



Study Guide 17 – Wind Gauge

Study Guide 17 – Wind Gauge – Learning/Performance Objectives

Junior Official Program Study Guides

The purpose of the Study Guides in this program are to help you acquire the knowledge needed to be able to understand and create a brief statement of the information that you will need for course completion and future knowledge. You might think of this Study Guide as a mini-outline to the different official positions that are contained in Track and Field competitions. Consider this Study Guide as a condensed version of all of the important information that you will need to complete the Junior Officials Program successfully.

Each Officials duties, skills and behaviors are contained in the 17 different Study Guides offered in this program. These Study Guides are a combination of

- Adopted USATF 2020 USATF Competition Rules.
- Best Practices (those skills that describe “what works best” in a particular situation or environment). These Study Guides are data supported successes and researched supported over time, as offered by Track & Field officials in the quest for accountability for reliable methods.
- USATF Code of Ethics
- USATF Professional Guidelines

Procedures

Once you have the Study Guide in front of you, do more than just read it. Take the time to look at the material to understand what you will be asked to do. Start by reading the description to formulate a big-picture idea of what your Mentors assessment will look like. Then, review the list of concepts.

Quizzing yourself is a highly effective study technique. Make a copy of the Mentors Checklist and carry it with you to the meets so you can review the questions and answers periodically throughout the day and across several days/meets. Identify the questions that you don't know and quiz yourself on only those questions. Say your answers aloud.

The important skills needed in this Guide correspond to the Learning and Performance Objective numbers that begin with the abbreviation: **WG (Wind Gauge). (WG1 through WG21)**

Ask questions of your Mentors, they are there to answer your questions and guide you to learning and performing as a USATF official.

Good Luck to you on your journey to become a USATF Certified Official!



Study Guide 17 – Wind Gauge

Study Guide Information

1. USATF RULE 134 – WIND GAGUE OPERATOR (WG1)

The wind Gauge Operator, except as provided in Rule 163.14, shall maintain the wind gauge, and take the recording in writing, on the forms provided for that purpose by the Competition Secretary/ Head Official, the wind velocity in the direction of running for all running events (including hurdles, events) up to, and including, the 200 meters and the Long Jump and Triple Jump. The Wind Gauge Operator shall report each wind gauge measurement to the appropriate recorder for each event and shall provide a compilation of all measurements to the Competition Secretary.

Note: For wind gauge placement and operation see Rule 163.10 through 163.14

2. USATF RULE 163.10 (WG2)

- (a) The periods for which the will be measured from the flash of the starting device, are as follows:
 - 80 Meter Hurdles.....10 seconds
 - 100 Meters.....10 seconds
 - 100 Meter or 110 Meter Hurdles.....13 seconds

- (b) In the 200 Meters and 200 Meter Hurdles run around a curve, the wind velocity shall be measured for a period of 10 seconds, commencing when the lead runner(s) enter the straightaway. In the Long Jump and Triple Jump, the wind velocity shall be measured for a period of 5 seconds, commencing 40 Meters from the take-off board in the case of the Long Jump and 35 Meters from the take-off board in the case of the Triple Jump or, if the competitor runs less that 40 M or 35 meters, as the case maybe, from the start of the run.

3. USATF RULE 163.11 (WG3)

The wind measuring instrument shall be placed beside the sprint track, adjacent to lane 1, preferably 50 m from the finish line and, for the Long Jump and Triple Jump, 20M from the take-off board. The instrument shall not be more that 2m away from the track , or straightaway, and should be approximately 1.22m (4 ft.) above the competition surface.

NOTE: *When multiple boards are used, the 20m distance is from the board furthest from the pit.*

4. USATF RULE 163.12 (WG4)

The wind gauge shall read in meters per second, rounded and recorded to the next higher tenth of a meter per second, in a positive direction. (i.e., a reading of +2.03mps shall be recorded as +2.1: a reading of -2.03 mps shall be recorded as -2.0). Gauges that produce digital readings expressed in tenths of meters per second shall be constructed so as to comply with this rule.

NOTE: For record requirements, See Rule 262.4

5. USATF RULE 163.13 (WG5)

To insure an accurate reading of only the wind component in the direction of the running, a mechanical wind gauge should have some type of protection which reduces the impact of any cross-wind component. Where tubes are used, their length on either side of the measuring device should be at least twice the diameter of the tube.

