



FAI Sporting Code

*Fédération
Aéronautique
Internationale*

TASK CATALOGUE

WORLD MICROLIGHT CHAMPIONSHIP 2022

FEDERATION AERONAUTIQUE INTERNATIONALE
MSI - Avenue de Rhodanie 54 – CH-1007 Lausanne – Switzerland

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AUTHORITY

This Task Catalogue is to be used in conjunction with the Local Regulations. The General Section and Section 10 of the FAI Sporting Code takes precedence over the Local Regulation and Task Catalogue wording if there is ambiguity.

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Key to symbols used in the task catalogue

-  Line drawn before takeoff
-  Line drawn after takeoff
-  Free flight
-  Direction of travel
-  Marker selected from list of Marker Symbols
-  Ground feature to be identified from photograph
-  Turnpoint
-  Turnpoint to be identified from photograph
-  Ground feature to be photographed or controlled by FR evidence.
-  Timing point or gate
- SP**  Initial or Start point
- SP**  Initial or Start point with time gate

- FP**  Finish point
- FP**  Finish point with time gate
-   Marker identity given before takeoff
-  Home airfield
-  Outlanding airstrSP
-  Direction of landing
-  Left hand circuit
-  Right hand circuit
-  600' Circuit height above ground in feet
-  Windsock
-  Landing direction indicator
-  Road or track

Marker Symbols

- H**
I
K
L
N
T
U
X
Q
=
π
Δ

General

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 maximum 15 kg for aircraft flown solo and 22 kg for aircraft flown with two people.
- C** Precision

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

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

2 Tasks for Microlights

2.A1 NAVIGATION OVER A KNOWN CIRCUIT

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

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

There will be track gates to evaluate navigation precision. These can be combined with timing gates to evaluate time precision.

The task may finish with an outlanding.

Summary

Before takeoff the competitor must declare the ground speed at which he plans to fly.

Competitors will be given:

- A series of 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.
- Take-off time.
- 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.

After completing the landing the competitor will be required to enter a Quarantine area for scoring.

Scoring

Spatial precision:

V_m = Value assigned to properly placing a mark on the map (e.g. 100)

N_m = Number of properly placed marks on the map (less than 2 mm error).

Markers placed between 2 and 5 mm error score zero.

More than 5 mm error score negative points.

$Q_m = V_m * N_m$

V_h = Value assigned to crossing a hidden gate (e.g. 50)

N_h = Number of hidden gates correctly crossed.

$Q_h = V_h * N_h$

Time precision (when included in the task):

V_t = Gate value (e.g. 100)

E_i = Absolute error in seconds in gate i .

Maximum error tolerance is V_t .

Time gates not crossed do not score points.

$Q_t = \sum (V_t - E_i * 5)$ (sum of gate value minus time error each gate crossed)

Note: In case of interval measurement between two gates, the time error may be substituted by ground speed error.

Total: $Q = Q_m + Q_h + Q_t$

Competitor's score: $P = 1000 * Q / Q_{max}$

Penalties

The following penalties will apply:

Not taking off within one minute starting at assigned take-off time: 20%

Breach of Quarantine: 100%

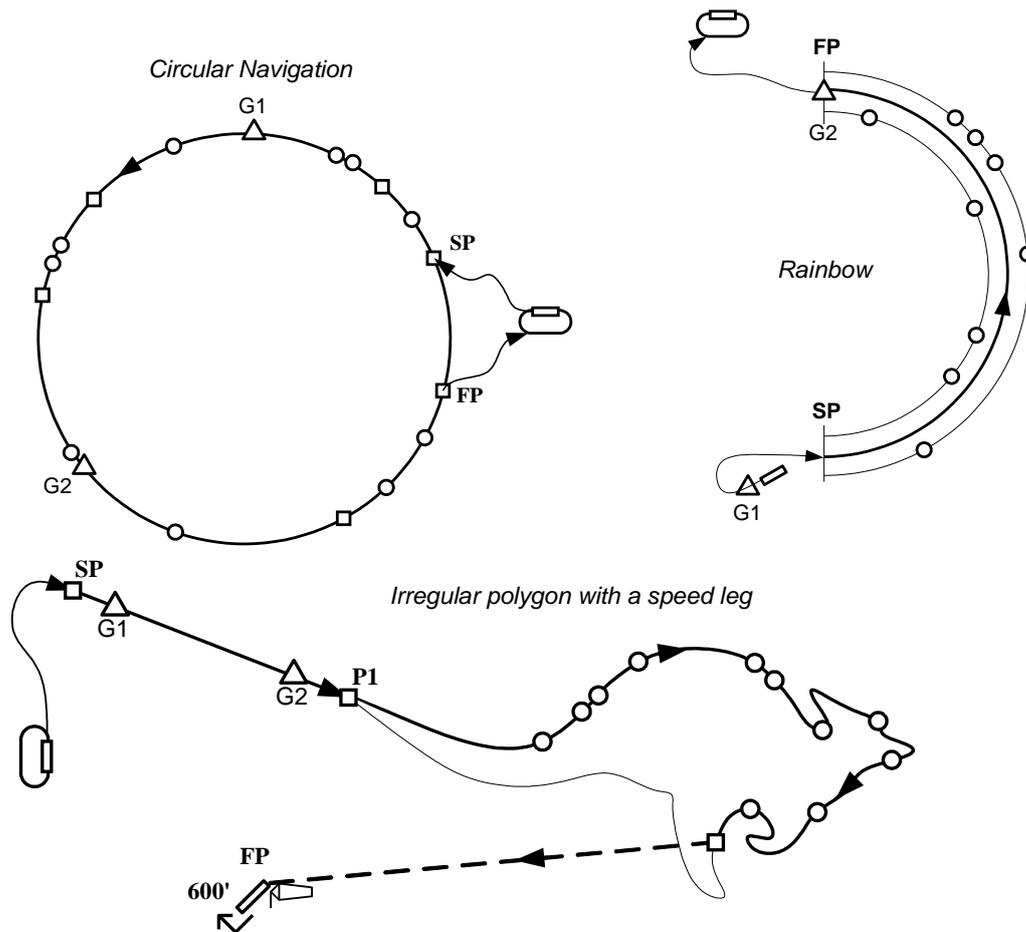
Outlanding: 100%

Flying in a prohibited airspace: 100%

Crossing a hidden gate twice invalidates the gate.

A 100% penalty will be imposed for backtracking. Backtracking is defined as either re-joining the active track line at a point prior to the point where the pilot departed from it or flying with an angle of greater than 90 degrees in respect to the intended flight direction within a corridor defined by the width used to score gates in the task. If the task involves more than one possible active track line (e.g. Cog wheel navigation with unknown legs), all track lines shall be considered as active.

Examples



2.A2 NAVIGATION WITH UNKNOWN LEGS

Follow a series of partially known legs, finding markers and identifying ground features from photographs, and locating their positions on a map or crossing hidden gates. Discover unknown legs during the flight and follow them. Certain ground features or markers will indicate a change of heading, the start of a leg to another point, the correct choice of several alternative legs or another mechanism of constructing the unknown part of the track as briefed.

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

There will be track gates to evaluate navigation precision. These can be combined with timing gates to evaluate time precision.

The task may finish with an outlanding.

Summary

Before takeoff the competitor must declare the ground speed at which he plans to fly.

Competitors will be given:

- A series of lines drawn on a map or a description of the procedure to draw them. This procedure might include instructions that depend on information obtained during the flight (such as depending on type or position of a ground feature found)
- The location of a start point (SP) before which no markers, ground features or gates will be found.
- Take-off time.
- 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.

After completing the landing the competitor will be required to enter a Quarantine area for scoring.

Scoring

Spatial precision:

V_m = Value assigned to properly placing a mark on the map (e.g. 100)
 N_m = Number of properly placed marks on the map (less than 2 mm error).
 Markers placed between 2 and 5 mm error score zero.
 More than 5 mm score negative points.
 $Q_m = V_m * N_m$

V_h = Value assigned to crossing a hidden gate (e.g. 50)
 N_h = Number of hidden gates correctly crossed.
 $Q_h = V_h * N_h$

Time precision (when included in the task):

V_t = Gate value (e.g. 100)
 E_i = Absolute error in seconds in gate i.
 Maximum error tolerance is V_t .
 Time gates not crossed do not score points.
 $Q_t = \sum (V_t - E_i * 5)$ (sum of gate value minus time error each gate crossed)

Note: In case of interval measurement between two gates, the time error may be substituted by ground speed error.

