

2000

WORLD SOLAR-CAR RALLYE

REGULATIONS

WORLD SOLAR-CAR RALLYE EXECUTIVE COMMITTEE

NOTICE

These are the English translation of the regulations of 2000 WORLD SOLAR-CAR RALLYE.

If there is a difference between the original described in Japanese and the English version regarding the interpretation of these regulations, the interpretation in the Japanese version shall apply.

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◆ WORLDSOLAR BICYCLE RACE ◆

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GENERAL PROVISIONS

GENERAL PROVISIONS

A.1 EVENT TITLE:

The event shall be known as the WORLD SOLAR-CAR RALLYE (W.S.R.).

A.2 OBJECT:

1. To promote the development and utilization of solar energy for transportation; to foster creativity and curiosity among younger members of society; to provide engineers with an opportunity to display their discoveries.
2. Primary theme: "Pursuing Clean Energy for the 21st Century"
3. Slogan: "Be one with the sun"

A.3 AUTHORITY:

The event shall be conducted under the auspices of the WORLD SOLAR-CAR RALLYE Organizing Committee, Chairman; Fumitoshi NOTO, Professor emeritus of Akita University. (hereinafter referred to as the Organizing Committee)

A.4 PROMOTER:

The event shall be promoted by the WORLD SOLAR-CAR RALLYE Executive Committee, Chairman; Hisahiro YAMAMOTO. (hereinafter referred to as the Executive Committee)

A.5 DATES:

WORLD SOLAR BICYCLE RACE:

July 22, 2000 : Speed Contest

July 23, 2000 : Marathon

July 24, 2000 : Preparatory day

WORLD SOLAR-CAR RALLYE:

July 28 - 30, 2000

A.6 LOCATION:

The event shall be held at the Ogata-mura Solar Sports Line in Akita Prefecture. The course is 31.256 km long and is sanctioned as a qualified course by International Solarcar Federation (ISF).

A.7 SPECIAL SUPPORTERS:

- * UNESCO
- * International Solarcar Federation

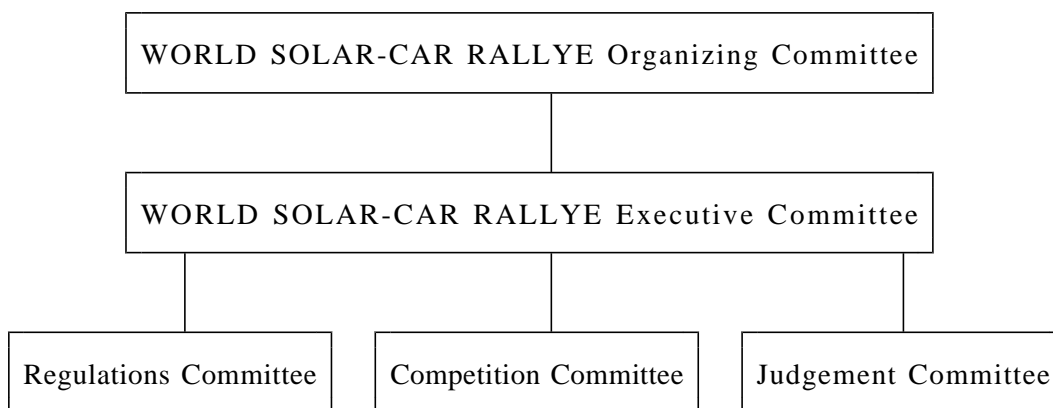
A.8 OFFICIAL SUPPORTERS:

- * The Ministry of International Trade and Industry
- * The Ministry of Home Affairs
- * The Ministry of Transport
- * The Environmental Agency
- * The Science and Technology Agency
- * The Ministry of Labor etc.

A.9 SPONSORS: (Undecided)

- * Companies and parties which approve the aims of the event

A.10 ORGANIZATION CHART:



A.11 OFFICIALS OF THE EVENT: (See the members list)

A.12 REFERENCE:

Secretariat for WORLD SOLAR-CAR RALLYE Executive Committee

c/o Solar Division

Ogata-mura Yakuba

1-1 Chuo Ogata-mura

Akita 010-0494

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WORLD SOLAR-CAR RALLYE

REGULATIONS

Chapter 1: ADMINISTRATION

A.1 PROGRAM:

May 31, 2000	Closing date for entry Closing date for submitting the data sheet of solar cells and batteries
July 25, 2000	Registration
July 26, 2000	Inspection
July 27, 2000	Time trial
July 28, 2000	9:00 - 17:00 1st day
July 29, 2000	8:00 - 17:00 2nd day
July 30, 2000	8:00 - 16:00 Final day

A.2 TITLE & NATURE:

1. The event shall be known as the WORLD SOLAR-CAR RALLYE (W.S.R., hereinafter referred to as the event).
2. The event shall be an international endurance rally of solar cars lasting approximately 25 hours over 3 days. Direct solar radiation received by the car is the only power source allowed.

A.3 AUTHORITY:

The event shall be conducted under the auspices of the WORLD SOLAR-CAR RALLYE Organizing Committee, Chairman; Fumitoshi NOTO, Professor emeritus of Akita University.

A.4 PROMOTER:

The event shall be promoted and organized by the WORLD SOLAR-CAR RALLYE Executive Committee, Chairman; Hisahiro YAMAMOTO.

A.5 DATES & LOCATION:

The event shall commence on July 28, 2000 and finish two days later at the Ogata-mura Solar Sports Line in Akita Prefecture. The course is 31.256 km long and is sanctioned as a qualified course by International Solarcar Federation (ISF).

A.6 FINANCIAL:

All currency in regulations is in Japanese Yen.

* Payable to: WORLD SOLAR-CAR RALLYE Organizing Committee

* Bank: Akita Bank, Ogata Branch Office

Address: 2-12 Chuo, Ogata-mura, Akita, JAPAN

* Account number: No. 79721 (ordinary deposit)

A.7 AMENDMENTS TO THE REGULATIONS:

The Executive Committee reserve the right to amend the regulations.

A.8 PROTEST:

1. Protests, if any, must be lodged in writing within one hour of incident.
2. The right to lodge protests is limited to the representative of each entrant.

