

2005



RULEBOOK

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5 December 2004

1. General Undertakings and Conditions

- 1.1. All riders, teams, and officials participating in the USGPRU Road Racing National Championship Grand Prix undertake, on behalf of themselves, their employees, and agents, to observe all the provisions of:

1. SPORTING REGULATIONS
2. TECHNICAL REGULATIONS

as supplemented and amended from time to time (hereinafter collectively referred to as the "USGPRU Road Racing National Championship Grand Prix Regulations").

- 1.2. It is the responsibility of the team to ensure that all persons concerned with its entry observe all the requirements of the USGPRU Road Racing National Championship Grand Prix Regulations. The responsibility of the rider, or any other person having charge of an entered machine during any part of the Event with respect to observance of the USGPRU Road Racing National Championship Grand Prix Regulations is joint and several with that of the team.

2. SPORTING REGULATIONS

2.1. Introduction

A series of motorcycle races counting toward the USGPRU Road Racing National Championship Grand Prix for Riders will be organized.

2.2. Events

The Event shall be deemed to commence at the scheduled time for Technical and Sporting Checks and conclude after all the races at the expiry of the deadline for the lodging of a protest and the time at which technical or sporting verifications have been concluded, whichever is the latest. The race control must remain operative with all equipment in place until the end of the period provided for the lodging of a protest, and all officials and marshals must remain at the circuit available to the Race Director and USGPRU Stewards during that period.

2.3. Officials

The following officials will be appointed to perform supervisory and executive roles. Except in cases of illness or Force Majeure the officials will be expected to be present at each event.

2.4. Race Director

Responsible for ensuring proper observance of the hosting organization's rules and regulations and efficient running of the practice and races. The Race Director is not a member of the USGPRU (unless no hosting organization is used). He/she will be an employee of the hosting organization and is ultimately responsible for the weekends events. The Race Director shall have overriding authority in the following matters when it is deemed necessary to complete the full race events of the hosting organization:

- The control of practice and the race, adherence to the timetable
- The stopping of practice or the race if he deems it unsafe to continue and ensuring that the correct restart procedure is carried out.
- The starting procedure.
- The use of medical cars/fast interventions vehicles.

2.5. Chief Steward

Responsible for ensuring that the event requirements are properly coordinated before, during and after the event. The Chief Steward will adjudicate any appeals to rules that cannot be adequately addressed by the technical scrutineer or regional stewards. The Chief Steward is also responsible for the following activities:

- Establishing series schedule

- Updating the rulebook
- Coordinating sponsorship
- Coordinating advertising and media
- Other duties as required

2.6. Technical Scrutineer

Responsible for ensuring that technical regulations are correctly enforced and supervising scrutineering and protests of a technical nature.

2.7. Regional Stewards

- 2.7.1. Are appointed by the Chief Steward and are responsible for ensuring that the event is run within the USGPRU Road Racing National Championship Grand Prix Regulations. They will have final approval and signature with time of provisional results (practices, warm-ups, starting grids and races) and presentation of reports to the Chief Steward.
- 2.7.2. Should a USGPRU Steward be indisposed during the event for any reason, the Chief Steward may appoint another person, conversant with the USGPRU Road Racing National Championship Grand Prix Regulations, to fill the vacancy for the period such USGPRU Steward is indisposed.
- 2.7.3. If the Chief Steward is indisposed during the Event then the Regional Steward will fill the vacancy and appoint another person, if possible, conversant with the USGPRU Road Racing National Championship Grand Prix Regulations, as Regional Steward to fill the vacancy for the period that the Chief Steward is indisposed.

2.8. Event Management

- 2.8.1. The management of the event will be carried out by the Event Management Committee which will comprise the following delegates:
 - The Race Director
 - The Technical Director
 - The Regional Steward
 - The Chief Steward (if available)
 - Other Officials or persons needed to assist
- 2.8.2. All event-impacting issues will be brought before the Race Director for review and approval. The Race Director's decision is final and will be respected even if in conflict with USGPRU rules/regulations.
- 2.8.3. The duties of the Event Management Committee are:

- To ensure the smooth and efficient running of the event.
- To receive reports from the various Officials concerning scrutineering, practice and races.
- To make recommendations to the Race Director concerning any matter that is in contradiction of the rules and/or regulations.
- To report to the Race Director any infringements of the rules and/or regulations.
- To confirm the practices and races results.
- To impose penalties on riders for any infringements of the rules and/or regulations.
- To adjudicate any protest relating to the infringements of the rules and/or regulations.

