



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

**Subject: USE OF COCKPIT DISPLAYS
OF DIGITAL WEATHER AND
OPERATIONAL INFORMATION**

**Date: 9/24/04
Initiated By: AFS-410**

**AC No: 00-63
Change:**

1. PURPOSE. This Advisory Circular (AC) provides guidance to aircraft flight crewmembers and other airmen for the use of Flight Information Services Data Link (FISDL) systems. Both the Federal Aviation Administration (FAA) VHF Flight Information Services Data Link (FISDL) system and non-FAA FISDL systems are addressed in this AC.

FISDL is a method of disseminating aeronautical weather and operational data that augments pilot voice communication with Flight Service Stations (FSS), other Air Traffic Control (ATC) facilities, or Airline Operation Control Centers (AOCC). FISDL does not replace pilot and controller/flight service specialist or aircraft dispatcher voice communication for weather or operational information interpretation. However, FISDL can provide background information that can abbreviate and improve the usefulness of such communication. FISDL enhances pilot situational awareness and improves safety.

2. APPLICABILITY. The guidance contained in this AC applies to all operators using FAA and non-FAA FISDL systems.

3. RELATED 14 CFR REFERENCES.

a. Specific portions of Title 14 of the Code of Federal Regulations (14 CFR) to which this guidance applies includes:

- (1)** Section 1.1;
 - (2)** Sections 61.65 (b)(6), (8), (9), (10); 61.93 (e)(3); (f)(3), (g)(3), (i)(3), (k)(3), (12); 61.97 (b)(5), (11); 61.105 (b)(6), (12); 61.125 (b)(4), (11), (15); 61.155 (c)(3), (5), (12);
 - (3)** Sections 63.53 (a)(3), (8); appendix A (e)(46); appendix B (a)(2)(iii); appendix C (a)(2)(iii);
 - (4)** Section 65.55 (a)(2); appendix A (b);
 - (5)** Sections 91.21, 91.103;
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- (6) Sections 121.101 (a), (b), (c), (d); 121.119 (a), (b); 121.655;
- (7) Sections 125.287 (a)(6), (7), (8); 125.353;
- (8) Sections 135.213 (a); 135.225 (a), (b), (c); 135.293 (a)(7); 135.345 (b)(6);
- (9) Sections 141: appendix A, (3)(e), (k); appendix B (3)(b)(6), (12); appendix C (3)(b)(6), (8); appendix D (3)(b)(4), (11); appendix E (3)(b)(4), (5), (6), (12), (13).

b. Related Reading Materials.

- (1) AC 00-6A, Aviation Weather;
- (2) AC 00-45E, Aviation Weather Services;
- (3) AC 00-62, Internet Communications Of Aviation Weather And NOTAMs;
- (4) AC 120-76A, Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices; and
- (5) Aeronautical Information Manual, chapter 7, section 1.

4. DEFINITIONS.

a. Aeronautical Spectrum. That portion of the radio frequency spectrum which is assigned by the Federal Communication Commission (FCC) for aeronautical purposes.

b. Aircraft Communications Addressing and Reporting System (ACARS). A non-FAA system using two-way Very High Frequency (VHF) data link air/ground communications for Airline Operational Control (AOC), Airline Administrative Control (AAC), and Air Traffic Control (ATC) messages. FISDL messages can be sent over the ACARS network.

c. Airline Operations Control Center (AOCC). An air carrier dispatch service or other operator providing aeronautical weather and operational information service.

d. Basic Product. A textual product which is offered by the FAA's FISDL Service Provider at no cost to the receiver. FAA FISDL Basic Products are listed in Par 6b(1).

e. Broadcast Data Link. A data link broadcast with no requirement for a request from the receiving station.

f. Broadcast Message. A message that uses a broadcast protocol and does not depend on a request reply from the receiver.

g. Data Link. Radio data communication.

h. FAA VHF FISDL. An FAA service that provides, through a vendor operated broadcast data link, aeronautical weather and operational information for display in the cockpits of aircraft equipped with the appropriate FISDL receivers, transmitters, and digital display units. This service includes free basic products and fee-for-subscription “value added” products. The FAA’s VHF FISDL vendor operates under a service agreement with the FAA.