3. The judgement will be delivered orally only to the party involved.
4. Any protest against a violation of the rules or unfair behavior during the race must be made within one hour after the finish of that day's competition.
5. Any protest against the race results must be made within 30 minutes after the publication of the provisional results.
6. In the case of delay of the judgement, the delivery can be deferred provided that the date and place of delivery are appointed.

A.9 JUDGES OF FACT:

Any officials or the Competition Committee shall be a judge of fact.

A.10 BRIEFING:

The briefing, the Executive Committee putting in operation, must be attended by the representative of each entrant and drivers.

A.11 VEHICLE IDENTIFICATION:

Numbers will be allocated to each entry.

A.12 IDENTIFICATION OF PERSONS:

Pit and designated area Entry ID will be issued to the pit crew and drivers.

A.13 OFFICIAL NOTICE:

Other matters not covered in these regulations will be announced publicly on the official notice or at the briefings.

Chapter 2: ENTRIES

A.14 ELIGIBILITY OF PARTICIPATION:

All entrants and their personnel shall undertake to know these regulations and agree to abide by these regulations. Teams shall consist of a registered team representative, drivers, pit crew, and other registered individuals.

A.15 VEHICLE CLASSES:

(1) Free Class: Unrestricted.

(2) Stock Class: Using standard solar panels and Pb/Acid (sealed) batteries. (See A.22, A.23)

Fresh Category: solar panel ... maximum power output 480 W

Pb/Acid batteries -marketable ... maximum weight 45 kg

(3) Junior Class: High school students in Stock Class. (Registration of entries by school name; registration of more than one instructor or teacher is required; at least half of the team members registered are students.)

Fresh Category: solar panel ... maximum power output 480 W

Pb/Acid batteries -marketable ... maximum weight 45 kg

* Two-seater Class: The vehicle must carry two persons. Solar power may be obtained from the surface of the entire car.

A.16 ELIGIBILITY OF TEAM REPRESENTATIVE & DRIVERS:

1. Every driver shall possess a Japanese or international driver's license. This requirement may be waived with the permission of the Executive Committee.

2. The number of drivers shall be at least two and not more than four. Only drivers can drive during competition hours. However, if the Executive Committee gives special approval, there can be a change of registered drivers.

The number of navigators in Two-seater Class shall be at least two and not more than four. The combination of driver and navigator is free.

3. No passenger must ride more than 18 hours in total. The first time a driver crosses the start/finish line after three hours of continuous driving, he/she must come into the pit for a driver change or for a 20-minute break.

Passengers shall consist of drivers in all classes and navigators in Two-seater Class.

4. A change of passengers during the race is limited to the registered passengers, and may take place only in the designated pit of each team.
5. A change of passengers may be ordered by the course officials even when the vehicle is on the course. In the above case, the replacement passenger must go to the place concerned either by a car provided by the Executive Committee or on foot.
6. The registered team representative shall be at least 20 years old. He/She shall assume responsibility for the conduct and behavior of his/her team members at all times. Members under the age of 20 must submit a written consent from the person with parental authority.

A.17 ENTRY APPLICATION TERM:

Entries open April 1, 2000 and close May 31, 2000.

A.18 CHANGE OF ENTRY DETAILS:

An entrant may change the specifications of the vehicle or members up to the scheduled time of inspection; battery specifications by June 30, 2000. No guarantee is given that changes will appear in printed lists.

A.19 DRIVER MASS:

1. The official mass of each driver shall be at least 80 kg including driving clothes. Ballast may be used to bring the weight to that level.
2. The total weight including the driver and navigator of each two-seater vehicle shall be at least 160 kg. Ballast may be used to bring the weight to that level.
3. Drivers must carry the ballast in the vehicle when driving.
4. The ballast of each driver shall be subject to being re-weighed during the race.

Chapter 3: ENTRY FEE

A.20 ENTRY FEE:

(1) Free Class (unrestricted)	100,000 Japanese yen
* Member of Japan Intercollege Solarcar Championship	90,000 Japanese yen
(2) Stock Class (restricted)	30,000 Japanese yen
* Member of Japan Intercollege Solarcar Championship	20,000 Japanese yen
(3) Junior Class (High school students in Stock Class)	30,000 Japanese yen

If an entry is withdrawn before the closing date of application (May 31, 2000), the entry fee will be refunded. Otherwise, the fee is nonrefundable.

Chapter 4: INSURANCE

A.21 PERSONAL ACCIDENT INSURANCE:

1. Each member has the responsibility to compensate injured parties for any loss caused by accidents of his/her own expense. Every member should acknowledge that the organizer, officials, committees or course administrators do not have the obligation to compensate victims of those accidents.
2. All members must be covered by the event's personal accident insurance, which must be purchased at their own expense.

Chapter 5: VEHICLE ELIGIBILITY & SPECIFICATIONS

A.22 POWER & SOLAR PANEL:

1. Solar radiation is the only power source that shall be used for propulsion.
2. Solar collectors may be constructed in any way. They shall fit inside a box of 4.44 m long \times 2.00 m wide \times 1.60 m high, and they must not exceed 8 sq. m of the Earth Surface. This range must not be exceeded while driving. (See A.15 for Two-seater Class)
3. The panels used for vehicles of Stock Class and Junior Class (See A.15) are restricted to ones put on the market by May 31, 2000. Specifications supplied by the manufacturer shall be treated as the certificate of the panel. Each team shall submit the data sheet of manufacturer, model and performance used in its vehicle by May 31, 2000.
4. The maximum total power output for Fresh Category of Stock and Junior Class shall be 480 W.
5. Entrants may not replace cells or modules for any reason other than in case of an accident or malfunction. These may be replaced for those of the same model and same manufacturer, with the approval of the Competition Committee only in case of an accident or malfunction.

