
























TASK CATALOGUE FOR EMC 2008, LESZNO, POLAND

Key to symbols used in the task catalogue

| | | | |
|---|---|---|--------------------------------------|
|  | Line drawn before takeoff | FP  | Finish point |
|  | Line drawn after takeoff | FP  | Finish point with time gate |
|  | Free flight | Δ Π | Marker identity given before takeoff |
|  | Direction of travel |  | Home airfield |
|  | Marker selected from list of Marker Symbols |  | Outlanding airstrip |
|  | Ground feature to be identified from photograph |  | Direction of landing |
|  | Turnpoint |  | Left hand circuit |
|  | Turnpoint to be identified from photograph |  | Right hand circuit |
|  | Ground feature to be photographed or controlled by FR evidence. |  | Circuit height above ground in feet |
|  | Timing point or gate |  | Windsoc k |
| SP  | Initial or Start point |  | Landing direction indicator |
| SP  | Initial or Start point with time gate |  | Road or track |

Marker Symbols

H
I
K
L
N
T
U
X
O
=
Π
Δ

TASK CATALOGUE FOR EMC 2008, LESZNO, POLAND

INTRODUCTION

This catalogue describes tasks which may be set in FAI World and Continental championships. It does not preclude new tasks provided they have been tried out satisfactorily in national competitions and are clearly described and accepted when the FAI Microlight Commission (CIMA) approves the Local regulations.

Good tasks make for good championships, but tasks also drive the design direction for the aircraft. For example, microlights would soon lose their short field capability if no more precision landing tasks into a 100m deck were given.

Flight planning and navigation tasks develop good pilot skills but they, too, affect the characteristics of competition aircraft so a Director must try to set a reasonable balance between tasks where ultimately speed is the advantage and economy is the advantage. These tasks should be as long as possible, so that pilot skills are tested by having to fly over new and different country.

Competition Directors are cautioned against setting a few complicated tasks in favour of lots of simple ones. It is all too easy for a Championship to end with the minimum of tasks required (S10 4.3.3) and there is nothing more likely to upset pilots than if they think they have not flown enough in a championship to properly demonstrate their skills.

TASK TYPES

Tasks fall into Three Categories:

- A** Flight planning, navigation estimated time and speed. No fuel limitation.
- B** Fuel economy, speed range, duration. Fuel limited to 15 kg or less.
- C** Precision

The proportion of each task to be used is stated in S10, 4.24.3

Any task may be set more than once, either identically or with variations.

Distances should be as long as possible referring to the recommended still air range of the competing aircraft stated in S10 4.13.7.

In any task requiring pre-declaration of speed or elapsed time the Director may set up hidden gates through which the pilot would fly if on the correct flight path. Pilots failing to be checked through such gates or who are observed flying a devious path to adjust timing/speed errors may be penalised. No information will be given at briefing on the existence or whereabouts of hidden gates, or the method by which they are controlled.

The Director may set a time period for completion of a task in addition to the last landing time.

A FLIGHT PLANNING, NAVIGATION TASKS

A1 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.

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 | → | TG 1 | → | 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)

$Q_h = 1000 \times H / N_h$

Time precision

Nt = Number of time gates.

E_{max} = Maximum error (in seconds) in each time gate (typically 180).

E_t = Sum of absolute errors in time gates.

Maximum error of E_{max} seconds in each point.

E_{max} seconds error is applied if point not flown.

$Q_t = E_{max} \times N_t - E_t$

Total

$$Q = Q_h - Q_t \quad P = 1000 \times Q / Q_{\max}$$

Comments

An additional penalty may be established for an excessive delay to cross SP since take-off.

An additional penalty may be established for an excessive delay to cross FP since crossing SP.

The task can also be run without the time precision part (no known time gates). Then Q_t is dropped from the scoring formula.

A2 Constant Speed 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.

| | | | | | | | | | | |
|-----------|-----|----|-----|----|-----|----|-----|----|-----|------------|
| STAR T | → | AA | → | BB | → | CC | → | DD | → | FINIS H |
| 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:

E_{max} = Maximum error (in seconds) in each time gate (typically 180).

N_g = Number of gates correctly crossed

$Q_p = E_{max} * N_p$

Time precision:

E_i = Absolute error in seconds in gate i .

Maximum error is E_{max} . Time gates not crossed score E_{max} seconds error.

$Q_t = \sum E_i$ (sum of errors in all time gates)

Total:

$Q = Q_p - Q_t$ $P = 1000 * Q / Q_{max}$

Penalties

An additional penalty may be established for a delayed crossing of SP from the take-off time.

A3 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

Pilots will receive a catalogue of turn points. Three of them, the start point SP, a middle point MP and the finish point FP, are mandatory and will be crossed at designated times.

Before take-off, pilots will declare the sequence of turn points they will fly.

They will take off 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. These two points will be flown at 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 T seconds after SP and will fly over the finish point (FP) exactly $2T$ seconds 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 points will be invalid.

| | | | | | | | | | | | | |
|---------------|-----|----|-----|-----|-----|---------------|-----|-----|---|-----|-----|----------------|
| SP | → | P1 | → | ... | → | MP | → | Pn | → | ... | → | FP |
| Time = 0 s | Nav | | Nav | | Nav | Time = T s | Nav | Nav | | | Nav | Time = 2T s |

SCORING

Turn-points

N = Number of turn-points declared and flown in order (different from SP, MP and FP).

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

$V = N - E_p$

$Q_p = 1000 * (V / V_{max})$

Time estimation:

Emax = Maximum error (in seconds) in each time gate (typically 180).

Et = Sum of absolute errors in SP, MP and FP.

Maximum error of Emax seconds in each point.

Emax seconds error is applied if point not flown.

