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ON BEHALF OF

FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

Task Sheets

Contents

General Rules

The following rules and clarifications are common to all task sheets, unless something different is established in a specific sheet.

Flight log analysis

Flight log elements

Flight logs, also known as ***tracks*** are basically composed by a sequence of ***fixes***. Each fix is composed by a pair of coordinates (latitude and longitude) and a time mark with 1 second precision.

The interval between two consecutive fixes is the ***logging period***. In the case of the MLR model, this period is normally set to five (5) seconds.

The track can be viewed as a sequence of points (***track points***), but for the purpose of its analysis it is also convenient to think of it as a sequence of segments (***track segments***) defined by pairs of consecutive points.

Crossing gates

Gates are defined by two end points forming a segment.

When a track segment cuts the segment formed by the two gate ends, the gate is said to be crossed. This can be done in two different directions. When a task specifies a certain direction for crossing a gate, the inverse crossing is considered incorrect.

If nothing else is specified in a task sheet, gates will be 500 m wide (250 m margin on each side from the ideal course line).

Timing in gates

Crossing time will be taken from the oldest point defining the track segment that crosses the gate. This is the **track point just before** crossing the gate.

When crossing time is to be checked against an estimation given by the pilot or calculated by the scoring team, a **five (5) second margin** applies. If a pilot crosses the gate up to five seconds too early or too late, he gets a zero (0) time error in the gate. If a pilot crosses the gate six seconds too early or too late, he gets 1 second error in the gate.

Crossing turn-points

Turn points are defined by a central point, referenced to a ground feature, and a certain radius forming a circle.

When a track segment cuts, enters or exits the turn-point circle or lies inside of it, the turn point is said to be crossed. Normally, more than one track segment crosses the turn-point circle.

If nothing else is specified in a task sheet, turn-points will have a radius of 250 m.

The 250 m radius is a margin to absorb a number of error sources: GPS error when taking the fix by the organization, GPS error when pilot flies over the point, size of the ground feature, cartographic precision,...

If a pilot is flying to and from a certain turn-point, and he decides to turn back 200 m before the actual ground feature, he is taking chances. The only way for a pilot to be sure of flying through a turn-point is to fly exactly above the reference ground feature.

Timing in turn-points

One of the segments that crosses the turn-point circle is nearest to the centre. Crossing time will be taken from the oldest point defining this track segment. This it is the **track point just before reaching the nearest distance** to the ideal centre of the turn-point.

When crossing time is to be checked against an estimation given by the pilot or calculated by the scoring team, a **five (5) second margin** applies. If a pilot crosses the turn-point up to five seconds too early or too late, he gets a zero (0) time error in the turn-point. If a pilot crosses the turn-point six seconds too early or too late, he gets 1 second error in the turn-point.

Start and Finish points or gates

Unless otherwise stated, the navigation parts of a task will start and finish at designated start and finish points or gates.

When points are used, direction is not relevant. When gates are used, they must be crossed in the designated direction.

If scoring depends on the position or time of crossing the start or finish points or gates, a pilot missing one will be given a zero score in any scoring formula that uses its time or distance.

If scoring does not depend on it, a 20% penalty will be given to the pilot.

360 turns

A 360 turns can be easily spotted in the flight track. Some tasks may forbid 360 turns.

No-fly zones

No fly zones will be defined as circular areas, or aggregations of circular areas. Entering no-fly zones is checked in the same way as it is done in turn-points.

A pilot flying into a no fly zone will incur in a 100% penalty in the task.

Sealing procedures

Electronic devices in flight

Any electronic devices other than those approved in Sec. 10 for use in championships must be submitted to the organization for inspection. The organization will decide whether the competitor will be able to carry such device open or sealed, switched on or off.

If competitors wish to carry any non approved device in flight, they must carry it sealed.

Device sealing procedure

Competitors will hand their devices to a marshal at a designated place. The competitor may use his own wrapping method, or the organization may provide it. In any case, the marshal will decide if the method is valid and proceed to seal it.

The marshal will record the sealing event – competitor, task, sealed device(s).

After the flight, seals will be inspected and checked against the sealing records. Any seal not inspected after a task will incur in a 100% penalty in the task.

Marshals may inspect competitors' equipment at any time during a task.

