitted** | **2** |
| | **c. Min. dist. from ILP to target** | **4/8 km** |

| **TASK Nr. 18, JDG (R.15.2)** | | |
|---|---|---|
| a) Marker colour | **VIOLET** | |
| b) Marker order | **in order** | |
| c) Marker drop | **R.12.9** | |
| d) Scoring period | **-** | |
| e) Scoring area | **Contest area** | |
| f) Task data R15.2.2 | **a. Position of set goal** | **31155050** |

| **TASK Nr. 19, HESITATION WALTZ (R 15.3)** | | |
|---|---|---|
| a) Marker colour | **BLUE** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **-** | |
| e) Scoring area | **50 meters around any valid goal** | |
| f) Task data R15.3.2 | **a. Position of set goal** | **Any valid goal** |

| **TASK Nr. 20, HESITATION WALTZ (R 15.3)** | | |
|---|---|---|
| a) Marker colour | **BLUE** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **till 09:50** | |
| e) Scoring area | **50 meters around any valid goal** | |
| f) Task data R15.3.2 | **a. Position of set goal** | **Any valid goal (range 3 – 12 km from previous mark)** |

*Landing before 10.00. Distance between all marks minimum 2000 meters.*
**BEWARE OF POWERLINES**

This task sheet shows you that even with the “basic five” it is possible to set challenging tasks.
There is a **time constraint** in take off, it must be before 0745 hrs and in the flight, all tasks must be finished before 1000 hrs, which is the ultimate landing time.
There are a few **distance constraints**, the launch should be at least 1500 meters from the first FIN goal, the distance between each and every mark should be 2000 meters, and there is a constraint on the last task in a range of 3-12 km.
The Fin has a scoring area constraint with a NW quadrant and a 200 meters scoring area.
The PDG (2 were permitted) has a scoring area constraint of a 200 meters radius, while the HW’s have a constraint of 50 meters as the scoring area.
Since tasks have to be flown in order, there are many decisions to be made.
As the distance between FIN and JDG is just 8 km, it was not easy to find 1 proper goal for the PDG in between, at the correct distance. It has to be with a minimum distance constraint, and the PDG has to be declared before take off.

In all I would say this was rather complicated.

On the first task of this flight, the road was out of bounds and hardly any one tried to score next to the road. Instead the competitors almost all took the field, which was separated from the hard surface by the border and a ditch.
That was significant because the pilots went for “better sure then sorry!”
Something else happened there that I want you to know.
The competitor involved had the markers(5) in his breast pocket. He took out the correct one to be released for the task, but when he did, one of his HW markers fell out of his pocket.
After the flight I asked him how he had solved the problem of losing his marker. He did not, he said, he had no marker, so no result on his last HW.
How could he have solved it?
Remember I told you about a spare marker with your name on it?
We all had seen the mishap and his observer was on board.
I would have given him a result had he used his own marker.
Even if he had thrown a glove or something else at the HW goal, I would have considered it a valid score, given the circumstances.

So the point is, have some spare markers with your name on it, the proper length and preferably two colours, so every one can see it is a marker with a special reason!

# Another Sample Task Sheet

20th Polish National HAB Championship – 4th Polish Woman Championship – 13th Leszno Cup
**Leszno 15 – 19/9 – 2004**

| **FLIGHTDATA, Friday, sept. 17th, morning** | | | |
|---|---|---|---|
| a) Sunrise / Sunset | **06:30/19:00** | e) Briefing times | **06:30/16:30** |
| b) PZ's in force | **All** | f) Observer | **Pilot's invitation** |
| c) Launch area | **Pilot's choice** | g) Solo flight | **Solo** |
| d) Launch period | **07:00 – 07:45** | h) Search period | **AM4hrs/PM3hrs** |

| **TASK Nr. 9, FIN (R.15.4)** | | |
|---|---|---|
| a) Marker colour | **WHITE** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **07:00 – 08:15** | |
| e) Scoring area | **Contest area** | |
| f) Task data R15.4.2 | **a. Position of set goal** | **CLP** |
| | **b. Min./Max. dist. from ILP to target** | **South of Road 34 or at min. 2km distance** |
| | **c. Number of take-offs permitted** | **2** |
| **Clear FIN area, rule 9.22 applies for this area, boundary to be considered radius 200 m around FIN goal** | | |