6. USATF RULE 163.14 (WG6)

The wind gauge may be started and stopped automatically, and/or remotely, and the information relayed directly to the Competition computer. Whenever the wind gauge is connected to a computer system, a Wind Gauge Operator may be appointed to assure that such wind gauge is properly transmitting the wind readings to the computer and that the computer is properly recording those readings.

7. Wind Gauge Program Learning Objectives

In track and field meet, the wind gauge measures the wind assistance which can be a benefit to an athlete. . Wind is one of many forms of weather which can have an effect on the sport. A tailwind can enhance the speed of an athlete.

Due to a tailwind helping to enhance the speed of the athlete in events like certain sprint races (100 and 200 meters), 100/110 meters hurdles, the triple jump and the long jump, there is a limit to how much assisting wind the athlete may perform under if the performance is to establish a record.

If a tail wind exceeds 2 meters per second(4.5mph) (Also, most phone weather apps and local weather reports give wind speed in mph)... the result cannot be registered as a record on any level. However, the results within that competition still are valid because all athletes in a race would get equal assistance, and in field events it is just the luck of the circumstance at the moment of the attempt. The wind assistance maximums are only in regard to the validation of a record

The exceptions are the combined events like heptathlon and decathlon. Here, the total score may be accepted even though some of the results had a tail wind of more than 2.0 meters per second (mps). Here, in events where wind velocity is measured, the average velocity (based on the algebraic sum of the wind velocities, as measured for each individual event, divided by the number of such events) shall not exceed +2.0 mps (Rule 260.18). Higher average velocity was previously allowed as long as no individual event would exceed +4.0 m/s but the IAAF removed this rule in 2010.^[3]

8. Types of Wind Gauges

There are two types of wind gauges in use--those that are (1) remotely/computer operated and (2) other WG devices that must be started manually by a human operator. (WG7)

For the most part, use of remotely-operated devices are limited to use in the straightway races (100 meters, 200 meters, and the 100/110 Hurdles). (WG8)

The long and triple jumps also require wind readings, but--due to the nature of the events--these wind readings are almost always taken by hand-operated devices. **(WG9)**

There are very definite protocols for how and when wind is measured during a race or an attempt.

9. Device Placement

The device used to measure the wind (called an anemometer) must be placed 1.22m (4 feet) feet above the ground, parallel to the ground, parallel (in another dimension) to the straightaway or runway, at a prescribed distance from the straightaway or runway 2m from the take-off board or finish line. **(WG10)**

In the case of the long and triple jump, the wind gauge shall be located within two meters of the runway and 20 meters from the foul line (or take-off board). if multiple takeoff boards are in use, the WG is placed 20m away from the take-off board from the landing pit. **(WG11)**

In the case of the 100m, 200m, and 100/110 m Hurdles, the wind gauge shall, once again, be within two meters of the track (in this case, the inside edge of lane 1), and shall be placed 50 meters from the finish line. **(WG12)**

For the long and triple jump, the wind gauge shall be started when the jumper begins his or her approach (takes the first step) and the recorded wind reading is an average of the next five seconds. More specifically, if the athlete starts their approach behind the 40 meter cone, the wind gauge is started when the athlete passes the marker cone. A cone is placed on the side of the runway at 40 meters from the board in the Long Jump. (35 meters for the Triple Jump). If the competitor runs less than 40 meters in the long Jump or fewer than 35 meters in the Triple Jump, the wind velocity will be measured from the start of the run/Trial. **(WG13)**

For the 100 and 100/110 Hurdles, the anemometer shall be started with the start of the race and be averaged over the next 10 seconds (100 Meters) or the next 13 seconds (100/110 Hurdles). **(WG14)**

For the 200 Meters, the anemometer should be started when the lead runner enters the final straightaway, reaching the 100 Meter start line (top of the straightaway) and be averaged over the next 10 seconds. **(WG15)**

10. Reading the Gauge/ Basic Operation

Wind readings are rounded up to the nearest tenth of a meter per second. A rounded wind reading of 2.0 meters per second or less is considered "wind legal" and times from that heat or attempt may be used for records, and "higher level competition (such as state, district, conference, regional, or national qualifying, and seeding purposes for future meets. **(WG 16)**