Take-off and landing procedures

Take-off in open window

When take-off is performed in an open window, each pilot will decide when to take off. When he wishes to do so, he will get near the deck and will wait for a marshal's signal to enter it. The marshal will allow a maximum number of pilots inside the deck. Once inside, the pilot will get ready and take off.

Delaying take off in the deck for more than 20 minutes will be penalised (20% of the task value).

Take-off in given order

When take-off is performed in a given order, each pilot will watch for his precedents and will be ready near the deck when his precedents are taking off. A marshal will allow the pilot to enter the deck to get ready and take off at the specified order or time.

Penalty for delaying takeoff (more than 20 min on the deck or the seventh in order below pilot's position has taken off) 20% takeoff score. In this case, marshals may send the pilot to the last take-off position.

Other take-off penalties

20% for taking off from outside the deck.

20% to 100% for dangerous take-off manoeuvres.

50% for not following marshal's instructions.

Landing after navigation tasks

When landing after a navigation task, if competitors must fill in a declaration sheet they will proceed to a safe area and they will not speak or communicate with anybody before handing the declaration sheet to a marshal.

Landing after economy tasks

After landing in an economy task, competitors will proceed to a safe area, and they will wait for a marshal to check their fuel system.

Other landing penalties

100% for landing out.

20% for landing outside of the designated deck but within airfield boundary.

100% for landing after end of task.

General penalties

Infringement of any rule established in a task sheet will incur in a 20% penalty applied to the total task score, unless the task sheet specifies a different penalty.

Reminder of penalties from the Local Regulations (1.14.2):

Actions which will normally result in disqualification:

a. *Bringing the event, its organisers, the FAI or the sporting code into disrepute. The use of hostile 'tactical protests' falls into this category.*
b. *The use of banned substances.*
c. *Unauthorised interference with an aircraft in a Secure Area.*
d. *Flight outside the specified flight envelope of the aircraft or dangerous flying.*
e. *Flight or attempted flight with prohibited equipment.*
f. *Unauthorised assistance during a task.*
g. *Interference with the firmware or software of a CIMA approved GNSS flight recorder*

Actions which will result in 100% penalty to task score unless stated differently in the task brief:

a. *Landing out*
b. *Returning after end of task*
c. *Local airspace infringement.*
d. *Competition prohibited area (no fly zone) infringement.*

Navigation tasks

Flight planning, navigation with estimated time and speed. No fuel limitation.

Task A. Pure Navigation

Fly to the greatest number of turn-points within the time window and return to the deck.

Description

Pilots will receive a catalogue of turn-points.

They will take off from their designated decks, fly through a start point, and try to fly as many turn points as possible in a time window of _____ minutes. Then they will return to a finish point and then they will land at the deck.

Each point may only be visited once.

After landing, pilots will fill in a declaration of the flown turn-points and hand it to a marshal.

Scoring

Number of turn-points:

N	=	Number of turn points correctly flown AND declared in order.
Nmax	=	Best N (maximum) among pilots
Qp	=	500 * N / Nmax

Distance:

D	=	Accumulated distance in straight segments from the start point along the turn points and then to the end point.
Dmax	=	Best D (maximum) among pilots
Qd	=	500 * D / Dmax

Total:

Q	=	Qp + Qd
P	=	Q / Qmax

Task A – Pure Navigation – Declaration Sheet

Sequence of points flown

1st	2nd	3rd	4th	5th
6th	7th	8th	8th	10th
11th	12th	13th	14th	15th
16th	17th	18th	19th	20th
21st	22nd	23rd	24th	25th
26th	27th	28th	29th	30th
31st	32nd	33rd	34th	35th
36th	37th	38th	39th	40th
41st	42nd	43rd	44th	45th

Pilot: _____

Number: _____ **Team:** _____ **Class (circle appropriate):** **PF1** **PF2** **PL1** **PL2**

Signature:

Task B. Curve Navigation with Time Estimation

Precisely fly the course defined by an arbitrary line drawn on the map, with time estimations and a time limit.

Description

Pilots will receive a course drawn on a map. There will also be a number of known time gates where pilots will estimate their crossing time, counted from the start point.

Before take-off, pilots will hand their declarations to a marshal.

They will take off from their designated deck and fly to the start point, where time will start. Then they will precisely fly the course trying to cross the time gates in order at their estimated times.

Navigation and timing end at the finish point. Then, pilots will proceed to land at their designated decks.

