SO 25-015 Modifies this GO

DEPARTMENTAL GENERAL ORDER 22-123

ST. LOUIS COUNTY POLICE
OFFICE OF THE CHIEF OF POLICE

February 16, 2022

Index as:
Calibration Certification
Certification of Radar Guns and Tuning Forks
Deployment of Radar/Lidar Units
Pace Tickets
Radar/Lidar Policy
Radar-Speed Gun Use
Radar/Lidar Use and Certification
Speed Limit Enforcement Methods
Selective Traffic Enforcement Activities
Ticket Information
Tuning Fork Certification

Cancels:
Procedure 200-30

SPEED LIMIT ENFORCEMENT METHODS AND EQUIPMENT

I. PURPOSE

The purpose of this General Order is to establish policy and procedure for the methods used to enforce the speed laws within St. Louis County, standardize the deployment of radar **and lidar** equipment, ensure proper information is placed on **traffic** tickets, provide **guidance** for regular testing and maintenance of radar **and lidar** equipment**, and establish reporting procedures for selective traffic enforcement activities**.

II. POLICY

For roadways patrolled by this Department, it enforces, with impartiality and accuracy, the speed limits.

III. DEFINITIONS

A. High **Crash** Locations – Sites of **vehicle crashes** involving injury **or** death where speed **and/or hazardous moving** violations were a contributing factor. These locations will be identified in a monthly report entitled "**Traffic Safety** Site Report" generated by **each P**recinct **C**ommander **and Bureau/Unit Commander as needed. The identified locations must be the primary locations for speed enforcement.**

B. High Volume Violation Locations – Locations where there **exists** a high frequency of speeding, **hazardous moving** violations, **or both. These locations will also be identified in the monthly** "**Traffic Safety** Site Report" **by Precinct/Bureau/Unit Commanders. It is the Commander's responsibility to validate the sites before radar/lidar usage is authorized.**

C. Lidar (Light Detection and Ranging) – A device used to measure the speed of a moving vehicle by transmitting a beam of infrared light at an object and

calculating the time it takes the reflected light to return to the unit. These units are also known as a Laser.

D. Permanently Mounted Radar Units – Units **attached to a police vehicle that** continually monitor **vehicle speeds** and may be operated at any location **or while moving during routine patrol.**

E. Radar (Radio Detection and Ranging) – A device used to measure the speed of a moving object/vehicle by detecting a change in radio frequencies caused by the Doppler effect, so that the frequency of the returned radio signal is increased in proportion to the object's speed of approach if the object is approaching and lowered if the object is receding.

F. Speed Survey - The deployment of radar or lidar for monitoring traffic flow and vehicle speeds at a location.

G. Valid Citizen Complaints – **Citizen complaint's regarding** speeding motorists that **are validated by a watch commanders prior to authorizing** radar**/lidar** usage. **Validation may be made by observed surveys or traffic monitoring survey equipment (i.e., Stealthstat or Jamar). These locations will also be identified on the monthly "Traffic Safety Site Report".**

H. Work Element – A subdivision of the Department, such as a Division, Precinct, Bureau, Unit, or Office.

IV. PROCEDURES

A. Equipment

1. RADAR

a. The Department authorizes the use of hand-held **or mounted** moving/stationary Doppler Radar operating on the "K" and "KA" bands of the radio spectrum.

b. All **equipment** must be equipped with software designed to perform a complete self-test involving verification of accuracy; any detected malfunction must result in some form of "FAIL" indication.

c. Each **radar** unit must provide a minimum range of one mile on a straight, open, two-lane roadway while detecting an average size vehicle, **and** displaying the target speed on an LCD display.

d. Each **radar** unit **must** have a minimum of two tuning forks, certified by the manufacturer, for field testing the unit by its operator **or be equipped with electronic tuning forks for the same purpose.**

2. LIDAR

a. The Department authorizes the use of hand-held Lidar Units.

b. All equipment must be equipped with software designed to perform a complete self-test for accuracy and operation; any detected malfunction must result in some form of "FAIL" indication.

c. Each Lidar unit must provide a minimum range of 2000 feet on a straight, open, two-lane roadway while detecting an average size vehicle, and displaying the target speed on an LCD display.