A.23 BATTERIES:

1. The maximum total weight of batteries is as follows: (See A.15)
 - * The weight of battery packs is the maximum total weight for the component cells and/or modules. If the batteries are installed in a box or on sub frames, the weight of box or frame will be included.
 - (1) Free Class
 - 1) Ag/Zn and Developed battery system : 24 kg
 - 2) Pb/Acid (sealed) - marketable : 75 kg
 - 3) Ni/Zn : 45 kg
 - 4) Ni/Cd and Ni/Fe : 60 kg
 - 5) Ni/Mh : 43 kg
 - * In Using two or more types of batteries, the weight must conform to each conversion rate according to the utility rate.
e.g. Pb/Acid (50%); 37.5 kg + Ni/Zn (50%); 22.5 kg
 - (2) Stock Class
 - Pb/Acid (sealed) - marketable : 75 kg
 - Fresh Category : Pb/Acid (sealed) - marketable 45 kg
 - (3) Junior Class
 - The same standard of battery weight as for Stock Class
2. Batteries must be rechargeable.
3. Fuel cells and power packs are not allowed.

4. After the start of 1st day, batteries may be charged by the sun from sunrise to sunset, and by regenerated braking during competition hours.
5. The vehicle must travel along the entire course with the same make and number of batteries as are fitted at the start.
6. Batteries must be those which can be sealed in cases (no more than 10 cases).
7. Batteries must be installed on a vehicle by securely bolting the entire sealed case onto the chassis, and quick-release is not approved.
8. Charging of batteries from any other energy source and/or spare batteries will lead to exclusion.
9. The weight of a battery must be proved by the specifications issued by its manufacturer. Each team shall submit the data sheet of manufacturer, model and weight used in its vehicle by May 31, 2000.
10. Entrants may not replace battery packs for any reason other than in case of an accident or malfunction. Should the need arise, a vehicle's batteries may be exchanged with its previously registered spare batteries after obtaining the approval of the Competition Committee. A penalty will be incurred for a change of battery.
11. If a power condenser is used, the electric charge must be proved to be zero before the start of 1st day.
 - * The definition of "power condenser" in the event is different from that of ones used generally. "Power condenser" means the equipment which is judged to have big capacity and manage the drive system temporarily.
12. If a flywheel is used, it must be proved not to rotate before the starting time.

A.24 CUSTODY OF BATTERIES:

1. All registered and sealed batteries must be kept overnight in battery storehouses. (See A.48)
2. Batteries which have been registered as spare batteries shall be kept in the battery storehouses during the race period. (This shall not apply to teams which do not need spare batteries.)

A.25 VEHICLE STABILITY:

1. A vehicle travelling at its maximum speed must be able to run safely, without losing control, at normal wind speeds. If the Competition Committee deems a vehicle unsafe, the committee may disqualify it or order repairs be made to the vehicle.
2. Aerodynamic devices must be extended if requested.

A.26 VEHICLE SPECIFICATIONS:

The vehicle design and construction is free except for the following.

- (1) The vehicle must pass a stability test (A.25) and the inspection.
- (2) The following specifications are compulsory;
 - 1) The maximum size of the vehicle in motion shall be 6.0 m long by 2.0 m wide by 1.6 m high + 1% allowance. Minimum height is 1.0 m. When turning corners, wheels and wheel spats are permitted to exceed this envelope.
 - 2) Braking Test: Each vehicle shall be equipped with two or more brake systems which work separately. Vehicles must be able to stop from 30 km/h within 22m in distance. A hand brake must hold the vehicle stationary on an 8% incline.
 - 3) Visibility: The driver must have normal car type vision in all directions. All vehicles must have a rearview mirror and/or an electronic device. Minimum height for driver's eye point is 70 cm from the ground.
 - 4) Light and Horn:
 - Blake lights; Color red. Clearly visible from a distance of 30m.
 - Indicators; Color orange. 60 c/m - 120 c/m. Clearly visible from a distance of 30 m.

Hazard lights.

Horn; 90 phons or more.

The power for these lights and horn shall be admitted to use a battery of 12V3Ah wired separately from the main drive systems. This battery is rechargeable and replaceable during the race, and excluded from the battery weight stipulated in A.23.

The power supply for the on-board computer which are 100 Wh or less, and which may not be replaced during the race period, shall be excluded from the battery weight stipulated in A.23.

- 5) Communication equipment: When using radio communications equipment, teams shall observe all applicable laws. Any batteries used solely to power communications equipment shall not be considered as a part of the vehicle's battery weight as regulated A.23.
- 6) The driver must be protected from electrical shock hazards.
- 7) High voltage warning signs must be fitted if using in excess of 30 V.
- 8) All fast rotating bodies of the vehicle, e.g. driving chains, sprockets, gear, shafts etc., must be equipped with protective covers.
- 9) All vehicles must be equipped with seat belts fixed to vehicle at three or more points.
- 10) All vehicles must have a calibrated and functioning speedometer.
- 11) All vehicles must have a towing eye (painted in yellow, red or orange) rigidly fixed to the front frame of the vehicle.
- 12) All vehicles must have a manual fire extinguisher containing 2 lb (907g) or more of powder fire extinguish agent or halon gas.
- 13) No part of the vehicle may protrude into the cockpit in a dangerous manner.

A.27 VEHICLE DATA SHEETS:

Each team shall submit the manufacturer's specifications for the solar cells and batteries used in its vehicle by May 31, 2000.

Chapter 6: OFFICIAL VEHICLE INSPECTION

A.28 UNFAIR PRACTICES:

Disqualification will occur if during the race or at the inspection the Judgement Committee discover that an entrant has deliberately violated these regulations to gain unfair advantage over other entrants, or departed from the spirit of competition.

A.29 OFFICIAL VEHICLE INSPECTION:

1. All competing vehicles shall be required at the set time to undergo an inspection in a ready condition. Inspectors will examine the vehicles to ensure they conform with these regulations. Any vehicle that does not pass the official inspection shall not be allowed to participate in the event. However, this shall not apply if the Executive Committee has given special approval.
2. All competing vehicles will be placed in the pit area after inspection and during the race. Entrants may be subject to penalty when a request is made for a second inspection or when late for inspection.

A.30 DOCUMENTATIONS:

Drivers must hold a driver's license for driving on Japanese roads and other relevant documentations. However, this shall not apply if the Executive Committee has given special approval.

