TASK CATALOG

CLASSIC CLASSES

(FIXED WING & TRIKE)

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ASC Sport Pilot USUA www.usua.org NAA National Aeronautic Association FAI Microlight Commission

9th U.S. National Microlight Championship Classic Classes Task Catalog

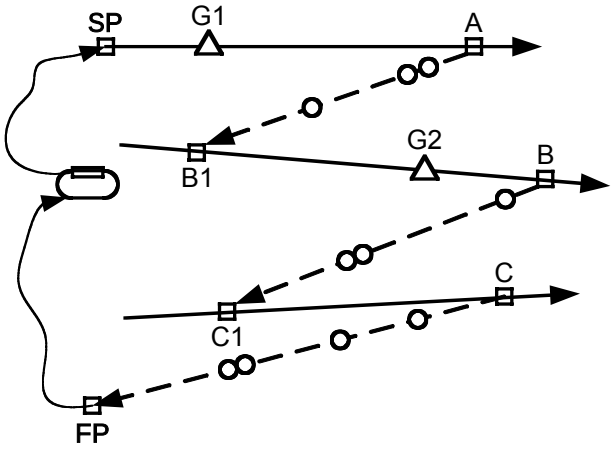
Introduction

The purpose of this catalog is to define the skills that will be tested in the Championship classes for trikes and fixed wings (AL1, AL2, WL1, and WL2). The tasks described are generic in nature and intended only as examples. Actual contest tasks may include combinations of various task or portions of tasks. Diagrams of sample navigation tasks are included only for symbolic purposes. Actual contest task descriptions revealed at the pilot briefing takes precedence over any details in this catalog. Competitors should take care at each task briefing to note the details of scoring and penalties associated with that specific task.

2.1 FLIGHT PLANNING AND NAVIGATION TASKS

2.1.1 LINEAR NAVIGATION

Objectives
To follow a series of given lines, finding markers or identifying ground features from photographs and locating their positions on a map. Certain of the ground features or markers may indicate a change of heading or a transition to the next portion of the task. Points may be awarded for achieving hidden gates. There may be timing gates if part of the task must be flown at a predicted ground speed.



Summary
Competitors will be given:
- a series of headings to follow or lines drawn on a map
- the location of a start point (SP) before which no markers, ground features or time gates will be found
- the location of a finish point (FP) after which no markers or ground features will be found
- photos of any ground features to be identified
- a list of possible ground markers

If the task is to contain a speed prediction element before takeoff the competitor must declare the ground speed at which he plans to fly. The task will normally start and finish with a Deck Takeoff and Deck

Landing. 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.

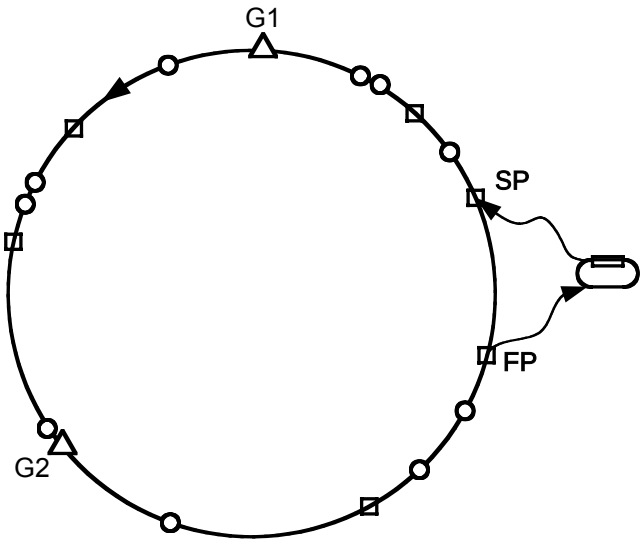
Scores
Typically each photo, ground marker, or hidden gate will score 100 points. Any ground speed prediction element will be scored as briefed

Penalties
Each photo or ground marker correctly identified and located on the map to within 2mm will be scored. The following penalties will apply:

Takeoff deck penalty	20%
Landing deck penalty	20%
Backtracking against the task direction	100%
Breach of Quarantine	100%
Photo or marker misplaced on map > 2mm but < 5mm	No photo/marker score
Photo or marker misplaced on map > 5mm	Penalty 50% of photo/marker

2.1.2 CIRCULAR NAVIGATION

Objectives
To follow a circular track, 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. Points may be awarded for achieving hidden gates. There may be timing gates if part of the task must be flown at a predicted ground speed.