B. <u>General Operation</u>

1. Radar/Lidar usage may be used in high crash locations, high volume violation locations, and areas with validated citizen complaints. Permanently mounted radar units may be used any time officers are on patrol.

2. **Radar/Lidar usage is unacceptable when there is**:

a. High volume, "rush hour" **type traffic conditions when enforcement stops would interfere with traffic flow or pose a safety hazard; and**

b. Speed limit changes (except school zones); **and**

c. **A location at** the bottom of **a** hill, unless **that location has been** identified in the precinct/bureau/unit commander's **monthly "Traffic Safety Site Report"** as a high **crash** location involving injury **or** death.

3. To ensure that the unit readings are admissible in court, **officers must**:

a. Ensure that the location has properly posted Speed Limit signage that is clearly visible to approaching vehicle operators; and

b. Perform a self-test of the radar or lidar unit; and

c. Perform two radar tuning fork tests before and after enforcement **deployment when using radar; and**

d. Conduct alignment and distance testing before and after deployment when using lidar; and

e. Visually identify a specific target vehicle **exceeding the speed limit** and then **use** the radar **or** lidar unit to **verify** that the vehicle was exceeding the posted speed limit before taking any enforcement action**; and**

f. **Confirm** the ground speed of the police vehicle with the radar unit when using the radar unit in the moving mode of operation**; and**

g. **Record the radar unit serial** number and tuning fork numbers on the traffic citation**.**

1) If using a lidar unit, the serial number will also be noted on the citation.

2) Additionally, this information should be recorded in the "Notes" section (Tab 7) of the electronic ticket or "Other" section on a hand-written citation.

h. **If** there is a unit malfunction the **officer should cease** operation, return the unit to the **work element**, and notify the on-duty supervisor of the malfunction.

1) The supervisor **must** ensure all necessary **documentation** is prepared, and arrangements are made for repairs.

2) Repair can be coordinated through the Department's contracted service provider or returned to the manufacturer.

C. Radar Equipment Usage

1. A **Daily Radar Survey Site Form (F-409) will** be **used** for each location **listed on the Traffic Safety Site Report** where radar is **deployed. However, a form** is **not needed if a** patrol **vehicle** has a permanently mounted radar unit **and enforcement occurs during patrol at a non-designated site.**

2. The officer issuing a radar speeding citation **must** print:

a. **T**he DSN of the radar operator if it was operated by another officer**; and**

b. **The serial number of the radar** gun**; and**

c. **T**he direction of travel **of and/or lane number of the violator; and**

d. **T**he tuning fork numbers in the section of the **mobile** ticket designated as **"Notes."**

3. **If the citation is hand-written, the information should be written** in the section designated as "Other."

4. The officer will sign for use of the equipment on the work element's Daily Equipment Accountability Log and is responsible for its return in working order.

5. The speed detection method must be recorded as STATIONARY RADAR or MOVING RADAR as appropriate.

D. Tuning Fork Usage

1. Tuning forks are a very durable, basic, and accurate means of testing traffic radar devices. Other than periodic checks for frequency, they provide years of service **as long as they are maintained and not** struck too severely against hard surfaces.

2. The fork is made of cast aluminum and its vibrating frequency is determined by the type of metal, temperature of the metal and the shape and length of the **tine**. The shape and length of the tines are the major factors in determining frequency, the longer the tines, the higher the frequency.

3. Temperature has a slight effect on tuning forks; between 0- and 140-degrees Fahrenheit, the speed of the fork will vary approximately one mile per hour. For the most accurate test, the forks **must** be checked at or near room temperature (approximately 70 degrees).

4. **Radar units equipped with electronic tuning forks built into the control handset should be used to test equipment as directed by the manufacturer. Standard metal forks may also be used with these radar units.**

E. Lidar Equipment Usage

1. A **Traffic Enforcement Operator/Observer** Log **(F-410)** will be prepared for each location where lidar is operated with assisting enforcement units.

2. Upon completion of the assignment, **the Operator/Observer** Log **(F-410)** will be **returned to a supervisor and** filed within the **work element** for a period not to exceed one **(1)** year.

