



BULLETIN No 1

2010 FAI WORLD CHAMPIONSHIPS FOR SPACE MODELS

- Seniors and Juniors –

(18th World Spacemodelling Championships for seniors) (9th World Spacemodelling Championships for juniors)

August 21st - 28th 2010. – Irig, Serbia



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August 21st- 28th 2010. – Irig, Serbia

ORGANIZERS AERONAUTICAL UNION OF SERBIA,

Uzun Mirkova 4/1, Belgrade

and

MODELLING CLUB «SIRMIUM»

Ticanova 30, 22000 Sremska Mitrovica, Serbia Phone/Fax: ++381-22-631-273 E-mail: office@mksirmium.com Web: www.mksirmium.com

Director of the Championship: General manager of the Championship: Dragana Spasojevic Secretary of Championship: Sports director:

Andrija Ducak Ivana Gvoka **Vladimir Pauljev**

HOSTING TOWNSHIP - IRIG

Irig is one of the largest colonies on southern side of Fruska Gora and it is, also, residence of the same named community. It reposes on very important traffic artery, which springs, from Novi Sad and over Iriski Venac and middle part on southern side of Fruska Gora align to Ruma. From this main road detaches local road that connects row of villages on side of Fruska Gora.

Irig is 62 km away from Belgrade, 24 km away from Novi Sad and 10 km away from Ruma.

Contact: www.irig.org.yu, www.turorgirig.org.yu



VENUE The contest site is located in Jazak at the crossing of the roads Ruma – Veliki Radinci and Jazak- Vrdnik





DATES World Championship will be held from August 21st - 28th 2010.

PRELIMINARY SCHEDULE

August 21st 2010. – SATURDAY

- 1st day - Hotel «TERMAL» Vrdnik - arrival of participants, accommodation, registration -, turn-in of S5 and S7, engine testing, TM meeting August 22nd 2010.- SUNDAY

-2nd day - engine testing, official training, the World Championship opening ceremony

August 23th 2010. – MONDAY

- 3rd day – Contest flights – S6, S4 Juniors and Seniors

August 24th 2010. – TUESDAY - 4th day - Contest flights – S1, S9 Juniors and Seniors

August 25th 2010. – WEDNESDAY - 5th day - Contest flights – S5, S3 - Juniors and Seniors

August 26th 2010. – THURSDAY

- 6th day - Contest flights - S7, S8 - Juniors and Seniors

August 27th 2010. – FRIDAY - 7th day – Reserve day, banquet, closing ceremony

August 28th 2010. – SATURDAY

- Departure of participants after breakfast



OFFICIALS: FAI JURY

Jury President	Srdjan PELAGIC	Serbia
Jury Member	Gerhard WOEBBEKING	Germany
Jury Member	Tadeusz KASPRZYCKI	Poland
Reserve	Joze CUDEN	Slovenia
Reserve	Lubomir JUREK	Slovakia

FAI SCALE JUDGES S5/S7

Chief Judge	Oleg HOROSH	Russia Slovakia			
Judge	Stuart LODGE	United Kingdom			
Judge	Nikola CIJETINCANIN	Romania Serbia			
Reserve Reserve	Jiry KASPAR Arnis BACA	Czech Republic Latvia			
<u>Dimension Measuring</u> Team Chief	Jiry KASPAR	Czech Republic			
RANGE SAFETY OFFICERS (RSO)					

Marjan CUDEN

For seniors

For juniors

Georgi GEORGIEVSKI Macedonia Slovenia

COMPETITION CLASSES AND RULES

The contest will be conducted according to the FAI Sporting Code, Section 4, Volume ABR and Volume Space Models, Edition January 1st 2010.

WORLD CHAMPIONSHIPS CLASSES:

- SENIORS: S1-B, S3-A, S4-A, S5-C, S6-A, S7, S8-E/P, S9-A, Team / Individual classification

- JUNIORS: S1-A, S3-A, S4-A, S5-B, S6-A, S7, S8-D, S9-A, Team / Individual classification

Altitude in all altitude classes shall be measured by electronic altimeters in accordance with the FAI Sporting Code, Section 4, Volume ABR, paragraph B.12 and Volume Space Models, paragraph 4.9.2.1. Local Rules for the Contest Process in Space Models Altitude Competition in Classes S1 and S5 are given in Annex 1 of this Bulletion No 1.

