U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ORDER 6560.10C

National Policy

Effective Date: 1/20/11

SUBJ: Runway Visual Range (RVR)

1. Purpose of This Order. This order provides general information on the installation, operation, and utilization of Runway Visual Range (RVR) systems. It further establishes guidelines for the installation of RVR systems and retrofit programs for existing installations under the various categories of operation.

2. Audience. The audience for this order is Federal Aviation Administration (FAA) personnel involved in the operation of RVR systems within the National Airspace System (NAS), including personnel involved in instrument flight procedure development, takeoff and landing operations, RVR installation, RVR maintenance, and RVR monitoring.

3. Where You Can Find This Order. You can find this order on the MyFAA employee Web site at https://employees.faa.gov/tools_resources/orders_notices. Inspectors can access this order through the Flight Standards Information Management System (FSIMS) at http://fsims.avs.faa.gov. Operators may find this information on the FAA's Web site at http://fsims.faa.gov.

4. What This Order Cancels. This order cancels FAA Order 6560.10B, Runway Visual Range (RVR), dated May 9, 1977.

5. Scope. The requirements of this order apply to RVR use for all takeoff and landing operations, including RVR siting criteria for operational credit, and the criteria for the use of an RVR visibility sensor (VS) to serve more than one runway (RVR VS sharing). Distances shown in this order are in feet. The metric equivalent distances, when given, are approximations.

6. Definitions.

a. Runway Visual Range (RVR). In the United States, the RVR value is determined by instruments located alongside and approximately 14 feet higher than the centerline (CL) of the runway, based on standard calibrations. This represents the horizontal distance a pilot can expect to see down the runway, based on sighting either the High Intensity Runway Lights (HIRL) or the visual contrast of other targets, whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal visual range, not slant visual range.

b. Touchdown RVR Visibility Sensor (VS). The touchdown RVR VS is located near the touchdown end of the runway and is installed in accordance with the criteria stated in this order and the applicable standard installation drawings.

c. Mid-Point RVR VS. The mid-point RVR VS is located within 1,000 feet of the center point of the runway and is installed in accordance with this order and the applicable standard installation drawings.

d. Rollout RVR VS. The rollout RVR VS is located near the rollout end of the runway and is installed in accordance with this order and the applicable standard installation drawings.

e. Far End RVR VS. The far end RVR VS is the touchdown RVR VS on the reciprocal runway when four RVRs are installed.

f. Designated RVR Runway. The designated RVR runway is the runway officially designated by the FAA for reporting 10 minute average maximum and minimum RVR values for use in weather reporting, commonly referred to as longline RVR information. This will normally be the runway having the lowest instrument minima. This definition is for weather reporting and flight planning purposes.

g. Runway Threshold. In this order, all references to the runway threshold refer to the landing threshold unless otherwise noted.

h. RVR Usability Radius. When determining if an RVR VS is suitable for use on adjacent runways, an RVR VS is considered usable within an area defined by a circle centered at the RVR VS location, with a radius of 2,000 feet (4,000-foot diameter). Refer to Figure 2, Runway Visual Range Visibility Sensor Sharing Example.

7. RVR Visibility Sensor Requirements.

a. Transmissometer RVR Systems. Currently, there are still transmissometer-type RVR systems in use at many airports. Transmissometer systems utilize an incandescent lamp projector and receiver that provide RVR readings as low as 600 feet, and report in 200-foot increments from 600 RVR to 3,000 RVR. Transmissometer RVR systems are no longer being installed in the United States. However, the relevant standard installation drawings contain information concerning longitudinal and lateral projector and receiver locations. Transmissometer systems must not be installed or relocated to support Category (CAT) II/III operations, unless relocating a transmissometer system to replace a previously installed transmissometer system at a runway served only by transmissometer systems.

b. Scatter-Effect RVR Systems. Newer RVR systems using scatter-effect technology are replacing older transmissometer systems. The new systems have low maintenance costs, eliminate the use of steel and concrete structures on the airport surface, and provide RVR readings as low as 0 feet. The new systems utilize an infrared projector and receiver and reports data in 100-foot increments below 800 feet, in 200-foot increments between 800 feet and 3,000 feet, and in 500-foot increments between 3,000 feet and 6,500 feet. An RVR reading above 6,249 feet generates an RVR report of 6,500 feet, and an RVR reading below 50 feet generates an RVR report of 0 feet. The RVR system rounds off the calculated value; therefore, an RVR report of 800 feet indicates an actual RVR value between 751 feet and 899 feet.

c. Longitudinal Location.

