

## 15.15 Section 4C Volume Space Modelling

### Part Two - Space Models Specification

#### a) 2.3 Stages of Operation

**YES**

Serbia

Add a new paragraph as follows:

**2.3.3 Number of stages of scale models in Classes S5 and S7 shall correspond to number of stages of the original prototype defined by technical data submitted for judging. Example: Saturn 1B is a two stage prototype and if it carries a powered Moon Lander, which is a payload of the prototype, this is not a “three stage” scale model than its special effect.**

Reason: This is necessary clarification to avoid confusion when identifying configuration of a scale model at static judging.

#### b) 2.4 Construction Requirements

**No**

Serbia

Amend paragraph the table and sub-paragraph as follows:

2.4.4 Minimum dimensions of subclasses of classes S1, S2, S3, S5, S6, S9 and S10 must not be less than:

Event Class	Minimum diameter (mm) (for at least of 50% of the overall length and 20% for S5)	Minimum overall Length (mm)
A	40	500
B	40 <b>50</b>	500 <b>650</b>
C	50 <b>60</b>	650 <b>800</b>
D	60 <b>70</b>	800 <b>950</b>
E	70 <b>80</b>	950 <b>1100</b>
F	80 <b>90</b>	1100 <b>1250</b>

~~Models of Classes S1, S2, S3, S6, S9 and S10 must have minimum diameter of 30 mm of enclosed airframe for at least 50% and for Class S5 for at least 20% of the overall body length. In case of Classes S1 and S5 the smallest body diameter must be not less than 18 mm for at least 75% of the overall length of each stage, including their back sections. No boat tails or reducers are allowed unless they meet this requirement.~~

Reason: It was necessary to increase dimensions in the table for two reasons: a) to make physical distinction between classes A and B and b) to make models bigger and more attractive and also to improve their flyability. Text in the paragraph below was changed to clarify it because it was a “stumbling block” for years. It was changed many times but the ambiguity was staying. Now it is removed. Also diameter of 18 mm left from “old times” when motors of such diameter were used. Today it is meaningless and diameter of upper stage should be matched to nowadays needs.

c) **2.4 Construction Requirements**



*Technical Secretary's Note: the table did not contain any amendments.*

*Amend the text [and table] as follows:*

2.4.4 Minimum dimensions of subclasses of classes S1, S2, S3, S5, S6, S9 and S10 must not be less than:

Event Class	Minimum diameter (mm) (for at least 50% of the overall length and 20% for S5)	Minimum Overall Length (mm)
A	40	500
B	40	500
C	50	650
D	60	800
E	70	950
F	80	1100

~~Models of Classes S1, S2, S3, S6, S9 and S10 must have minimum diameter of 30 mm of enclosed airframe for at least 50% and for Class S5 for at least 20% of the overall body length. In the case of Class S1 the smallest body diameter must be not less than 48 25 mm for at least 75% of the overall length of each stage, including their back sections. No boat tails or reducers are allowed unless they meet this requirement. An S1 sustainer stage may not have a boat tail. In the case of Class S5, the smallest body diameter must be not less than 18 mm for at least 50% of the overall length of each stage.~~

Reason: In the paragraph following the table, the first sentence is eliminated because it has been superseded by the header of Column 2.

Reason for S1 amendment:

- Using current model sizes, an 18mm diameter S1 sustainer stage flies to altitudes where the model is extremely difficult to see. This makes it very challenging for the Range Safety Officer (RSO) to assess if the recovery system of the model has deployed safely. The high altitude also makes it difficult for the competitor to see and successfully recover the model. Increasing the minimum required diameter of the sustainer stage will reduce the apogee height, thereby improving visibility for the RSO and the competitor.
- The current rules are ambiguous as to whether or not a boat tail is allowed for an S1 sustainer. The proposed change clarifies that a boat tail is not permitted for an S1 sustainer.

Supporting data: See Agenda Annex 7i for the Supporting Date for the S1 Amendment.

Reason for S5 amendment: The current rules do not specify a minimum diameter that would apply to an S5 sustainer stage. Current S5 models have included sustainer stages as small as 10mm diameter. These small stages fly to high altitudes where the model is extremely difficult to see. This makes it very challenging for the Range Safety Officer (RSO) to assess if the recovery system of the model has deployed safely. The high altitude also makes it difficult for the competitor to see and successfully recover the model. Increasing the minimum required diameter of the sustainer stage will reduce the apogee height, thereby improving visibility for the RSO and the competitor.

cont/...