2.9. The Calendar

The calendar of races counting for the Championships will be, in principle, published by no later than 30 days after all hosting organizations schedules have been released.

2.10. Classes

2.10.1. Classes will be for the following categories:

- 125GP: up to 125cc single cylinder 2-stroke
- 250GP: 124-250cc single or twin cylinder 2-stroke

2.10.2. Technical Regulations governing these two classes are provided in the USGPRU Grand Prix Technical Rules for the USGPRU Road Racing National Championship Grand Prix.

2.11. Eligible Competitors

2.11.1. In order to compete in the USGPRU, riders must be in possession of either a USGPRU License, a CCS/F-USA (Divisions of Clear Channel Entertainment) issued or affiliate license (LRRS, etc), or a host organization license. Licenses are issued to riders designated by the USGPRU with the approval of CCS/F-USA. To receive a USGPRU license, the rider must be in possession of a nationally recognized road racing license or have attended a nationally recognized race school and can produce documentation to prove successful completion.

2.11.2. Licenses for riders are issued only when the minimum age has been attained as below:

125GP: 14 years

250GP: 16 years (exceptions to be based on proven performance in 125gp class – petition by rider must be made to Chief Steward no later than 1 week prior to event)

2.12. Entries

2.12.1. Race entries shall be processed by the hosting organization. Pre-entry is preferred when available. Refund policies will be in accordance with hosting organizations rules/regulations. Special allowances may be given to USGPRU riders, but it is recommended that riders consult hosting organization rulebooks prior to the event.

2.12.2. A rider shall be deemed to have taken part in the event when he/she participates in at least one practice session.

2.12.3. A rider shall be deemed to have started a race when he/she starts the first lap of the race.

2.13. Starting Numbers

Each rider accepted for the USGPRU Road Racing National Championship Grand Prix will be allocated a specific starting number that will be valid for the whole Championship. The top 10 numbers will be reserved for the top ten finishers of the previous season. Riders entering bikes in both classes will be required to run the same number in both classes.

2.14. Practice

2.14.1. Practice will be conducted in accordance with the hosting organization's rules and regulations. In general, practice groups will be combined with hosting organization groups.

2.14.2. Riders entering both 125GP and 250GP classes may practice on two motorcycles. If the racer is racing a 125 in both races, and the host organization charges full price for the second race, the rider will be allowed to enter both 125 and 250 practice sessions on the same bike. If a discount is given for the second event, they may only be allowed to enter one practice group.

2.14.3. Practice will not be timed for the purpose of qualification or grid positions. In the instance when timing equipment fails during qualifying sessions (not the rider's fault), times from the most recent practice session may be used to set grid position for the race.

2.15. Qualification for the Race

2.15.1. During qualifying, all lap times of the competitors will be timed and count towards qualification for the race and grid positions.

2.15.2. Any rider deemed by any official to be riding in an unsafe manner will be disqualified from the event.

2.15.3. After riders have completed the qualifying session, they must report immediately to the technical inspection area regardless of finishing order. Even if there is time left to qualify, they must either stay on the hot pit lane, or report directly to tech. If they fail to do so immediately, their qualifying times will be disqualified and the rider will be forced to start at the back of the race grid.

2.16. Grid Positions

2.16.1. Grid positions will be based on the fastest time recorded by the rider in the qualifying session. In the event of a tie, riders' second and subsequent best times will be taken into account. The grid will be arranged in accordance with the hosting organization's configuration for the event. The pole position, allocated to the fastest rider, will be determined according to host organization configuration.

2.16.2. In general, the final grid will be posted at least one hour prior to the race.

2.17. Races

The length of races will be according to the following parameters:

- Minimum 54 km Maximum 80 km
- The length of the race may be varied only by direction of the race director.

2.18. Start Procedure

All starting procedures will be in accordance with host organization rules and regulations for the event.

2.19. Stop and Go Procedure

All stop and go penalties will be conducted in accordance with host organization rules and regulations.