If the average wind reading for a heat or attempt is 2.02 meters per second, that wind reading is rounded up to 2.1 meters per second or a reading of -1.76 mps becomes -1.7 mps, and so forth. **(WG17)**

Most wind gauges do the rounding up automatically, so nobody ever knows if a wind reading for a particular heat attempt was 2.02 or 2.09. For conversion purposes, 2.0 meters per second is just a little under 4.5 miles per hour. **(WG18)**

Any mark associated with a negative wind reading (into the face of the runner or jumper) is always legal for records, state qualifying, and future seed mark purposes. **(WG19)**

Note that the only relevant dimension of the wind reading is the magnitude of the wind vector in the direction of the forward motion of the competitor. **(WG20)**

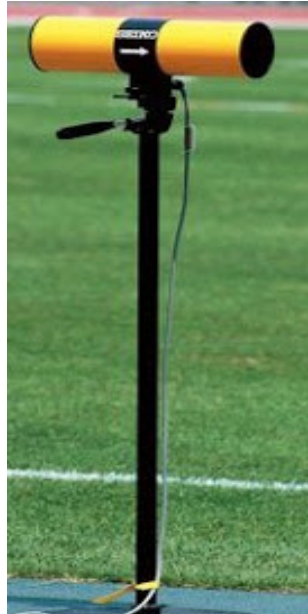
12. Terminology (WG21)

Wind reading is expressed in meters per second (mps). A positive (+) reading (tailwind) means the wind direction is from behind (which helps increase velocity), while a negative (--) reading (headwind) refers to the a wind that blows against an athlete as he/she move(s) forward. In the affected events, all the "negative wind" such as -0.5, -1.8, -3.0 are considered "legal", while "positive wind" would only be considered legal when the reading is not exceeding +2.0, means that +2.01 would be illegal and performance shall not be ratified (as new record).





Electronic Wind Gauge



Wind Gauge

References

- [A realistic quasi-physical model of the 100 metre dash](#) by J.R. Mureika
- [A mathematical analysis of the bioenergetics of hurdling](#) by A.J Ward-Smith
- [A model of wind and altitude effect 110m hurdles](#) By Spiegel & Mureika
- [The legality of wind and altitude assisted performances in the sprints](#) by J.R Mureika
- [Effects of winds on world class long jump performance](#) by David W. Murrie
- [What really are the best performances?](#) J.R. Mureika
- [Comparing 100m sprints](#) by K. Duffy

Resources

- Wind Gauge Set-up and Operations – April 2020
<https://www.flipsnack.com/USATF/horizontal-jumps/full-view.html>
- USAFT Code of Ethics/ Professional Guidelines
[USATF Code of Ethics and Performance Guidelines](#)



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REMINDER MAP - Common Learning/Performance Objectives (PO's) for all Junior Official Participants

Mentors will be concentrating on the areas in gray to determine your Checklist and Field of Play Evaluation during and at the end of your individual time-line in the program.

Code of Ethics/Performance Objectives (PO's)	PO #	Assessment Evaluation Criteria (P.O.'s)	PO #
Be fair, consistent, and impartial to ensure equitable treatment for all competitors.	PO1	Arrives on time for meetings and events.	AEC1
Have a thorough knowledge of the rules and procedures for the particular event or position assigned and review them prior to a competition.	PO2	Properly wears officials' uniform; presents a professional appearance.	AEC2
Cooperate with fellow officials to conduct competition in a safe and professional manner. Be courteous and avoid confrontations or making derogatory comments to athletes, coaches, spectators, or other officials.	PO3	Knows and applies rules correctly and consistently.	AEC3
Demonstrate respect and courtesy for other officials. Avoid interfering with duties assigned to other officials or publicly questioning the performance of other officials. Assist in correctly applying rules and support final decisions rendered by chief officials. Provide and accept performance feedback in a positive manner.	PO4	Treats all personnel with respect and professionalism	AEC4
Honor all assignments and agreements made for performance of officiating and support duties.	PO5	Communicates effectively with competitors.	AEC5
Not discriminate against any individual or group on the basis of race, color, religion, gender, national origin, age, or other protected characteristic.	PO6	Stays alert to the competition, potential problems, and the athletes.	AEC6
Not engage in harassment by making unwelcome advances, remarks, or display of materials where such would create an intimidating, hostile, or offensive environment.	PO7	Works well with other officials for success of the crew.	AEC7
Not fraternize with athletes or coaches, provide tips or comments which could be construed as coaching for any athlete, nor cheer for or provide encouragement to particular athletes or teams during a competition.	PO8	Willing to pitch in and help wherever needed or directed.	AEC8
Not use tobacco products while in the field of competition, nor consume alcoholic products before or during a competition.	PO9	Has applicable rule books and necessary personal equipment.	AEC9
Conduct an honest self-evaluation after each competition, to identify errors made and areas for improvement; and be receptive to suggestions for conducting events in the best possible manner in the future.	PO11	Conducts complete, accurate briefings for athletes.	AEC11
Comply with the USA Track & Field Officials Code of Ethics	PO12	Effectively manages volunteers	AEC12