Supporting data:

- For S5C at the 2012 World Spacemodelling Championships, Bumper-WAC models took the top seven places. The maximum altitude was 730 meters. At this altitude, the models cannot be seen. Recovery of the models is difficult.
- For S5C at the 2013 European Spacemodelling Championships, Bumper-WAC models took the top four places. The maximum altitude was 801 meters. At this altitude, the models cannot be seen, and recovery of the models is very difficult. Some models landed in a nearby corn field, and several models (and their electronic altimeters) were not recovered, perhaps in part due to the small size of the sustainers.
- Under current rules, the S5 event has only one competitive prototype. Increasing the minimum required diameter of the sustainer stage will reduce the apogee height, thereby improving visibility for the RSO and the competitor. It will also help increase diversity in the prototypes entered for the event.

d) **2.4 Construction Requirements**



Serbia

*Amend the paragraph as follows:*

2.4.6 A space model shall not contain any type of explosive or pyrotechnic payload. **A prefabricated ejection charge for ejection of a recovery device, in conjunction with a space model engine(s), shall not be considered explosive or pyrotechnic payload.**

Reason: This is necessary clarification especially in case when multiple, clustered engines are used in multistage models in order to avoid disqualification of the model from competition.

e) **2.4 Construction Requirements**



Serbia

*Amend the paragraph as shown. (This sentence was omitted from the Edition 2013 and was existing in previous editions. Technical Secretary's Note: the sentence was not included in the 2013 edition because the proposal submitted by Serbia for the 2012 Plenary Meeting and approved at that meeting showed this entire sentence as marked for deletion.*

2.4.7 Models in Classes S4, S8 and S10 must fly and land without separation of any part in flight. **In classes S4, S8 and S10, the minimum weight of the model that returns to ground in stable gliding flight supported by aerodynamic lifting surfaces, shall not be less than 30% of the maximum specified weight for the particular subclass.**

Reason: Request for gliding models to have minimum weight of 30% of maximum weight was in the rules to prevent use of small Styrofoam tailless wings with very poor flying characteristics but with long flight times. Such “gliding portions” were not flying but rather were “floating”.

f) **2.4 Construction Requirements**



Serbia

*Add a new paragraph as follows:*

**2.4.8 Space models shall be painted (nose cone, body tubes, fins or wings) in bright colours and shall use a “freestyle decoration” because of increased visibility and attractiveness.**

Reason: In many SM classes like S3, S6, S9 etc models are small, not painted and not attractive plastic tubes with very poor visibility. In all other aeromodelling classes

models have very good appearance and attract public and media. This is necessary to achieve with space models in these very popular and very well participated classes.

### Part Three - Space Model Engine Specification

g) **3.10 Certification for FAI Contests**



Serbia

*Add a new paragraph as follows:*

**3.10.3. The organizers of World and Continental Championships are not obliged to perform a static test during the event if they provide all engines of the same type by the same producer for all participants in a particular class or classes. In such a case the organizer shall get the certification document in accordance with 3.10.1 by the producer and/or to do the static test for random samples of engines to be used prior the Championships to make sure that the delivered engines are in compliance with the space model engine standards. This shall be specified in Bulletin 1 for these Championships.**

Reason: In the best participated classes S3A, S4A, S6A, S9A participate up to 25 countries, but there are used only 4 to 5 types of space models engines. They must be tested if provided by participants to avoid engines modification. In case if the organiser provides engines for all participants and they take them from one box just before their flights any cheating is not possible. So time consuming and expensive engine testing shall be avoided and many engines saved for flying. However the organizer must make sure the engines are safe and they comply with the space models engine standards, but this shall happen before the Championships and shall relate only producer and the event organiser. Space modellers also have problems with shipping engines by planes and in this case this inconvenience should be avoided.

h) **3.14 Type Identification**



Serbia

*Apply numbering to the existing paragraph and add a new paragraph as follows:*

**3.14.2 Standard markings on exterior of the casing of a space model engine shall consist of four marks: a) producer's name or logo, b) engine class (and total impulse) marked by a capital letter in accordance with paragraph 3.1.4 of these rules, c) average thrust in Newtons (N) marked by a numeral and d) delay time in seconds (s) marked by a numeral. When the colour coding of the nozzle end is used a producer is obliged to provide an affidavit that explains this coding with every delivered quantity of the engines that shall be submitted to the organizer at an event.**

Reason: Such markings are in use for decades, but are nowhere in the rules. It is necessary to make these markings standardized and mandatory by putting them in the rules.

cont/...