2.20. Behavior During Practice and Race

2.20.1. Riders must obey the flag signals, the light signals if used, and the boards that convey instructions.

- 2.20.2. Riders must ride in a responsible manner, which does not cause danger to other competitors or participants, either on the track or in the pit-lane. Riders must at all times adhere to the provisions of the Sporting Regulations.
- 2.20.3. Riders should use only the track and the pit-lane. However, if a rider accidentally leaves the track then he may rejoin it at the place indicated by the marshals or at a place which does not provide an advantage to him. This is subject to change based on host organization rules and or regulations.
- 2.20.4. The marshals may assist the rider to the extent of helping him to lift the machine and holding it whilst any repairs or adjustments are made.
- 2.20.5. Any repairs or adjustments must be made by the rider working alone with absolutely no outside assistance. The marshal may then assist him to re-start the machine.
- 2.20.6. If the rider intends to retire, then he must park his motorcycle in a safe area as indicated by the marshals.
- 2.20.7. If the rider encounters a problem with the machine that will result in his retirement from the practice or the race, then he should not attempt to tour at reduced speed to the pits but should pull off the track and park his machine in a safe place as indicated by the marshals.
- 2.20.8. Riders may enter the hot pit lane during the race to make adjustments to their machines or change tires. All such work must be carried out in the pit lane. Work is permitted during the intervals, if races are interrupted.
- 2.20.9. Riders who stop their engines in the pits may be assisted to re-start their motorcycle by the mechanics.
- 2.20.10. Riders must not ride or push their motorcycles in the opposite direction of the circuit, either on the track or in the pit lane, unless doing so under the direction of an Official.
- 2.20.11. No signal of any kind may pass between a moving motorcycle and anyone connected with the motorcycle's entrant or rider, save for the signal from the time keeping transponder, from on-board cameras, legible messages on a pit board or body movements by the rider.
- 2.20.12. Any riders deemed to be not conducting themselves in a sportsman like manner will be disqualified from the event and may be banned from future participation in USGPRU events. Decision can be made by any USGPRU or host organization official. Any appeals to this ruling will be adjudicated by the Chief Steward.

2.21. Finish of a Race and Race Results

- 2.21.1. When the leading rider has completed the designated number of laps for the race, he will be shown a checkered flag by an official standing at the finish line. The checkered flag will continue to be displayed to the subsequent riders.
- 2.21.2. In case of a photo-finish between two, or more, riders, the decision shall be taken in favor of the competitor whose front wheel leading edge crosses the plane of the finish line first.
- 2.21.3. In case of ties, the riders concerned will be ranked in the order of the best lap time made during the race.
- 2.21.4. The results will be based on the order in which the riders cross the line and the number of laps completed.
- 2.21.5. To be counted as a finisher in the race and be included in the results a rider must:
 - Complete 50% of the race distance.
 - The rider must be in contact with his machine when crossing the finish line.
- 2.21.6. The riders placed in the first five positions in the race will be escorted by officials, as quickly as possible, to the tech inspection area and then to the podium for the awards ceremony. Participation in the podium ceremony by the first three riders is compulsory. Following the ceremony, the top 5 bikes and riders are required to report directly to technical inspection for weight check.
- 2.21.7. A rider can only establish a new lap record for a circuit during a race.
- 2.21.8. If a rider (or group of riders) is assessed by the host organization as being the cause of a red flag during the race, they will be automatically disqualified from the results.

2.22. Interruption of a race

- 2.22.1. If the Race Director decides to interrupt a race, then red flags will be displayed at the finish line and at all marshals' posts. Riders must follow directions provided to them at the riders meeting. Procedures will vary based on host organization rules and or regulations.
- 2.22.2. The results will be taken at the last point where the leader and all other riders on the same lap as the leader had completed a full lap without the red

flag being displayed calculated as in the principle set out in the following example:

- Example of a race consisting of 30 laps: If a Red Flag is shown when the leader is on his 10th lap after completing his 9th lap and all other riders have not completed the 9th lap, then the race result will be 8 laps completed, and the second part will consist of 22 laps.
- If a Red Flag is shown when the leader and all other riders on the same lap as the leader are on the 10th lap after completing the 9th lap, the race result will be 9 laps completed and the second part will consist of 21 laps.
- Exception: if the race is interrupted during the last lap, the following procedure will be followed:

For all the riders to whom the checkered flag was shown before the interruption, a partial classification will be established at the end of the last lap of the race.