SPORTING LICENCES:

Competition is open for all space modellers with the FAI Sporting Licences valid for 2010.

Volume ABR, Section 4B, 2010 Edition, Effective January 1st 2010

B.3.2. Sporting Licences

a) Every competitor, team manager and assistant team manager entering an international contest must possess a valid Sporting Licence of the FAI. This Sporting Licence is issued by the NAC of the competitor, team manager or assistant team manager under the conditions of the General Section of the Sporting Code and must bear the national identification mark.

b) Organisers of any international competition must check FAI licences and must not permit entry to the competition to anyone who does not have a valid FAI licence.

c) Competitors who hold an FAI Sporting Licence issued directly by the FAI office enter as "FAI Applicants" and in entry and results list their nationality shall be shown as "FAI".



PARTICIPATION

National teams of each member of the FAI may enter with a team consisting of:

- Maximum 3 senior in each class,
- Maximum 3 junior in each class,
- One TM (for seniors),
- One TM (for juniors),
- One assistant TM accordingly for juniors and seniors,
- 2 timekeepers
- Official helpers,

- According to the FAI Sporting Code, Section 4, Volume ABR paragraph B.3.5. the reighning senior and junior World Champion has the right (subject to the approval of his NAC) to participate in the next World Championship in that category to defend his title, regardless whether he qualifies for the national team or not.

WORLD CHAMPION 2006.-2008.

SENIORS		JUNIORS			
S1-B	Vladimir MENSHIKOV	RUS	S1-A	Mirko KATANIC	SRB
S3-A	ZHANG LI	CHN	S3-A	JESUS MORAN	ESP
S4-A	GABRIEL CONSTANTINESCU	ROU	S4-A	JANKECH TOMAS	SVK
S5-C	Terao TAKUMA	JPN	S5-B	Elena JAKOVNINA	RUS
S6-A	JONAS BUECHL	GER	S6-A	MARKO DJURKOVIC	SRB
S7	Aleksandr LEVYKH	RUS	S7	Aleksandr LASHKO	UKR
S8-E/P	MATUSKA PETER	SVK	S8-D	GUO ZHAOFENG	CHN
S9-A	MAKSIM TIMOFEJEV	LTU	S9-A	CONTASTINESCU MIHAI	ROU
17 th WSMCH – Leida (SPAIN) 2008.			16 th WSMCH- Bajkonur (RUSSIA) 2006.		

AGE OF JUNIOR COMPETITORS AND THEIR HELPERS

Volume ABR, Section 4B, 2010 Edition, Effective January 1st 2010

B.3.4. Age Classification for the Contest

A competitor is considered to be a junior up to and including the calendar year in which he attains the age of 18. All other competitors are classed as Seniors.

a) At these Junior Championships, all competitors and all helpers, team members, mechanics and assistants must all be juniors.

c) Any Junior Continental Champion who will be too old to defend his title at the next World or Continental Championships for Juniors is entitled to fly in one World or Continental Championship for Seniors, in the appropriate class.

ENTRY FEES

- 350 Euro Senior competitor/ Team Managers or TM assistant
- 250 Euro Junior competitor
- 70 Euro Supporter, helper
- 33 Euro Banquet

Entry fee covers the cost of: participation card in World Championship, informative materials, souvenirs, local transportation between hotels and site during competition days, sport trophies.

Entry fee payments April 1st to 30th 2010.



Date of payment	Benefit Fine	
February	- 10 %	/
March	- 5 %	/
April	-	-
May	/	+ 5 %
June, July	/	+ 10 %
On site	/	+ 50 %

PRELIMINARY ENTRIES

To be received by 1st February 2010.

ACCOMMODATION

- 1 Hotel "TERMAL" Vrdnik for 250 + 60 contestants+ camp
- 2 Hotel for students in Sremska Mitrovica for 90 contestants
- 3 Restaurant "MINES" for 30-50 contestants

<u>- 1 –</u>

1.1. Hotel «TERMAL» at Vrdnik (14 km from contest site) for 250 competitors and members of delegations.

Vrdnik Spa is located in the middle region of Srem, at the foot of Mount Fruska Gora, and is part of the Fruska Gora National Park, at 210 m above sea level. It has a moderate continental climate with warm, sunny days. Because of its excellent exposition, Vrdnik has 2200 hours of sun per year. Thermal water with a temperature constant 32.5 degrees Celsius, which classifies it into hypothermal waters, with a wide spectre of influences on the human organism.