3. The officer issuing a lidar speeding citation **must** print:

   a. The DSN of the lidar operator, if operated by another officer**; and**

   b. **The serial number** of the lidar gun**; and**

   c. The direction of travel **and/or lane number** of **the violator in the section of the electronic ticketing** citation designated as **"Notes."**

4. **If the citation is hand-written, the information should be written** in the section designated as "Other".

5. **The speed detection method must be marked as "LASER" in the appropriate box. Additionally, if another officer is operating the Lidar, "WATCH (GROUND)" should be indicated.**

F. Pacing

1. When pacing a vehicle to determine its speed, **the** officer will ensure that the police vehicle is not overtaking the suspect vehicle but maintaining a constant and safe following distance.

2. **The** officer **must** verify that the suspect vehicle is traveling at the same or faster speed of the patrol vehicle **for at least 1/10 of a mile.**

3. The accuracy of the police vehicle's speedometer should be verified by using a properly tested and calibrated radar unit **or lidar unit operated** by a qualified officer.

4. Police vehicle **maintenance could affect the accuracy of the speedometer readings** (e.g., change in tire size, transmission repair, etc.).

5. **After maintenance, the police vehicle must** be **checked** against a properly tested and calibrated radar **or lidar** unit operated by a qualified **officer** prior to being **used** as a pace vehicle in speed enforcement.

6. **The police vehicle number should be noted in the "Notes" section of the electronic ticket or written in the "Other" section on a hand-written citation.**

7. **The speed detection method will be marked as PACE where appropriate on the citation.**

G. Speed Blocks

1. Metro Air Support pilots will only conduct speed enforcement at those locations where the Missouri State Highway Patrol **(MSHP)** has provided confirmed measurements of the painted speed block separation **on the roadway.**

2. Air Support pilots**/observers must use** certified stopwatches for all enforcement activities and maintain a **Traffic Enforcement Operator/Observer** Log **(F-410)**.

3. Aircraft pilots/observers must be able to demonstrate to a supervisor, their ability to:

    a. Identify target vehicles and, with reasonable accuracy, estimate their speed; **and**

    b. Properly **use** a stopwatch to time the target vehicle as it passes between the **painted** speed blocks; **and**

    c. Accurately calculate the target vehicle's speed or accurately **use** the speed tables provided by the MSHP.

4. Prior to the commencement of enforcement activities, at least one police vehicle, with a **verified accurate speedometer,** will drive through the **painted** speed blocks on the roadway, while maintaining a constant speed.

5. **The police vehicle will be used for the observer to verify the accuracy of the stopwatch, the observer's calculations and the speed conversion table used.**

6. **The observer will maintain a written Traffic Enforcement Operator/Observer Log (F-410) of violations and provide an Air Violation (AV) number to the officer stopping and citing the violator.**

7. Officers issuing citations observed by aircraft will note the witness officer's DSN and Air Violation (AV) number in the **"Notes"** box **of the mobile citation or** in the "Other" box **of a handwritten citation.** Additionally, the speed detection method will be designated as **WATCH (AIR)** in the appropriate box of the citation.

H. Radar/Lidar Maintenance

1. Speed detection units, though durable, should not be subjected to extremes of temperature, humidity, or vibration.

2. While **using** equipment, operators must ensure that the units will not be exposed to liquids.

3. All units are to be stored and/or transported in protective carrying cases.

4. Damaged or inoperative units should be taken to **the Department's** contract repair facility or **sent to the manufacturer** for repair.

5. The Vehicle and Supply Unit can advise or authorize any necessary work to be done by a contract vendor, the original supplier, **or the manufacturer.**

I. Radar Certifications and Qualifications

1. Tuning Fork **Certification**

a. Tuning fork certification **must** be performed under the direction of the assigned **work element** (watch) commander on a semi-annual basis. The assigned commander will ensure the proper forms documenting the certification of the tuning forks are completed **for each radar unit.**

b. Certification of tuning forks **must** be recorded on the Radar and Tuning Fork Certification of Accuracy Form **(F-376)**.

c. **The** original **Certification** form **must** be retained by the **work element** for a period of three **(3)** years.

d. The manufacturer certificates are to be retained in each radar unit's equipment file for the life of the equipment.

e. With the fork at or near room temperature, strike it on a non-metal surface **and follow the attached VOCAR TFG directions for use.**

f. Each tuning fork has a manufacturer certificate that identifies the Tuning Fork Band (K or Ka), its frequency oscillation in HERTZ and its operating GHZ.

