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Mavericks Civilian Space Foundation
Sounding Rocket Competition
Rules and Definitions

MAVERICKS SOUNDING ROCKET COMPETITION RULES

3.1 Overview & Objectives

The Mavericks Sounding Rocket Competition is intended to drive development of rapid, repeatable, low-cost sub-orbital transportation technologies for targeted delivery of a specific weight caliber payload to a specific altitude above the Earth's surface, at the lowest vehicle and payload launch costs.

Numerous studies have substantiated the importance of high flight rates both for reducing overall cost of space access and for achieving rapid response to satisfy a variety of emerging sub-orbital payload lift needs. Additionally, innovations in vehicle design are necessary to reduce the airframe and launch costs, so that effective payload lift costs are affordable. Therefore, it follows that the development of low cost, high flight rate reusable vehicle systems will provide the enabling capabilities for civilians to develop and serve new space related markets and payload delivery challenges.

The current status quo for the launch industry is that launch campaigns typically require weeks of preparation and often slip by days, weeks, or even months. The need to retain a well trained workforce to support infrequent launches drives launch costs, which in turn drive the costs of satellites, payloads, and ultimately of human knowledge and scientific discovery.

The Mavericks Sounding Rocket Competition will challenge the civilian space exploration community to think about addressing many important issues in this arena, thereby jumpstarting progress towards a functional fleet of rapid response, highly reusable vehicles of a variety of capabilities and capacities, which will provide suborbital payload delivery by civilian space explorers.

3.2 Competition Purses

The total annual Mavericks Sounding Rocket Competition Purse of \$425,000 USD is divided into several Challenge Purses, offered for each Challenge Event. Each Challenge Event and its associated Challenge Purse will be announced upon



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Challenge Sponsorship. Challenge Sponsors will retain the Naming Rights for each sponsored Challenge Event in perpetuity. Each Challenge Event may offer more prize money, with correspondingly more difficult mission and victory requirements. Any Challenge Purse unclaimed in a given year will be carried over to the following year, and so on until all purses have been won or the competition has expired. The prize rules for each Challenge Event will be slightly different, and detailed in a Challenge Event Standard, and may be modified each year, and up to 60 days prior to the Competition Venue.

3.3 Competition Structure & Operations

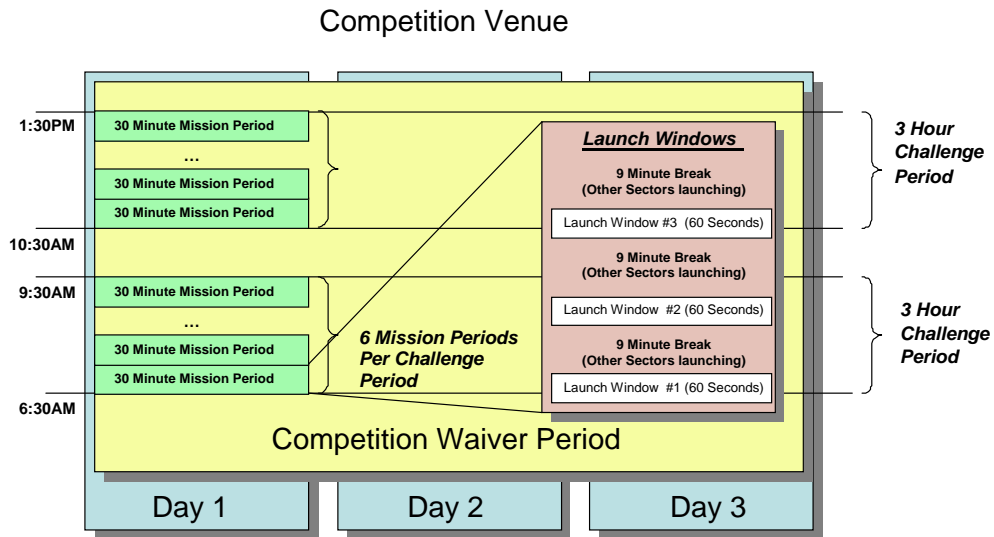


Figure 1. - Competition Flight Operations Structure

The Competition Venue will take place over a three (3) consecutive day period, and will be announced by the 30th of January in each year of the Competition Venue.

Each day of the Competition Venue will contain a Competition Waiver Period, which will open at 6:30AM, and will close at 1:30PM. Competition Flight Missions up to 100,000 FT MSL will be approved for operations within the Competition **Waiver**

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Period, for qualified Vehicles and qualified Entrants with proper TRIPOLI permits and approvals as required under TRIPOLI research launch regulations.

Qualified Vehicles and qualified Teams are expected to be able to perform multiple Flight Missions of a reliable, inexpensive, and robust rocket propelled device, deploying an on-board ARM Standardized Payload or Dummy Payload to a given target delivery altitude within a given Challenge Period.