$Q_t = E_{max} * 3 - E_t$

Total:

$Q = Q_p + Q_t$
 $P = 1000 * Q / Q_{max}$

Comments

An additional penalty may be established for a delayed crossing of SP from the take-off time.

A4 Navigation over a known circuit

Follow a known circuit, finding markers or identifying ground features from photographs and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

There may be timing gates to take times if part of the task must be evaluated for time precision or for speed.

The task may finish with an outlanding.

Summary

Competitors will be given:

- A series of headings to follow or lines drawn on a map or a description of the procedure to draw them.
- The location of a start point (SP) before which no markers, ground features or gates will be found.
- The time at which they must overfly the start point.
- The location of a finish point (FP) after which no markers or ground features will be found.

- Photos of any ground features or description of canvas markers to be identified.

If the task is to contain a speed prediction element before takeoff the competitor must either:

- Declare the ground speed at which he plans to fly, or
- Select a ground speed from those specified at the briefing, or
- Declare crossing times at certain turn points.

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for scoring.

Safety

During the task competitors must not back track along the track line against the direction of the task. If there is a need to backtrack competitors must leave the track line and fly back well clear of it before rejoining the track line at an earlier point.

SCORING

Spatial precision:

Vh = Value assigned to crossing a hidden gate or properly placing a mark on the map (e.g. 100)

Nh = Number of hidden gates correctly crossed or properly placed marks on the map (less than 2 mm error).
Markers placed between 2 and 5 mm error score ½ point.
More than 5 mm score zero.
Out of track marks score zero.

$$Qh = Vh * Nh$$

Time precision (when included in the task):

Vt = Gate value (e.g. 180)

Ei = Absolute error in seconds in gate i.
Maximum error is Vt.

Time gates not crossed do not add error.

$$Qt = \sum (Vt - Ei) \text{ (sum of gate value minus time error each gate crossed)}$$

Speed (when included in the task):

Vs = Relative value for the speed term

S = Pilot's speed in the speed section

$$Qv = Vs * S / S_{max}$$

Total:

$$Q = Qh - Qt + Qv$$

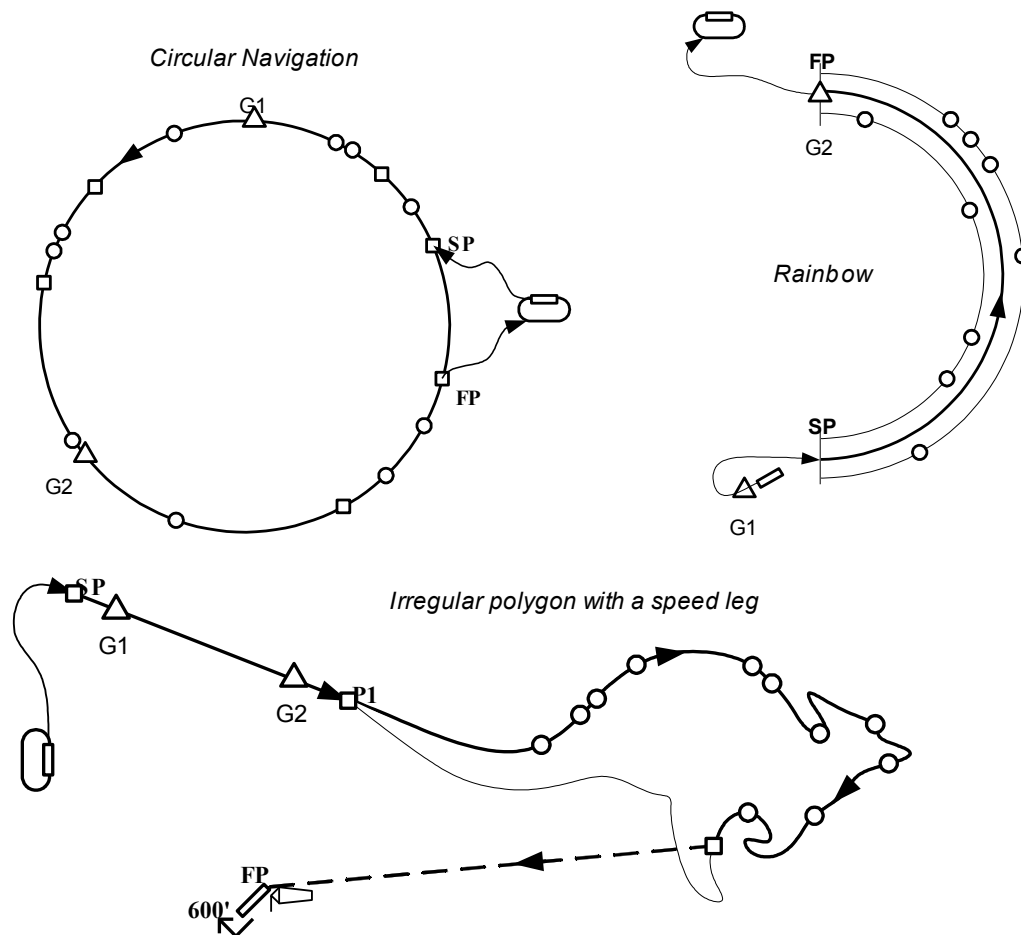
$$P = 1000 * Q / Q_{max}$$

Penalties

Each photo or marker correctly identified and located on the map to within 2mm and any ground speed element will score as briefed. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction or crossing a hidden gate backwards: 100%
- Breach of Quarantine: 100%
- Crossing a hidden gate twice invalidates the gate.

Examples



A5 Navigation with unknown legs

Follow a series of headings or known lines, finding markers and identifying ground features from photographs, and locating their positions on a map or crossing hidden gates.

It may be required to distinguish between on-track and off-track markers and ground features.