(1) Touchdown RVR VSs are located 0 feet to 2,500 feet (0 meters to 750 meters) from the runway threshold, normally behind the instrument landing system (ILS) glide slope (G/S) antenna, precision approach path indicator (PAPI), visual approach slope indicator (VASI), or microwave landing system (MLS) elevation antenna (if applicable). Refer to Figure 1, Runway Visual Range Visibility Sensor Longitudinal Locations.

(2) Rollout RVR VSs are located 0 feet to 2,500 feet (0 meters to 750 meters) from the threshold at the rollout end of the runway, normally behind the ILS G/S antenna, PAPI, VASI, or MLS elevation antenna (if applicable).

(3) Mid-point RVR VSs are located within ±1,000 feet (300 meters) of the center point of the runway.

(4) Runways longer than 12,000 feet may require 4 RVR VSs to adequately support low visibility operations to both ends of the runway. Placement of RVR VS sensors will be in a manner that ensures the maximum continuous coverage. The touchdown RVR VS must be located 0 feet to 2,500 feet (0 meters to 750 meters) from the runway threshold. The midfield RVR VSs will be located within 1,000 feet (300 meters) of a point one-third of the way down the runway from the respective landing thresholds. RVR reporting for the “touchdown, mid, and rollout” will be referencing the first 3 sensors from the landing threshold (i.e., the second midfield RVR is considered the “rollout” RVR). The fourth or “far end” sensor will serve as additional information. Figure 1 shows an example of RVR siting criteria.