A Competition Waiver Period for each day, will be broken into Challenge Periods of three (3) hours each, for a total of two (2) Challenge Periods per day. Each Challenge Period will consist of six (6) sequential Mission Periods, within which an Entrant may select up to two (2) Mission Periods on a first come first service basis when they attain Vehicle Qualification for competition. There will be three (3) Launch Windows of a 60 second duration each, within each Mission Period, in which to launch an Entrants required mission.

Should an entrant complete the minimum two missions within their selected Challenge Period, they will be awarded Intra-Challenge Period Bonus Award Points, and they will be eligible to schedule additional Mission Periods within future Challenge Periods, and attain additional Launch Windows within which to win Challenge Points.

Should an entrant complete the minimum two missions within their selected Challenge Period and an additional Challenge Period within the same Competition Waiver Period on a given day, they will be awarded Inter-Challenge Period Bonus Award Points, and they will be eligible to schedule additional Mission Periods within future Challenge Periods, and attain additional Launch Windows within which to win Challenge Points.

During each Mission Period, each Launch Sector will be cycled through three times with a nine (9) minute break between attempts, giving each entrant three (3) sixty (60) second Launch Windows within each Mission Period, within which to launch their vehicle.

Each Launch Sector operations will be under the control of local Launch Sector ARM LCO, as shown in Figure 2 below. Activation of a Launch Sector for power for each

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Mission Period will be under the control of the ARM RSO, in compliance with TRIPOLI safety regulations.

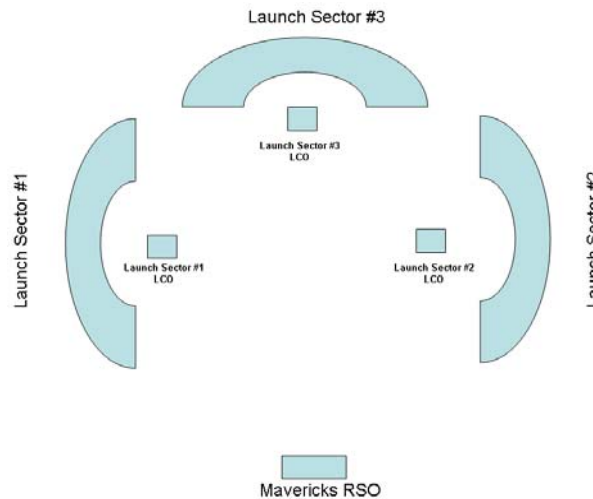


Figure 2. - Competition Flight Operations Area

3.3 Mission Award & Bonus Points

Qualification Award Points will be awarded to each Entrant associated with each milestone of the Entrant qualification process. Qualification Award Points will be defined for each Challenge Event in a Challenge Event Standard.

Mission Award Points will be awarded to each Entrant during each Challenge Period for accomplishment of a successful Mission Objective. Mission Award Points will be defined for each Challenge Event in a Challenge Event Standard, and will be dependent upon the difficulty of the Mission Objective. Payload Mission awards sizes will be proportional to mission risk, with Live Payload Mission awards representing significantly greater awards points than Dummy Payload Mission awards.

Live Payload Mission Award – Live Payload Mission Award points are defined in each Challenge Event Standard. To qualify a vehicle for Live Payload Mission Award points, an Entrant must first successfully perform at least one Dummy

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Payload Mission with that Vehicle. Upon successful launch and recovery of that mission Vehicle, only that qualified Vehicle can be used for performing additional Live Payload Missions and accumulating higher Mission Award points associated with performing Live Mission Payloads. In the event that a mission flight is launched, but the payload is not deployed and returned safely and can be flown again, 50% of the Live Payload Mission award will be issued.

Dummy Payload Mission Award - Dummy payload mission award points are defined in each Challenge Event Standard, and have a per mission flight award which is less than a Live Payload Mission Award. To qualify a vehicle for Dummy Payload Mission Award points, an Entrant must first successfully qualify for competition with that Vehicle. An Entrant is not required to fly Live Payload Missions, and can fly repeated Dummy Payload Missions if they desire, but the award points per mission is less for a dummy payload, than a live payload, because of the reduced mission risk.

In the event that a dummy payload mission flight is launched, but the dummy payload is not deployed and returned safely and can be flown again, 50% of the Dummy Payload Mission award will be issued.

Mission Bonus Points will be awarded to each Entrant during each Challenge Period for performance of multiple missions within the same Challenge Period or within the same Waiver Period. In addition, Mission Bonus Points can also be attained by formal submission of a documented dispersion analysis and prediction for each mission flight window, prior to mission launch. The dispersion analysis, and landing area prediction must be presented to the sector LCO in printed form prior to launch. Mission Bonus Points will be defined for each Challenge Event in a Challenge Event Standard.