For all the riders to whom the checkered flag was not shown before the interruption, a partial classification will be established at the end of the penultimate lap of the race.

The complete classification will be established by combining both partial classifications as per the lap/time procedure.

2.22.3. Case 1: If the results calculated show that less than three laps have been completed by the leader of the race and by all other riders on the same lap as the leader, then the race will be null and void and a completely new race will be run. If it is found impossible to re-start the race, then it will be declared cancelled and the race will not count for the USGPRU Road Racing National Championship Grand Prix.

2.22.4. Case 2: If three laps or more have been completed by the leader of the race and all other riders on the same lap as the leader, but less than two-thirds of the original race distance, rounded down to the nearest whole number of laps, then the race will be re-started with the laps and times of the two races added together to arrive at a final result. If it is found impossible to re-start or to resume the race, then the race will be deemed to have been completed and full Championship points will be awarded.

2.22.5. If the results calculated show that two-thirds of the original race distance rounded down to the nearest whole number of laps have been completed by the leader of the race and by all other riders on the same lap as the leader, then the race will be deemed to have been completed and full Championship points will be awarded.

2.23. Re-Starting a race that has been interrupted

2.23.1. If a race has to be re-started, then it will be done as quickly as possible, consistent with track conditions allowing. As soon as the riders have returned to the hot pit lane the Race Director will announce a time for the new start procedure to begin which, conditions permitting, should not be later than 20 minutes after the initial display of the red flag.

2.23.2. When possible, the results of the first race should be available to teams before the second part of a race can be started.

2.23.3. The start procedure will be identical to a normal start.

2.23.4. Conditions for the re-started race will be as follows:

2.23.4.1. In the case of situation described in case 1 above:

- All riders may re-start.
- Motorcycles may be repaired or changed. Refueling is permitted.
- The laps will be the same as the original race distance.
- The grid positions will be as for the original race.

2.23.4.2. In the case of situation described in case 2 above:

- Only riders who are classified as finishers in the first race may re-start.
- Motorcycles may be repaired or changed. Refueling is permitted.
- The number of laps of the second race will be the number of laps required to complete the original race distance.
- The grid position will be based on the finishing order of the first race.

2.24. Championship Points and Classification

2.24.1. Riders will compete for the USGPRU Road Racing National Championship Grand Prix. The points will be those gained in each race.

2.24.2. For each race, Championship points will be awarded on the following scale:

- 1st 50 points
- 2nd 40 points
- 3rd 32 points
- 4th 26 points
- 5th 22 points
- 6th 20 points

7th 19 points
8th 18 points
9th 17 points
10th 16 points
11th 15 points
12th 14 points
13th 13 points
14th 12 points
15th 11 points
16th 10 points
17th 9 points
18th 8 points
19th 7 points
20th 6 points
21st 5 points
22nd 4 points
23rd 3 points
24th 2 points
25th 1 point

- 2.24.2 Regional Championships will be determined by adding all race results from the riders home region
- Home region will be declared on membership form or by location of riders home of residence.
- 2.24.3 National Championships will be determined by adding:
- Regional points (see above)
 - Points from single “out-of-region” event
 - Final round points
- 2.24.4 In the event of a tie in the number of points, the final positions will be decided on the basis of the number of best results in the races (number of first places, number of second places etc.). In the event that there is still a tie then, the date in the Championship at which the highest place was achieved will be taken into account with precedence going to the earliest result.

TECHNICAL REGULATIONS

3.1 Introduction

- 3.1.1 The USGPRU Road Racing National Championship Grand Prix is for motorcycles, i.e. vehicles with two wheels that make one track propelled by an internal combustion engine, controlled exclusively by one rider.
- 3.1.2 Providing that the following USGPRU Road Racing National Championship Grand Prix regulations are complied with, the teams are free to be innovative with regard to design, materials and overall construction of the motorcycle.

3.2 Classes

- 3.2.1 The following classes will be accommodated, which will be designated by engine capacity:
 - 125GP: up to 125cc – Maximum one cylinder
 - 250GP: 124cc up to 250cc – Maximum two cylinders

Note: Additional regulations may be applied in addition to the following rules or removed completely at the discretion of the Race Director in accordance with host organizations rules and regulations governing the event.