Chapter 7: COMPETITION

A.31 GENERAL SAFETY:

1. Drivers must drive only on the designated course during the inspection, the time trial and the race.
2. During the race, no other person except the registered drivers may drive a vehicle.
3. Under no circumstances should any vehicle drive in the opposite direction of the race or take a short-cut.
4. If any driver needs to stop his/her vehicle for any reason, the vehicle must be removed immediately from the course so as not to endanger or get in the way of other vehicles.
5. During the time trial and the race, all drivers must wear a helmet which has passed the official inspection and must fasten their seat belts at all times.
6. In case of overtaking, in principle, slower vehicles should run on the left side of the course (the driving lane), and faster vehicles should run on the right side of the course (the passing lane) and pass the slower ones. A vehicle being overtaken must give way.
7. Drivers must obey signs, such as those which indicate speed limit and prohibit passing, as if they were on a public road.

A.32 START:

1. At the start on the 1st day, vehicles shall start in the order determined by the results of the time trial. On the 2nd and final days, the start will be held in the same way on the 1st day, but the vehicles will leave in the order determined by the results of the previous day.
2. Each vehicle must arrive at the designated grid at least 15 minutes before the starting time, and wait to be confirmed by the official.
3. A vehicle which fails to arrive at the grid at least 15 minutes before the starting time for some reason, shall start at the end of the line in order of arrival.
4. A vehicle which fails to arrive at the grid for some reason, shall start from the pit, and be penalized.

A.33 TIME LIMIT:

1. The checkered flag shall be waved for all vehicles after 16:00 on the 1st and 2nd days of the race, and after 15:00 on the final day of the race. Vehicles may not enter a new lap after such time.
2. The exit of pit road shall be blocked at 16:00 on the 1st and 2nd days, and at 15:00 on the final day.
3. Races shall end at 17:00 on the 1st and 2nd days, and at 16:00 on the final day. A vehicle's official driving record shall be that which was recorded when that vehicle passed the final control line (which it had thus far completed).
4. Vehicles remaining on the course after the race has finished shall be penalized. (See A.39)
5. Ranking shall be decided in accordance with number of covered laps and overtime. If two or more vehicles have the same number of laps, the vehicle which took less time since the standard time (16:00 on the 1st and 2nd days, and 15:00 on the final day) shall be ranked higher. If total penalty time reaches 180 minutes, the vehicle shall be degraded to Penalty B, one lap shall be deducted from the number of covered laps.

A.34 SCHEDULE:

All vehicles shall be required to complete the full course as per instructions.

A.35 INSTRUCTIONS:

Entrants shall receive a copy of the route instructions at the time of entry. The final instructions will be given at the briefing on the previous day to the race.

A.36 CHANGES & ALTERATIONS OF THE COURSE:

1. All signs and instructions by the Competition Committee and course marshals must be observed.
2. The Competition Committee may change the course at any time.

A.37 RECORDS OF PERFORMANCE:

Details of the performance of a vehicle will be recorded by the officials.

A.38 TIMING:

No protests against timing will be allowed.

A.39 PUSHING, TOWING & CARRIAGE OF VEHICLES:

1. Competing vehicles may be hand pushed on and off the course only in an emergency.
2. The vehicle may be hand pushed from the finishing line to pit and/or from the pit to the starting line.
3. If the driver judges that a repair can not be made on the course, the vehicle may be carried to the pit by the cars which the Executive Committee prepares. (See A.43)
4. The vehicles which do not return by the stipulated time shall be penalized, and the vehicles which can not run on their own power shall be recovered by the Executive Committee. (See A.33)
5. No regenerative power system must be set in motion at this moment.

A.40 RETIREMENT FROM THE RACE:

A vehicle retiring must notify the Competition Committee in writing.

A.41 CONTROL POINTS:

1. Control points will be established along the course for press purposes and to examine the vehicles.
2. All vehicles will be required to stop and will be held for an equal time.

A.42 COURTESY:

It is requested that all vehicles shall be driven in a sensible and safe manner in order to avoid any hazardous road incidents.

Chapter 8: SERVICING

A.43 SERVICING:

1. The competing vehicles may be serviced in the pit.
2. Repairs on the course, except for at dangerous places such as a No Passing Zone, may be performed by the driver alone and only with the parts and tools equipped in the vehicle.
3. If it has been judged that it would be impossible for a driver to make a repair alone, or to make a repair with the tools he/she is carrying in the vehicle, if the driver or pit crew so requests, one of the members may come to a vehicle on the course, equipped with as many tools as that person can carry in his/her hands. However, in such a case, this member must travel to the vehicle in question by a car made available by the Executive Committee, and there shall be a penalty for this.
4. If a repair is impossible to make on the course, the vehicle may be carried to the pit by the Executive Committee, and there shall be a penalty for this. (See A.39)
5. The competing vehicles may never be removed from the course marshals' sight during the race.
6. A vehicle chassis which is of the basic structure may not be replaced.
7. If it is necessary to make repairs at night in a designated work area, approval for this must be obtained from the Competition Committee. (See A.48)

Chapter 9: COURSE MARSHALS

A.44 COURSE MARSHALS:

1. Course marshals are stationed on the course and various sections of the related facilities.
2. Course marshals will check and control the movement of the competing vehicles, drivers and pit crew in order to maintain safety. Course marshals may require a competing vehicle to stop because of dangerous driving.
3. Course marshals may not interpret the regulations or give advice.
4. Signals to the drivers during the race will be indicated with flags by course marshals.

Chapter 10: SIGNS ON VEHICLES

A.45 COMPULSORY SIGNS:

1. The Executive Committee shall supply signs carrying event and sponsor logos. These signs are to be located on the vehicles as directed.
2. The area for the signs on the vehicle needed is;
 - Front and rear; 100 mm × 200 mm event sign
 - Right and left side; 200 mm × 500 mm event sign
3. The vehicle number must be black on white, 200 mm × 200 mm on each side. (See A.11)

Chapter 11: ADVERTISING & PUBLICITY RIGHTS

A.46 ADVERTISING SIGNS:

1. Advertising signs are permitted on the vehicle.
2. Signs and lettering must not be of an offensive nature.

A.47 PUBLICITY RIGHTS:

By entering the event, all entrants associated with the event shall agree to the free use of their names and photographs in any publicity material that may be issued by the organizers, the event's principal sponsors and its associated companies.