Multi-mission Waiver Period Bonus Award Points – Multiple mission waiver period bonus point awards will be issued to Entrants who perform multiple missions using the same Vehicle, subject to the mass change allowances, within the same waiver period. For each additional successful mission flown in the same waiver period, beyond the first mission in a Challenge Waiver Period, an entrant will be issued award points as defined in the Challenge Event Standard.

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Multi-mission Challenge Period Bonus Award Points - Multiple mission Challenge Period bonus point awards will be issued to Entrants who perform multiple missions using the same Vehicle, subject to the mass change allowances, within the same challenge period. For each additional successful mission flown in the same Challenge period, beyond the first mission in a Challenge Period, an entrant will be issued award points as defined in the Challenge Event Standard.

Landing Accuracy Bonus Award Points – Landing accuracy bonus point awards will be issued to Entrants who submit a dispersion analysis for their flight to the ARM LCO prior to flight along with a predicted landing site GPS coordinate, and recover their airframe within a an error margin accuracy of the predicted landing GPS coordinates. The number of bonus award points per successful mission is defined in the Challenge Event Standard, as a function of the confidence interval within which they recover the vehicle from the predicted GPS landing recovery coordinates.

Apogee Altitude Bonus Award Points – Apogee altitude bonus point awards will be issued to Entrants who fly their payloads beyond the target deployment altitude to apogee, and deliver them upon descent at the target delivery altitude. For every one-hundred (100) ft above the target payload deployment altitude that a Vehicle apogee's, a point value specified in the Challenge Event Standard will be awarded.

3.4 Mission Penalties

Mission Penalty Points are defined for failure to launch within a launch window, payloads returned un-deployed but deployable in another Mission, false mission scheduling, payload destruction due to Vehicle loss or deployment damage to payload by Vehicle, and below minimum flight target deployment.

Below Minimum Flight Target Deployment Penalty – Flights that apogee below the target payload deployment altitude and fail to attain target deployment altitude will lose the Mission Points for that Mission Attempt but will not be penalized any points from their cumulative total.

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False Mission Scheduling Penalty – If an Entrant schedules for additional Mission Periods beyond their allocated, and fails to attempt to launch within them, they will be penalized the full points for that mission from their cumulative Challenge Event total.

1st Launch Failure Penalty - If the Entrant fails to launch within the first launch window, a point penalty will be assessed, and the Entrant can launch in their next Launch window, five (5) minutes later.

2nd Launch Failure Penalty - Should the Entrant fail to launch within the second launch window after a 1st launch attempt and failure, they will be assessed an additional point penalty, and be permitted to launch within their third launch window.

3rd Launch Failure Penalty - Should the Entrant fail to launch within the third launch window after a 2nd launch attempt and failure, they will be assessed an additional point penalty, and be required to launch within their next Mission Period.

Returned Un-deployed Payload Penalty - Should the Entrant fail to deploy its live payload at the target delivery altitude, and return the payload safely back with the Vehicle, the Entrant will be awarded the mission award points for the mission, but will also be penalized half of the award points for failure to properly deploy the payload at the target altitude.

3.5 Challenge Event Qualification, Disqualification, & Winner Determination

Entrants, whose cumulative total drops below 0 during any Challenge Period, will be disqualified from further participation in the competition.

A minimum number of Mission Points, defined in each Challenge Event Standard, must be accumulated by each Entrant as part of Qualification, to become a Competitor.

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Entrants can continue to fly in as many subsequent Mission Periods as desired to gain additional Award or Bonus Points as can be scheduled, once they accomplish the minimum of two flights within the same Waiver Period, At the close of the competition flight operations, all Entrants Mission Award & Bonus Points and Mission Costs & Penalty Points will be totaled, and then total Penalty Points subtracted from the total Mission Award and Mission Bonus Points. The result is the Challenge Event Cumulative Point Total.

The Entrant that has accumulated the most accumulated Challenge Points within the Challenge Event shall be considered the First Place Winner, so long as that number of Flights is greater than or equal to two (2). The Vehicle that has accumulated the second highest number of Challenge Points within the Challenge Event shall be considered the second place Winner, so long as that number of Flights is greater than or equal to two (2). The Vehicle that has accumulated the third highest number of Challenge Points within the Challenge Event shall be considered the third place Winner, so long as that number of Flights is greater than or equal to two (2).

In the event that multiple Entrants achieve matching points, the first place prize will be awarded to the Entrant that has accomplished the most missions in the least number of Challenge Periods. Should multiple Entrants perform the same number of maximum successful missions in the same minimum Challenge Periods, the Entrants shall be ranked according to the accuracy of the actual landing coordinates relative to the stated Landing Target coordinates, measured in miles to two decimal places (hundredths of a mile). The Entrant that has the lowest mean average distance between Landing Target coordinates and actual landing coordinates on all Flights shall be considered the better ranked. In the event we still have a tie between two or more Vehicles, the purse money shall be split evenly between these Vehicles.