## Part Four – General Rules for International Contests

### i) 4.1 World Championships Event for SPACE MODELS



Serbia

*Decrease the engine power of one of the classes as shown:*

i) W/CH for Senior classes:

- a) altitude models – S1B
- b) parachute duration models – S3A
- c) boost glider duration models – S4A
- d) scale altitude models – S5C
- e) streamer duration models – S6A
- f) scale – S7
- g) rocket glider duration and precision landing models – ~~S8E/P~~ **S8D/P**
- h) gyrocopter duration models – S9A

Reason: This is a consequential change if proposal v) “11.7 Class S8E/P” is approved. It relates to the request of S8E/P flyers from several countries to fly with cheaper engines to lower altitudes which gives different benefits explained in that proposal.

### j) 4.1 World Championship Events for Space Models



USA

*Replace an existing class with a different class as shown below:*

The following events are recognized (~~2004~~) as World Championships for Space Models:

i. W/CH for Senior classes:

- a) altitude models – S1B
- b) precision fragile payload models – S2/P**
- ~~c) parachute duration models – S3A~~
- ~~d) boost glider duration models – S4A~~
- ~~e) scale altitude models – S5C~~
- ~~e) streamer duration models – S6A~~
- f) scale – S7
- g) rocket glider duration and precision landing models – S8E/P
- h) gyrocopter duration models – S9A

Reason:

- S2/P provides a challenging event for precision altitude and duration while protecting a fragile payload. Models tend to be larger and use larger motor than for many other WSMC events. Design, construction, and flying these models will provide a new and modern challenge to competitors. The large models will also be attractive to spectators and media coverage.
- S6A is sometimes perceived as one of the simpler Spacemodelling events. Replacing S6A with S2/P will provide an increased level of challenge for Senior competitors. S6A will be retained for Junior competitors.

Supporting data: See Agenda Annex 7j for the Supporting Data.

k) **4.2 Number of Models**

**Yes**

Serbia

*Amend the final paragraph as follows:*

For classes **S1, S2**, S3, S4, S6, S8, S9 and S10 one (1) additional model may be processed and flown by the competitor on there being a tie for first place at the end of the third round.

Reason: It is necessary to allow a new model for classes S1 and S2 for additional flight to resolve tie if other criterions are not fulfilled. It happens not rarely that two competitors with best but equal results have only one official flight each and other model is either lost or crashed. This makes very big problems to the organisers and the Jury in FAI Championships. One model for fly-off like in other classes would resolve this situation.

l) **4.5 Official flights**

**Yes**

Serbia

*Add a new paragraph as follows:*

**4.5.4. Definition of a Re-flight**

**A competitor shall be allowed a re-flight when he is prevented from making an official flight through no fault of his own. In such cases he or his team manager should notify RSO immediately. Permission for a re-flight shall be given by the RSO, or in case of a protest, by the FAI Jury. A re-flight shall be made under flight conditions similar to those under which the other official flights for that class were made, but before the official results are announced.**

Reason: There was a number of situations in the FAI SM Championships or World Cup contest when a competitor was not able to make an official flight because of errors of field personnel or for other reasons out of his personal responsibility. It is necessary to sanction such situations by the rules.

m) **4.7. Radio Controlled Space Models**

**Yes**

Serbia

*Add a new paragraph as follows:*

**4.7.5 In World and Continental Championships because of increased safety, reduced harmful radio-interferences and simplified organisation of the RC events, spread spectrum 2.4 GHz radio devices shall be used.**

Reason: 2.4 GHz Spread Spectrum radio equipment is very popular and widely used all over the world. There is a lot of participants in World and Continental Championships and am/fm radio spectrum control is very demanding and expensive and organisation especially of group flying complicated. Therefore it is necessary to recommend application of these modern costly compatible and reliable devices.