Chapter 12: OVERNIGHT STOP

A.48 OVERNIGHT STOP:

All batteries which have been registered and sealed shall be kept overnight in battery storehouses. (See A.24)

Chapter 13: RESULTS

A.49 DETERMINATION OF WINNERS & FINISHERS:

As per these regulations, the vehicle that have completed the most laps will be First, Second and Third respectively. When two or more vehicles have completed the same number of laps, the team with the least amount of overtime points shall be ranked higher.

A.50 PROVISIONAL RESULTS:

Progress scores will be posted from time to time during the event. These results do not include all penalties and will not be accurate or final. They may not be used in advertising.

A.51 FINAL RESULTS:

Final results will become available by the Executive Committee when passed by the Competition Committee.

Chapter 14: OFFENSES, BREACHES & PENALTIES

A.52 APPLICATION OF PENALTY:

Teams alleged to have committed the following offenses shall be subject to such penalties as the Judgement Committee impose; (See Penalty List)

- (1) Misrepresentation
- (2) Violation of these regulations
- (3) Dangerous driving
- (4) Transferring a competing vehicle in a manner not stipulated in A.39
- (5) Failure to observe instructions by police or the officials
- (6) Obstructing an overtaking vehicle (See A.31)
- (7) Willful damage or interference to property
- (8) Failure to follow the route instructions (See A.35)
- (9) Failure to report damage to stock
- (10) Failure to stop at a control point (See A.41)
- (11) Exceeding the time limit (See A.33, A.39)
- (12) Exceeding any posted speed limit (See A.31)
- (13) Repair of maintenance of a competing vehicle (See A.22, A.23, A.43)

A.53 DISQUALIFICATION FROM THE EVENT:

Teams alleged to have committed the following offenses shall be disqualified from the event.

- (1) Replacement of a battery without permission (See A.23)
- (2) Breaking of any seal without permission (See A.23, A.48)
- (3) Charging of batteries from other power system (See A.23)
- (4) Malicious violation (See A.28)
- (5) Bad manners (See A.28)

Chapter 15: AWARDS

A.54 AWARDS:

The following awards will be bestowed.

- (1) Overall Champion; The WORLD SOLAR-CAR RALLYE Cup
- (2) First, Second and Third in each Class
- (3) Other prizes; Awards for design, technique, teamwork, etc.
- (4) Certificate to all finishers

Chapter 16: APPLICATION & SUPPLEMENT OF THESE REGULATIONS

A.55 INTERPRETATION OF THESE REGULATIONS:

1. The Executive Committee is empowered to make a decision on any case not covered or clarified by these regulations.
2. The entrants may submit inquiries in writing about interpretation of these regulations, the official notices or the rules of the event.
3. The answer will be given orally to the party involved as final interpretation or determination by the Judgement Committee.

A.56 THE ISSUE OF OFFICIAL NOTICES:

Details not covered or clarified by these regulations shall be indicated to all teams by the following ways;

- (1) Sent by mail to the registered address of the team representative up to July 17, 2000, and posted on the bulletin board after that date.
- (2) Indicated at the briefing held before and during the event or as occasion calls.
- (3) Delivered by the PA system and so on in an emergency.

[SUPPLEMENTARY PROVISIONS]

These regulations shall apply to the 2000 W.S.R. and be enforced on March 1, 2000.

PENALTY LIST

- 1) Penalty A: 60 minutes will be added. If total penalty time reaches 180 minutes, the vehicle will be degraded to Penalty B.
- 2) Penalty B: One lap will be deducted from the number of covered laps.
- 3) Disqualification

v ILLEGAL DRIVING

- * Driving outside the designated course A
- * Driving by an unregistered person A
- * Driving backwards on the course B
- * Taking a short-cut B
- * Violation of safety procedures when stopping A
- * Driving without wearing a helmet or seat belt A
- * Interference to let an emergency service vehicle pass A
- * Failure to observe a signal A
- * Failure to keep safety lane and/or to obstruct an overtaking vehicle A
- * Starting from the pit A × 2
- * Delayed finish;
 - For the 1st and 2nd days, the designated finish time is 17:00. Any vehicle which crosses the finish line after the time will be given a penalty.
 - If the vehicle crosses the finish line by its own by 18:00 A
 - If the vehicle does not cross the finish line by its own by 18:00, the vehicle will be towed. B
 - If the vehicle is towed when it can not run by itself B
 - For the final day, the designated finish time is 16:00. Any vehicle which does not cross the finish line by the time will be towed. B
- * Intentional obstruction or dangerous act Disqualification
- * Failure to obey the speed limit (if any)
 - At first warning B
 - At second warning Disqualification

v CHANGING DRIVERS

- * Failure to adjust the total weight when drivers are changed A
- * Excessive riding time A
 - Each passenger can not ride his/her vehicle continuously for three or more hours, and a passenger's total riding time can not exceed 18 hours.

v PIT STOP & REPAIR WORK

- * Backward running A
 - (It is allowed to push the vehicle backward by human power.)
- * Leaving the pit without an official's permission A
- * Unauthorized carrying of the vehicle into and/or out of the pit area without permission, and illegal custody of batteries A
- * Repair work on the course by the members A
- * Towing the vehicle when the vehicle can not run by itself B

v BATTERIES

- * Charging batteries by reflector panel(s) A
- * Delayed delivery to storehouse at night (A.24) A
- * Failure to delivery to storehouse at night (A.24) Disqualification
- * Replacement without permission (A.23) Disqualification
- * Illegal recharging (A.23) Disqualification
- * Breaking seal(s) without permission (A.23) Disqualification
- * When a battery or batteries are replaced according to A.23-10 of the regulations, n laps will be deducted, to be determined by the following equation.

$$n = 2 \text{ laps} + \frac{\text{replaced capacity(Wh)} \times 3}{500 \text{ Wh}}$$

Other penalties for violations not specified shall be left to the determination to the Judgement Committee.