Entrant Point Totals will be posted and displayed on the Challenge Event web page of the ARM website in real-time, as the competition endures, for world-wide audience viewing.

3.6 Challenge Conditions for Competitions

3.6.1 Technical specifications not already covered in these rules or in the Challenge Event Standard about any technical details will be provided by ARM to

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the Entrants at the time of project registration. Project registration will be available starting April 30 of the year of the Challenge Event. These technical specifications may be subject to reasonable future updates by ARM at its sole discretion no later than 60 days prior to the Challenge for those changes that might affect design and no later than 30 days for those changes affecting operations.

3.6.2 Challenge will be conducted until Challenge Termination.

3.6.3. Entrants shall provide or make arrangements for all necessary test facilities, storage facilities, personnel, equipment, fluids, and consumables necessary to complete the flight and to transport the Vehicle between the Staging Area and the Launch Point.

3.6.4 Vehicle must meet all Minimum Design Requirements, as defined in section 3.6.12 and in the Challenge Event Standards as verified by the Official Judges of the Challenge.

3.6.5 All Flight Attempts to win the Purse(s) must take place from the Competition Venue during assigned Mission Periods.

3.6.6 Entrants must provide certification to ARM at least 30 days prior to the Challenge certifying that at least 90% of the funds used to design, build, and operate the Vehicle come from Private Sources.

3.6.7 Entrants must provide to ARM at least 30 days prior to the Qualification Event an Entrants Data Package as completion of their project application, containing the results of a Monte Carlo dispersion analysis simulation (such as Splash or RockSim), along with relevant aerodynamic data supporting Splash or RockSIM input assumptions, including a Thrust Curve for all motor(s) in RASP format, and an airframe design documented in Rocksim including the Materials Database used for the Rocksim design document.

3.6.8 Entrants must provide documentation to ARM at least 30 days prior to the Qualification and Challenge Event proving the Vehicle has received appropriate licenses, or permits from the applicable regulatory bodies. Determination of

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exactly what licenses and permits are required is to be determined by Entrant, not ARM. Permit & license requirements will be governed by the laws of the United States, the State of Nevada, United States FAR part 101 and TRIPOLI Research Launch regulations. (ARM may or may not be able to provide License Sponsorship for non-US based Entrants that do not qualify for permits or licenses that require U.S. citizenship. Such Sponsorship will be on a case by case basis if special requests are made to ARM as a part of Project Registration and ARM Memberships and if ARM has resources available to accommodate the requests.)

3.6.10 Challenge Event Purses will be distributed as follows:

3.6.10.1 If only a single Finalist becomes a Winner in a given year, then that Finalist will win the largest Purse not previously awarded in the Challenge.

3.6.10.2 If more than a single Finalist becomes a Winner in a given year, then those Winners will be ranked according to the tie-breaker criteria described in section 3.6.7. Entrants will then be awarded the highest Purses not previously awarded for the Challenge according to their ranking.

3.6.10.3 No Vehicle can win more than one Purse in a single year of the Challenge.

3.6.10.4 No Entrant may compete with more than two Vehicles in any year.

3.6.11 Advance Notification Period Terms - Prior to any Flight Attempt within a Mission Period:

3.6.11.1 Entrants desiring to compete must register with ARM by 30-days in advance of the Challenge Event. If desired by the Entrant, Entrant Registration data will be kept confidential until 30 days before the Challenge Event date, at which point it will be made public and promoted by ARM.

3.6.11.2 An Entrants Data Package (See 3.6.7) must be provided to ARM 30-days in advance of the Challenge.

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3.6.11.3 Entrants must sign and return the Challenge Master Entrant Agreement to ARM 30-days in advance of the Challenge. The Master Entrant Agreement addresses multiple issues including but not limited to sponsorship rights, media rights, and liability. Entrants and all entrant members must agree to abide by the Master Entrant Agreement, in order to qualify as an Entrant for the competition.

3.6.12 Minimum Design Requirements - Each Entrant shall:

3.6.12.1 Use an approved set of propellants, oxidizers, and other consumables. Approval will be granted based on Material Safety Data, emergency response and hazardous Entrant capabilities, and circumstances of the Competition and Qualification Venue.

3.6.12.2 Clearly display the Challenge Event Logo Cluster provided by ARM in an approved location on the Vehicle.

3.6.12.3 Provide for support equipment for prompt and safe transport of the vehicle to and from the Competition Venue, as well as between a designated Staging Area to the Launch Point, transport of crew between the Launch Point and the Landing Zone, and the transport of the vehicle from the Landing Zone back to the designated Staging area.

3.6.12.4 Fly an ARM Competition Certified Flight Data Recorder, and make this Data Recorder available to the ARM RSO for firmware certification prior to scheduling of a Mission Period and installation of ARM flight performance recording media.