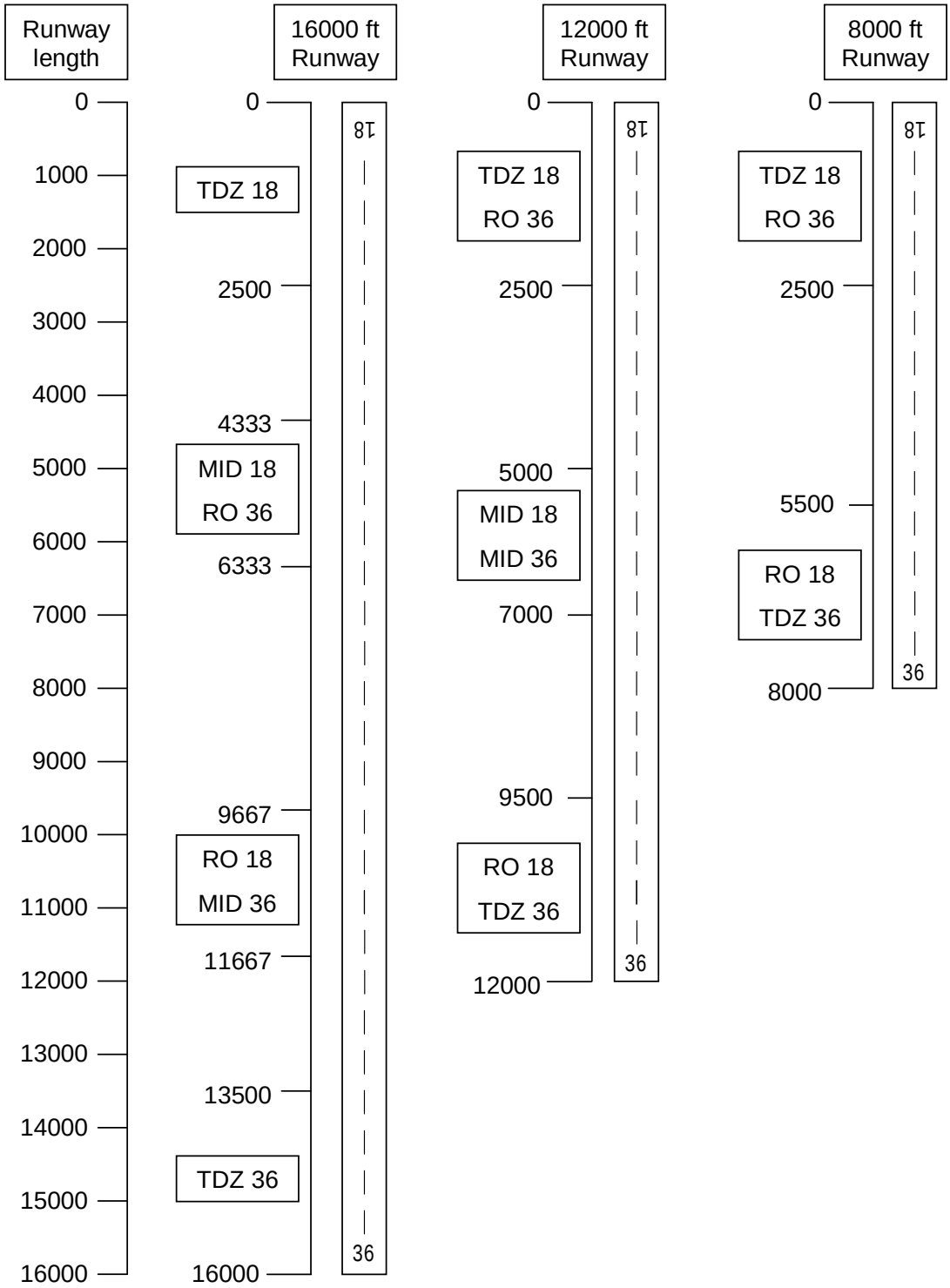
(5) Based on both the current and proposed airport layout, longitudinal location of any RVR VS installation should consider the possibility of sharing service with an adjacent runway.

d. Lateral Location. RVR VSs are installed adjacent to the instrument runway that they serve, in a location that does not conflict with an adjacent runway or taxiway.

(1) Single-point RVR VSs are located at least 400 feet (120 meters) from the runway CL. RVR VSs must also be sited outside any taxiway object-free areas. Coordinate locations with the responsible airport’s Regional/District Office.

(2) Lateral location of any RVR installation should consider the possibility of sharing with an adjacent runway, based on both the current and proposed airport layout.

FIGURE 1. RUNWAY VISUAL RANGE VISIBILITY SENSOR LONGITUDINAL LOCATIONS



e. RVR Sharing. Adjacent runways may be authorized to share RVR when segments of those runways (as described below) are located within a circle with a 2,000-foot radius (4,000-foot diameter) centered at the RVR VS location. Figure 2 shows an example of how to apply RVR sharing criteria.

(1) Touchdown RVR VS.

(a) CAT II and CAT III Operations. The threshold plus 2,000 feet of runway is required within the 2,000-foot radius circle.

(b) All Other Operations. The threshold plus 1,200 feet of runway is required within the 2,000-foot radius circle.

(2) Mid-Point RVR VS. For all operations, 2,000-foot coverage of the runway CL including the runway mid-point is required within the 2,000-foot radius circle.