Hotel is 74 km away from Belgrade, 24 km away from Novi Sad.





1.2. Hotel object is 100 metres from main hotel (behind the open pool and parking space-camp) – 20 rooms with 3 beds. Every room has a toilette. Breakfast and dinner are included.

1.3. Camp on the field by the open pool. Breakfast and dinner are included in hotel. For camping it is necessary to bring own tents.

NOTE: Accommodation reservation, until June 1st 2010. and payment after receiving the bill.

<u>-2</u>- Hotel for students in Sremska Mitrovica. There are rooms with 2 and 3 beds, with bathroom. Breakfast and dinner are included.

NOTE: Accommodation reservation, until April 1st 2010. and payment after receiving the bill.

<u>-3</u> Restaurant "MINES" Vrdnik. Accommodation is in private houses, breakfast and dinner are in restaurant "MINES".

NOTE: Accommodation reservation, until May 1st 2010. and payment after receiving the bill.

PRICES:

Accommodation with half day boarding (breakfast and dinner)

- 1.1. Rooms with 3 beds: <u>31 Euros / day / participant</u> Rooms with 2 beds: <u>35 Euros / day / participant</u> Rooms with 1 bed: <u>41 Euros / day / participant</u>
- 1.2. Rooms with 3 beds: 22 Euros / day / participant
- 1.3. Camp 10 Euros / day / participant

This price includes free entry to open and closed swimming pools and fitness room.

- Hotel for students in Sremska Mitrovica for 90 contestants <u>25 Euros / day /</u> participant
- 3. Restaurant "MINES" Vrdnik- for 30-50 contestants 23 Euros / day / participant

<u>LUNCH</u>

Lunch at the competition site: 7 Euros per meal.

REGISTRATION

Final entry forms should not be sent later than April 30th 2010., accompanied with payment of the full entry fee.

LOCAL TRANSPORTATION

The organizer shall provide transport between hotels and the contest site during competition. Local transportation should be arranged according to the daily competition program and shall be announced on the first day of competition at the first Team Managers meeting.



CLASSIFICATION AND AWARDS

Individual and team winners will be awarded with FAI medals and diplomas and cups of the Organizers. Also special awards of the sponsors are expected.

WEATHER CONDITIONS

In this time of year prevails sunny and stable weather with minimal chances for rainfall. The average daily temperatures are 25-35 C.

ANTI-DOPING

If a competitor has to take any of the substances listed on the WADA Prohibited list for a medical condition, then he must have a Therapeutic Use Exemption from the FAI.



AERONAUTICAL UNION OF SERBIA MODELING CLUB "SIRMIUM" SREMSKA MITROVICA (SERBIA)

FAI WORLD SPACE MODELS CHAMPIONSHIPS 2010 FOR SENIORS AND JUNIORS

LOCAL RULES

FOR THE CONTEST PROCESS IN SPACE MODELS ALTITUDE COMPETITION IN CLASSES S1 AND S5

(ANNEX 1 TO THE BULLETIN NO 1. FOR THE FAI WORLD SPACE MODELS CHAMPIONSHIPS 2010)

repared in conjunction with work by experts, for electronic altimeters application in altitude classes S1 and S5 contests, of National Association of Rocketry – NAR (USA)

These rules are prepared in compliance with the FAI Sporting Code, Part 4, Volume ABR par. B.5.2 by experts for electronic altimeters application in altitude classes contests of National Association of Rocketry – NAR (USA) based on eight year of competition experience represented by about 10.000 successfull flights. Contests in altitude classes with electronic altimeters were held successfully also in Poland, Romania, Slovenia, Serbia and Great Britain since 2007. These rules are recommended by the CIAM Space Models Subcommittee for application in the FAI World Space Models Championships 2010 to be held from 21 to 28 August, 2010 in Irig (Serbia) as clarification of the FAI SC4 Vol SM par. 4.9.2.1. on safety matters and are being submitted to the CIAM Bureau for approval to be used in these Championships.