3.3 Engines

- 3.3.1 Engines may operate on the two stroke principle only.
- 3.3.2 Engines are allowed mechanical forced induction if engine displacement is less than 60% of maximum allowed in the class.
- 3.3.3 Cubic capacity of the engine will be defined by the swept volume the cylinder, i.e. the area of the bore of the cylinder multiplied by the stroke. No tolerance on capacities is permitted.
- 3.3.4 Engine capacity must be measured at ambient temperature.

3.4 Gears

There may be a maximum of six gears.

3.5 Weights

- 3.5.1 The following are the minimum weights permitted :
 - 125GP: motorcycle + rider = 300 lbs

- 250GP: 1 cylinder motorcycle 160lbs,
2 cylinders motorcycle 230lbs

- 3.5.2 Ballast may be added to the motorcycle to achieve the minimum weights. Maximum weight that can be added to any machine will be 20lbs. If still under the minimum weight, no additional weights will be required.
- 3.5.3 Weight may be checked at the initial technical control, but the main control of weight will be made at the end of qualifying session or at the end of the race. The weight of the motorcycle will be that measured in the form that the motorcycle participated, including oil, water and other fluids and all additional equipment attached to the motorcycle, for example timekeeping senders, camera equipment, electronic telemetry equipment etc.
- 3.5.4 For the 125cc class the weight checked will be the total of the rider with full protective clothing plus the weight of the motorcycle. Random weight controls may be carried out during practice in a designated weighing area.
- 3.5.5 To remove the variable element of the weight of any remaining fuel, motorcycles may be weighed without the fuel tanks for which a 5lb allowance will be made for all classes.

3.6 Fuel Tanks

- 3.6.1 Fuel caps must be leak proof and have a positive closing device.
- 3.6.2 Fuel tank breather pipes must include a non-return valve. Breather pipes must discharge into a suitable container with a capacity of at least 250cc.

3.7 Throttle Twist grips

Throttle twist grips must close automatically when released.

3.8 Steering

- 3.8.1 Handlebars must have a width of not less than 450mm and their ends must be solid or rubber covered. The width of the handlebar is defined as the width measured between the outside of the handlebar grips or throttle twist grips.
- 3.8.2 There must be at least 15 degrees of movement of the steering each side of the center line.
- 3.8.3 Stops must be fitted to ensure a clearance of at least 30mm between the handlebar and the tank when at the extremes of lock.

3.9 Brakes

3.9.1 Motorcycles must have a minimum of one brake on each wheel that is independently operated.

3.9.2 Only brake discs of ferrous materials are allowed.

3.10 Exhausts

3.10.1 When viewed from the side, the outlet of the exhaust must not extend behind a line drawn vertically through the rear edge of the rear tire.

3.10.2 The last 30mm of the pipe must be horizontal and parallel to the center line of the motorcycle with a tolerance of ± 10 degrees.

3.11 Handlebar Levers

Levers must not be longer than 200mm measured from the pivot point.

3.12 Bodywork

3.12.1 The windscreen edge and the edges of all other exposed parts of the streamlining must be rounded.

3.12.2 The maximum width of bodywork must not exceed 600mm. The width of the seat or anything to its rear shall not be more than 450mm (exhaust pipes excepted).

3.12.3 Bodywork must not extend beyond a line drawn vertically at the leading edge of the front tire and a line drawn vertically at the rearward edge of the rear tire. The suspension should be fully extended when the measurement is taken.

3.12.4 When viewed from the side, it must be possible to see:

- At least 180 degrees of the rear wheel rim.
- The whole of the front rim, other than the part obscured by the mudguard, forks or removable air-intake.
- The rider, seated in a normal position with the exception of the forearms.

Note: No transparent material may be used to circumvent the above rules.

3.12.5 No part of the motorcycle may be behind a line drawn vertically at the edge of the rear tire.

3.12.6 Mudguards are not compulsory. When fitted, front mudguards must not extend:

- In front of a line drawn upwards and forwards at 45 degrees from a horizontal line through the front wheel spindle.
- Below a line drawn horizontally and to the rear of the front wheel spindle.

3.12.7 All motorcycle lower fairing has to be constructed to hold, in case of an engine breakdown, at least half of the total oil capacity used in the engine.

3.13 Clearances

3.13.1 The motorcycle, unloaded, must be capable of being leaned at an angle of 50 degrees from the vertical without touching the ground, other than with the tire.