Certain of the ground features or markers will indicate a change of heading or the start of a leg to another point.

There may be timing gates to take times if part of the task must be evaluated for time precision or for speed.

The task may finish with an outlanding.

Summary

Competitors will be given:

- A series of headings to follow or lines drawn on a map or a description of the procedure to draw them.
- The location of a start point (SP) before which no markers, ground features or gates will be found.
- Details of which markers or ground features indicate a point from which a new line must be drawn.
- The location of a finish point (FP) after which no markers or ground features will be found

Depending on the specific task design, competitors may be given:

- Sealed instructions giving the location of next turn points or outlanding sites.
- The time at which they must overfly the start point.
- Photos of any ground features or description of canvas markers to be identified.

If the task is to contain a speed prediction element before takeoff the competitor must either:

- Declare the ground speed at which he plans to fly, or;
- Select a ground speed from those specified at the briefing.
- Declare crossing times at certain turn points.

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for scoring.

Safety

During the task competitors must not back track along the track line against the direction of the task. If there is a need to backtrack competitors must leave the

track line and fly back well clear of it before rejoining the track line at an earlier point.

SCORING

Spatial precision:

Vh = Value assigned to crossing a hidden gate or properly placing a mark on the map (e.g. 100)

Nh = Number of hidden gates correctly crossed or properly placed marks on the map (less than 2 mm error).
Markers placed between 2 and 5 mm error score ½ point.
More than 5 mm score zero.
Out of track marks score zero.

$$Q_h = V_h * N_h$$

Time precision (when included in the task):

Vt = Gate value (e.g. 180)

Ei = Absolute error in seconds in gate i.
Maximum error is Vt.

Time gates not crossed do not add error.

$$Q_t = \sum (V_t - E_i) \text{ (sum of gate value minus time error each gate crossed)}$$

Speed (when included in the task):

Vs = Relative value for the speed term

S = Pilot's speed in the speed section

$$Q_v = V_s * S / S_{max}$$

Total:

$$Q = Q_h - Q_t + Q_v$$

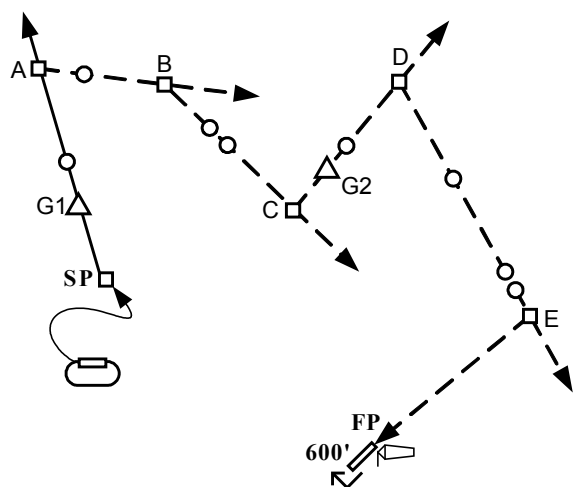
$$P = 1000 * Q / Q_{max}$$

Penalties

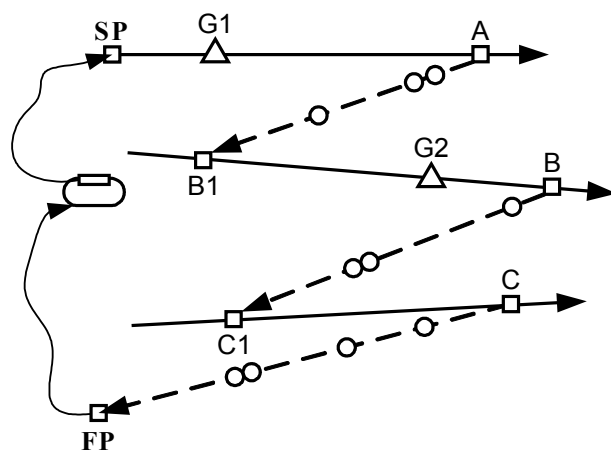
Each photo or marker correctly identified and located on the map to within 2mm and any ground speed element will score as briefed. The following penalties will apply:

- Take-off deck penalty: 20%.
- Landing deck penalty: 20%.
- Backtracking against the task direction or crossing a hidden gate backwards: 100%
- Breach of quarantine: 100%
- Crossing a hidden gate twice invalidates the gate.
- A penalty will be specified for braking an envelope seal.