INTRODUCTION

Altitude spacemodelling classes are among the oldest competition classes and have been flown for almost 50 years. Altitude measurements began with very simple, hand-made devices with two rules and a protractor. Later military artilery theodolites TZK were used, particularly in East European countries. Recently these instrument have become unavailable, except in Slovakia, and now sophisticated surveying theodolites are used. However, they proved unsuitable for reliable tracking of flying objects, so reliability of tracking decreased from more than 90%, when old TZK were used, to 35% to 80% depending on weather conditions, position of sun, skill of tracking crew etc. This is not satisfactory for FAI Class 1 events. Also, with theodolites a long time is needed for pre-flight preparation for tracking and data reduction. Electronic altimeters, based on barometric air pressure change, have proved simple to use, reliable and accurate (errors of 1 to 2%) and with read-out of result immediately available after model's retrieval. Therefore it is necessary to transfer from triangulation to electronic method of altitude measurements.

ELECTRONIC ALTITUDE MEASUREMENTS BASICS

The density of air varies with pressure and the altitude above sea level. Mean absolute pressure at sea level is approx 760 mm Hg (101.325 kPa) with a variation of about +/- 5%. This figure is defined at 0 ^oC and is the so called STP (Standard Temperature and Pressure). Both temperature and altitude affect barometric pressure. In rough terms the air pressure decreases 1% for each 100 meters due the elevation increase. An electronic sensor converts this change of air pressure into an electric signal that is memorized in the altimeter's memory and read after retrieval of the model. There are simple devices that give the result by light flashes or by audio signals and more sophisticated ones that need special software and laptop to read the result. These sophisticated ones can memorize more detailed data on competitors and more flights with numerical presentation of data and graphical presentation of model's trajectory. In both cases read-out of result is in terms of seconds.



ELECTRONIC ALTIMETERS TO BE USED IN ALTITUDE CONTESTS AND AUXILIARY EQUIPMENT

Electronic Altimeters to be used in Altitude Contests shall fullfil the following conditions:

- 1. They must fully comply with technical specifications for the electronic altimeters specified in the FAI Sporting Code, Part 4, Volume SM, par. 4.9.2.1.
- 2. All altimeters to be used in an altitude contest shall be of the same type and delivered by the same producer after the organiser has tendered offers from more than one producer and selected the best offer.
- 3. They shall be produced by and purchased from a qualified producer of electronic altimeters, preferably carrying a certificate of the NAC of the manufacturer's country.
- 4. Each altimeter shall have an internal code that represents its serial number. Whenever the altimeter is powered-off and then on, with its reset button depressed, it will output its serial number.
- 5. The altimeters shall be based on modern electronic technology and as small and light as possible. It shall weigh less than 8 grams packed, including battery. The altimeter dimensions should allow installation into a housing that has minimum dimensions of 11 mm diameter by 50 mm long. The altimeter housing must form an integral part of the model design.
- 6. All electronic altimeters to be used in Altitude Contests at FAI 1st class events shall be calibrated at producer's premises and shall have the calibration certificates, with serial numbers, of all delivered devices. They will also be re-calibrated after receipt by the contest organizer and all devices that deviate from specified values shall be returned to the producer at his expense.
- 7. The altimeters shall be subjected to a recalibration test at the flying field. The producer is obliged to deliver a calibration tool that shall allow calibration of all altimeters simultaneously. Testing altitudes shall be 300 m, 600 m and 1200 m.
- 8. The producer shall also deliver detachable and rechargeable batteries as power supplies for altimeters of such capacity to be able to function for at least two hours before being re-charged.
- 9. The producer shall deliver sufficient number of chargers to re-charge a number of batteries equal or more than number of altimeters in use.
- 10. The producer is obliged to deliver precise written instructions for calibration, preparation of altimeters for flight, read-out and batteries and battery chargers in use. These instructions shall call the attention of the user to any matters of safety or reliability.

Overall equipment to be delivered for one altitude contest shall be:

- 1. Number of delivered altimeters shall be at least equal to the greatest number of registered competitors in altitude classes for that contest plus 25% extra as reserve altimeters.
- 2. Number of batteries delivered shall be two times the number of delivered altimeters.
- 3. Number of chargers shall be such to allow simultaneous charging of batteries for all altimeters in use.
- 4. One calibration tool shall be such as to allow simultaneous calibration of all altimeters in use.