3.13.2 There must be a clearance of at least 15mm around the circumference of the tyre at all positions of the motorcycle suspension and all positions of the rear wheel adjustment.

3.14 Breather Pipes

Any breather pipe from the engine or gearbox must discharge into a suitable container with a minimum capacity of 250cc. There must be a separate container for each breather pipe.

3.15 Materials

3.15.1 The use of titanium in the construction of the frame, the front forks, the handle-bars, the swinging arm spindles, and the wheel spindles is forbidden. For wheel spindles, the use of light alloys is also forbidden. The basic structure of the crankshaft must be made from steel or cast iron. Pistons, cylinder heads and cylinder blocks may not be composite structures which use carbon or aramid fiber reinforcing materials.

3.15.2 Brake callipers must be made from aluminum materials.

3.16 Chain Guards

If motorcycle came factory equipped with chain guard, it must still be attached as originally installed. If an aftermarket guard is installed, it must be fitted in such a way as to prevent trapping extremities between the lower drive chain run and the final drive sprocket at the rear wheel. Motorcycles that did not come factory equipped with a guard will not be required to install one.

3.17 Tires and Rims

3.17.1 Racing tires must be used.

3.17.2 Maximum rim widths are as follows:

	Front	Rear
125cc	2.5"	3.5"
250cc	4.0"	5.5"

3.18 Numbers and Backgrounds

3.18.1 Racing numbers must be displayed in accordance with hosting organizations rules and regulations.

3.18.2 Novices will display yellow backgrounds, and experts will display white.

3.19 Fuel

3.19.1 Motorcycles will be permitted to run leaded or unleaded fuel. The fuel must be commercially available to all racers and may not be performance altered in any way other than with premix 2-stroke oil.

3.19.2 Fuel samples may be taken at the Regional Stewards discretion. Samples will be analyzed and results reported to Chief Steward. Failure to supply requested sample will result in automatic disqualification from the event. Failure to pass fuel tests will result in disqualification from event.

3.20 Protective Clothing and Helmets

3.20.1 Riders must wear clothing and helmet in accordance with host organization rules and regulations.

3.20.2 Helmet should be DOT and SNELL approved.

3.20.3 Leathers, boots, and gloves must be in good condition.

3.20.4 Back protector is mandatory.

3.21 Procedures for Technical Control

3.21.1 At each circuit an area must be designated as the Technical Checking Area. In this area, under the control of the Technical Scrutineer and the supervision

of the Regional Steward, suitable equipment will be available to conduct the various tests:

- Weighing scales
- Instruments for measuring engine capacity.
- Rulers and gauges for measuring other dimensions.

- 3.21.2 The technical control procedure will be carried out in accordance with the schedule set for the event. The technical scrutineers must be available throughout the event to check motorcycles and equipment as required by the Technical Director.
- 3.21.3 Presentation of a machine will be deemed as an implicit statement of conformity with the technical regulations. A rider's presence at the technical control is not mandatory, except in the case of the 125GP class when the rider must be present together with his helmet and all protective clothing.
- 3.21.4 The technical scrutineers should inspect the motorcycle for obvious safety omissions and may also at their discretion choose to check the motorcycles for technical compliance with other aspects of the USGPRU Road Racing National Championship Grand Prix regulations.
- 3.21.5 The Technical Director will refuse any machine that does not have a correctly-positioned, positive transponder attachment. The transponder must be fixed to the motorcycle in the position and orientation as described by the host organization. Positive attachment of the transponder bracket consists of a minimum of two of the following methods: tie-wraps, Velcro, or duct tape. The transponder retaining clip must also be secured by a tie-wrap when applicable.
- 3.21.6 The technical scrutineers must be available, based on instructions from the Technical Director or Regional Steward, to re-inspect any motorcycle for technical compliance during the meeting or after the race and to supervise inspection of a motorcycle following a protest on a technical matter.
- 3.21.7 At the end of the race, the Technical Scrutineer will ensure that the motorcycles placed in the first five positions, plus any other motorcycles designated, after the podium ceremony may be placed in the Check Area for a period up to 60 minutes pending any protest. The motorcycles may be checked for compliance with the weight regulations, and any other technical requirement. The Technical Director or Regional Steward may require a team to provide such parts or samples as he may deem necessary.