3.6.12.5 Provide ARM RSO with one non-returnable Certified Flight Recorder Media per Flight Attempt, for use within their Vehicle. This media will be kept by ARM for record purposes, but a copy of the flight data will be provided electronically to each Entrant on the day following the Waiver Period in which the flight was conducted.

3.6.12.6 Install an ARM certified competition flight recorder firmware image within all certified flight avionics installed in the vehicle.

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3.6.12.7 Ventilation requirements for the ARM certified Flight Data Recorder device must be accounted for in the Vehicle design. The space in which the ARM certified Flight Data Recorder device is mounted shall have sufficient static port ventilation to the outside ambient atmospheric conditions to allow constant pressure equalization.

3.6.13 Payload – Notwithstanding more specific instructions specific to a given Challenge Event, the Entrant must provide a removable and measurable dummy payload. Official Judges will observe and weigh the dummy payload. The Payload must serve no additional function for the nominal Vehicle operation. The Gold Box or abort-mode safety systems (if required) may or may not count as part of this entire Payload if pre-approved by the Official Judges and if consistent with Challenge Event specific rules.

3.7 Qualification Events for Competition

3.7.1 Entrants wishing to compete in the Challenge must register for the Qualification Events along with the Challenge no later than May 30th, of the Challenge Event year.

3.7.2. Entrants must comply with any other regulations, including registration requirements, imposed by the hosts of the Qualification Event.

3.7.3 Entrants must conduct a minimum of one (1) successful flight to the Altitude Window of the Challenge Event with the Dummy Payload and land within the parameters set by ARM, the FAA, and the Challenge Event rules before being permitted to fly live payloads. The Mission Period is measured from liftoff of the first flight to touch down and recovery of the last.

3.7.4 All flight events as described in section 3.4.3 must be observed and recorded by ARM RSO, and LCO Personnel.

3.7.5 In preparation for the successive Flights (second third etc), no more than 10% of the Vehicle's dry mass, which does not include the motor casing if present, may be replaced, as verified by the Official Judges or ARM Personnel.

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3.7.6 Payload delivery accuracy will be determined by the ARM certified Flight Data Recorder (provided by Entrant.) observation of a break-wire event, associated with the deployment breaking an installed break-wire between the payload and the payload bay. The flight data recorder media must be removed from the ARM certified Flight Data Recorder at the recovery site by the ARM Recovery Official after each Flight Attempt. ARM Official Judges will take the flight data recorder media and mark it with the Entrant, Vehicle, and Flight Identification information for later extraction and interpretation of the flight data. If Entrant is recycling the Vehicle for another flight Entrant will provide an additional and different flight data recording media for each additional flight attempt.

3.7.6a Entrant is required to design into vehicle the space, mounting system, power requirements, and ventilation necessary for proper operation of the ARM certified Flight Data Recorder device. Entrants may choose and fly a certified Flight Data Recorder of preference. Flight Data Recorder certifications will be available for Entrants selection criteria by May 30th of the year of the Challenge Event.

3.7.6b The certified Flight Data Recorder device for the Qualification Event WILL BE ANNOUNCED as soon as Testing is complete and an official device is selected or no later than 30 days prior to the first Challenge Event.

3.7.7 Entrants completing the qualification requirements will be named as Competitors, and invited to attend the Challenge Competition. In the event that more Entrants complete the requirements described in Sections 3.4.1 through 3.7.6, than can be accommodated at the event final Competition, Competitors shall be selected on a first come first serve basis, as determined by the completion of their qualification as an Entrant.

3.7.8 Competitors must provide a vehicle update electronically through the ARM website to ARM every 2 weeks until the Challenge Competition starting 2 weeks after the date of Competitor Notification and continuing through 2 weeks prior to the date of Challenge Competition. Final simulation analysis results and proper

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documentation must be submitted to ARM at least 30 days prior to the event. Standard software for all simulations is to be described by the Event Standards for each specific Challenge Event.

3.7.9 Changes to the airframe or engine design or propellants or other consumables up to 30 days before the Challenge Competition event must be approved by ARM. ARM reserves the right to require additional re-qualification to validate substantial changes to design or operation of the Vehicle. Changes after 10 days prior to event will not be allowed and will result in disqualification of the Entrant.

3.8 Technical Flight Requirements for Competition

3.8.1 Prior to the first Mission Period of any Challenge period, Entrant must provide ARM Flight Operations personnel and other relevant safety officers with launch elevation angles, maximum allowable winds, dispersion parameters, Landing Target coordinates, and wind weighting data.

3.8.2 Entrants must launch within sixty (60) seconds of the designated mission period Launch Window of any Mission Period, or that Mission Period shall be considered forfeit. Entrant must secure relevant permissions from ARM LCO and RSO Flight Operations personnel prior to launch.

3.8.3 For all Flight Attempts, Vehicle must carry the Designated Payload to a point higher than the Floor Altitude within the Altitude Window. For Challenge Events that require a payload deployment event, Flight Attempts may execute the deployment event at or above the Target Altitude.