i. Flight Information Service Data Link (FISDL). A data link service that provides aeronautical weather and operational information that enhances the safety and efficiency of flight operations. This includes services provided by the FAA and non-FAA FISDL systems.

j. FAA’s VHF FISDL Service Provider. A commercial vendor that provides FAA FISDL on VHF Aeronautical Spectrum under an agreement with the FAA.

k. Graphical Product. A FISDL product composed of graphics with associated supporting text.

l. Non-FAA FISDL. A commercial data link service that provides aviation weather and operational information to customers.

m. Non-FAA FISDL Provider. An organization that operates a commercial data link service providing aviation weather and operational information independent of a vendor service agreement with the FAA.

n. Text Product. A FISDL product that is composed of text only.

o. Value-Added Product. A product that is offered by the FAA’s VHF FISDL Service Provider for a fee.

p. VHF. That portion of the radio frequency spectrum from 30 to 300 megahertz (MHz).

5. BACKGROUND.

a. In the past, several systems have provided aviation weather and operational information to flightcrews using cockpit visual displays. The most prevalent system in current use is ACARS, a two-way VHF data link messaging system primarily utilized by air carriers. This system has been successfully used for routine AOC and AAC text messages, such as weather, dispatch, and administrative messages. In addition, ACARS has been demonstrated for certain limited ground and in-flight messages, such as pre-departure clearances, expected taxi clearances, and Digital Automatic Terminal Information Service (D-ATIS). This experience has shown the potential for data link as a responsible use of spectrum resources and support for enhanced flightcrew situational awareness.

b. In order to widely implement digital data link service to support the display of weather information in the cockpit, the FAA Administrator issued a FIS policy letter. This policy letter directed FAA to pursue the implementation of a VHF digital data link system called FISDL. When fully applied, VHF FISDL enhances flight crewmember situational awareness by providing digital weather and operational information in textual and graphical formats on a cockpit display.

c. To implement FISDL, the FAA entered into an agreement with a service provider to broadcast digital aviation weather and operational information on two frequencies within the VHF Aeronautical Spectrum. These broadcasts include both “basic” (i.e., free of charge) services and “value added” (i.e., fee-for-subscription) services that provide aviation weather and operational information in the cockpit of appropriately equipped aircraft.

d. In addition, several commercial enterprises not operating under service agreements with the FAA have developed ground-based and space-based FISDL systems using other frequencies and communications protocols, including both broadcast and two-way communications. These systems may offer different service volumes and information products than the FAA’s VHF FISDL system. These systems are referred to as non-FAA FISDL systems and may be used to receive in-flight aviation weather and operational information as described in this AC.

6. DISCUSSION.

a. **FISDL.** FISDL systems are comprised of two basic types: broadcast systems and two-way systems. Broadcast system components include a ground-based or space-based transmitter, an aircraft receiver, and a cockpit display. Two-way systems use transmitter/receivers at both the ground-based or space-based site and on the aircraft.

(1) Broadcast FISDL allows the pilot to collect weather and operational data passively and to call up that data for review at the appropriate time. In addition to textual weather products such as Aviation Routine Weather Reports (METARs) and Terminal Area Forecasts (TAFs), graphical weather products such as radar composite or mosaic images, may be provided to the cockpit. Two-way FISDL services permit the pilot to make specific weather and operational information requests for cockpit display.

(2) FISDL services are available from three types of service providers:

(a) FIS providers operating under contract with the FAA using VHF aeronautical spectrum whose products are reviewed and accepted by the FAA before being included in their transmission service.

(b) FIS providers operating under private contract using aeronautical spectrum.

(c) FIS providers operating under private contract using other than aeronautical spectrum, including Internet data providers.

b. **FAA’s VHF FISDL.** The FAA’s VHF FISDL system provides flightcrews with a cockpit display of certain aeronautical weather and flight operational information. This information is displayed in both textual and graphical formats. Under a service agreement with the FAA, the FISDL Service Provider broadcasts FAA FISDL messages using VHF Data Link. Two 25-kilohertz (KHz)-spaced frequencies are assigned for FAA FISDL between 136.450 and 136.475 MHz, inclusive.