n) **4.8. Timing and Classification**

**Yes**

Serbia

*Amend the paragraph as follows:*

4.8.3. The total time of the three flights of each competitor is taken for the final classification **unless otherwise defined by the rules of a particular class.**

Reason: There is a “target time” in Classes S2/P or S8E/P which is combined with a “precision altitude” or “precision landing” in a formula for calculating classification points, so a present definition in 4.8.3 must be changed and completed.



o) **4.9.2.1 Electronic Altitude Measurements**

**No**

Serbia

*Amend the 9th point of sub-paragraph b) as follows:*

- b) - For FAI Category 2 events, simpler devices may be used that give the data readout of peak altitude by **numbers on its hand held reader** or by audio or visual means directly from the altimeter, with no external device required.

Reason: This is sanction by rules all available equipment. Simple and cheap electronic altimeters have hand held readers that come in a kit with the altimeter. They are more sophisticated then those with audio or visual readout.

**S1 – Altitude Class**

p) **5.1 2 Definition & 5.3 Sub-Classes**

**Abstain**

Serbia

*Amend the following paragraphs and add a new paragraph at 5.4 as shown.*

5.1. Definition

In any altitude competition event, the model achieving the highest maximum altitude as ~~tracked and reduced~~ **measured and/or calculated** shall be declared the winner.

5.3. Sub-Classes

Altitude competition shall be divided into classes based upon the maximum allowable gross launching weight of the model and the maximum permissible total impulse of the engine or engines powering the model. Any number of engines may be used in any arrangement provided that the sum of the total impulses of the individual engines does not exceed the allowable total impulse maximum for the competition class.

The following event classes are in effect for altitude competition:

CLASS	TOTAL IMPULSE ( Newton-seconds )	MAXIMUM WEIGHT (g)	
S1A	0,00 -	2,50	<del>30</del> <b>60</b>
S1B	2,51 -	5,00	<del>60</del> <b>90</b>
S1C	5,01 -	10,00	120
S1D	10,01 -	20,00	240
S1E <b>LMAR1</b>	20,01 -	40,00	300 single stage
S1F <b>LMAR2</b>	40,01 -	80,00	500 two stage

**Note: LMAR stands for Large Model – Altitude Rocket and shall be used for promotional purposes of Spacemodelling in addition to competitions. They shall encourage new designs in order to achieving ultimate flight specifications.**

**5.4. Classification**

**Yes**

**Every competitor shall be given three opportunities to make official flights. The best out of three flights shall be taken for classification. In case of tie the second or even the third flight shall be decisive. It the tie stays competitors shall be allowed to make an additional flight with a new model.**

Reason:

- a) Terms tracked and reduced are from early days of Spacemodelling and are not understandable to nowadays sportsmen. Competition must be matched to new

available technologies that use different terms.

b) Maximum weights are not realistic for subclasses A and B. They belong to times when models were very small. These values must be approached to today's practice.

c) There was nothing in the rules about classification that made big problems in competitions. There were several situations in the FAI SM Championships that tie was not resolved because the rules do not consider such situations. This caused a big problem to the organisers and the FAI Jury. Therefore it is necessary to think about all possible situations and have appropriate solutions for them.

#### **S4 - New Class**

##### **q) S4D/P Programmed Flights Competition**



**Serbia**

*Add a new class as follows:*

#### **8.5 CLASS S4D/p PROGRAMMED FLIGHTS COMPETITION**

##### **8.5.1 DEFINITION**

Programmed flights competition introduces in free flight boost-glider competition new technologies like on board cameras and programming devices. The goal of competition is to perform automatically some flight tasks and at the same time to monitor flight of all models in the air on monitoring screens and so make this event attractive to public and media.

##### **8.5.2 PRINCIPLE OF COMPETITION**

Competition of program flights shall be organized in subclasses D and consists of three flights. The flight No 1 is a duration competition flight. Flights 2 and 3 are flights on an assigned route over three belts 1000 m wide. Belt No 1 is distant 700 meters and is 100 meters long, Belt No 2 is distant 600 m and is 100 m wide and Belt No 3 is distant 400 m and long m wide. Belts are located in relation to the wind direction.

These belts are drawn on a Google map on the screen of computer and is oriented depending on the wind direction. Modellers shall get tasks for flying over or in vicinity of some markers and to land in a particular area.