Summary
Competitors will be given:

- A chart with a circular course already drawn on it.
- the location of a start point (SP) before which no markers, ground features or gates will be found
- direction to fly the circle from 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 to be identified

If the task is to contain a speed prediction element before takeoff the competitor must declare the ground speed at which he plans to fly. The task will normally start and finish with a Deck Takeoff and Deck Landing. 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.

Scores
Typically each photo, ground marker or hidden gate will score 100 points. Any ground speed prediction element will be scored as briefed

Penalties
Each photo or ground marker correctly identified and located on the map to within 2mm will be scored. The following penalties will apply:

The following penalties will apply:

Takeoff deck penalty	20%
Landing deck penalty	20%
Backtracking against the task direction	100%
Breach of Quarantine	100%
Photo or marker misplaced on map > 2mm but < 5mm	No photo/marker score
Photo or marker misplaced on map > 5mm	Penalty 50% of photo/marker

2.1.3 SPEED RANGE WITH PREDICTIONS

Objectives
To fly a speed lap as fast as possible along a specified track which may be an out-and return, or a triangle course. Next fly a slow leg, as slow as possible, along a narrowly defined track. Before takeoff the competitor will declare his predicted elapsed time for each leg.

Summary
Competitors will be given:
- the location of the start point (SP) and finish point (FP) of each leg
- the distance of each timed leg
- the direction the course is to be flown.

The maximum score will be 250 points for the speed leg, 250 points for the slow flight and 250 points for each of the two predictions.

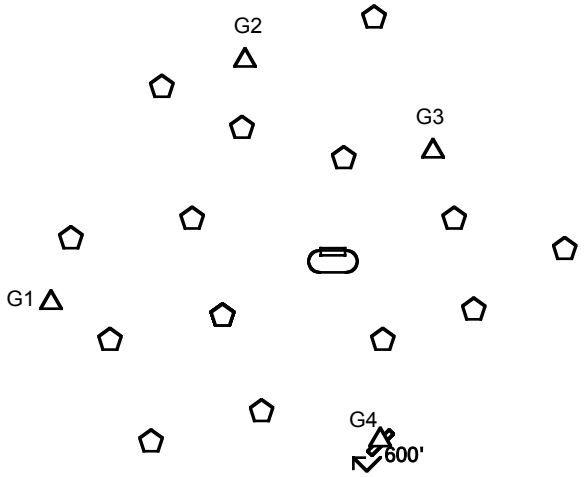
Penalties

Takeoff deck penalty	20%
Landing deck penalty	20%

Penalty for prediction error = to be briefed
Flight outside the limits of slow flight lane = no score for slow flight

2.1.4 TURNPOINT HUNT

Objectives
To fly to as many turnpoints as possible within a specified time limit.



Summary
Competitors will be given a map showing the location of all turnpoints. Before takeoff the competitor must declare the number of turnpoints that will be visited within the specified time limit. 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.

Scores
Typically each turnpoint will score 100 points, with additional points awarded if the predicted number of turnpoints is achieved. The following penalties will apply:

Takeoff deck penalty	20%
Landing deck penalty	20%
Breach of Quarantine	100%

Time over maximum task duration = to be briefed

2.2 FUEL ECONOMY & DURATION TASKS

2.2.1 DURATION

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

Summary
Competitors will be given a specified weight 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
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 following penalties will apply:

Takeoff deck penalty	20%
Breach of Quarantine	100%
Flight in a prohibited area	100%
Landing with less than the required fuel	to be briefed

Pilot Score = 

Where:
TP = time aloft achieved by pilot
Tmax = maximum time aloft achieved by a scoring competitor

2.2.2 FUEL ECONOMY

Objectives
Given a limited amount of fuel, fly as many laps as possible in the required direction around a short pylon course of 3 to 5 miles.