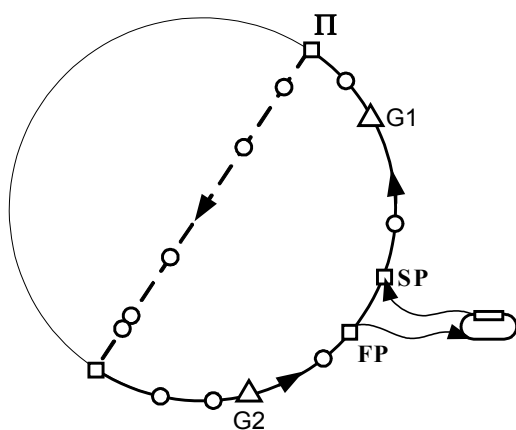
EXAMPLES OF ROUTES, TASK A5



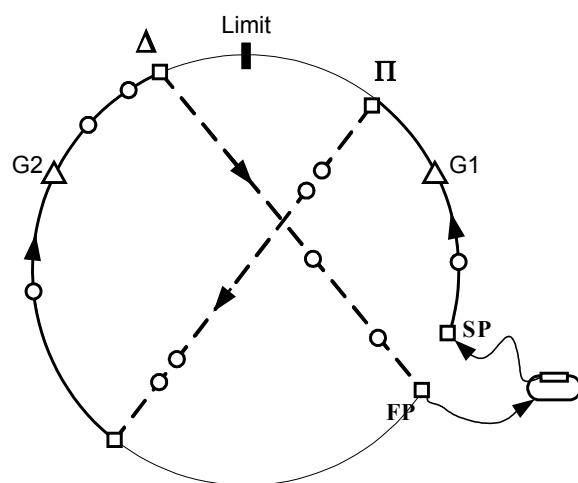
Sequential navigation



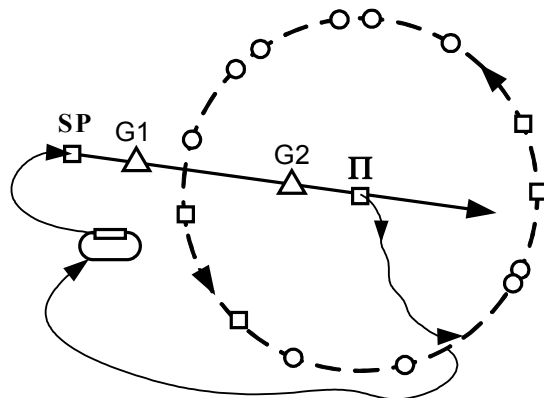
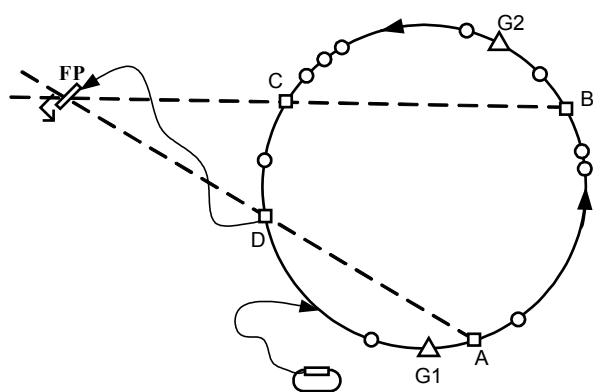
Linear navigation



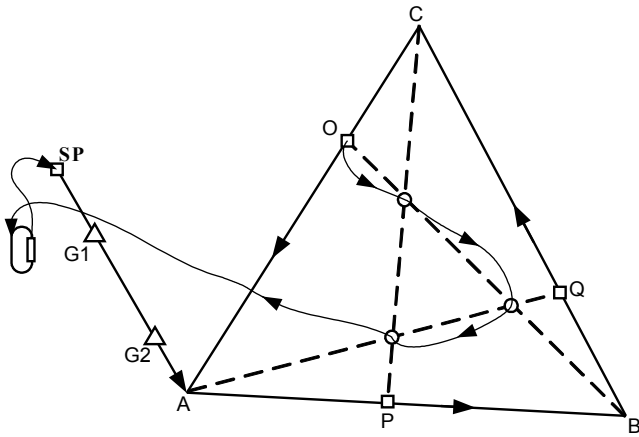
Circular navigation and diameter



Circular navigation, diameter and reverse.

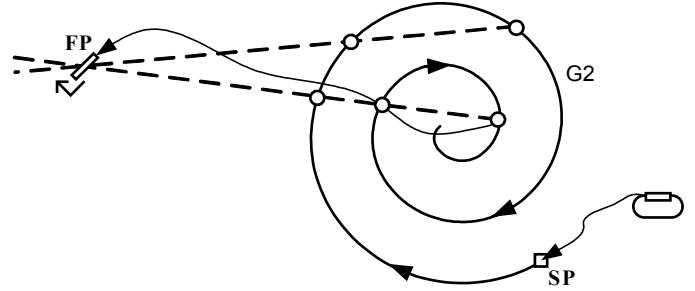


Circle and two lines

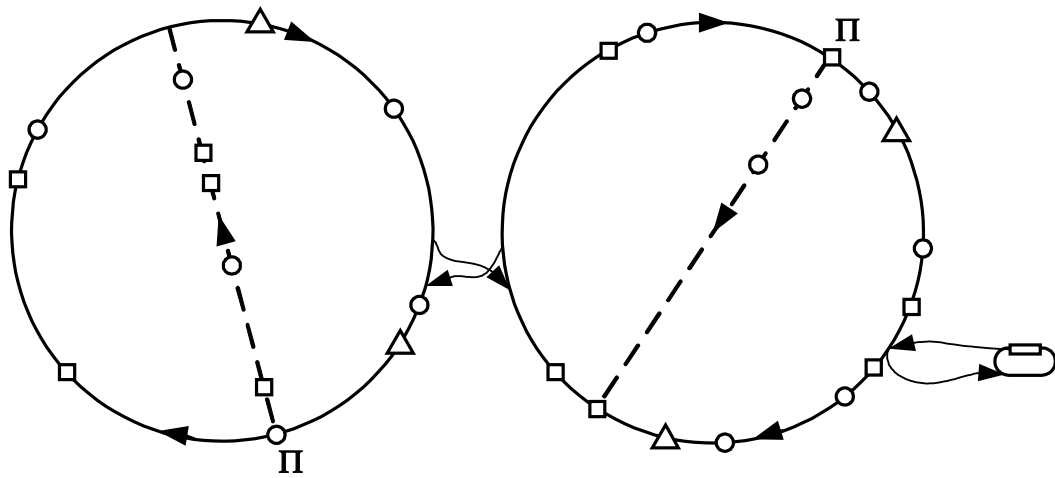


Triangle and three lines

Drawn circular navigation



Speed spiral and two lines



Double circular navigation

||

A6 TURNPOINT HUNT

Objectives

To fly to and identify from given photographs as many turnpoints as possible within a limited time and in the order predicted. 3 of the turnpoints will be compulsory timing gates which must be overflown within 10 seconds of a time predicted by the competitor. One of the gates may require a precision touchdown.