Total: $Q = Q_m + Q_h + Q_t$

Competitor's score: $P = 1000 * Q / Q_{max}$

Penalties

The following penalties will apply:

Not taking off within one minute starting at assigned take-off time: 20%

Breach of Quarantine: 100%

Outlanding: 100%

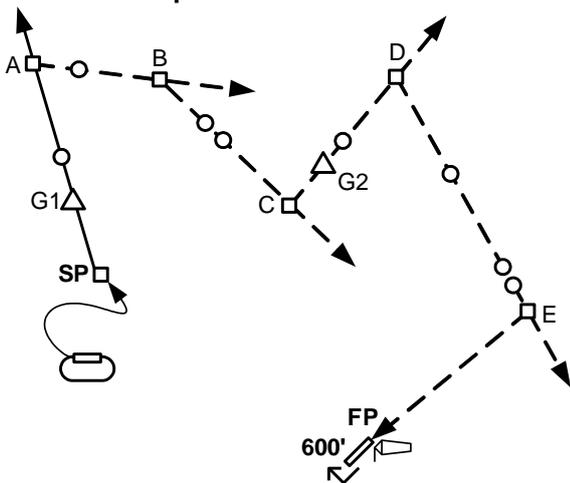
Flying in a prohibited airspace: 100%

Crossing a hidden gate twice invalidates the gate.

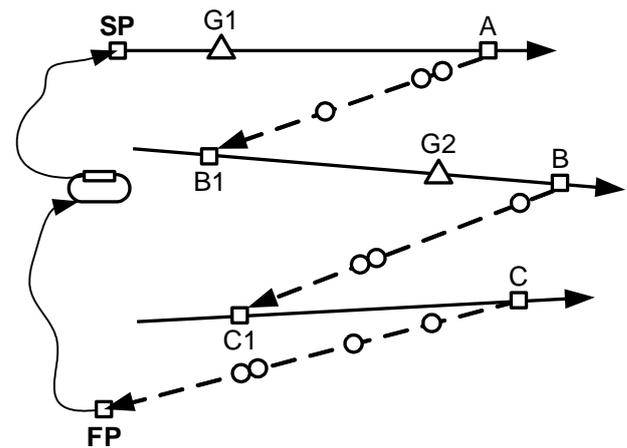
A penalty will be specified for braking an envelope seal.

A 100% penalty will be imposed for backtracking. Backtracking is defined as either re-joining the active track line at a point prior to the point where the pilot departed from it or flying with an angle of greater than 90 degrees in respect to the intended flight direction within a corridor defined by the width used to score gates in the task. If the task involves more than one possible active track line (e.g. Cog wheel navigation with unknown legs), all track lines shall be considered as active.