WORLD SOLAR BICYCLE RACE

EVENT REGULATIONS

A.1 PROGRAM:

May 31, 2000	Closing date for entry Closing date for submitting the data sheet of solar cells and batteries
July 21, 2000	Registration / Inspection
July 22, 2000	Speed Contest
July 23, 2000	Marathon
July 24, 2000	Preparatory day

A.2 TITLE:

The event shall be known as the WORLD SOLAR BICYCLE RACE (W.S.B.R., hereinafter referred to as the event).

A.3 AUTHORITY:

The event shall be conducted under the auspices of the WORLD SOLAR-CAR RALLYE Organizing Committee, Chairman; Fumitoshi NOTO, Professor emeritus of Akita University.

A.4 PROMOTER:

The event shall be promoted and organized by the WORLD SOLAR-CAR RALLYE Executive Committee, Chairman; Hisahiro YAMAMOTO.

A.5 DATES & LOCATION:

The event shall be held on July 22 - 23, 2000 at the Ogata-mura Solar Sports Line in Akita Prefecture. The course is 31.256 km long and is sanctioned as a qualified course by International Solarcar Federation (ISF).

A.6 ELIGIBILITY OF ENTRANTS:

The number of team members must be at least two, and a team representative must be 20 years of age or older. Riders must be at least 13 years old on the starting day of the event. Minor members must have written permission from his/her parents or guardians.

A.7 VEHICLE ELIGIBILITY:

1. A solar bicycle is a land vehicle which is equipped with solar cells of at least 0.15 sq. m, and energy conversion system to propel the vehicle.

2. Entrants are to be classified into the following Categories and Classes in the event as follows;
(See Technical Regulations)

Category	Application	Class Division
A	<p>The vehicle must be a commercially available bicycle equipped with the ISF-approved solar cells and batteries.</p> <p>The only modification allowed is in accordance with the following standards;</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The use of a front cowl shall be permitted. 	<p>Classes shall be divided according to the riders' age and sex as below;</p> <p>1. Junior Class: 18 years old and younger Men or mixed</p> <p>2. Open Class: 19 - 49 years old or mixed age group Men or mixed</p> <p>3. Senior Class: 50 years old and older Men and mixed</p> <p>4. Ladies Class: 13 years old and older Women</p> <p>* Riders in Category B shall be limited to individuals with a Japanese or international driver's license or a motorcycle operator's license for engines up to 50 cc.</p>
B	<p>Free modification is permitted in accordance with the following standards;</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The maximum total area covered by solar cells shall be 1.2 sq. m not including the gaps between solar cells. • The maximum total weight of batteries is as follows: <ul style="list-style-type: none"> 1) Ag/Zn and Developed battery system: 2.6kg 2) Pb/Acid (sealed) - marketable : 8 kg 3) Ni/Zn : 4.8 kg 4) Ni/Cd and Ni/Fe : 6.4 kg 5) Ni/Mh : 4.6 kg • The use of a full-covered cowl shall be permitted. 	
S	<p>The vehicle must be powered by solar energy only.</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The maximum total area covered by solar cells shall be 1.2 sq. m not including the gaps between solar cells. • Only Pb/Acid (sealed) batteries within 14 kg shall be permitted. • The use of a full-covered cowl shall be permitted. • Propelling by human power is prohibited. 	No Class

A.8 APPLICATION PROCEDURES:

1. Documents:
 - (1) Entry Registration
 - (2) Rider Registration
 - (3) Member List
 - (4) Vehicle Specifications
 - (5) Parental Consent
2. Documents should be sent by registered mail.

3. Entry fee:
 - 1) Category A/B
 - (1) Junior Class 10,000 Japanese yen
 - (2) Open Class 20,000 Japanese yen
 - (3) Senior Class 20,000 Japanese yen
 - (4) Ladies Class 20,000 Japanese yen
 - 2) Category S 20,000 Japanese yen
4. Entry applications must be accompanied by documents and entry fee.
5. Applications for entry shall be submitted between April 1 and May 31, 2000.
6. If an entry is withdrawn before the closing date of application (May 31, 2000), the entry fee will be refunded. Otherwise, the fee is nonrefundable.

A.9 COMPETITION STYLE:

- (1) Speed Contest: Average speed contest for a specific length on the course
(prerunning: 300 m, race zone: 200 m)
- (2) Marathon: Timed race of 3 laps on the course (31.256 km/lap)

A.10 CHANGES & ALTERATIONS:

The organizer may change the course and/or the competition rules at any time depending on the weather conditions.

A.11 SELECTION OF COMPETITION:

1. Each team may participate in Speed Contest and/or Marathon.
2. The Judgement Committee have a right to disapprove some entrants by security reasons.

A.12 COMPETITION RULES:

1. Speed Contest
 - (1) This race shall be competed based on the vehicles' ability.
 - (2) This will be held at a designated area of the course.
 - (3) Riders start one by one. Riders who can not start with the starting gun or vehicles which are in some trouble, will be allowed to start only if they are ready before all others have finished.
 - (4) After prerunning of 300 m from the starting line, the average speed in the race zone (200 m) will determine the winner. The fastest riders will be the First, Second and Third-place winners.
2. Marathon
 - (1) This race shall be competed to cover 3 laps (31.256 km/lap). The fastest riders will be the First, Second and Third-place winners.
 - (2) All riders on the course must obey the signs and traffic signals, and observe safety.
 - (3) There may be a speed limit on the course and the organizer may set up areas where overtaking is prohibited.
 - (4) The number of registered riders must be one to three. Changing riders during the race is permitted only to the registered riders, and only at pit area.
 - (5) Riders who become tired and/or sick may stop their vehicles by the roadside along the course to avoid danger to others, and may continue when ready.
 - (6) Principally the starting order will be decided based on the results of Speed Contest. Teams who are not in Speed Contest shall be decided their starting order by drawings. Riders who can not start at the starting gun will be deemed to have started on time.
 - (7) Each rider may use any combination of human power, solar energy and stored energy. In Category S, each rider may be running with combination of solar energy and stored energy.

- (8) The maximum time of competition will be four hours in Category A/B, or five hours in Category S. The organizer may expel a rider who has no further will to compete and/or a rider who may cause an accident due to fatigue.
- (9) Retirement: A rider retiring must return his/her rider's number to an official, and inform the official of the fact that he/she is dropping out of the race. Such rider is to then remove his/her vehicle from the course and follow the official's instructions.