There will be an undetermined number of hidden gates to validate the course. Gates must be crossed in order and proper direction. Crossing the same gate more than once in any direction invalidates the gate. Example: The sequence 1-2-4-3-5-6-5-7 will be evaluated as 1-2-4-6-7, a total of five correct gates.

Time will be measured at the known time gates and checked against pilot declarations. If a time gate is crossed more than once, time will be extracted from the first crossing.

There will be a maximum flight time – Tmax – between crossing the start and finish points. No pilot may declare an estimated time beyond this limit.

SP	→	***HG***	→	***TG1***	→	***HG***	→	***...***	→	***TG2***	→	***HG***	→	***...***	→	***FP***
T = 0	Nav	+1	Nav	T1	Nav	+1	Nav		Nav	T2	Nav	+1	Nav		Nav	T < Tmax

Scoring

Spatial precision

Nh = Number of hidden gates in the task

H = Number of hidden gates correctly crossed (crossed once, in order and proper direction)

Qh = 1000 x H / Nh

Time precision

Tmax = _____ (Longest flight time between start and finish points)

Nt = Number of time gates in the task

Emax = 180 s (Fixed value, maximum time error computed for a pilot in a single time gate)

Ei = Absolute error in seconds in gate i.
Margin of 5 seconds. Maximum error is Emax. Time gates not crossed score Emax error.

E = ∑ Ei (sum of errors in all time gates)

Qt = 1000 x E / (Nt x Emax)

Total

Q = Qh – Qt

P = 1000 x Q / Qmax

Task B – Curve Navigation with Time Estimation – Declaration Sheet

Time Gate	*Times of arrival (ETAs) in seconds counted from the Start Point*
1	
2	
3	
4	
5	

Pilot: _____

Number: _____ **Team:** _____ **Class** (circle appropriate): **PF1 PF2 PL1 PL2**

Signature:

Task C. Precision Navigation

Fly a circuit at a constant speed in each straight leg, estimating arrival times to known turn points.

Description

A circuit will be defined by a start and finish points, with a number of intermediate turn points. All points will be known before take-off.

Before take-off, competitors will hand a declaration of their estimated times of arrival to every turn point in the circuit, including the finish point.

Competitors will take-off from their designated decks and fly to the START point where navigation and timing start. They will fly each leg at a constant speed that should be consistent with their declarations. The speed in each leg may be different, but it must be constant along the leg.

There will be hidden time gates along the corridors.

Navigation and timing end at the FINISH point. Then they will proceed to land at their designated decks.

START	→	***AA***	→	***BB***	→	***CC***	→	***DD***	→	***FINISH***
T = 0	Nav	Ta	Nav	Tb	Nav	Tc	Nav	Td	Nav	Te

Scoring

Each hidden gate crossed scores 180 points. A gate crossed twice or crossed in the opposite direction will be invalidated.

An estimated time for crossing each gate will be calculated by the organization. Crossing time will be checked against this estimation. Each second of error will score one negative point. If a gate is crossed twice, time will be extracted from the first crossing.

Spatial precision:

Ng = Number of gates correctly crossed

Qp = 180 * Np

Time precision:

Ei = Absolute error in seconds in gate i.
Margin of 5 seconds. Maximum error is 180. Time gates not crossed score 180 s error.

Qt = ∑ Ei (sum of errors in all time gates)

Total:

Q = Qp – Qt

P = 1000 * Q / Qmax

Task C – Precision Navigation – Declaration Sheet

Turn Point	*Times of arrival (ETAs) in seconds counted from the Start Point*
AA	
BB	
CC	
DD	
FINISH	

Pilot: _____

Number: _____ **Team:** _____ **Class** (circle appropriate): **PF1 PF2 PL1 PL2**

Signature:

Task D. Navigation with Unknown Legs

Fly a course where new legs are discovered along the flight.

Description

Pilots will take-off from their designated decks and fly to P1 where navigation starts.

- From P1 they will fly along the given line towards L1. Along this leg they will find a ground feature F1.
- Then they will fly a straight line from F1 to P2.
- From P2 they will fly along the given line towards L2. Along this leg they will find a ground feature F2.
- Then they will fly a straight line from F2 to P3.
- From P3 they will fly along the given line towards L3. Along this leg they will find a ground feature F3.
- Then they will fly a straight line from F3 to the finish point (FP).

Along the course P1 – F1 – P2 – F2 – P3 – F3 – FP there will be a number of hidden gates to validate the course.