| **TASK Nr. 10, MINIMUM DISTANCE TIME (R 15.13)** | | |
|---|---|---|
| a) Marker colour | **YELLOW** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **-** | |
| e) Scoring area | **Contest area** | |
| f) Task data R15.13.2 | **a. Minimum set time** | **20 minutes** |
| | **b. Arrangements for timing** | **Time starts at marker drop of Task nr.9** |
| **Distance will be measured between Mark task nr. 9 and Mark task nr. 10** | | |

| **TASK Nr. 11, FON (R.15.5)** | | |
|---|---|---|
| a) Marker colour | **RED** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **07:00 – 08:15** | |
| e) Scoring area | **Contest area** | |
| f) Task data R15.4.2 | **a. Min./Max. dist.** | **1/5km** |
| | **b. Number of goals permitted** | **2** |

| **TASK Nr. 12, ANGLE (R.15.19)** | | |
|---|---|---|
| a) Marker colour | **BLUE** | |
| b) Marker order | **in order** | |
| c) Marker drop | **-** | |
| d) Scoring period | **-** | |
| e) Scoring area | **Contest Area** | |
| f) Task data R15.4.2 | **a. Description Point A and B** | **Point A = Mark task 11**<br>**Point B = Mark task 12** |
| | **b. Set direction** | **090 degrees** |
| | **c. Min./Max distance from A to B** | **3/6 km** |

| **TASK Nr. 13, MINIMUM DISTANCE TIME (R.15.16)** | |
|---|---|
| a) Marker colour | **VIOLET** |
| b) Marker order | **in order** |
| c) Marker drop | **-** |
| d) Scoring period | **-** |

| | | |
|---|---|---|
| e) Scoring area | **Contest Area** | |
| f) Task data R15.16.2 | **a. Minimum set time** | **20 minutes** |
| | **b. Arrangements for timing** | **Time starts at marker drop of Task nr.12** |
| **Distance will be measured between Mark task nr. 12 and Mark task nr. 13** | | |

*Officials should observe marker drop and note exact time for task 10 and 13 for best result.*
**BEWARE OF POWERLINES and OTHER BALLOONS**

This task sheet is complicated because of its numerous possibilities.
There were the normal time constraints here, launch period, and time of scoring period on the first task a FIN.

It was light weather, so there was considerable variation in the wind at low levels. The distance between the Road 34 and the target was in the order of 900 meters, so the launch site had to be chosen carefully.

Some competitors were rather skilled as they flew over target and dropped their markers on the target. Because they had to fly MDT, and pilots would be scored to the distance between their marks, they should remember where they dropped their first marker!

But they also had to clear the goal area, which was very challenging. Some were so good they could find an upper wind that brought them back to the goal; one even had a minimum distance of some 1 or 2 meters.
They then had to do a FON with a distance constraint, which was not easy, because of the light wind.

Then an angle and some were able to make the perfect 180 degrees, because they had found the correct upper wind that had brought them back to the goal of the FIN too.
Something struck my mind after the pilots had launched.
The direction is a true direction and some pilots flew strictly along a parallel on the map, thus making a 180 degree of direction change not in the 90 degree direction. This was because the parallel was not the true 90 degrees.

The last task was a Maximum Distance Time where it was crucial that measurements would be between the two marks. Given the critical timing, a lot of pilots took the observer on board to be sure the markers were seen when they were dropped and the time noted.
All in all, not that simple!

In many cases the task setting can only be partly judged at a distance, when you have the map, the meteo information, and the task sheet and extra information sheets that go with it.

So to be a true judge you have to be at a competition, which is not always possible. But I can assure you, if you take some efforts in getting those sheets from those who were there, and a map, it will help you to evaluate what could have been done and what to pay attention to.
I personally always try to persuade webmasters who publish competition results also to publish the task sheets!

**Remark on Task settings**

The first five tasks are the **"basic five"** as I call them.