##### **8.5.3 PROGRAMMING AND TRACKING DEVICES**

There is a number of small, light commercially available programming devices, GPS loggers and trackers at very competitive prices including also small, light photo or TV cameras that allow real time recording of flight. They shall be used as onboard equipment.

##### **8.5.4 SCORING**

Points for flight No 1 are points for a duration flight up to 360 seconds.

Points for 2nd and 3rd flight shall be awarded as follows: Models which land in Belt No 1 shall be awarded with additional 60 points, those which land in Belt No 2 shall get bonus of 30 points and those in belt No 3 – 10 point. No additional points for those that land out of belts.

Models shall get also 0 to 10 additional points for appearance.

Individual result for second and the third flight is  $B = \text{flight time points} + \text{bonus for landing in a belt} + \text{points for appearance}$ .

Overall points of an individual competitor are  $B_t = B_1 + B$  (better score of 2nd and 3rd flight).

*cont/...*



**Team points are obtained as a sum of results of team members.**

#### **8.5.5 MONITORING OF FLIGHTS**

**Position of all competition models shall be observed on the video beam screen during flights and shall be registered on a PC. All this shall be available to public and media.**

Reason: It is necessary to introduce new technologies in space modelling especially in free flight boost gliders. This class can become very interested for public and media and in further phases of development of this class competitions at night or low visibility shall be possible.

### **S7 Scale Class**

r) **9.11.2 and Annex 1 (Scale Space Models Judge's Guide)**

**Yes**

**USA**

*Technical Secretary's Note: the submitted proposal referring to Annex 1 did not contain the text to be deleted, this was corrected by the Technical Secretary.*

*Amend the paragraph and Annex 1 as follows:*

9.11.2. Adherence to scale: 200 points maximum. To be considered as a scale model, the dimensions of the body diameter; **and** overall length; ~~nose cone length and one selected dimension mm should~~ shall not depart from scale by more than 10% or else the model is disqualified. This rule shall not be applied to dimensions less than 10 mm. The judging category should be judged in two areas: 1) ~~nose cone and bodies of each of up to three stages~~ model dimensions - **150**points maximum; 2) colour and markings - **50**points maximum. ~~This rule shall not be applied to dimensions less than 10 mm.~~

See Annex 1 overleaf.

# Annex 1

FAI CATEGORY	SUB- CATEGORY	JUDGING CONSIDERATIONS	POINTS
Scale Adherence	<b><u>Colours</u></b>	Comparing the entry to colour photographs, paint samples, or other colour substantiation, to what degree does the entry's colour(s) resemble that prototype's colour?	(0- <b>25</b> ) _____
	<b><u>Markings (lettering &amp; insignia)</u></b>	Comparing the entry to photographs, marking diagrams, or other marking substantiation, to what degree to the entry's markings resemble the prototype's markings?	(0- <b>25</b> ) _____
	<b><u>Overall Model Dimensions Configuration</u></b>	Overall model length	(0- <b>25</b> ) _____
		Nose cone length	(0- <b>25</b> ) _____
		Greatest <b>body</b> diameter	(0- <b>25</b> ) _____
		One selected dimension greater than 10mm	(0-20) _____
		<b><u>Length of first stage</u></b>	(0- <b>25</b> ) _____
		<b><u>Fin span (individual fin, or tip-to-tip) *</u></b>	(0- <b>25</b> ) _____
		<b><u>Selected dimension greater than 10 mm (second stage length, diameter, etc.)</u></b>	(0- <b>25</b> ) _____
	Second Stage	Second stage length	(0-20) _____
		Second stage diameter	(0-20) _____
	Third stage	Third stage length	(0-20) _____
		Third stage diameter	(0-20) _____
<b><u>Award points shall be based on a % deviation from the prototype's scaled dimensions. Each 1% error reduces the value by 2 points. Deviation &gt; 10% shall be awarded a value of 0.</u></b>			
<b><u>* If prototype is finless, select one other dimension greater than 10 mm and check here ( )</u></b>			
Category Total (200 Max)			
Note: A difference of 1% reduces 2 points for every measured item			