Pilot's speed will be constant along each leg, although speed may be different in each leg. Time will also be measured in turn-points and hidden gates to evaluate this. Time in hidden gates will be estimated by interpolating between times in previous and next turn points.

Turn-points and ground features

The position of turn points and the aspect of the ground features will be given during the briefing:

P1	*F1*	*L1*	*P2*	*F2*	*L2*	*P3*	*F3*	*L3*	*FP*

Scoring

Spatial precision:

H = Number of hidden gates correctly crossed by the competitor

Qh = 300 * H

Constant speed:

Ei = Absolute error in seconds in gate i.
Margin of 5 seconds. Maximum error is 300. Time gates not crossed do not add error.

Qt = ∑ Ei (sum of errors in all gates crossed)

Total:

Q = Qh – Qt

P = 1000 * Q / Qmax

Task E. Contract Navigation with Time Controls

Fly a course between a combination of declared turn points, flying over some of them at a specified time.

Description

Before take-off, pilots declare the sequence of turn points they will fly. They will hand their declaration to a marshal.

They will take off from their designated decks and fly to the START point where navigation begins. Then they will fly the sequence of declared points in order, including the mandatory MIDDLE POINT and FINISH POINT. This two points will be flown a the specified time. Upon reaching the finish point, navigation ends.

Turn points may only be visited once.

Time starts counting at the start point (SP). Competitors will fly over the middle point (MP) exactly 3600 s after SP and will fly over the finish point (FP) exactly 7200 s after SP.

Pilot's declaration will include MP. Points declared to be flown after MP can't be flown before the established time for MP. Otherwise those point will be invalid.

SP	→	***P1***	→	***...***	→	***MP***	→	***Pn***	→	***...***	→	***FP***
T = 0	Nav		Nav		Nav	T = 3600	Nav		Nav		Nav	T = 7200

Turn-point catalogue

Will be given at the briefing.

Scoring

Turn-points

N = Number of turn-points flown by the pilot different from SP, MP and FP.

Nmax = Best N (maximum) among pilots.

Ep = Number of declared points that were not flown in order, including SP, MP and FP..

Epmin= Best Ep (minimum) among pilots.

Qp = 1000 * (N – E) / (Nmax – Epmin)

Time estimation:

Et = Sum of absolute errors in MP and FP.
Margin of 5 s. Maximum error of 180 s in each point. 180 s error if point not flown.

Etmax= Worst Et (maximum) among pilots.

Qt = 1000 * (Etmax -Et) / Etmax

Total:

Q = Qp + Qt

P = 1000 * Q / Qmax

Task E – Contract Navigation with Time Controls – Declaration Sheet

Sequence of points to be flown

1st	2nd	3rd	4th	5th
6th	7th	8th	8th	10th
11th	12th	13th	14th	15th
16th	17th	18th	19th	20th
21st	22nd	23rd	24th	25th
26th	27th	28th	29th	30th
31st	32nd	33rd	34th	35th
36th	37th	38th	39th	40th
41st	42nd	43rd	44th	45th

Pilot: _____

Number: _____ **Team:** _____ **Class (circle appropriate):** **PF1** **PF2** **PL1** **PL2**

Signature:

Economy Tasks

Fuel economy, speed range, duration. With limited fuel.

Task F. Turn–Point Hunt with Limited Fuel

Fly the maximum number of turn points with a limited amount of fuel and return to the airfield.

Description

Competitors will load a limited amount of fuel:

- PF1: _____
- PF2: _____
- PL1: _____
- PL2: _____

Fuel measurement procedure will be indicated at the briefing.

Pilots will take off from their designated decks and will fly as many turn points as possible from the catalogue, and return to the airfield.

Turn points may only be visited once.

Pilots will land at the designated areas of the airfield. Then they will take their aircrafts to a safe place and will wait for a marshal to inspect their fuel lines.

Airfield	→	***P1***	→	***P2***	→	***...***	→	***Airfield***
		+1		+1		...		

Scoring

Turn points:

N = Number of turn-points correctly flown by the pilot.

Nmax = Best N (maximum) among pilots.