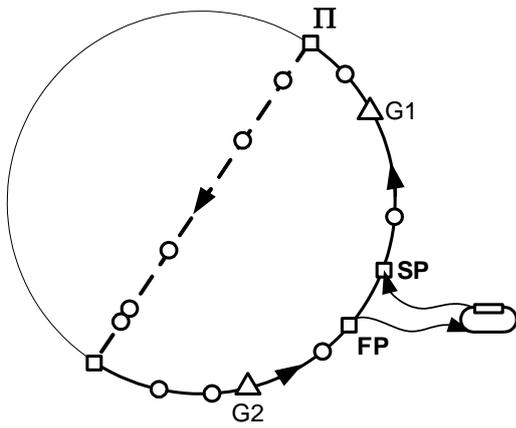
Examples



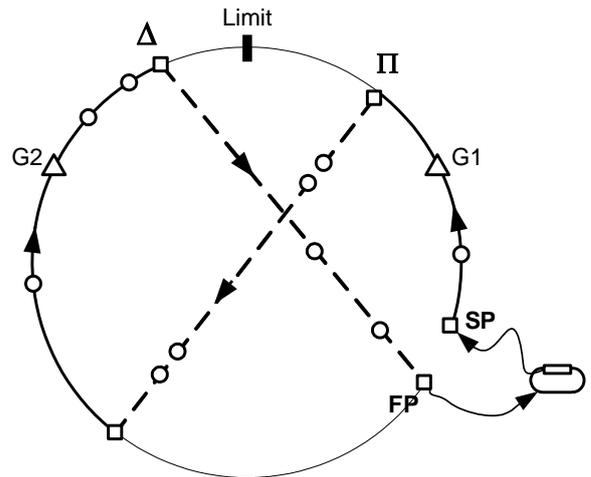
Sequential navigation



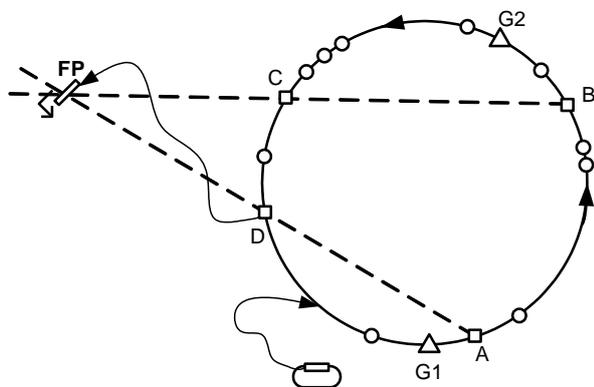
Linear navigation



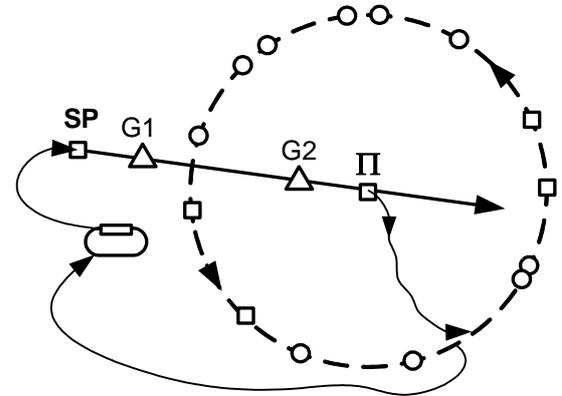
Circular navigation and diameter



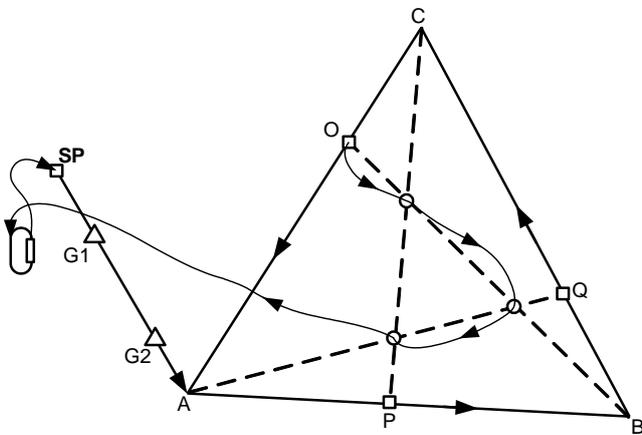
Circular navigation, diameter and reverse.