Example: Tuning fork #1234 was tested and found to operate at 3205 HERTZ at room temperature. When used with a Ka Band Doppler radar operating at 35.5 GHz will cause a calibration signal of 30 mph -which should match the speed indicated on the tuning fork.

g. The speed indicated during the calibration should not vary more than 0.5 mph and the HERTZ should not vary more than +/- 10 on the display compared to the information provided on the tuning fork certificate.

h. If the frequency reading shown on the digital frequency counter meter does not fall within the tolerance (+/- 10 Hertz) **and it consistently shows a wider deviation,** the watch commander **must** ensure the fork is **taken out of service. Replacement tuning forks may be purchased from the radar equipment manufacturer.**

i. After the tuning forks have been certified, **they** will be used to certify the radar unit. **The tuning forks should remain with the associated radar unit and should not be interchanged with other units.**

j. Check the **radar's** moving mode by striking the tuning forks on a non-metal surface and hold them in front of the **radar** antenna simultaneously.

k. Check the **radar's** stationary mode by striking the tuning forks on a non-metal surface and hold them in front of the **radar** antenna independently.

2. DB Design Brand - VOCAR TFG – Tuning Fork Gauge - Certification

a. The assigned Watch Commander/Supervisor will ensure that the calibration of each **tuning fork assigned to all radar equipment in the work element is performed. The VOCAR TFG will be the only equipment used by Department personnel for the calibration check. For further, please refer to the attachment entitled VOCAR TFG Directions for Use.**

b. Tuning fork calibration may also be conducted by the manufacturer or independent service contractor. A calibration certificate must be provided when completed.

c. The radar unit's band and operating frequency must be noted for use in the VOCAR TFG. Refer to the manufacturer tuning fork certificates.

d. **The Watch Commander/Supervisor must ensure the completion of the Radar and Tuning Fork Certification of Accuracy Form (F-376) which will be** retained in the precinct files for a period of three **(3)** years.

e. A copy of the semi-annual certifications **must** be forwarded as directed to **the Staff Inspector and Bureau of Research and Analysis** for the accreditation files.

3. Operator Qualification

a. No officer **will** operate a radar unit in an enforcement capacity without first attending training on the operation of traffic radar equivalent to the St. Louis County and Municipal Police Academy's Basic Police Training Curriculum. **Determination of an equivalent course will be made by the St. Louis County Police Academy in accordance with POST guidelines.**

b. Officers must demonstrate to a Field Training Instructor their ability to properly:

a. Test the accuracy of the instrument; **and**

b. Operate the radar unit in moving, stationary and same direction modes (If equipped); **and**

c. Identify target vehicles and their speeds **with reasonable accuracy**; **and**

d. Recognize malfunctions.

J. Lidar Certifications and Qualifications

1. Lidar Certification

a. The certification of Lidar units is based on the accuracy of the laser in the equipment. The certification is accomplished by checking the laser's ability to measure distance in a straight line.

b. Each work element will designate an outside location at their operations base (precinct station, unit office, etc.) where the lidar can be tested. The lidar will be directed from a fixed stationary location to a fixed object (utility pole, building wall, utility box, etc.).

c. Two targets will be defined at different distances. One distance should be at least 100 feet from the stationary point and the second distance should be greater than 100 feet (such as 175 feet or 225 feet).

d. A certifying officer will use the Laser/Lidar Calibration Form (F-405) to record the results of monthly tests to ensure the equipment is working correctly. The form will be reviewed semi-annually by the designated commander at the same time the radar tuning fork calibrations are performed.

e. Testing may consist of the following:

1) Sight Alignment Test

Using the designated fixed object (such as a utility pole), the officer will direct the lidar to the object and move the lidar horizontally to ensure the beam is accurately hitting the object. The lidar will then be turned 90 degrees and the object will be sighted again, moving the lidar horizontally.

2) Range/Distance Test

Using the two previously measured points in item J.,1., c., verify that the lidar is accurately displaying the correct distance for the two points.