ALTIMETER GUIDLINES AND COMPETITION TIPS

An altimeter must be mounted in a 'sealed' chamber with a vent or vents to outside. A sealed bulkhead below is necessary to avoid the vacuum caused by the aft end of a rocket or pressure pulses from the motor ejection charge. A sealed bulkhead above the altimeter chamber is necessary to avoid any pressure fluctuations that may be caused by the nose cone of the rocket. A vent (or a static port) to the outside of the rocket also must be in an area with no obstacles that may cause turbulent airflow. Vents must be neat and burr free and on an outside surface that is smooth and vertical and where the airflow is without turbulence. Multiple ports evenly spaced around the space model's tube may help to cancel effect of a strong ground wind. If multiple ports are used it should be three or four (never two). General guidline for one vent hole is 3mm in diameter (or equivalent area if multiple smaller holes are used). For space models in the FAI events, vent holes should be one to two body diameters below the junction of the nosecone and space model's body.

It is very important that the altimeter housing is properly positioned on the rocket and vented as explained above. The altimeter shall be fixed to avoid it rattling when in flight.

Also important:

- Avoid black as a color of the model because of increased heating of black surface by sun that may have an influence on electronics.
- Take care about ambient temperature and let the model cool if taken out of a hot place.
- Always use fresh, fully charged batteries.

FLYING FIELD PERSONNEL FOR ALTITUDE CONTESTS

Flying field personnel for Altitude Contests shall be similar to that in duration contests and shall consists of:

- Range Safety Officer and his deputy,
- Two launch site monitors (who can be time-keepers in duration classes) at each launch site,
- Four field monitors equaly distributed within the recovery area.
- Two Altimeter Controllers at Altimeter Management Station responsible for; impounded altimeters, distribution of altimeters, managing the control log and documenting altimeter check-out and check-in.
- Computer center personnel for recording results and posting results on the scoreboard.

THE CONTROL LOG

The control log shall have several sections.

- 1. The serial numbers and calibration data for each altimeter.
- 2. The serial number and competitor name/number to which the specific altimeter and fully charged battery is issued. The organizer's representative and the competitor must initial the log.
- 3. The log shall also record data when the specific altimeter is returned, by whom and in what condition also initialed by the organizers representative and the competitor.
- 4. The log should also contain documentation for each country competing in altitude events, the number of competitors that will be using altimeters and documentation of the funds deposited for the issuance of the altimeter.



While not secret information, the calibration logs should not be opened to public scrutiny or used in altimeter selection by the competitor.

The altimeters, logs and flight cards should be stored in a secure location when not in use. A locked box impounded and out of the direct sunlight.

The Contest Process

The contest process consists of the following steps:

A. Classical Electronic Altimeters

- The competitor shall take his/her model to the launch site. When ready, the competitor, with one of the launch site monitors, would go to the Altimeter Management station to check out an altimeter.
- The Organizer's representatives would document in the log the competitor's name, competition number and the serial number of the altimeter being checked out. The Organizer's representative would also complete a flight card for the competitor, including the serial number of the altimeter. (This is done by powering on the altimeter while pressing the reset button. The serial number will be displayed.) Both the log and the competitor's flight card must be initialed by the competitor and the organiser's representative.
- The altimeter and fully charged battery would then be issued to the launch site monitor. The competitor, the launch site monitor with altimeter, battery, and flight card would return to the launch site.
- At the launch site, the altimeter will be installed in the model, by the competitor. The model is then presented to the launch site monitor who will "make a mark" on the model verifying the altimeter is installed.
- The competitor is ready to fly.
- At the competitor's prerogative, in coordination with the RSO, the model will fly.
- The competitor will retrieve the model and return to the launch site. At that time the launch site monitors will verify their mark and that the altimeter has not been removed since the launch. The retrieval will be noted on the flight card.
- Should the competitor come upon his/her model in the recovery area and it is apparent the altimeter and/or model are in a condition that may present a concern that the model has been tampered with, the competitor should call for a review by a field monitor. If the field monitor can determine beyond any doubt the model has not been tampered with, the field monitor can escort the competitor and model to the flight lane. If there is any question in the mind of the field monitor, they can declare *track lost* (TL) and the competitor may fly the round again. *
- Should the competitor return to the launch site for inspection by the launch site monitor and there is question of whether the model has been tampered with the monitor can request a track lost from the Organizer.