Summary
Competitors will be given:
- a specified weight of fuel
- A chart with the pylon course and the finish point clearly marked.

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
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 following penalties will apply:

Takeoff deck penalty	20%
Breach of Quarantine	100%
Flight in a prohibited area	100%
Landing with less than the required fuel	to be briefed

$$\text{Pilot score} = \left(1000 \times \frac{\text{LP}}{\text{LMax}}\right)$$

Where:

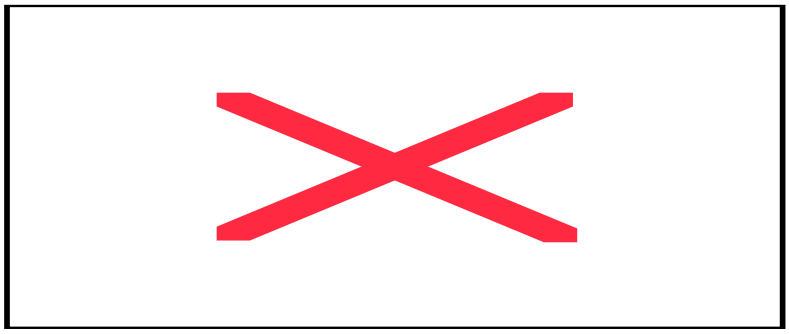
- LP = number of complete laps achieved by the pilot
- LMax = the maximum number of laps achieved by a scoring competitor.

2.3 PRECISION TASKS

2.3.1 POWER OFF 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.

Summary
This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 meters long and 25 meters wide. The first 25-metre section of the deck is divided into five 5 meter 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 and stay down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck.



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 and remain in contact with the ground (P_S) . If the aircraft bounces the score will be the lowest value of the strips entered. Touching down on a dividing line scores the higher of the two strips. The pilot will be scored zero if:

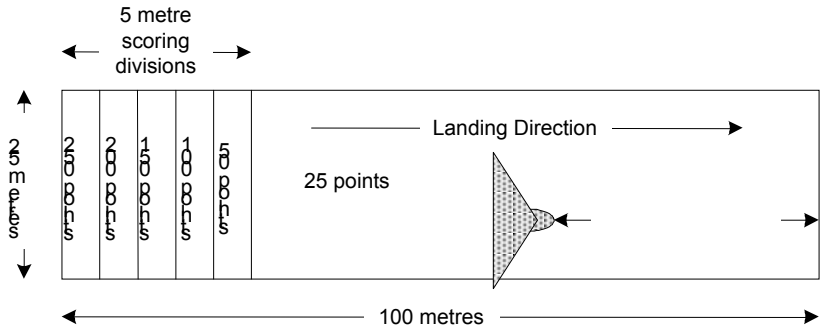
The aircraft commences takeoff before instructed to do so by the marshal
The engine is not stopped or the throttle is not closed before passing over the deck
The aircraft does not pass over the entire length of the deck before turning to descend
The engine does not remain at idle once final approach has started if engine idle permitted
The aircraft turns by more than 90 degrees from the deck centerline 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 with a maximum score of 250

2.3.2 POWERED 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.

Summary
This task simulates a landing on an aircraft carrier deck, the deck being a deck 100 meters long and 25 meters wide. The first 25-metre section of the deck is divided into five 5 meter 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 and stay down in a particular strip and the aircraft must come to a complete halt within the 100-metre deck.