## Reason:

- The changes to Rule 9.11.2 are to be consistent with changes made to Annex 1.
- The primary change to Annex 1 is to change the dimensions that are measured. 2013 rule changes require that measurements include the length and diameter of stages 1, 2, and 3. However, many scale model prototypes do not have a 3<sup>rd</sup> stage. Several historic and modern prototypes have a 3<sup>rd</sup> stage that is within a payload fairing and therefore inaccessible for measurement. Under the 2013 rules, a model receives a zero score for absent stages or inaccessible measurements. This is not a good judging scheme. Models without a 2<sup>nd</sup> or 3<sup>rd</sup> stage might be less difficult, but that does not make the model less accurate. Any effect on difficulty should be included in the Degree of Difficulty score, not Adherence to Scale.
- The new dimensional accuracy measurements retain several measurements used in the 2013 (and prior) rules. Additional measurements are specified that can be used with single stage or multi-stage models.

- The quantity of measurements is reduced from 8 (in the 2013 rules) to 6. This provides sufficient measurements to determine the accuracy of the model while expediting the measurement process.
- Points per measurement and the points for colour and markings are slightly adjusted to maintain a total of 200 points for the “Adherence to Scale” category.

Supporting data: The Nike-Hercules models were entered at the 2013 European Spacemodelling Championships. Under the 2013 rules, these models would lose 40 points of accuracy since the Nike Hercules prototype does not have a 3<sup>rd</sup> stage. As noted above, not having a 3<sup>rd</sup> stage might affect the Degree of Difficulty, but it does not make the model less accurate.

## S8 Rocket Glider Duration Class

### s) 11.2 Purpose



USA

*Amend the text as follows:*

#### 11.2 PURPOSE

The purpose of this competition is to achieve the longest flight duration time in combination with a landing of any part of the model within a given landing area of 20 by 20 metres ~~which adds one minute to the flight time. The model shall be timed from the instant of first motion on the launcher until the instant it touches the ground.~~

Reason: This will be a consequential change if proposal t) “11.4 Timing and Classification”, below, is approved.

### t) 11.4 Timing and Classification



USA

*Number the 1st paragraph, move the 2nd paragraph to the end of the new text and number it 11.4.5 and add new paragraphs 11.4.2 – 11.4.4 as follows:*

**11.4.1** Timing and Classification Rules 4.8 will be used for this competition.

**11.4.2** The model shall be timed from the instant of first motion on the launcher until the instant it touches the ground.

**11.4.3** One point will be awarded for each full second of flight time up to the class maximum listed in rule 11.6.

**11.4.4** 60 additional points will be awarded if any part of the model lands within the 20 by 20 metres landing zone. During landing, if the model hits the pilot or their helper, or the pilot stops the model, no additional points will be awarded for landing.

**For each flight, the total score is compiled by adding points from flight time and additional points for landing.**

**11.4.5** For the fly-off in classes S8E and S8F the jury shall determine the maximum time of flight (but not exceeding 30 minutes) for a round according to the meteorological conditions and the character of the flying site. The maximum must be announced before the start of the round.

Reason: We support the 2012 rule change for having junior pilots demonstrate piloting skill and rewarding their ability to land in a designated area. However, the original wording specified that the bonus would be awarded as additional flight time. This creates a conflict between the bonus flight time and the maximum flight time

specified in Rule 11.6.

We believe that the logical intent of the landing bonus was to add the bonus points to the flight time. This was done at the 2013 European Spacemodelling Championships for the Junior S8D event (discussed further below).

This proposal clarifies the rules for S8 to bring the wording of the rules in line with the intent of the bonus and the current interpretation.

Supporting data: Results for Junior S8D at the 2013 European Spacemodelling Championships are listed below. Several of the flights exceed the flight maximum time of 360 seconds. It's clear that the landing bonus rule was being interpreted as 360 seconds max (per Rule 11.6) plus 60 points for a good landing.