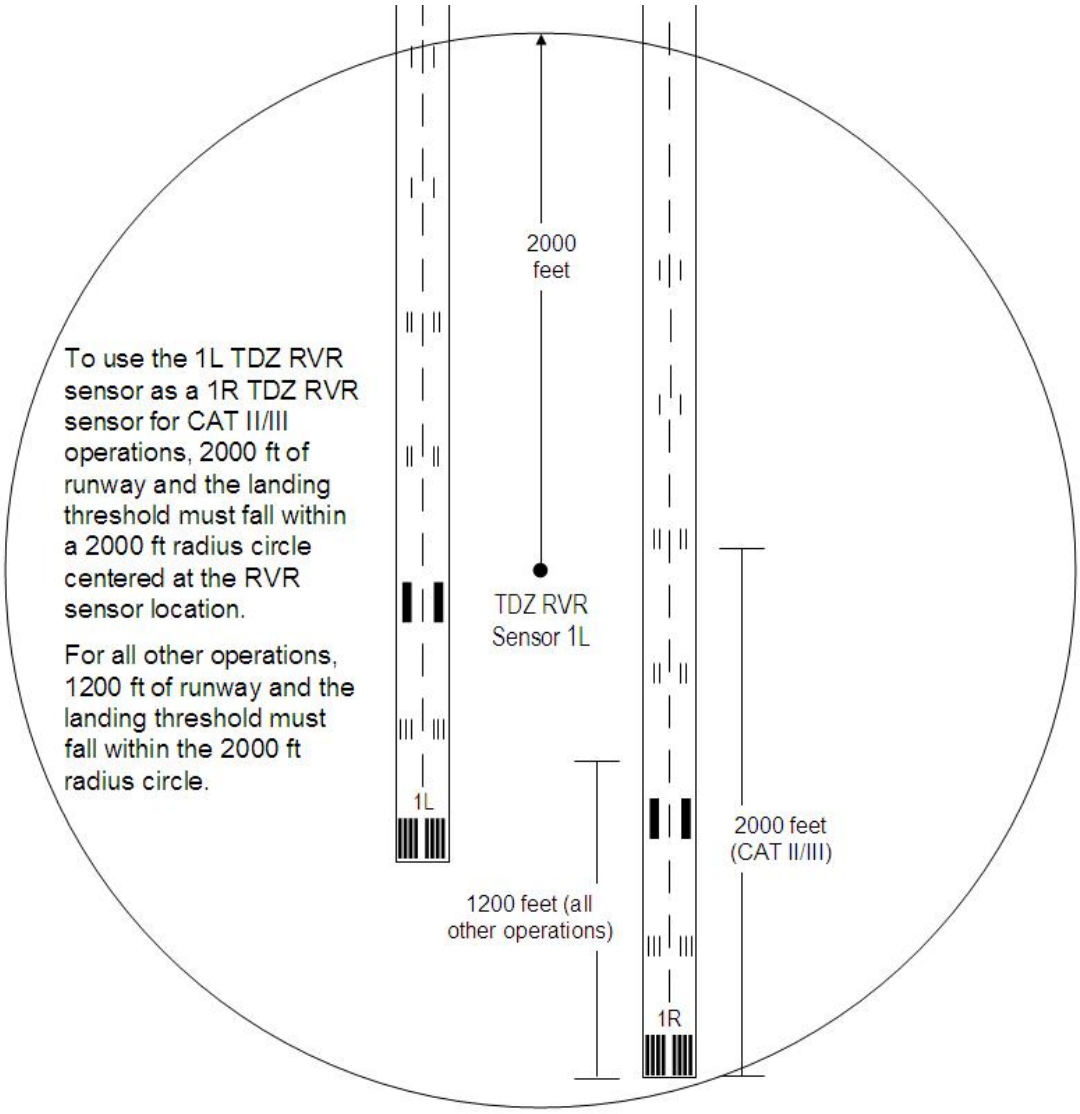
(3) Rollout RVR VS.

(a) CAT II/III Operations. The threshold plus 2,000 feet of runway is required within the 2,000-foot radius circle.

(b) All Other Operations. The threshold plus 1,200 feet of runway is required within the 2,000-foot radius circle.

Note: Siting Criteria. When an RVR VS serves a single runway, the VS must meet the siting criteria found in the standard installation drawings for the type of equipment being installed. When an RVR VS serves more than one runway, at least one runway must meet the siting criteria in subparagraph 7c and 7d, and the other runway(s) must meet the relevant RVR sharing criteria. Refer to Figure 2.