Summary

Competitors will be given:

- The location and score of all turnpoints and gates
- Photos of any ground features to be identified

Before takeoff the competitor must declare:

- The predicted time at which the gates will be overflown
- The predicted turnpoints and gates that will be visited and their sequence in the flight

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for scoring.

Safety

During the task competitors must be aware that their paths may cross those of other aircraft. They must maintain careful observation of the sky at all times and should avoid flying at predictable heights.

SCORING

Typically each photo will score 100 points, each time gate 200 points and an additional score will be awarded if the full and correct turnpoint and gate sequence is achieved. The following penalties will apply:

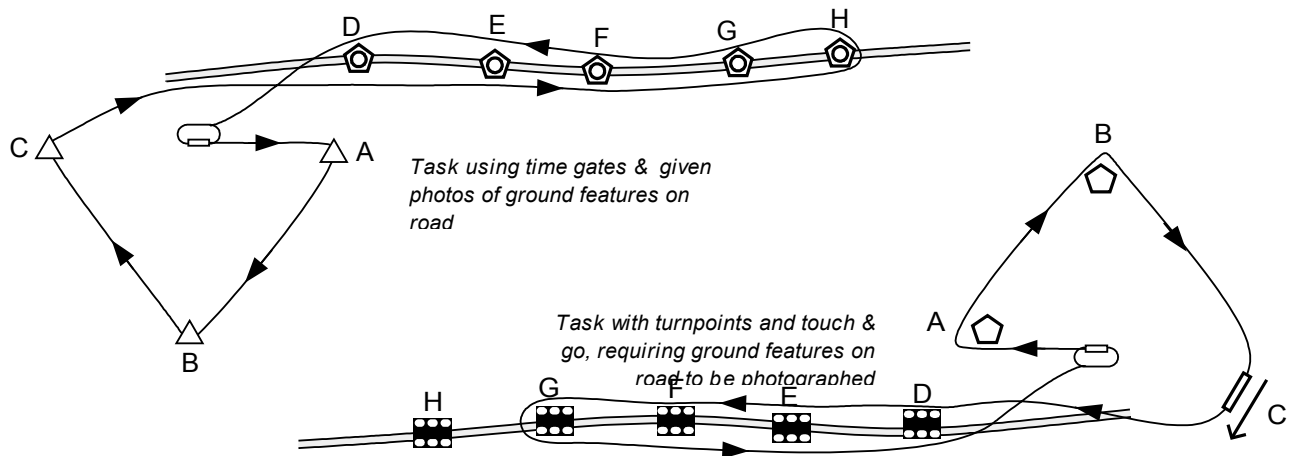
- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Breach of Quarantine: 100%
- Photo wrongly identified on the map: Penalty 50% of photo score
- Timing gate error >10 seconds from prediction: 10 points/second
- Time over maximum task duration: 10 points / 1 s

B ECONOMY, SPEED RANGE & DURATION TASKS

B1 SPEED TRIANGLE OUT-AND-RETURN

Objectives

With limited fuel, to fly around a triangular circuit in the shortest possible time, then to return to the deck or pass through a gate, and finally, with the remaining fuel, to fly in a given direction as far as possible, photograph a known ground feature or identify it from a given photograph and return to the deck.



Summary

Competitors will be given:

- The location of the three turnpoints or time gates that form the triangle
- A line or linear ground feature such as a road, river, railway or power-lines to be followed
- The location of or photographs of known ground features
- A specified weight or volume of fuel

The task will normally start and finish with a Deck Takeoff and Deck Landing and, if a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking and any scoring

SCORING

The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction: 100%
- Failing to pass around the outside of the turnpoints or overfly gates: 100%
- Returning with less than minimum specified fuel: 100%

The task score calculation will be:

$$\text{Pilot score} = \left(500 \times \frac{t_{\text{Min}}}{t_p} \right) + \left(500 \times \frac{dp}{d_{\text{Max}}} \right) + T$$

Where:

t_p = the pilot's time,

t_{Min} = The best time (Part 1)

dp = the pilot's distance

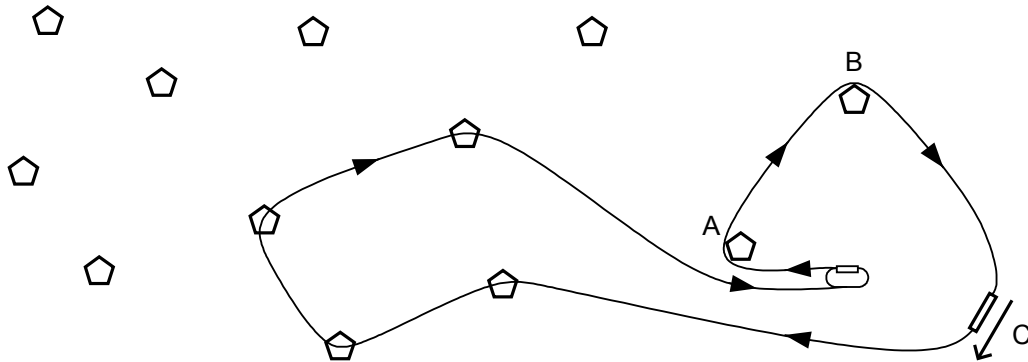
d_{Max} = the greatest distance (Part 2)

T = touch & go score

B2 SPEED TRIANGLE & TURNPOINT HUNT

Objectives

With limited fuel, to fly around a triangular circuit in the shortest possible time, then to complete a precision touchdown, and finally, with the remaining fuel, to fly to as many turnpoints as possible and identify ground features from a given photograph before returning to the deck.