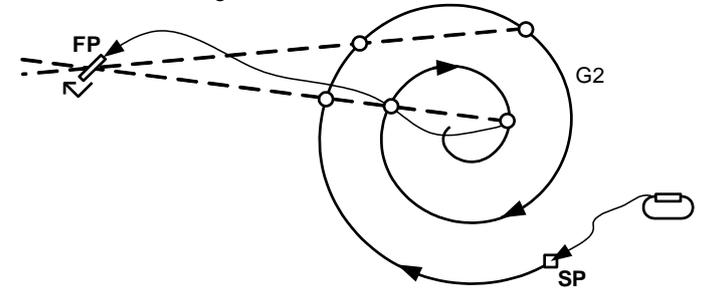
Circle and two lines



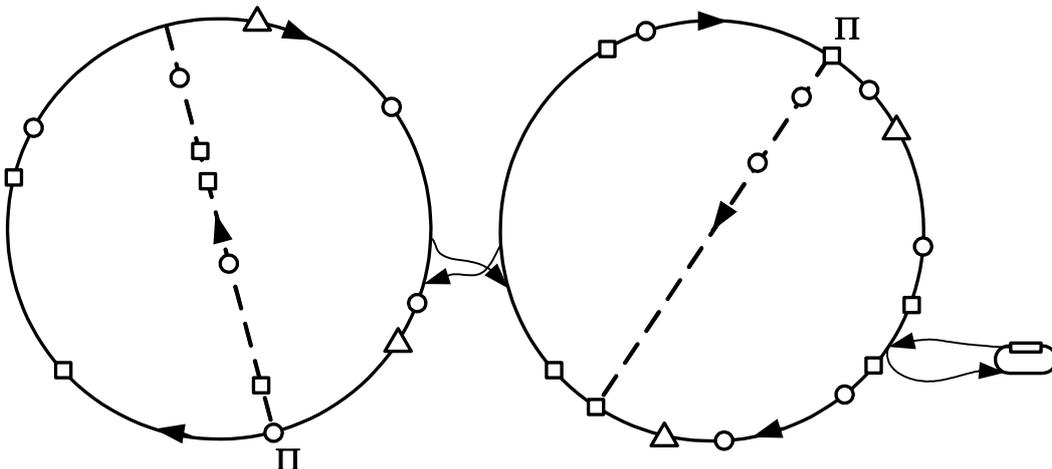
Drawn circular navigation



Triangle and three lines



Speed spiral and two lines



Double circular navigation

2.B1 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 + requested extra fuel for safety

Before takeoff the competitor must:

- Declare amount of extra fuel (for safety; this amount can be 0)

Landing will normally be in an extended area, to be specified at the briefing. If an extra fuel has been taken by the competition, after completing the landing the competitor will be required to enter a Quarantine area for fuel checking.

Safety

Pilots must look out for other aircraft preparing to land engine off. 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 time of the flight will be measured between the time of flying out of a circle (2 km radius) centered around the airfield and the time of flying back inside this circle.

Total Q = Time measured in seconds

Competitor's score: $P = 1000 * Q / Q_{max}$

The following penalties will apply:

- Breach of Quarantine: 100%
- Flight in a prohibited area: 100%
- Outlanding or remaining fuel in the aircraft is less than extra fuel taken: 100%

2.B2 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 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
- A specified weight or volume of fuel + requested extra fuel for safety
- Photos of any ground features to be identified

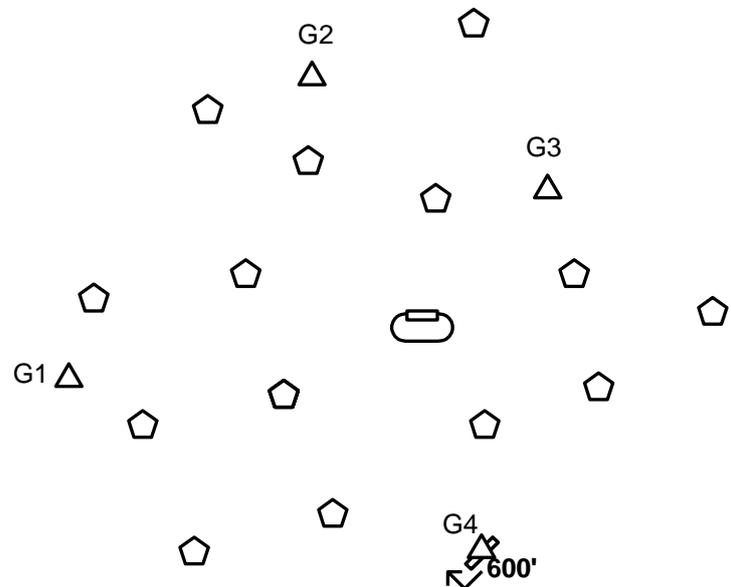
Before takeoff the competitor must:

- Declare the predicted time at which the gates will be overflown
- Declare amount of extra fuel (for safety; this amount can be 0)

After completing the landing the competitor will be required to enter a Quarantine area for fuel checking and scoring. The remaining fuel must be at least the extra amount taken. If the extra amount taken is 0, then the criterion for completion is successful landing at the competition airfield.