FIGURE 2. RUNWAY VISUAL RANGE VISIBILITY SENSOR SHARING EXAMPLE



f. Existing RVR Installations and Operational Approvals. RVR VSs presently installed and authorized at locations not meeting the above requirements may be retained with existing operational approvals. If the above requirements are not met, either in the case of new or relocation of existing RVR facilities, the RVR VS location must be approved by the Flight Technologies and Procedures Division (AFS-400) in coordination with Navigation Services (AJW-4) on a case-by-case basis.

g. Determining the "Designated RVR Runway." At those airports where more than one runway has the same published RVR landing minimum, all of which are the lowest RVR landing minimum for the airport, the regional Flight Standards division (RFSD) NextGen Branch (AXX-220), in cooperation with the air traffic control (ATC) facility chief, shall determine which runway is to be the "Designated RVR Runway." This designation shall not change unless the RVR landing minima for that runway changes or another runway supports a lower RVR landing minima.

8. Operational Criteria. RVR systems are not provided at all locations. In addition to the requirements in FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS) (current edition), the criteria in paragraph 7 of this order must be met to publish RVR values on approach charts as controlling visibility minima for all approaches. All CAT II and CAT III runways will be equipped with RVR sensors in accordance with the requirements of this order. Operational use will be predicated on all systems operating normally. RVR data will be disseminated to pilots in accordance with ATC procedures and as requested. Refer to FAA Order 6750.24, Instrument Landing System and Ancillary Electronic Component Configuration and Performance Requirements (current edition), and FAA Order 8400.13 , Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operations (current edition), for current RVR system requirements (such as the number of RVR systems required) for operational credit. Refer to FAA Order 8900.1, Flight Standards Information Management System (FSIMS),Volume 3, Chapter 18, Section 5 for guidance on operational criteria and authorizing the relevant operations specifications (OpSpecs), management specifications (MSpecs), or letter of authorization (LOA).

a. Arriving Aircraft.

(1) Other Than CAT II/III. In all operations other than CAT II/III, (including non-precision, approach procedures with vertical guidance (APV), and CAT I precision operations), the touchdown RVR VS data is controlling when installed and operational. If the touchdown RVR VS is inoperative, some operators may be authorized, via OpSpecs, MSpecs, or an LOA, to substitute an operative mid-point RVR VS for visibility minima greater than or equal to 1,800 RVR. Refer to OpSpec/MSpec/LOA C052 (Straight-In Non-Precision, APV, and Category I Precision Approach and Landing Minima—All Airports) for current RVR operational requirements.

(2) Special Authorization CAT I (SA CAT I). A touchdown RVR VS is an FAA system requirement for runways with 1,400 RVR landing minima. The operator may not substitute an operative mid-point if the touchdown RVR VS is inoperative. Where installed, mid-point and rollout RVR VSs provide advisory visibility information to pilots. Refer to OpSpec/MSpec/LOA C052 for current RVR operational requirements.

(3) CAT II. Touchdown and rollout RVR VSs are an FAA system requirement for runways that are 8,000 feet or less. Touchdown, mid-point, and rollout RVR VSs are an FAA system requirement for runways in excess of 8,000 feet, but AFS-400 may approve CAT II operations on a runway with only two RVR sensors (a touchdown zone (TDZ) and either a mid-point or rollout RVR sensor) on a case-by-case basis. All CAT II operations less than 1,600 RVR require touchdown and a second RVR VS (either mid-point or rollout). The touchdown RVR data is required and controlling for all CAT II operations. Where installed, mid-point and rollout RVR VSs provide advisory visibility information to pilots. CAT II runways require associated RVR systems. Refer to OpSpec/MSpec/LOA C059 (Category II Instrument Approach and Landing Operations (Optional): 14 CFR Parts 91, 121, 125, 125M, 135, and 91K Operators) for current RVR operational requirements.