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 centerline 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 and remain in contact with the ground (P_S). If the aircraft bounces the score will be the lowest value of the strips entered. Touching down on a dividing line scores the higher of the two strips. The pilot will be scored zero if:

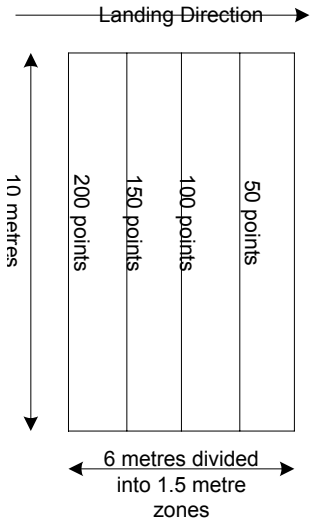
Any part of the aircraft touches the ground before the deck
The aircraft turns by more than 90 degrees from the deck centerline between starting the landing approach and coming to a standstill
The aircraft does not stop within the limits of the deck.
The aircraft moves from the deck before instructed 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 with a maximum score of 250

2.3.3 PRECISION TOUCHDOWN

Objectives
The objective is for the aircraft to perform a precision touch–and-go within a marked deck as close to the start of the deck as possible.

Summary
The deck is 6 meters long, 10 meters wide and is marked in four 1.5 meter 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.



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 (P_S). 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 fails to touchdown within the limits of the deck
The aircraft turns by more than 90 degrees from the deck centerline 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 with a maximum score of 250

2.3.4 SHORT TAKEOFF OVER AN OBSTACLE

Objectives
The objective is for the aircraft to take off over and clear an obstacle, starting the takeoff run as close to the obstacle as possible.

Summary
This task simulates a short field takeoff over a hedge, the hedge being represented by a tape stretched across the runway 1 meter above the ground. The pilot may position his aircraft on the runway as close as he wishes to the tape. This distance will be measured from the centre of the foremost wheel and rounded up to the nearest 0.1 meter. The aircraft must the take off over the tape without breaking it.

Takeoff
The takeoff order will be specified at the task briefing. The pilot may position his aircraft as close to the tape as he wishes 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 at the briefing.

Scoring
The competitor in each class that starts the takeoff run closest to the tape (D_{MIN}) and clears the tape without breaking it will score 250 points. Other competitors will be awarded scores based on their distance from the tape at the start of their takeoff run (D_P) relative to D_{MIN}. The competitor will be scored zero if:

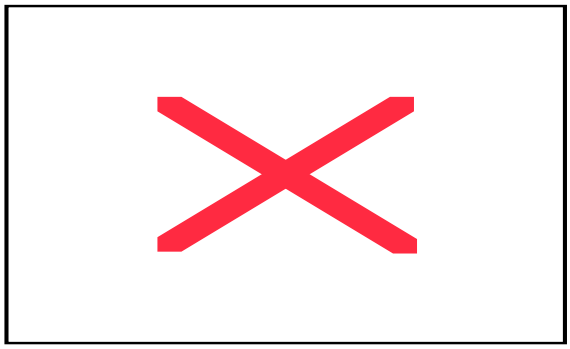
The aircraft commences takeoff before stationary
The aircraft commences takeoff before instructed to do so by the marshal
The aircraft fails to fly over the tape
Any part of the aircraft breaks the tape

Thus the score calculation will be (250 x D_{MIN} / D_P) with a maximum score of 250

2.3.5 SHORT FIELD LANDING

Objectives
The objective is for the aircraft to fly over a line that simulates the beginning of the runway, and to land and come to a standstill as close to the line as possible.

Summary
This task simulates a short field landing. The distance will be measured from the target line to the center of foremost wheel.



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 centerline 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 line (D_{MIN}) will score 250 points. Other competitors will be awarded scores based on their distance from the line when they stop (D_P) relative to D_{MIN}. The competitor will be scored zero if:

Any part of the aircraft touches the ground before the line
The aircraft turns by more than 90 degrees from the runway centerline 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 ($250 \times D_{MIN} / D_P$) with a maximum score of 250

2.3.6 DECK TAKEOFF

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

2.3.7 DECK LANDING

Objectives
The objective is for the aircraft to land in a deck 100 meters long by 25 meters 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 meters 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 centerline 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 centerline 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

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