Be punctual in reporting for assigned officiating duties, including allowing adequate time for venue inspection and set-up prior to the warm-up period and competition.	PO13	Completes event forms properly and neatly	AEC13
Possess the appropriate rule book(s) for the competition.	PO14	Demonstrates good decision-making and problem-solving skills.	AEC14
Possess and maintain appropriate uniform items and wear the national uniform or other dress prescribed by meet management, and be prepared to continue duties in all types of weather.	PO15	Accepts & responds to feedback, contributes to post-event review	AEC15
Inspect assigned venues to ensure the safety of athletes, officials, and spectators. Correct or report apparent or suspected dangers to meet management before beginning a competition.	PO16		
Be calm, positive, and polite. Refrain from dialog with athletes and coaches regarding disputed calls or decisions, and instead refer them to the referee, protest table, or games committee for resolution. Report abusive behavior toward officials to meet management.	PO17		
Not use any electronic or photographic devices, including cell phones, while officiating.	PO18		
Assist in submitting competition results, cleaning the event area, and returning equipment. Before departing the site, determine if any other venues need officiating assistance.	PO19		
Attend periodic training sessions or clinics to maintain or update officiating skills. Assist, as appropriate, in developing and presenting training materials.	PO20		
Keep physically fit, and advise their association or coordinator of officials of physical limitations on their ability to perform any assigned duty.	PO21		
Mentor less experienced officials by sharing information and techniques, demonstrating use of equipment, identifying potential problems or issues and recommending solutions, and encouraging questions.	PO22		
Assist in recruiting new officials.	PO23		
Consider active involvement with the officials' committees of the local association and USATF.	PO24		
Make recommendations for rules changes as appropriate.	PO25		



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Study Guide 17– Wind Gauge – Common Rules -Mentor Assessment Checklist

Participant Name _____ Mentor Name _____

Evaluate applicable areas, based on assignment(s) for this meet/some areas will be Non-Applicable (NA)

INSTRUCTIONS: All items on this Checklist must be completed during the timeline of the program. Some participants are in the program for one-to-four years. All items/objectives should be checked when the item is successfully completed. Not all items will be completed at any particular meet but over a series of meets. Enter the date of the completed PO/LO, your Initials for verification, and any comments that you may have. Make three (3) copies when the form is completed. Keep one (1) copy for yourself. Distribute one (1) to the participant. Send one (1) to your Certification chairperson or to your Junior Officials Program coordinator as per your specific Association designee. All Objectives must be met before submission. Note: Some of the items on the checklist maybe “Not Applicable (NA) but those items are very limited. Ex. A 14 year-old JOP Participant will not be a Starter at a meet or assigning other officials to duties. These type criteria will be marked NA. NA’s should be used sparingly.