A.13 OFFICIAL VEHICLE INSPECTION:

1. All vehicles have an obligation to be checked by the official inspectors at the prescribed place. Those who do not pass the inspection may not participate in the races.
2. All vehicles must get confirmation individually on every item written in the regulations.
3. Those who are ordered by officials to modify their vehicles, and can not do so within a determined time can not participate in the races.
4. After the inspections, no entrant may modify the items mentioned in the Technical Regulations.
5. After finishing the race, every vehicle must be kept in an appointed area until the announcement of the results. Those winning prizes will have their vehicles inspected again.

A.14 VEHICLE IDENTIFICATION:

After passing the inspection, the organizer will supply each team with a vehicle number. (See Technical Regulations A.18)

A.15 BRIEFING:

Team representative and rider(s) must attend the briefings which the organizer calls up.

A.16 TIMING:

1. In Speed Contest, time will be recorded by 1/1000 of a second.
2. In Marathon, time will be counted by seconds.
3. The results will be posted on the official notice board after every competition. The places will be announced 30 minutes after the posting of the provisional results.

A.17 RESULTS:

1. The results in Speed Contest shall be determined by the average speed obtained in the race. Awards will be made to each Category winner.
2. The results in Marathon shall be determined by the time spent to cover 3 laps. Awards will be made to each Category and each Class winner.

A.18 DISQUALIFICATION:

In the following cases, the organizer shall disqualify an entrant.

- (1) In case of intentional false application.
- (2) In case that a vehicle can not operate, and it interferes with the competition.
- (3) In case that a member does not obey the officials' instructions.

A.19 PROTEST:

1. Riders have a right to protest at any time if they feel they have been treated unfairly.
2. Protests, if any, must be lodged in writing, with detailed descriptions to the chief official.
3. Protests will be accepted only within 30 minutes after the rider has crossed the finish line, and/or within 30 minutes after the provisional results have been announced.
4. Judgements to the protests will be notified by the Judgement Committee to the person concerned orally.

A.20 CONDUCT:

1. All team members must follow all regulations of the event, and obey the officials' instructions. All team members are always required to be fair and honest. Unmannerly behavior or unsportsmanlike conduct toward the organizer, officials, the Judgement Committee and the Competition Committee are not to be allowed.
2. Riders must not obstruct other riders, or make dangerous, zig-zag maneuvers at any time.
3. A vehicle being overtaken by the followings must give way safely and smoothly.
4. A rider who overtake the preceding vehicles must express his/her intention to the precedence by using bells or horns. (No restrictions on style)

A.21 DAMAGE COMPENSATION:

Each team has the responsibility to compensate injured parties for any loss caused by accidents at his/her own expense. Every member should acknowledge that the organizer, officials, committees or course administrators do not have the obligation to compensate victims of those accidents.

A.22 PRIZE:

Prizes shall be defined separately.

A.23 CANCELLATION OF THE EVENT:

In the following situations, the organizer has the right to cancel the competition itself to prevent accidents.

- (1) In case of strong wind.
- (2) In case of heavy rain.
- (3) In case that the course can not be used because of some disaster.
- (4) In other cases that the organizer judges that it is impossible to continue the competitions.

A.24 INSURANCE:

All riders must be covered by the event's personal accident insurance, which must be purchased at their own expense.

A.25 PUBLICITY RIGHTS:

By entering the event, all entrants associated with the event agree to the free use of their name and photographs in any publicity materials, for example, television, radio, newspaper, magazines that may be issued by the organizer, the event's principal sponsors and its associated companies for the purpose of popularization of solar energy and publicity of the event itself.

A.26 SIGNAL FLAGS:

Four kinds of flags will be used; the starting flag (Convention flag), the finishing flag (Checkered flag), red flag and yellow flag.

A.27 MISCELLANEOUS:

1. Additional regulations and instructions not included in these regulations will be announced in writing prior to the event.
2. Any questions of interpretation of these regulations shall be decided by the Judgement Committee.
3. These regulations may be changed by the organizer, and they shall be announced in writing.

TECHNICAL REGULATIONS

A.1 SOLAR BICYCLE:

A solar bicycle is a land vehicle which is equipped with solar cells of at least 0.15 sq. m, and energy conversion system to propel the vehicle. It may also be propelled by human power of the rider. (In Category S, human power is prohibited.)

A.2 VEHICLE DIVISION:

The division is defined in categories as follows:

Category	Application
A	<p>The vehicle must be a commercially available bicycle equipped with the ISF-approved solar cells and batteries. The only modification allowed is in accordance with the following standards;</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The use of a front cowl shall be permitted.
B	<p>Free modification is permitted in accordance with the following standards;</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The maximum total area covered by solar cells shall be 1.2 sq. m not including the gaps between solar cells. • The maximum total weight of batteries is as follows: <ol style="list-style-type: none"> 1) Ag/Zn and Developed battery system : 2.6 kg 2) Pb/Acid (sealed) - marketable : 8 kg 3) Ni/Zn : 4.8 kg 4) Ni/Cd and Ni/Fe : 6.4 kg 5) Ni/Mh : 4.6 kg • The use of a full-covered cowl shall be permitted.
S	<p>The vehicle must be powered by solar energy only.</p> <ul style="list-style-type: none"> • The bicycle must be within the regulation size. • The maximum total area covered by solar cells shall be 1.2 sq. m not including the gaps between solar cells. • Only Pb/Acid (sealed) batteries within 14 kg shall be permitted. • The use of a full-covered cowl shall be permitted. • Propelling by human power is prohibited.

A.3 VEHICLE RULES:

1. Category A

- (1) A commercially available model bicycle is required. No modification to the fundamental structures, i.e. frame structures and wheel axle, is allowed.
- (2) The ISF-approved solar cells and batteries are subject to separate regulations.
- (3) Each vehicle shall be less than 2.4 m long, less than 1.0 m wide and less than 1.6 m high.
- (4) Modifications must not interfere with getting on and off the vehicle.
- (5) Equipment recognized of reducing air resistance shall meet the vehicle's dimensional regulations, and be positioned between the front of the vehicle and the back of the front wheel.
- (6) Vehicle functions including solar mobile systems must not be attached to the riders' body.