The figures for these 5 different tasks set during all Worlds and European Championships are:

| | | |
|---|---|---|
| PDG | 10% | The remaining 14 tasks account for 32%! |
| JDG | 14% | |
| HW | 8% | |
| FIN | 20% | |
| FON | 16% | |

Many pilots love those 5 only because they are very good at them!
However, I have spoken to many who also would like some variation, some spice in the task setting.
But no matter what, it always is the CD's discretion to choose the tasks.
And mind you, there are still many variations possible.

How about the following:

- A double PDG task with two goals to be declared per task?
- A Fly-In where the scoring area is only east or west or north or south or the target coordinates (with loggers)?
- A JDG or FIN in a scoring area with a minimum scoring altitude (with loggers)?
- A HW at any valid goal, with a scoring area of 50 meters around those goals?
- Any of the basic 5 with a sector scoring area?
- Any time constraint, any distance constraint, any scoring area constraint?

Thus you have seen a live example with just these tasks so you could see how complicated it can be. But this is hardly the case at big competitions where the tasks are pretty straightforward.
This may seem boring and does not appeal to any sense of fantasy, but an ED is not always in the position to assign fantasy task settings!

I would say there are enough possibilities but when you have these tasks for 9 flights at a stretch, you may want something else.
There are indeed many tasks, but it is likely you will only get 32 % of the possible tasks in big competitions.
And for that there are many reasons, such as fewer complications, fewer complaints/protests, less work for scoring and debriefing!
Something interesting to end with:

**Balloon Competition Drop Sight**

Many a time I have seen balloonists been wrong in assessing the moment they have to drop their marker when they are high above their target or goal.
Almost all pilots release their marker (a bit) too late.

To start with, you must note the wind speed at different levels and calculate an average speed to reach the ground from several altitudes.

There is a common rule, and that is, that an official competition marker falls at an average speed of 24-28 feet per second (depending on the fabric the marker is made of).

It also means you have to estimate the average horizontal speed of your marker during the drop at your altitude above the ground. This is not necessarily your own speed.

**Suppose:**
You calculate the average wind speed at 20 km/h during the drop.
You are at a 1000 ft above the ground.
Your marker will reach the ground in 35-40 seconds.
**Question:**
How much do you travel in 35-40 seconds at a speed of 20km/h?
**Answer:**
You will have to release your marker at approximately 160-200 meters before your target!!

This calculation assumes you are right on the proper direction to the target and the main wind direction during the drop is also to the target.

But of course it also depends on the direction of the target from the balloon position in relation to the wind.

It would be very handy if you set up your own tablet for that. Experiment with dummy markers and your own calculation of the wind speeds.
And adjust your table accordingly.
You could call that an **inclinometer** table

**Conclusion**
My mission was not to make money on writing this book.
I will ask a decent price but will never sell enough to cover all the hours that I have spent on this.
My real mission in writing this book is to get more pilots interested in the sport of competition flying. I hope this booklet contributes to that.
Most of us start out as hobbyists and before we know it, we realize it's a source of income and never think about it as a sport anymore.
That's a pity.
This booklet is especially for those who persevere. Please study the material and go get them, beat them, become better, you can do it!!

Thanks

**Cornelis van Helden**

Oud Turnhout, February 2005

Cornelis van Helden has been involved in moving with the wind all his life. As a young boy he watched the sea-going vessels in the port of Rotterdam and that was the start of his nautical career. He sailed the seven seas for 10 years and if you name a country, there's a good chance he has sailed there.

During a successful career ashore where he was an entrepreneur in the real estate business and a director in a software company, he found the time to put a lot of energy into sailing with a small boat. Yes, sailing again.

In 1988 he picked up hot air ballooning and was a competitor from day one.
Since that time, he has participated in many tournaments all over the world.
When he was asked somewhere in 1996 to head up a tournament, he did not hesitate for a minute! He has been doing that ever since and has lead more championships as an Event Director then he has participated in as a competitor.
His greatest achievement was his Event Directorship of the European Championship HAB in 2003 in Vilnius, Lithuania.

The first e-book published on ballooning has been written for the interest of all competition balloonists, in the hope they can learn something that will benefit them.

Cornelis also owns the company that publishes the Balloon EZINE.

**Cornelis van Helden**
Author of Competition Director's Insight or How to Pick the Brain of a CD.

***http://www.my-e-book/author/cvanhelden***