Learning/Performance Objective What the JOP should be able to do or explain...	PO #	Date Completed	Mentor Initials
1. USATF RULE 134 – Wind Gauge Operator	WG1		
2. USATF RULE 163.10	WG2		
3. USATF RULE 163.11	WG3		
4. USATF RULE 163.12	WG4		
5. USATF RULE 163.13	WG5		
6. USATF RULE 163.14	WG6		
7. Type of wind gauges.	WG7		
8. Limited use to straightaway on courses.	WG8		
9. Long Jump/Triple Jump wind readings	WG9		
10. Device Placement –1.22m(9 4’)/above ground/Parallel to ground to straight away/at prescribed distances.	WG10		
11. Device Placement – Long Jump/Triple Jump	WG11		
12. Device Placement – 100m/200m, 100.110m hurdles	WG12		
13. Starting device – Long Jump/Triple Jump	WG13		
14. Starting device – 100m/110m hurdles	WG14		
15. Starting device – 200m	WG15		
16. Reading the wind Gauge – rounding up to the nearest 10 th of meter per second.	WG16		
17. Reading Gauge example	WG17		
18. Wind Gauge automatic rounding up. Conversions.	WG18		
19. Negative reading (in the face of the runner) is legal.	WG19		
20. Magnitude of the wind vector in forward motion.	WG20		
21. Terminology – Positive reading (Tail Wind)/negative reading (Head Wind)	WG21		

Comments: _____



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Study Guide 17 – Wind Gauge – Mentor Assessment Field of Play Evaluation

Participant's Name: _____ Mentor Name: _____

MENTORS – All items on this Checklist must be completed during the timeline of the program. Some participants are in the program from one-to-four years. All items/objectives should be checked when the item is successfully completed. Not all items will be completed at any particular meet but over a series of meets. Checkoff the rating that you give to the JOP Participant, enter the date of completion and enter your initials as a verification that the objective was completed. If you have assigned a rating of Fair* - Please add your rationale to the *Area for Improvement space. *Please submit a copy of this Field of Play Evaluation/Assessment final form with the completion dates and your Mentor signature, to the Association Certification Chairperson or JOP Designee in your Association. Please make 3 copies -One (1) for your records, one (1)for the Association Chair/JOP Designee, and one (1) to give to the JOP Participant for their records. Hardcopies or electronic copies are acceptable. All Objectives must be met before submission.*

Code of Ethics/Professional /Learning/Performance Objectives	PO#	Fair* (check)	Good (check)	Excellent (check)	Date Completed	Mentor Initials
1. Arrives on time for meetings and events.	AEC1					
*Area for Improvement (Fair or below):						
2. Properly wears officials' uniform: presents a professional appearance.	AEC2	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
3. Knows and applies rules correctly and consistently.	AEC3	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
4. Treats all personnel with respect and professionalism.	AEC4	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
5. Communicates effectively with competitors.	AEC5	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
6. Stays alert to the competition, potential problems, and the athletes.	AEC6	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
7. Works well with other officials for success of the crew.	AEC7	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						

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8. Willing to pitch-in and help wherever needed or directed.	AEC8	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
9. Has applicable rulebooks and necessary personal equipment.	AEC9	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
10. Correctly and efficiently prepares the venue and maintains a high level of safety.	AEC10	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
11. Conducts complete, accurate briefings for athletes.	AEC11	Fair*	Good	Excellent	NA	NA
*Area for Improvement (Fair or below):						
12. Effectively works with volunteers.	AEC12	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
13. Completes event forms properly and neatly.	AEC13	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
14. Demonstrates good decision-making and problem-solving skills.	AEC14	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
15. Accepts and responds to feedback in an appropriate manner.	AEC15	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
16. Not discriminate against any individual or group on the basis of race, color, religion, gender, national origin, age, athletic ability or other protected characteristic.	PO6	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
17. Not engage in harassment by making unwelcome advances, remarks, or display of materials where such would create an intimidating, hostile, or offensive environment.	PO7	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						



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18. Not use tobacco products while in the field of competition, nor consume alcoholic products before or during a competition.	PO9	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
19. Be calm, positive, and polite. Refrain from dialog with athletes and coaches regarding disputed calls or decisions, and instead refer them to the referee, protest table, or games committee for resolution. Report abusive behavior toward officials to meet management.	PO17	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
20. Not use any electronic or photographic devices, including cell phones, while officiating.	PO18	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
21. Keep physically fit, and advise their association or coordinator of officials of physical limitations on their ability to perform any assigned duty.	PO21	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
22. Presentation of JOP Log of meet experiences containing the number of Hours based on age group.	Program Requirement	Fair*	Good	Excellent		
*Area for Improvement (Fair or below):						
23. Presentation of Journal or "Briefcase of acquired materials indicating the participants knowledge of growth over the length of the program.	Program Requirement					
*Area for Improvement (Fair or below):						

Comments: _____