3.8.4 Entrant may begin Vehicle recovery immediately after Vehicle launch and while the recovery Entrant is accompanied by ARM Flight Recovery personnel or other relevant safety officers.

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3.8.5 Payload delivery must be discretely recorded and synchronized within the flight data such that the exact altitude and flight time of the payload deployment/delivery event is clearly recorded and time stamped by the Payload break-wire event and barometric and inertial recorded altitude and Vehicle velocity. Exact requirements of what constitutes payload delivery or payload deployment shall be specifically addressed within the Standards for each Challenge Event.

3.8.6 Vehicle and Payload must be recovered by the Entrant and returned to the Staging Area during the designated Challenge period. Should an Entrant fail to recover its vehicle and return it to the designated Staging Area within the Challenge Period, Vehicle will be ineligible to fly during the next Mission Period

3.8.6.1 In the event that a particular Challenge Event integrates separate vehicle Challenge Event Entrants with Payload Challenge Event Entrants, the vehicle Entrant must recover the vehicle and return it to the designated Staging Area within the allocated time to be eligible to fly during the next Mission Period regardless of the performance or recovery status of the Payload Entrant.

3.8.7 No later than 10 minutes prior to the end of any Mission Period, Entrant must report to ARM Flight Operations Personnel, Official Judges of the Competition, and relevant safety officers whether or not they will attempt a launch during the Launch Window at the start of the following Mission Period. Failure to report prior to this deadline shall result in forfeit of the following Mission Period.

3.8.8 To win any purse in the Challenge, a Vehicle must complete at least two successful Flights. (Minimum of one (1) Dummy Payload Flight, and minimum of one (1) additional flight in the Competition within the designated Time Periods.) A Flight shall be considered complete when the Vehicle is recovered, transported back to the Staging Area, and deemed by the Official Judges to be in flyable condition for another attempt.

3.9 Definitions Specific to Challenges

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Challenge Event- A specific set of Event Standards (rules), governing a class of entries not related to any other class of entries, except that a Challenge Series may refer to a collection of Challenge Events. Notwithstanding any Challenge Series based restrictions or collective standards, the event standards of one event do not have influence or effect on the standards of any other event.

Challenge Series- A Maverick's competition series of Challenge Events. A Challenge Sponsor name can be added by ARM at any time to any of the specific Challenge Events, or to the entire array of events. A specific challenge series may have overriding standards, effective dates, quantitative purses or other effects with ramifications to any or all of the challenge events within the series.

Bronze Challenge Event – An entry level challenge event for sub-orbital flight operations within the lower troposphere (Above 30K MSL).

Silver Challenge Event – An intermediate challenge event for sub-orbital flight operations within the upper troposphere (Above 60K MSL).

Gold Challenge Event – An advanced challenge event for sub-orbital flight operations within the stratosphere (Above 100K MSL).

Iridium Challenge Event – The premier challenge event for sub-orbital flight operations in space (Above 360K MSL).

Challenge Termination - Such time as all the Competition Purses have been won in a specific challenge event, challenge series, or the conclusion date of a specific challenge event or challenge series. Date based deadlines may be extended at the sole discretion of MCSF. Prize Purses may be supplemented pending availability of funds at the sole discretion of MCSF.

Competition Venue – The challenge events will take place at the location of the “MAVERICKS INTERNATIONAL CIVIAL SPACE COMPETITION” event, as determined by ARM. The Competition Venue may be different from the Qualifying Event Venue.

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Flight Attempt – The operation of the Vehicle at the Competition Venue within a Launch Window intended to satisfy all the rules for participation in a challenge event. Specific restrictions on what constitutes a Flight Attempt may be further defined, restricted or otherwise defined within the Challenge Standards for any specific challenge event.

Flight Safety System - A device, procedure or combination of devices and procedures designed to limit or restrict or minimize potential hazards to the uninvolved public, event participants or event staff by preventing the Vehicle from performing in an unanticipated, unacceptable or otherwise potentially unsafe manner such as (but not limited to) straying off course with potential of reaching a populated area.

Qualifier- A Entrant that has submitted an application and received notice from ARM of the acceptance and approval of said application; Subject to specific challenge event standards, pre-qualification design submission completion. A Entrant may include more than one vehicle, but each vehicle must be separately qualified.

Entrant- A specific vehicle and the supporting flight team that qualified with it.

Finalist- A vehicle and it's supporting Entrant, selected by ARM personnel to compete at the Competition Venue after accumulation of a minimum of 1000 Award Points, awarded as part of successful qualification. Qualification process will occur as described in Section 3.4.

Winner - Any Entrant that accumulates the most cumulative Challenge Points and successfully makes the required minimum number of launches specified for a specific Challenge Event that deliver the minimum payload to a point within the Altitude Window and that comply with all Technical Flight Requirements and other rules of the Challenge.