2. Operator Qualification

a. No officer **will** operate a lidar unit in an enforcement capacity without first attending training on the operation of traffic lidar that is equivalent to the St. Louis County and Municipal Police Academy's Basic Police Training Curriculum.

b. Officers must demonstrate to a Field Training Instructor their ability to properly:

a. Test the accuracy of the instrument; **and**

b. Operate the lidar unit in a stationary setting; **and**

c. Identify target vehicles and their speeds **with reasonable accuracy**; **and**

d. Recognize malfunctions.

K. Subpoenas

1. Radar Court Cases

a. Upon being subpoenaed to court on a speeding case, the officer **must** review **a** copy of the ticket and identify the radar operator **and the serial numbers of the** radar gun and tuning forks involved in the case **that is** pending prosecution.

b. The officer **must** request a copy of the certification of the speed gun and tuning forks from **either** the precinct desk officer or **work element supervisor.**

c. Care should be taken to ensure the most recent certifications dated prior to the issuance of the citation**(s)** are taken to court.

d. The desk officer, or **designee,** is not to give out the original precinct copy of the certification as it may be needed in another court case. **Instead, a copy must be made for the requesting officer to** use in court.

2. Lidar Court Cases

a. Upon being subpoenaed to court on a speeding case, the officer **must** review **a** copy of the ticket and determine the relevant **equipment** information necessary for the prosecution.

b. The officer **must** then request copies of any certification for the lidar from **either the precinct desk officer or work element** supervisor.

L. Reporting

1. Survey Site Reporting

a. It is the responsibility of the Neighborhood Policing supervisor, or designee, to ensure copies of approved radar survey sites are readily available to officers.

b. When conducting traffic enforcement activities at approved radar survey sites officers must record all activity on Department Form F-409 entitled Daily Radar Survey Site Form.

c. The completed form along with any other relevant documentation should be returned to a supervisor, or designee, by the end of the officer's shift.

d. It is the responsibility of the Neighborhood Policing supervisor, or designee, to compile all data received into a preformatted Excel spreadsheet. The data collected will then be used to assist the work element in:

1) Creating a monthly Traffic Safety Site Report; and

2) Providing the Bureau of Research and Analysis with data that will be used to prepare the annual selective enforcement activities report.

e. **All completed Daily Radar Survey Site Forms (F-409) should be** filed **within** the **work element** for a period not to exceed one **(1)** year.

2. Traffic Site Safety Report

a. **The Neighborhood Policing Unit or designated officer will compile data related to traffic crashes that occur within a precinct, contract patrol area or other geographic area.**

b. **A monthly Traffic Safety Site Report will be prepared for the precinct or unit. The report will include a list of locations that identifies if the locations are high crash locations, high volume violation locations or verified citizen complaint locations.**

c. **Each precinct/unit will track their radar deployments and enforcement activity results monthly.**

d. **The report will identify the relevant month and year, specific locations, corresponding beat, and the justification for the site (crashes, high volume, citizen complaint). For tracking purposes, each site will record how many speed surveys were conducted, total time spent on surveys, the number of citations and warnings issued for each location.**

e. **Upon request, each precinct commander, or designee, may forward a copy of their Traffic Safety Site Report to the supervisor of the Highway Safety Unit for consideration of enforcement deployments when available.**

f. **The Traffic Safety Site Report will be maintained by each work element for a period of one (1) year.**

Attachments
Traffic Enforcement Assignment Log/Daily Radar Survey Site Form (F-409)
Traffic Enforcement Operator/Observer Log (F-410)
Traffic Safety Site Report Template
F-376 Radar and Tuning Fork Certification of Accuracy
F-405 Laser/Lidar Calibration Form
VOCAR TFG Directions for Use

Adopted by Command Staff DRAFT

By order of:

COLONEL KENNETH GREGORY
Chief of Police

KG:JM:mw

Approved at the regular Board meeting of Police Commissioners dated February 16, 2022.

COMMISSIONER
Chair

COMMISSIONER
Secretary

Distribution
All Department Personnel

CALEA Reference
17.5.**2**; **61.1.1; 61.1.6; 61.1.8**