Nr	Start Nr	Surname , Name	FAI licence	Country code	1st flight	2nd flight	3rd flight	1st fly-off	Total	Place
	129	SHIROBOKOV, ALEKSANDR	03098	RUS	420	290	310		1020	1
	101	BRATOEV, SLAV	00647	BUL	420	249	313		982	2
	135	STROKOV, KIRILL	01215	RUS	228	191	420		839	3
	152	MUKHA, ROMAN	UKR-S-893	UKR	229	347	217		793	4
	114	DYBA, MATEUSZ	POL6694	POL	215	282	243		740	5
	118	PIASECKI, MACIEJ	POL6994	POL	304	230	202		736	6
	148	TARAN, ROMAN	UKR-S-631	UKR	204	247	260		711	7
	155	AVRAMOV, STOIL	986170	USA	179	105	420		704	
	153	SHAKO, OLEKSII	UKR-S-729	UKR	161	201	335		697	8
	130	KASHKIN, ANDREY	02630	RUS	266	189	234		689	9
	157	STENBERG, ALYSSA		USA	286	DQ	395		681	
	111	TOTEV, MLADEN	02540	BUL	171	285	167		623	10
	112	KARAIVANOV, SVETOZAR	02512	BUL	189	96	241		526	11
	117	NIEBIELSKI, MATEUSZ	POL6693	POL	263	87	144		494	12
	138	KATANIC, VESNA	S-472	SRB	83	146	117		346	13
	158	STENBERG, ZACKARY		USA	DQ	202	DQ		202	
	140	CIPIC, MIODRAG	S-400	SRB					0	14

#### u) 11.6. Sub-Classes

**Yes** Serbia

*Amend the table as follows:*

CLASS	TOTAL IMPULSE (Newton-seconds)	MIN*	MAX WEIGHT (g)	MINIMUM WING SPAN (mm)	MAXIMUM FLIGHT TIME (sec)
S8A	0,00 - 2,50	20	60	<u>500</u>	180
S8B	2,51 - 5,00	30	90	<del>650</del> <u>700</u>	240
S8C	5,01 - 10,00	40	120	<del>800</del> <u>900</u>	300
S8D & S8D/P	10,01 - 20,00	100	300	<del>950</del> <u>1100</u>	360
S8E & S8E/P	20,01 - 40,00	100	300	<del>1100</del> <u>1300</u>	360
S8F	40,01 - 80,00	170	500	<del>1250</del> <u>1500</u>	360

Reason: RC S8E/P flyers were asking several years decrease of total impulse of the engine to D engine but to preserve dimensions (wing span) of the models. A benefit shall be cheaper engines, more possibility for better training, smaller flight altitudes that requires better pilots' skills. Also wing spans in other classes are increased with general recommendation for bigger models.\* (P) Introduced are minimum weights as well as for all other subclasses.

v) **11.7 Class S8E/P**



Serbia

*Amend the engine size in the title and 2nd paragraph as follows:*

11.7. CLASS S8E/P **S8D/P** .....

11.7.2. SPECIFICATIONS

The competition has only one subclass determined for models which comply with subclass S8E**S8D**. Total impulse of engine(s) 20,01 to 40,00 **10,01-20,00 and a wing span of 1100 mm** is allowed.

Reason: There is a proposal from S8E/P flyers for several years to decrease total impulse of the engine from 20,01-40,00 Ns (E class) to 10,01-20,00 Ns (D class) but to preserve dimensions (wing span of 1100 mm) of models. So, models shall fly not so high but pilots should be very good trained to achieve high performances. D engines are also remarkably cheaper than E engines so with the same amount of money much better flying abilities shall be achieved.

**S8 New Class**

w) **S8/F/P RC Triathlon Tournament**



Serbia

**11.9.1 Definition**

**RC Triathlon tournament is a complex class that combines different flying skills: precision time – precision landing, aerobatics and duration flights. Classification is determined by a normalisation formula.**

**11.9.2 Principle of Competition**

**There will be three flights:**

- a) First out of three flights is – precise landing on defined spot in a target time as in existing class S8D/P.**
- b) The second flight contains a set of glider's aerobatic figures to be performed in 360 seconds. It can be flown with E engine because of height needed to complete the whole set of aerobatic figures.**
- c) The third flight is a S8D duration flight with target time of 360 seconds. Time over the target time shall be awarded with bonus points depending on placings of competitors.**
- d) Points from 0 to 10 for appearance would be awarded at model processing by a SM Scale Judge.**

**11.9.2 Scoring**

**a) First out of three flights shall be scored as for S8D/P (See rule 11.7.4.8).**

**b) Aerobatic set of figures shall be evaluated as:**

- stall turn (0 - 100 pts),**
- chandelle (0 - 90 pts),**
- rolling turn (0 - 70 pts),**
- inside loop with spin (0 - 60 pts),**
- inverted flight with spin (0-50),**
- outside loop (0 - 40 pts),**