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.



Scores

V_m = Value assigned to properly identifying a photo of a turnpoint (e.g. 100)

N_m = Number of correctly assigned photos.

Incorrectly assigned photos score negative points.

$Q_m = V_m * N_m$

V_t = Gate value (e.g. 200)

E_i = Absolute error in seconds in gate i .

Maximum error tolerance is V_t .

Time gates not crossed do not score points.

$Q_t = \sum (V_t - E_i * 5)$ (sum of gate value minus time error each gate crossed)

Total: $Q = Q_m + Q_t$

Competitor's score: $P = 1000 * Q / Q_{max}$

The following penalties will apply:

- 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
- Outlanding or remaining fuel in the aircraft is less than extra fuel taken: 100%

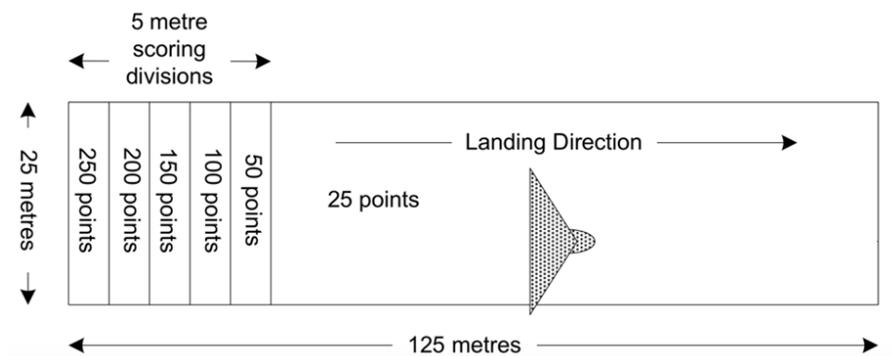
2.C1 SPOT LANDING

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 125 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). 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 125-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).

Touching down on a dividing line scores the higher of the two strips.

The distance between the finish of the deck and the closest wheel will not be measured.

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 centreline 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

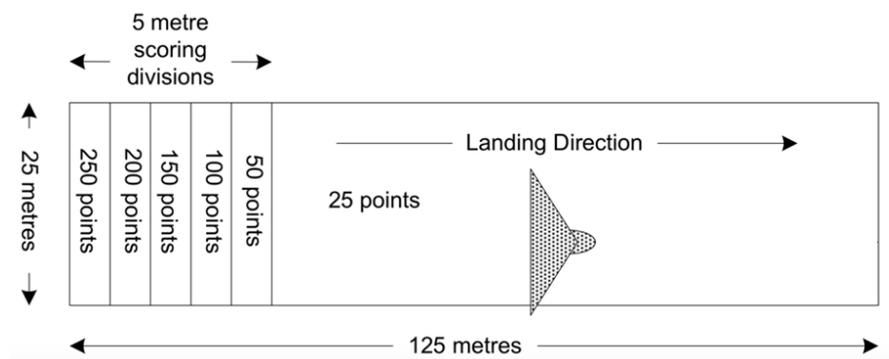
2.C2 SPOT LANDING - TIMED

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, 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 125 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). 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 125-metre deck, as close to the start of the deck as possible. 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.



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. 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). 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 100 points is scored (PT). This score will be reduced by 5 points for every second outside ± 5 seconds from a full minute.