P = 1000 * N / Nmax

Task F – Turn-Point Hunt with Limited Fuel – Declaration Sheet

Sequence of flown points
To be declared AFTER the flight

1st	2nd	3rd	4th	5th
6th	7th	8th	8th	10th
11th	12th	13th	14th	15th
16th	17th	18th	19th	20th
21st	22nd	23rd	24th	25th
26th	27th	28th	29th	30th
31st	32nd	33rd	34th	35th
36th	37th	38th	39th	40th
41st	42nd	43rd	44th	45th

Pilot: _____

Number: _____ **Team:** _____ **Class (circle appropriate):** **PF1** **PF2** **PL1** **PL2**

Signature:

Task G. Pure Economy

Fly the maximum possible time with a limited amount of fuel and return to the airfield.

Description

Competitors will load a limited amount of fuel:

- PF1: _____
- PF2: _____
- PL1: _____
- PL2: _____

Fuel measurement procedure will be indicated at the briefing.

There will be a time window for take-off.

Time will start counting from the moment the pilot's feet leave the ground for the last time.

Flights will be supervised by GNSS loggers. Track continuity is a proof of not having landed. Landing out scores zero.

Pilots will land at the designated areas of the airfield. Then they will take their aircrafts to a safe place and will wait for a marshal to inspect their fuel lines.

Scoring

T	=	Time airborne
P	=	1000 * T / Tmax

Task H. Endurance Triangle with a Speed Leg

Take off from the deck with a given quantity of fuel, fly a speed leg and then as many laps as possible around a course not exceeding 1Km in length and land on another deck.

Description

Competitors will load a limited amount of fuel:

- PF1: _____
- PF2: _____
- PL1: _____
- PL2: _____

Fuel measurement procedure will be indicated at the briefing.

Pilots will take-off from a designated deck and will proceed to fly to point A and then to point B. Time will be measured in both points.

Then he will fly around point 1, then to point 2, point 3 and back to point 1. After completing each circuit the pilot will choose between landing at a the designated area, or performing another circuit.

- Only complete triangles will score.
- For a triangle to be complete, the three vertices must be flown properly.
- For a turn point to be correctly flown the whole aircraft must be outside.

Pilots will carry a GPS logger during the flight. There will also be marshals located at every turn point.

Scoring

Distance

N = Number of circuits correctly completed

Qn = 800 x N / Nmax

Speed

V = Pilot's speed from A to B

Vmax = Speed of the fastest pilot from A to B

Qv = 200 x V / Vmax

Total

Q = Qn + Qv

P = 1000 x Q / Qmax

Penalties

20% for not landing at the designated area.

Task I. Distance and Speed with Limited Fuel

Fly a course between any combination of declared turn points, and fly over specific time turn points at a pre-determined time, and return to the deck.

Description

Competitors will load a limited amount of fuel:

PF1: _____ PF2: _____ PL1: _____ PL2: _____

Fuel measurement procedure will be indicated at the briefing.

Pilots will take-off in a free window that will be specified at the briefing.

Before take-off pilots will declare their estimated time of arrival to turn-point BB counted from the first valid turn-point.

After take-off from their designated decks, pilots will fly a sequence of turn-points trying to fly the maximum possible distance and speed. Both distance and time will be measured from the first valid turn-point to the last one.

Airfield	→	***B1***	→	***B2***	→	***...***	→	***BB***	→	***B4***	→	***...***	→	***Bn***	→	***Airfield***
		Time 0	Dist Vel		Dist Vel		Dist Vel	Time Tbb	Dist Vel		Dist Vel		Dist Vel	Final Time		

Turn-point BB will be declared exactly in the middle of the sequence. There will be the same amount of turn-points before and after BB, or a maximum difference of 1.

Flights will be supervised by GNSS loggers. Track continuity is a proof of not having landed. Landing out scores zero.

Pilots will land at the designated areas of the airfield. Then they will take their aircrafts to a safe place and will wait for a marshal to inspect their fuel lines.

Scoring

Distance

D = Accumulated distance in straight lines from the first to the last valid turn-points

Qd = 400 * D / Dmax

Speed

T = Time from the first to the last valid turn point.

V = D / T

Qv = 400 * V / Vmax

Time estimation

Te = Accumulated error in time estimations. Margin of 5 s, maximum accumulated error is 200.

Qe = 200 – Terr

Total

Q = Qd + Qv + Qe

P = 1000 * Q / Qmax

Penalties

20% for not fueling in the estabished time tindow

20% for not flying BB in the middle of the sequence.

100% for not taking off in the established window.