(7) Riders must be able to get on/off the vehicle without assistance, and be able to remain upright safely while stationary.

2. Category B

(1) Each vehicle shall be less than 3.0 m long, less than 1.2 m wide and less than 1.6 m high.

(2) It is permitted to have full outer covering (cowl) for the sake of reducing air resistance.

(3) It is permitted for riders to be assisted in getting on/off the vehicle.

(4) The rider must have a vision with 180° in front.

3. Category S

(1) Each vehicle shall be less than 3.0 m long, less than 1.2 m wide and less than 1.6 m high.

(2) It is permitted to have full outer covering (cowl) for the sake of reducing air resistance.

(3) It is permitted for riders to be assisted in getting on/off the vehicle.

(4) The rider must have a vision with 180° in front.

A.4 VEHICLE WEIGHT:

No limitation.

A.5 PASSENGERS:

One rider only.

A.6 WEIGHT OF THE RIDERS:

1. Category A, B

No limitation.

2. Category S

The official mass of each rider must be at least 70 kg including driving clothes. Ballast may be used to bring the weight to that level.

A.7 NUMBERS OF WHEELS:

Each vehicle shall be equipped with a minimum of two wheels.

Vehicles in Category A shall be equipped with the same number of wheels as they had when originally manufactured.

A.8 SOLAR PANEL:

1. Category A

(1) No other solar panels which ISF approves shall be allowed to be added.

(2) Solar panels may be equipped with sunlight collecting reflectors. However, shapes that pose a danger to the rider or others (judged by the Judgement Committee) or reflectors made of glass shall not be permitted.

(3) Panels must be installed firmly within the outer dimensions of the vehicle size itself, and must not hinder safety. Movable systems of solar cells are allowed.

2. Category B

(1) The total sum of solar cell area must be equal to or less than 1.2 sq. m, not including the gaps between solar cells.

(2) Solar panels may be equipped with sunlight collecting reflectors. However, shapes that pose a danger to the rider or others (judged by the Judgement Committee) or reflectors made of glass shall not be permitted.

(3) Panels must be installed firmly within the outer dimensions of the vehicle size itself, and must not hinder safety. Movable systems of solar cells are allowed.

3. Category S
 - (1) The total sum of solar cell area must be equal to or less than 1.2 sq. m, not including the gaps between solar cells.
 - (2) Solar panels may be equipped with sunlight collecting reflectors. However, shapes that pose a danger to the rider or others (judged by the Judgement Committee) or reflectors made of glass shall not be permitted.
 - (3) Panels must be installed firmly within the outer dimensions of the vehicle size itself, and must not hinder safety. Movable systems of solar cells are allowed.
4. All teams entering in Category B and S are requested to submit the manufacturer's data sheet of solar cells by May 31, 2000.

A.9 MAIN BATTERY:

1. Category A
No other batteries which ISF approves shall not be permitted to be added.
2. Category B
The maximum total weight of batteries is as follows:
 - (1) Ag/Zn and Developed battery system : 2.6 kg
 - (2) Pb/Acid (sealed) - marketable : 8 kg
 - (3) Ni/Zn : 4.8 kg
 - (4) Ni/Cd and Ni/Fe : 6.4 kg
 - (5) Ni/Mh : 4.6 kg
3. Category S
Only Pb/Acid (sealed) batteries within 14 kg shall be permitted.
4. All team entering in Category B and S are requested to manufacturer's data sheet of batteries by May 31, 2000.
5. Miscellaneous
 - (1) Batteries other than the main battery are included in the above weight.
 - (2) Internal dry cells of speedometer, lights and portable transceiver are not included in the above weight.
 - (3) If a power condenser is used, the electric charge must be proved to be zero before the starting time.
 - * The definition of "power condenser" in the event is different from that of ones used generally.
"Power condenser" means the equipment which is judged to have big capacity and manage the drive system temporarily.
 - (4) If a flywheel is used, it must be proved not to rotate before the starting time.

A.10 MOTOR:

No limitation.

A.11 ELECTRICAL WIRING:

Any wiring harness connectors should be secured so as not to be disturbed during the competition, and should be covered so as not to directly contact the rider.

A.12 VOLTAGE:

No limitation.

Only in case of using more than 30 V, "High Voltage" label is required to affix.

A.13 BRAKES:

1. Each vehicle shall be equipped with two or more brake systems which work separately, excluding the regenerative brake system.
2. Each vehicle shall be capable of coming to a complete stop within 22 m from a speed of 30 km/h.

A.14 RIDING STYLE:

1. All vehicles must have a steering system that is safe and stable.
2. All vehicles must have front-wheel steering.
3. While the vehicle in motion, at least one of the toes of rider must be ahead of a rear end of the seat at some point in the pedal cycle.

A.15 SAFETY:

1. Riders must wear clothing suitable to a bicycle race, sport shoes, elbow pad and gloves.
2. Riders are required to wear a helmet for the bicycle race.
3. Batteries must be fixed to the frame of the vehicle in any motion.
4. A horn or warning bell must be equipped.
5. A rearview mirror must be equipped in a suitable position to be able to see the panel signboard located 2 m to the right hand side and 12 m back of a rider in a normal riding style. Board will be hung 1m high, and have an area of 30 cm sq.
6. If the Competition Committee deems a vehicle unstable, the Committee may disqualify it or order repairs be made to the vehicle.

A.16 HANDLING INTERFERENCE:

The handlebar must operate freely even when riders turn them fully to either sides.

A.17 OTHER EQUIPMENT:

1. A speedometer should be installed.
2. If equipped with a communication system, riders must obey Japanese domestic communication laws.

A.18 ENTRY NUMBERS:

Numbers for vehicles must be conspicuously displayed. The diameter of the number plate is planned to be 20 cm.

A.19 MISCELLANEOUS:

1. Matters not described in these regulations will be announced in writing prior to the race.
2. Any question of interpretation of these regulations shall be decided by the Judgement Committee, assisted by ISF.
3. Any changes in the regulations will be made by the Judgement Committee and ISF.

Secretariat for WORLD SOLAR-CARRALLYE EXECUTIVE COMMITTEE

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