Summary

Competitors will be given:

- The location of the two turnpoints or time gates and the airstrip that form the triangle
- The location and photographs of known ground features
- A specified weight or volume of fuel

The task will normally start and finish with a Deck Takeoff and Deck Landing and, if a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking and any scoring

SCORING

The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Backtracking against the task direction: 100%
- Failing to pass around the outside of the triangle turnpoints or overfly gates: 100%
- Photo wrongly identified on the map: Distance reduced as if turnpoint missed
- Returning with less than minimum specified fuel: 100%

The task score calculation will be:

$$\text{Pilot score} = \left(500 \times \frac{t_{\text{Min}}}{t_p} \right) + \left(500 \times \frac{dp}{d_{\text{Max}}} \right) + T$$

Where:

t_p = the pilot's time,

t_{Min} = The best time (Part 1)

dp = the pilot's distance

d_{Max} = the greatest distance (Part 2)

T = touch & go score

B3 FUEL & SPEED TRIANGLE

Objectives

To fly around a triangular circuit at speed on limited fuel having accurately predicted the time to each corner of the triangle.

Summary

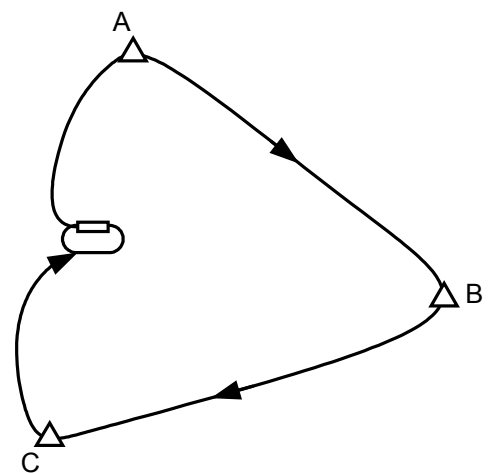
Competitors will be given:

- The location of the three time gates that form the triangle
- The weight or volume of fuel specified by the competitor

Before takeoff the competitor must:

- Declare the predicted time at which the gates will be overflowed

The task will normally start and finish with a Deck Takeoff and Deck Landing. If a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.



Scores

Typically, each timing gate overflowed within 10 seconds of the predicted time will score 100 points. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Failing to pass through the triangle timing gates: 100%
- Backtracking against the task direction: 100%
- Returning with less than minimum specified fuel: 100%
- Timing gate error >10 seconds from prediction: 5 points/second

The typical task score calculation will be:

$$\text{Pilot score} = \left(350 \times \frac{t_{\text{Min}}}{tp} \right) + \left(350 \times \frac{f_{\text{Min}}}{fp} \right) + X_A + X_B + X_C$$

Where:

tp = the pilot's time,

tMin = the shortest time achieved by a scoring competitor

fp = the pilot's fuel

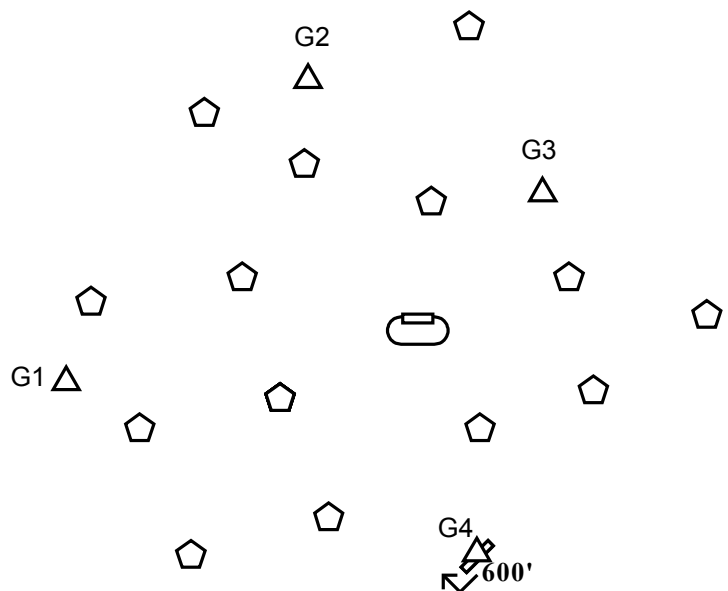
fMin = the least fuel used by a scoring competitor

X = gate score of 100 points

B4 LIMITED FUEL TURNPOINT HUNT

Objectives

To fly to and identify from given photographs as many turnpoints as possible within a limited time, carrying limited fuel. Three of the turnpoints will be compulsory timing gates which must be overflowed within 10 seconds of a time predicted by the competitor. One of the gates may require a precision touchdown.



Summary

Competitors will be given:

- The location and score of all turnpoints and gates
- A specified weight or volume of fuel
- Photos of any ground features to be identified

Before takeoff the competitor must:

- Declare the predicted time at which the gates will be overflown

The task will normally start and finish with a Deck Takeoff and Deck Landing and after completing the landing the competitor will be required to enter a Quarantine area for fuel checking and scoring.

Safety

During the task competitors must be aware that their paths may cross those of other aircraft. They must maintain careful observation of the sky at all times and should avoid flying at predictable heights.

SCORING

Typically each photo will score 100 points and each time gate 200 points. The following penalties will apply:

- Takeoff deck penalty: 20%
- Landing deck penalty: 20%
- Breach of Quarantine: 100%
- Photo wrongly identified on the map: Penalty 50% of photo score
- Timing gate error >10 seconds from prediction: 10 points/second
- Time over maximum task duration: 10 points/second

B5 DURATION

Objectives

To fly for as long as possible on a limited amount of fuel.

Summary

Competitors will be given:

- A specified weight or volume of fuel

The task will normally start with a Deck Takeoff. Landing will normally be in an extended area, to be specified at the briefing. If a residual fuel requirement has been specified, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.