(4) Special Authorization CAT II (SA CAT II). Touchdown and rollout RVR VSs are an FAA system requirement for runways with 1,200 RVR landing minima. A touchdown

RVR VS is an FAA system requirement for runways with 1,600 RVR landing minima. All CAT II operations less than 1,600 RVR require a touchdown and a second RVR VS (either mid-point or rollout). The touchdown RVR data is required and controlling for all CAT II operations. Where installed, mid-point and rollout RVR VSs provide advisory visibility information to pilots. Refer to OpSpec/MSpec/LOA C059 for current RVR operational requirements.

(5) CAT III. All CAT III operations require touchdown, mid-point, and rollout sensors of an RVR reporting system. AFS-400 may approve CAT III operations on a runway with only two RVR sensors (a TDZ and either a mid-point or rollout RVR sensor) on a case-by-case basis. CAT III runways require associated RVR systems. Refer to OpSpec/MSpec/LOA C060 (Category III Instrument Approach and Landing Operations) for current RVR operational requirements.

b. Departing Aircraft. Flight Standards Service (AFS) authorizes lower-than-standard takeoff minimums in OpSpec C056 (IFR Takeoff Minimums, Part 121 Operations—All Airports) and CO78/C079 or MSpec MC079 (IFR Lower Than Standard Takeoff Minima, 14 CFR Part 121 Airplane Operations—All Airports). These authorizations contain the current RVR requirements for lower-than-standard takeoffs.

(1) Weather Conditions 1,600 RVR or Greater. Touchdown RVR VS data is required and controlling. Operators may substitute mid-point RVR VS data if the touchdown RVR is inoperative. All other RVR VS data is advisory.

(2) Weather Conditions Below 1,600 RVR Down to 300 RVR.

(a) Where only two RVR sensors are installed, both are required and controlling.

(b) Where three RVR sensors are installed on the takeoff runway:

- The TDZ, mid-point, and rollout RVR values are controlling when operational.
- The failure of any one RVR will not affect operations, provided the remaining two RVR sensors are reporting values at or above the appropriate minima.

Note: OpSpecs, MSpecs, and LOAs do not authorize takeoff minima below 1000 RVR unless the runways are equipped with CL lights.

c. Action Required on RVR Failure. A Notice to Airmen (NOTAM) indicating that the RVR VS or system is out of service shall be issued when the RVR VS or system or HIRL components fail. Refer to Order 6750.24, current edition.

d. Newer Generation (Scatter-Effect Technology) RVR System Data for Weather Reporting.

(1) The newer generation RVR systems shall report the RVR at the designated runway to the automated surface observing system (ASOS) through the RVR/ASOS interface at all newer generation RVR locations.

(2) The ASOS will process the product and issue the 10-minute average high and low values of RVR based on light setting 5 (high intensity) for RVR reporting in the surface observations, Aviation Routine Weather Report (METAR) format, and/or via an ASOS transmission.

(3) At large airports covering large geographic areas, more than one runway may be designated for weather reporting. Up to four runways may be reported in the METAR format.

9. Directive Feedback. Direct questions or comments regarding this order or minimum reduction for operations conducted with properly equipped aircraft to the Flight Operations Branch (AFS-410) at (202) 385-4625. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this order on FAA Form 1320-19, Directive Feedback Information, and forward your comments to AFS-410 for consideration. If an interpretation is needed immediately, call AFS-410 for guidance and use FAA Form 1320-19 as a followup to verbal conversation.

for 

John M. Allen
Director, Flight Standards Service

Appendix A. Directive Feedback Information

U.S. Department
of Transportation
Federal Aviation
Administration

FAA Form 1320-19, Directive Feedback Information

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 6560.10C, Runway Visual Range (RVR)

To: Directive Management Officer, _____

(Please check all appropriate line items)

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:
(attach separate sheet if necessary)

☐ In a future change to this directive, please include coverage on the following subject
(briefly describe what you want added):

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

FTS Telephone Number: _____ Routing Symbol: _____

FAA Form 1320-19 (8-89)