* In most cases this issue will arise when it appears the "mark" made by the monitor has been tampered with in such a manner that suspicion is aroused. In all cases track lost must be established prior to taking the altitude reading from the model.

• If the competitor returns to the flight lane and the altimeter has malfunctioned, the flight will be declared a track lost and the competitor may fly the round again.



- The competitor will remove the altimeter from the model and present it to the launch site monitor. The launch site monitor will observe the altimeter output and document the result on the flight card. The competitor will also sign the flight verifying their agreement with the altimeter readout.
- The launch site monitor with the competitor will return the altimeter and flight card to the Altimeter Management Station. The Organizer's representatives will confirm the altitude, sign the flight card, power off the altimeter, press the reset button, power on the altimeter and read the serial number. It will be compared with the flight card and checked in. The altimeter log will be updated to indicate that the altimeter was returned. The battery will be sent to re-charge and the altimeter returned to the storage box for the next competitor.
- The flight card will be delivered to the Organizer and the monitor and competitor can return to the launch site.
- The flight is completed and the result shall be posted at the scoreboard immediately.

B. Advanced Second Generation Electronic Altimeters

- A competitor prepares his model for flight. He takes his engines from the launch site monitor and puts them in his model.
- When the model is ready for flight the competitor goes with one of the launch site monitors and his flight card to the Altimeter Management Station to obtain an altimeter and a battery.
- An altimeter is taken from a box, the competitor's data (his start number, country and his first and last names) is loaded into its memory and the serial number of the altimeter is recorded on the flight card.
- When the data is loaded, the altimeter and battery are fitted into the model's altimeter housing, secured and given to the competitor.
- The competitor is escorted, by the launch site monitor, to the launching site and puts his model on the launch pad.
- The launch site monitor informs the RSO about model's readiness for launch.
- The launch site monitor records exact time of take-off in the flight card and he watches the model during its flight and retrieval.
- When the model is retrieved the competitor reports to the launch site monitor, who records time of retrieval on the flight card and goes with the competitor, and his model, to the Altimeter Management Station to report the result.
- At the Altimeter Management Station the model is first checked to verify the altimeter housing has not been tampered with. The competitor then removes the altimeter from his model and passes it to one of the Altimeter Management controllers who connects it to a computer to read the peak altitude and other flight data.
- The Altimeter Management Station controller and launch site monitor compare the data from the starting card and altimeter's readings.
- If the data is correct the controller records the model flight data on the computer, saves it in computer memory and reads the altitude of the model.
- The altitude is written on the flight card and the result is reported to the results center to be recorded and posted at the scoreboard.



- Once the data is recorded, and confirmed by the signature of the competitor who agrees with the data, the controller resets the altimeter and puts it in a box with other altimeters.
- If the altimeter is damaged and/or is not able to give a proper result because of malfunction for any reasonable reason, the flight is registered as TL (track lost) and the competitor may re-fly.
- If a competitor does not return his model to control i.e. if model with altimeter is lost, he has the right, within 20 minutes from launch, to ask for TL and re-fly if there is enough time to perform a flight in the same round.

Depending on the number of competitors, available number of altimeters and other conditions, competitors can fly in; three rounds of approximately one hour; in groups, with working time of 15 minutes, until they complete three flights each; or in open time period of about three hours with three opportunities for every sportsman to perform three flights.

DEPOSIT

Every team shall submit, at registration, a deposit for each altimeter that will be issued. The deposit must be paid before the contest starts. The deposit shall be an amount of 1.5 to 2 times the cost the altimeters and batteries and shall be returned when the altimeters and batteries are returned. If an altimeter and battery is not returned, or is damaged, the deposit shall be retained. The exact amount of the deposit shall be announced before the beginning of the contest.

If all altimeters per team are lost, during a competition, a new deposit must be paid to allow the team to continue in the competition.

POST CONTEST ACTIVITIES

Based on the criteria established in the pre-contest organization the altimeters, chargers and batteries shall be sold or distributed.