Gold Box – A specialized payload or portion of the payload to be provided by ARM. The Gold Box shall contain cameras and sensors used to monitor Flight Attempts, including a video camera, an altimeter, a GPS receiver, and the

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appropriate transmitters and antennae to downlink these signals to an ARM-provided ground station during flight.

Staging Area - An area provided and designated by ARM wherein Article (a) or Entrants will store and perform vehicle flight preparations and recycle preparations before or following a Flight Attempt. Hazardous materials intended for use or storage in the Staging Area must be pre-approved by ARM.

Launch Point - The assigned initial launching pad GPS coordinates within the Launch Sector area for an Entrants Vehicle. Entrants will be provided with detailed information about their Launch Point within 60 days of the Challenge Event.

Landing Target – A spot inside the Landing Zone to be identified by a Entrant no later than 30 minutes prior to a Flight, used for calculation of landing accuracy for a tie-breaker and Landing Bonus, if needed. Entrants must provide GPS coordinates for their desired Target to ARM Flight Operations personnel, Judges, and any relevant safety personnel and receive confirmation of the coordinates prior to request for permission to launch.

Landing Zone - The designated landing area for an Entrants Vehicle, as determined by their Monte Carlo performance simulation. Entrants will be required to submit detailed information about their Landing Zone within 60 days of the Flight Attempts.

Logo Cluster - A pre-defined arrangement of logos, supplied by ARM, to be placed on the exterior of Vehicle

Altitude Target – An exact altitude (AGL or MSL as specified) at which a given competition primary event (usually Payload Delivery) is intended to occur within the course of a Flight Attempt.

Altitude Window – A range of altitude, between a lower limit known as the Floor Altitude and an upper limit known as the Ceiling Altitude within which the primary event of a given competition must occur for the Flight Attempt to be eligible to qualify as a successful flight attempt. Other factors may also be

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required in addition to this stipulation to achieve a successful flight attempt. The minimum Floor Altitude and maximum Ceiling Altitude for each challenge event will be detailed in the Challenge Event Standard.

Floor Altitude – The lower limit of an Altitude Window above which all primary events must occur.

Ceiling Altitude – The upper limit of an Altitude Window below which all primary events must occur.

Payload Delivery – The action required by challenge Event Standards which is used to define the point in time when altitude is measured for the purposes of judging results of a Flight Attempt.

For Challenge Events that require a payload deployment, Payload Delivery shall be determined to be the recorded altitude at the point in time when the deployment occurs, as indicated by either break-wire event detection attached to payload, as determined by competition certified on-board electronics or independent EODAS tracking certification.

For Challenge Events that do not require payload deployment, Payload Delivery shall be determined to be the point when the payload reaches apogee, as determined by competition certified on-board electronics or independent EODAS monitoring.

Event Standards – An independent set of specific details which define and quantify the rules for a specific Challenge Event. While the terminology for the Event Standards of a given Challenge Event may be identical to that of any or all other Challenge Events, the definitions for these standards may and likely will be different for each Challenge Event.

Official Judges - Independent contest evaluators appointed by ARM to assure compliance by Entrants to the rules and regulations governing the Challenge events, validate all measurements required for determining Finalist and Tie-breaker status and to determine the first and second place Winners for the Challenge Event.

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Payload - Vehicle mass that is not propellant or part of the airframe, motor system, structure, or other systems that are involved in the flight, operation, or maintenance of the vehicle. The Payload must be labeled, removable, and measurable prior to each flight. Within the Event Standards, a Payload may be provided or assigned from a pool of payloads, to be flown in the challenge event. Challenge Event Officials may make the payload assignments no later than one hour prior to flight time. If a Payload is not assigned, Entrants will fly a dummy payload of their own. Each Entrant is required to supply its own dummy payloads for qualification and competition purposes. If an Entrant fails to recover a dummy payload, prior to flying additional Missions in Launch Windows, the Entrant will need to provide back-up dummy payloads as needed. ARM will not provide dummy payloads. Entrants may reject a particular payload assignment from the payload pool if it fails to meet the Event Standards.

Private Sources – (Funding) Non-government (U.S. or other) sources. Money won in previous years of the Sounding Rocket Competition is deemed acceptable.

Challenge Purse - A sum of US dollars to be awarded to the Finalist that accumulates the largest quantity of Challenge Event Cumulative Point Totals, meeting the criteria of a specific event's standards. Unless otherwise defined in a Challenge event Standard, only one Challenge Purse will be awarded for each criteria defined within its events standards. Challenge Purse amounts may not be decreased after the initial formal event announcement. Challenge Purse amounts may be increased at any time after the initial formal announcement. Challenge Purse amounts will be defined within the Event Standards. Challenge Purses not claimed in any given year will carry over to future years until won or until the Challenge Event Termination.