The distance between the finish of the deck and the closest wheel will not be measured

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
- 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 (PS+PT) with a maximum score of 350

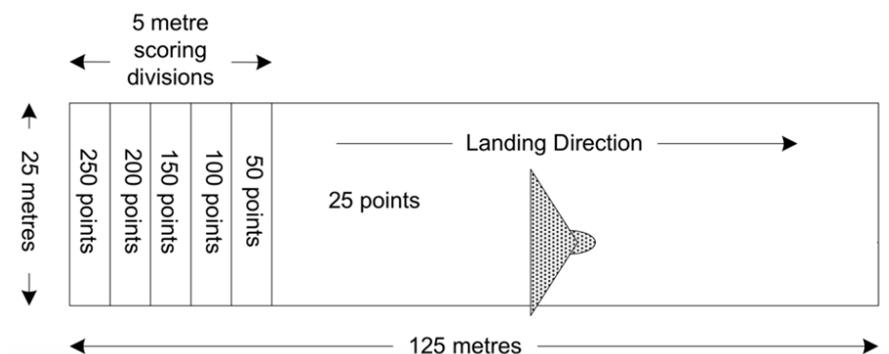
2.C3 POWERED PRECISION LANDING

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 125 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). 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 125-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 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

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.

The distance between the finish of the deck and the closest wheel will not be measured

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

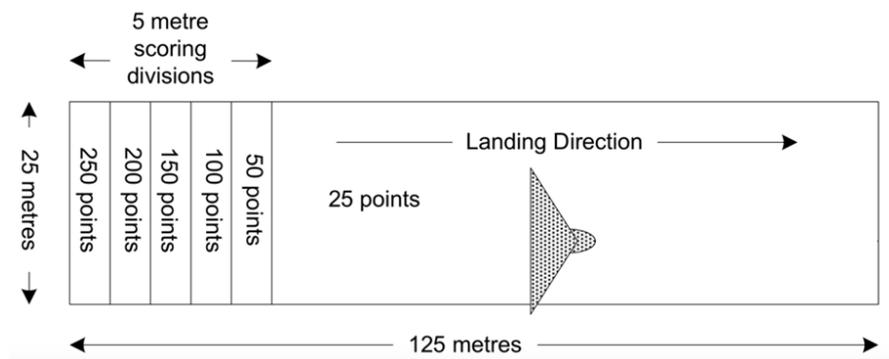
2.C4 POWERED PRECISION LANDING - TIMED

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, 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 125 metres long and 25 metres wide. Deck length shall be adjusted according to the airfield elevation (S10 4.31.5). The width of the deck may be decreased to be adjusted to the width of the existing runway (S10 4.31.5). 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 125-metre deck, as close to the start of the deck as possible. . 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 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 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

The score will be the value of the strip in which both main wheels touch down with the ground (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 100 points is scored (PT). This score will be reduced by 5 points for every second outside ± 5 seconds from a full minute.

The distance between the finish of the deck and the closest wheel will not be measured.

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 $(P_S + P_T)$ with a maximum hypothetical score of 350

2.C5 CIRCLE

Objectives

The objective is to fly a precise 360 degree circle around a marker in a given minimum height of 700ft AGL in a range of radius of minimum 200 meters to a maximum of 750 meters. The competitor may choose the radius within the given limits. To fly into the circle the competitor has to overfly the start point (SP) as well as the center marker (CM) in a straight line initially. After passing the center marker the competitor has to bank into the left using a desired radius. The first 180 degrees are for orientation purposes and not scored, even if the limits are exceeded. After 180 degrees, passing the given entry line (X) the scoring starts for the next 360 degrees. The scoring ends by crossing the entry line (X). The competitor has to leave the circle heading to the next waypoint (WP).

Summary

Competitors will be given:

The position of the start point (SP)

The position of the center marker (CM)

The next Waypoint (WP) after leaving the task

The elevation of the CM above MSL

Safety

During the task the competitor has to ensure that his aircraft is operating within the limits of speed, bank and g-force defined for the aircraft. The competitor is responsible to fly within the legal regulation, especially with respect to the minimum altitude.

The organizer has to ensure that only one aircraft is flying within the task at one time, to avoid critical approaches. Therefore, the organizer can issue special instructions regarding height or heading for entering or leaving the 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

The maximum score is given if the circle is flown exact circular, within the given limits.

$$P = (R_{min}/R_{max} - 0,5) * 400$$

$$P_{max} = 200$$

The task will be scored with 0 points if:

- o Ratio of R_{min} to R_{max} is 0,5 or smaller
- o The CM is located outside of the flown circle
- o EP and CM are not flown over within the briefed limits

- The aircraft leaves the limits of the radius
- The aircraft leaves the given altitude limits