Safety

Particularly as the task is to be flown to minimum remaining fuel, pilots must look out for other aircraft preparing to land at the same time. A proper look-out must be kept at all times. An aircraft joining another in a thermal shall circle in the same direction as that established by the first regardless of height separation

Scores

The following penalties will apply:

- Takeoff deck penalty: 20%
- Breach of Quarantine: 100%
- Flight in a prohibited area: 100%
- Missing specified landing direction
- Landing outside the specified area.
- Finishing fuel before landing or during taxing to quarantine area.

C PRECISION TASKS

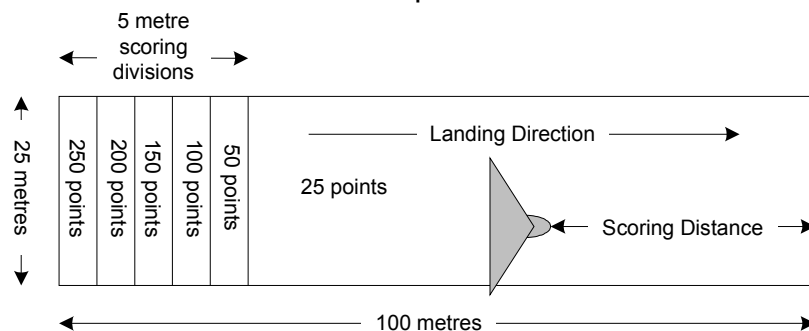
C1 SPOT LANDING

Objectives

The objective is for the aircraft to touch down within a marked deck, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible.



Takeoff

The takeoff order will be specified at the task briefing. The pilot must position his aircraft to the satisfaction of the marshal and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Climbing Circuit

The procedure for the climbing circuit will be specified at the task briefing.

Engine to Stop or Idle

The aircraft must approach the deck in the landing direction at a height of 1,000 ft. Before passing over the start of the deck the engine must be switched off or the throttle must be closed and the engine set to idle, as specified in the briefing. The aircraft must then fly over the full length of the deck before starting the descending circuit.

Descending Circuit

The procedure for the descending circuit will be specified at the briefing.

Landing

Once the aircraft has started its final approach no deviation of over 90° from the deck centreline either in the air or on the ground is permitted and the engine must remain at idle or may be switched off. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

SCORING

The score will be the value of the strip in which both main wheels touch down with the ground (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips.

The pilot will be scored zero if:

- The aircraft commences takeoff before instructed to do so by the marshal
- The engine is not stopped or the throttle is not closed before passing over the deck
- The aircraft does not pass over the entire length of the deck before turning to descend
- The engine does not remain at idle once final approach has started if engine idle permitted
- The aircraft turns by more than 90 degrees from the deck centre line between starting the landing approach and coming to a standstill
- Any part of the aircraft touches the ground before the deck.
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty
-

Thus the score calculation will be $(P_s + P_D) \times 250/350$ with a maximum score of 250

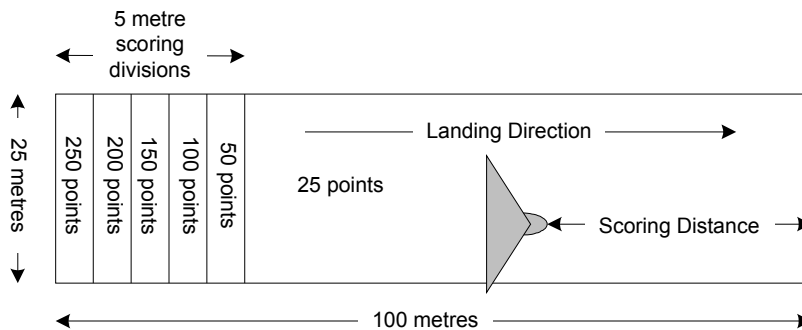
C2 POWERED PRECISION LANDING

Objectives

The objective is for the aircraft to touch down within a marked deck, as close to the start of the deck as possible, coming to a halt in as short a distance as possible.

Summary

This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 metres long and 25 metres wide. The first 25-metre section of the deck is divided into five 5 metre strips which are scored from 250 to 50 points as shown. The remainder of the deck scores 25 points. In order to score the main wheels must touch down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck, as close to the start of the deck as possible.



Joining

This task will follow the completion of a prior task in which no landing is required. Instructions for joining will be provided at the briefing or in the instructions for the prior task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centre line either in the air or on the ground is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

SCORING

The score will be the value of the strip in which both main wheels touch down (PS) plus the distance between the finish of the deck and the closest wheel, scored 1 point per whole metre (PD). Touching down on a dividing line scores the higher of the two strips.

The pilot will be scored zero if:

- Any part of the aircraft touches the ground before the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be $(P_s + P_D) \times 250/350$ with a maximum score of 250

C3 PRECISION TOUCHDOWN - TIMED

Objectives

The objective is for the aircraft to touch down within a marked deck at a specific time, as close to the start of the deck as possible.

Summary

The deck is 6 metres long, 10 metres wide and is marked in four 1.5 metre strips which are scored from 200 to 50 points as shown. In order to score the main wheels must touch down in a particular strip as close to the start of the deck as possible. The lines will be defined by raked wet sand to ensure accurate scoring. Additional points may be scored if the scoring touchdown takes place at or near an exact full minute as indicated by the competition clock, eg 11:31:00 hrs is a full minute, 11:31 17 hrs is not.

Joining

This task will form part of another task. Instructions for joining will be provided at the briefing or in the instructions for the main task.