Competition Purse – The total portion of annual award made available by MCSF in US dollars, for Challenge Purses.

Challenge Sponsor – Private Sources that sponsor a particular Challenge Event through a qualified Tax Deductible Donation to MCSF.

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Challenge Sponsorship – A Challenge Sponsor, who directs a portion of their donation to MCSF towards a specific Challenge Event, in exchange for Naming Rights over the Challenge Event.

Mission Period – 6 reserved thirty (30) minute periods per Challenge Period selected by Entrants within which to fly their Missions. Each Finalist receives at most, two Mission Periods initially, within which to fly their challenge Mission; Upon completion of the minimum completed missions for a particular Challenge Standard, an Entrant may reserve additional Mission periods as requested, after successfully completing two Mission Periods within a single Waiver Period.

Challenge Period – Each Waiver Period is divided into four (2) Challenge Periods, of 3 hours in duration. Each Challenge Period will contain 6 Mission Periods.

Naming Rights – The right of a Challenge Sponsor, to name a Challenge Event for perpetuity, any name, also in agreement by the MCSF and ARM, in exchange for Challenge Sponsorship.

Launch Window – A sixty (60) second period, cycled between five (5) launch pads within a Launch Sector, within which a Vehicle may make a Flight Attempt. Each Entrant may attempt three (3) Launch Windows, held in sequence through the Launch Windows of the other five (5) launch pads within the assigned launch Sector. Additional Launch Window usage beyond the first Launch Window will incur penalty points as defined in each Challenge Event Standard.

Launch Sector – A geographic portion of the launch area, which contains five (5) launch pads, and is under the direct control of the Launch Sector LCO, after RSO activation of power to the Launch Sector within the designated Launch Period.

Challenge Sponsorship – Private Source donations to the MCSF, a portion of which is directed towards Challenge or Competition Purses.

Qualifying Process – All Entrants wishing to compete at the Competition Venue must have submitted and had approved qualification information related to their vehicle, and been selected according to the criteria listed in these rules and the

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Challenge Event Standards, and attained a minimum of one-thousand (1000) Mission Award Points as part of the qualifying process.

Mission Periods - A pre-assigned grouping of Launch Window time slots wherein a Vehicle may attempt to perform Flight Attempts. There will be 15 Launch Windows in a Mission Period. There will be 12 Mission Periods in a Challenge Period.

The competitions will be divided into Challenge Periods. In each of these Challenge Periods, all vehicles with assigned Mission Periods will be allowed to conduct a Flight Attempt in a scheduled launch Window by preparing the Vehicle, launching the Vehicle, recovering the Vehicle, and preparing it for future flights, and flying it again.

The Mission Periods of different Entrants may be staggered or concurrent, at the sole discretion of ARM.

Launch Windows – A predetermined time slot of sixty (60) Seconds within an assigned Mission Period wherein vehicle launching is to occur. All Vehicles attempting a Launch in a given Mission Period must launch within the assigned Launch Windows. Each entrant will be issued 3 launch Windows with each Mission Period assignment. The Launch Windows will be sequential, with Entrants launching in order according to their Launch Sector pad assignments performed by the Official Judges of the Competition at the beginning of each day of the Competition.

Vehicles shall begin their countdowns at T-minus sixty (60) seconds at the beginning of the assigned Launch Window. Vehicles shall launch within the assigned window, or the Time Period shall be considered forfeited. Upon forfeiture, the two additional launch Windows must be used to launch the Vehicle, but their usage will result in penalties as defined in each Challenge Event Standard. The duration of these windows may be altered by the Official Judges up to 15 days prior to the competition to accommodate more Entrants as necessary.

After a vehicle launch, Entrants will be allowed to enter the Landing Zone to

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recover their vehicles as long as they are accompanied by an ARM recovery Official.

No later than 15 minutes prior to each Mission Period, Entrants must report to ARM Flight Operations personnel and Official Judges whether their Vehicle will attempt a Launch during the following Mission Periods. If no such notice is given, the following Mission Periods shall be considered forfeit.

Official Judges may elect at their sole discretion to extend a Mission Period or add in additional Mission Periods upon consultation with ARM due to external conditions such as weather or air traffic incursions.

Vehicle - The Entrant's entry in the Challenge, not including the Payload or ground support equipment.

Vehicle Update - Document containing new updates on aerodynamic data, simulation results, cosmetics, propulsion & miscellaneous information.

MCSF - The MAVERICKS CIVILIAN SPACE FOUNDATION is responsible for awarding prizes for the Challenge.

ARM - The ASSOCIATION OF ROCKET MAVERICKS is responsible for administering, executing, and judging the Challenge.

Competitor Notification – The act of official notification to Entrants, that their Vehicle has been selected as a competitor and invited to compete in a Challenge Event. The means of official notification shall be by certified mail, e-mail, or personal delivery with signed receipt.