Task I – Distance and Speed with Limited Fuel – Declaration Sheet

Sequence of points to be flown

1st	2nd	3rd	4th	5th
6th	7th	8th	8th	10th
11th	12th	13th	14th	15th
16th	17th	18th	19th	20th
21st	22nd	23rd	24th	25th
26th	27th	28th	29th	30th
31st	32nd	33rd	34th	35th
36th	37th	38th	39th	40th

Turn Point	*Estimated time of arrival to turn-point BB. Seconds counted from the first valid turn-point*
BB	

Pilot: _____

Number: _____ **Team:** _____ **Class (circle appropriate):** **PF1** **PF2** **PL1** **PL2**

Signature:

Task J. Distance and Flight Planning

Fly the maximum possible distance with a limited amount of fuel in two arbitrary legs of similar length.

Description

Amount of fuel to be used:

PF1: _____ PF2:_____ PL1: _____ PL2: _____

The pilot will fly to turn-point AA where the first leg starts. He will fly as far as he wishes to a point of his own election. Then he will turn back to AA where leg 1 ends. The farthest point from AA will be recorded.

He will proceed to turn-point BB where the second leg starts. Again, he will fly as far as he wishes to a second point of his election. Then he will turn back to BB where leg 2 ends. The farthest point to BB will be recorded.

The pilot will then fly back to land at the airfield. After landing he will wait for a marshal to inspect the sealing of the fuel lines.

Airfield	→	***AA***	→	***Far from AA***	→	***AA***	→	***BB***	→	***Far from BB***	→	***BB***	→	***Airfield***
			D1		D1		Nuisance		D2		D2			

Scoring

Distance:

D1 = Distance from AA to the farthest point in the first leg

D2 = Distance from AA to the farthest point in the second leg

D = D1 + D2

Leg similarity:

H = | D1 – D2 | (Absolute difference between both distances)

Total:

Q = D – H

P = 1000 * Q / Qmax

Precision Tasks

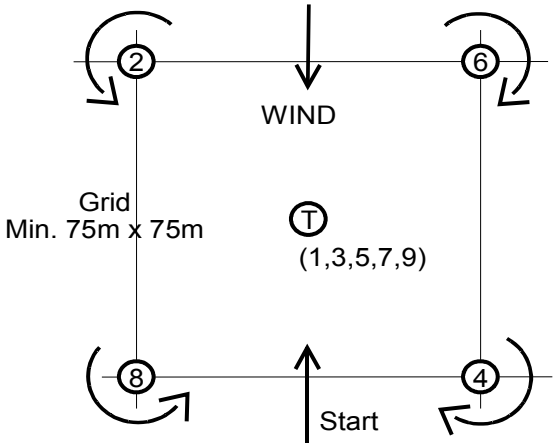
Task K. Clover Leaf Slalom

Strike a number of targets laid out in a given order in the shortest possible time and return to the deck

Description

4 pylons 2m in height are laid out at the corners of a 75M square. A fifth target is set at the centre of the square.

- The pilot enters the course into wind and strikes the target T (strike 1). At this point the clock starts.
- The pilot flies around pylon 2 and returns to kick the stick T (strike 3).
- He then flies around pylon 4 and returns to kick the stick T (strike 5).
- This continues until all four pylons have been rounded.
- The clock stops when target T is kicked for the last time (strike 9).



Scoring

T = The pilot's elapsed time in seconds between striking target 1 and target 9

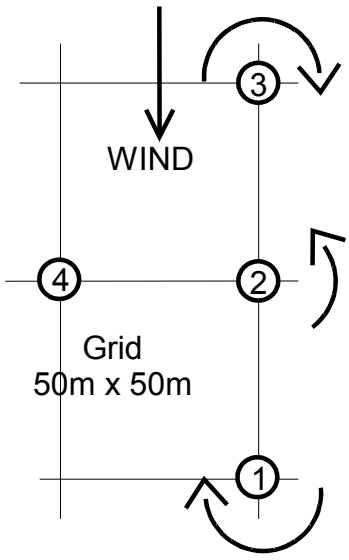
N = The number of targets struck by the pilot

$$Q = \frac{N^3}{T}$$

$$P = 500 \times \frac{Q}{Qmax}$$

Task L. Japanese Slalom

Strike a number of targets laid out in a given order in the shortest possible time and return to the deck.



Description

4 pylons 2m in height are laid out on a 50m x 50m grid.