Landing

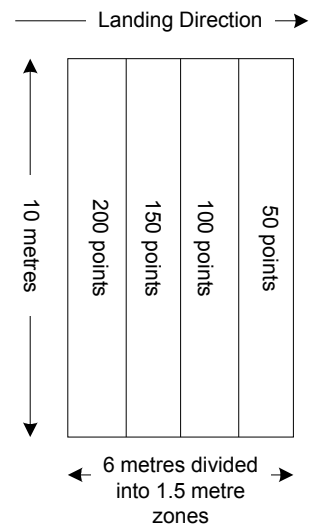
Once the aircraft has started its final approach no deviation of over 90° from the deck centreline is permitted. The pilot may choose whatever throttle setting he chooses or may switch off the engine unless otherwise instructed at the briefing. Once the touchdown is completed the pilot may immediately take off unless otherwise instructed at the task briefing.

Scoring

The score will be the value of the strip in which both main wheels touch down (PS). Touching down on a dividing line scores the higher of the two strips. If the aircraft touches down on a full minute, the time being taken from the official clock, ± 5 seconds a further 50 points is scored (PT). This score will be reduced by 5 points for every second outside ± 5 seconds from a full minute. The pilot will be scored zero if:

- Any part of the aircraft touches the ground before the deck
- The aircraft fails to touchdown within the limits of the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be $(P_S + P_T)$ with a maximum score of 250



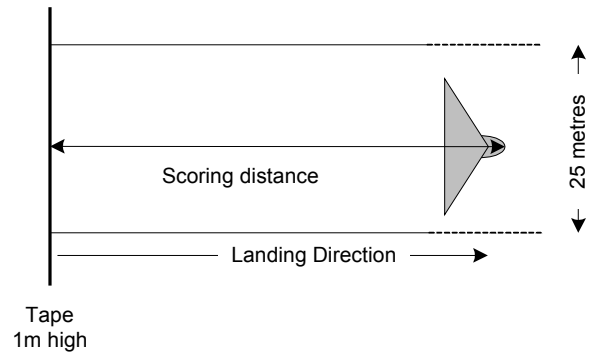
C4 SHORT LANDING OVER AN OBSTACLE

Objectives

The objective is for the aircraft to fly over and clear an obstacle, to land and come to a standstill as close to the obstacle as possible.

Summary

This task simulates a short field landing over a hedge, the hedge being represented by a tape stretched across the runway 1 metre above the ground. The pilot must land over the tape and stop. This distance will be measured from the centre of the foremost wheel and rounded up to the nearest 0.1 metre.



Joining

This task may form part of another task. Instructions for joining will be provided at the briefing or in the instructions for the main task.

Landing

Once the aircraft has started its final approach no deviation of over 90° from the centreline of the runway is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

The competitor in each class that comes to a standstill closest to the tape (D_{MIN}) having cleared the tape without breaking it will score 250 points. Other competitors will be awarded scores based on their distance from the tape when they stop (D_P) relative to D_{MIN}. The competitor will be scored zero if:

- The aircraft fails to fly over the tape
- Any part of the aircraft touches the ground before the tape
- Any part of the aircraft breaks the tape
- The aircraft turns by more than 90 degrees from the runway centreline between starting the landing approach and coming to a standstill
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty

Thus the score calculation will be $(250 \times D_{\text{MIN}} / D_{\text{P}})$ with a maximum score of 250

DECK TAKEOFF

Objectives

The objective is for the aircraft to take off from a deck 100 metres long by 25 metres wide.

Summary

This task proves the short takeoff capability that is fundamental to the performance characteristics of a microlight by demonstrating that the aircraft can take off in 100 metres in still air at sea level. Where local conditions, such as airfield altitude or slope of the runway, will make a significant difference to takeoff runs the length of the deck may be adjusted accordingly.

Takeoff

This task will form the start of another task. The takeoff order will be specified at the main task briefing. The pilot must position his aircraft with its main wheels, or tail wheel in the case of a tail-dragger, immediately in front of the start line of the deck to the satisfaction of the marshal and must not take off until instructed to do so by the marshal. The form of signal to be used by the marshal for this purpose will be specified at the briefing.

Procedure after Takeoff

The procedure to be flown after takeoff will be specified in the main task at the briefing.

Scoring

There is no score for a deck takeoff but instead a 20% penalty will normally be applied to the main task if the aircraft fails to leave the ground before reaching the end of the deck. This penalty will normally apply if the aircraft:

- Commences takeoff before stationary
- Commences takeoff before instructed to do so by the marshal
- Main wheels fail to leave the ground before reaching the end of the deck.
- Touches the ground before climbing away.

DECK LANDING

Objectives

The objective is for the aircraft to land in a deck 100 metres long by 25 metres wide.

Summary

This task proves the short landing capability that is fundamental to the performance characteristics of a microlight by demonstrating that the aircraft can land in 100 metres in still air at sea level. Where local conditions, such as airfield altitude or slope of the runway, will make a significant difference to landing runs the length of the deck may be adjusted accordingly.

Joining

This task will form the end of a task. Instructions for joining will be provided at the briefing or in the instructions for the prior task.

Landing

Once the aircraft has started its final approach no deviation of over 90 ° from the deck centreline either in the air or on the ground is permitted. The pilot may choose whatever engine setting he chooses or may switch off the engine unless otherwise instructed at the briefing. The aircraft must come to a complete standstill and must not move until instructed to do so by a marshal.

Scoring

There is no score for a deck landing but instead a 20% penalty will normally be applied to the main task if the aircraft fails to touch down and come to a halt within the deck. This penalty will normally apply if:

- Any part of the aircraft touches the ground before the deck
- The aircraft turns by more than 90 degrees from the deck centreline between starting the landing approach and coming to a standstill
- The aircraft does not stop within the limits of the deck.
- The aircraft moves from the deck before instructed to do so by a marshal
- The aircraft is unable to taxi or take off unaided following the touchdown although failure to start the engine will not incur a penalty