*cont/...*

**spin (0 - 30 pts).**

**three consecutive sharp turns (0 - 20 pts)**

**Total for set of aerobatic figures: 0 - 460.**

*Note: The set of aerobatic figures is selected from the Handbook of Glider Aerobatics by Peter Mallinson and Michael Woollard,, Air Life Publishing Ltd, UK, 1999.*

**c) In the third flight the best flyer shall get bonus of 100 pts and the last of 0 pts. These points shall be uniformly distributed to those who flew over 360 seconds. The score in the third flight shall be the flight time + bonus points.**

**d) Score of individuals shall be sum of points of all three flights normalized by formula:**

**The winner of a particular flight in the relating group receives a score of 1000 points. Other competitors receive points as follows:**

$$P_c = \frac{1000 \times R_c}{R_w}$$

**where  $P_c$  = points of the competitor**

**$R_w$  = result of the winner in the relating group**

**$R_c$  = result of the competitor**

**e) Score of a team shall be sum of points of its team members**

### **11.9.3 Organisation of competition**

**Organisation of duration flights and duration and landing precision is the same as for S8D and S8D/P. Aerobatic flights shall be flown in different zones – several flights at a time and will be judged by ground officials who will have sketches of sets of figure and are trained for such evaluation. Flight zones shall be specially distributed so to ensure required safety of models, persons and property on the ground.**

Reason: This class should show ultimate skills of RC spacemodellers and to attract attention of public and media.

## **S12P Time Duration Triathlon Tournament**

**x) 12.6.5. Sub-Classes**

**Yes**

**Serbia**

*Amend and expand the table as follows:*

~~Sub-classes for this competition are defined by rule 12.5.~~

<b>CLASS</b>	<b>TOTAL IMPULSE</b>	<b>MAXIMUM WEIGHT</b>	<b>MAXIMUM FLIGHT TIME (sec)</b>
	<b>(Newton-seconds)</b>	<b>(g)</b>	
<b>S12A/P</b>	<b>0,00 - 2,50</b>	<b>60</b>	<b>180</b>
<b>S12B/P</b>	<b>2,51 - 5,00</b>	<b>90</b>	<b>240</b>
<b>S12C/P</b>	<b>5,01 - 10,00</b>	<b>150</b>	<b>300</b>
<b>S12D/P</b>	<b>10,01 - 20,00</b>	<b>200</b>	<b>360</b>



## ANNEX 2

### y) 3. General Judging Criteria

**Yes**

Serbia

*Amend paragraph d) as follows:*

d. Unsafe Recovery. Crashes and other unsafe recoveries cannot be qualified. What constitutes an unsafe recovery? The rules state it is one that creates a hazard to property or people. For consistency let us ask ourselves if we would like to be under the rocket we are judging when it lands. If the answer is “no” then a disqualification is called for especially during payload flights where no minimum size parachute is required. **In case of scale models unsafe recovery is when a recovery device (parachute or streamer) of a substantial part, which are nose cone, any of the stages or boosters does not deploy and can make hazard for men or property on the ground. If a streamer or a parachute of a smaller and insignificant part does not properly work this is not a Reason for disqualification than for reduction of points for recovery devices in flight characteristics.**

Reason: Scale models are very sophisticated and very expensive models with a lot of parts that separate in flight. Some of them are significant for flight but some of them contribute only to a general impression and are treated as “special effects”. Some RSOs declare DQ whenever a small, insignificant streamer does not fully unfurl, which is a great harm for sportsman and finally also for the contest. So a precise criterion must be defined by the rules.

### z) 3. General Judging Criteria (2)

**Yes**

Serbia

*Delete paragraph e).*

~~**e. Engine Ejection.** No engines can be ejected—even if they have attached streamers or parachutes, except for boost gliders. All engines have to descend within an airframe that provides for safe recovery. Exception: Boost glider models may eject pods or engines if they have a streamer or parachute. (See below for minimum sizes)~~

Reason: In earlier editions of the SM rules there was a possibility in conjunction with paragraph 2.4.2 to eject engines of a boost-glider in so called engine pod. It is not possible any more, so this explanation in Annex 2.3.e is obsolete and should be deleted.

***Item 16 Election of Bureau Officers and Subcommittee Chairmen begins overleaf.***