- The pilot enters the course into wind and strikes target 1.At this point the clock starts.
- The pilot then strikes targets 2 and 3.
- He then returns to fly clockwise around target 1 (strike 4), anticlockwise around target 2 (strike 5) and clockwise around target 3 (strike 6).
- He then returns to strike target 1 (strike 7), target 4 (strike 8) and target 3 (strike 9).
- The clock stops when target 3 (strike 9) is kicked.

Rules

- A valid strike on a target is one where the pilot or any part of the aircraft has been clearly observed to touch it
- When targets are acting as pylons, to count as a strike, the pilot's body must be clearly seen to round it, pylons 1 & 3 must be rounded in a CLOCKWISE direction and pylon 2 must be rounded in an ANTI CLOCKWISE direction.
- A strike on target 1 starts the clock, a strike on target 9 stops the clock.
- Pilots may have only one attempt at striking each target except for the first and last targets where three attempts at each are permitted.
- Failure to strike the first or last target or touch the ground at any point between them: score zero.

Scoring

T = The pilot's elapsed time in seconds between striking target 1 and target 9

N = The number of targets struck by the pilot

$$Q = \frac{N^3}{T}$$

$$P = 500 \times \frac{Q}{Qmax}$$

Task M. Precision Take-Off and Landing

Make a clean take off at the first attempt in the deck, and subsequently land as near as possible to a point.

Description

The pilot is permitted four take-off attempts, climbs to 500ft overhead the target, cuts the engine before passing through a gate and tries to make a first touch as near as possible to the centre of a target.

- The first touch of the ground by the pilot's foot is the point from which the pilot's score will be derived.
- Contestants will be awarded a zero score if the pilot or any part of the aircraft touching the ground outside the deck while undertaking the task.
- Contestants will be awarded a zero landing score for:
  - Engine not stopped before the gate.
  - Gate not passed correctly.
  - Falling over as a result of the landing

Scoring

Take-off

Bto = 250 points for a clean take off at the first attempt
170 for the second
90 for the third
zero for the fourth

Landing

R = Maximum radius. Bigger distances score zero.
This distance will be given at briefing (between 10 and 25 metres) depending on the meteorological conditions.

Dmin = The closest distance to the target achieved by any pilot, truncated to integer metres.

D = The pilot's distance to the target, truncated to integer metres.

Total

$$P = Bto + 250 \times \frac{R - Dp}{R - Dmax}$$

Note

Precision take-off and precision landing can also be part of a compound task.

Task N. Slow – Fast

Fly a course as slow as possible and then fly it again as fast as possible.

Description

A straight course between 250 m and 500 m long is laid out. It will be defined either by two 25 m wide gates at each end, or by four sticks – a start stick, an end stick, and two intermediate sticks along the course.

The pilot makes a timed pass along the course as slow as possible, returns to the start, and makes a second timed pass in the same direction as fast as possible.

Rules

- For each leg, the **clock starts** the moment the pilot passes the start gate (or kicks the first stick) and stops the moment he passes the end gate (or kicks the fourth stick).
- If the pilot or any part of his aircraft **touches the ground** during the slow leg: Vs = 0 and E = 0
- If the pilot or any part of his aircraft **touches the ground** during the fast leg: Vf = 0 and E = 0
- If the pilot **zigzags**: Score zero.
- The **maximum time** allowed for a pilot to complete each leg of the course is 5 minutes.

If using sticks

- A **valid strike** on any stick is one where the pilot or any part of the aircraft has been clearly observed to touch it.
- The pilot may have 3 attempts at kicking the **first stick** on each run.
- If the pilot **misses the second or third stick** then he is considered 'too high', penalty 50% leg score for each stick missed.
- The pilot may have three attempts at kicking the **fourth stick** in the slow leg.

If not using sticks

- If the body of the pilot overflies a **side of the course** or **exceeds 2 m** above ground: Score zero.

Scoring

Slow

Vmin = The lowest speed achieved in the task, in Km/H
Vs = The speed of the pilot in Km/H in the slow leg of the task

Fast

Vmax = The highest speed achieved in the task, in Km/H
Vf = The speed of the pilot in Km/H in the fast leg of the task

Speed difference

Emax = Vmax – Vmin
E = Vf - Vs

Score

$$P = 125 \times \frac{Vf}{Vmax} + 125 \times \frac{Vmin}{Vs} + 250 \times \frac{E}{Emax}$$