The FAA FISDL provides coverage throughout the Continental United States from 5,000 feet above ground level (AGL) to 17,500 feet mean sea level (MSL), except in those areas where this is unfeasible because of mountainous terrain. Aircraft operating near transmitter sites will receive usable FAA FISDL signals at altitudes lower than 5,000 feet AGL, and in some instances the surface, depending on transmitter/aircraft line of sight geometry. Aircraft operating above 17,500 MSL may also receive usable FAA FISDL signals under certain circumstances. Aircraft equipment includes at least an appropriate receiver and display unit.

- (1) FAA FISDL provides, free of charge, the following basic products:
- (a) Aviation Routine Weather Reports (METARs);
 - (b) Aviation Selected Special Weather Reports (SPECIs);
 - (c) Aviation Terminal Forecast (TAF) and their amendments;
 - (d) Significant Meteorological Information (SIGMET);
 - (e) Convective SIGMETs;
 - (f) Airman's Meteorological Information (AIRMET);
 - (g) Pilot Reports (PIREP), both urgent and routine; and
 - (h) Severe Weather Forecast Alerts (AWWs) issued by the National Weather Service (NWS).

(2) The format and coding of these products are described in FAA Advisory Circular (AC) 00-45E and the Aeronautical Information Manual, Chapter 7, section 1, Meteorology.

c. Non-FAA FISDL Systems.

(1) Several commercial providers, not associated with the FAA, provide FIS using a variety of frequencies and data link protocols, including two-way data link communications. Services available from these providers vary greatly. Operators using non-FAA FISDL for in-flight weather and operational information should ensure that products providing this information conform to the FAA/NWS standards.

(a) Some commercial providers produce proprietary weather products based on Approved FAA/NWS weather products without any material changes to the original FAA/NWS weather information. These products are referred to as “repackaging”. A repackaged product contains only formatting and layout modifications without any material changes to the original FAA/NWS weather information.

(b) Other commercial providers produce analyses, forecasts, and/or proprietary weather products that materially alter the information contained in FAA/NWS weather products. This process and any limitations of the product should be described in the provider's user guidance material. An example would be a NEXRAD composite or mosaic map, which has been modified

by changing the scaling resolution. Since that change affects the user's interpretation of the displayed data, the methodology to display the image components should be described in the provider's guidance material. This will ensure the user can accurately interpret the displayed data.

(2) To ensure that airmen comply with 14 CFR, NOTAMs, Special Use Airspace, and other government flight information, FISDL services should include the transmission of the original FAA products. When using unfamiliar products, pilot and operators should ensure that those products conform to FAA/NWS technical specifications and/or quality control standards. Hence, operators and pilots contemplating using such services should review a description of services and provider disclosure. This should include, but is not limited to, the type of weather product (e.g., current weather or forecast weather), the currency of the product (i.e., product issue time), and the relevance of the product.

d. Operational Use of FISDL. Whether an FAA or non-FAA FISDL system is being utilized, several factors must be considered:

(1) Before using FISDL for in-flight operations, pilots and other flight crewmembers should become completely familiar with the operation of the FISDL system to be used, including its system architecture, airborne system components, modes of operation, indications of various system failures, service volume, and other limitations of the particular system. Users should also be familiar with the content, format, and application of the services and products available from the FISDL provider(s). Sources of this information include manufacturers' manuals, training programs, and reference guides.

(2) FISDL should not serve as the sole source of aeronautical weather and operational information. Air Traffic Control, Flight Service Station (FSS), and, when applicable, AOCC VHF/HF voice communication is the basic method of disseminating aeronautical weather, special use airspace, NOTAMs, and other operational information to aircraft in-flight. FISDL augments ATC/FSS/AOCC services and, in some cases, offers the advantage of graphical data. By using FISDL for orientation, the value of any information received from conventional voice sources may be enhanced. FISDL may alert the pilot to specific areas of concern, which will more accurately focus requests made to FSS or AOCC for in-flight briefings or queries made to ATC.

(3) The aeronautical environment is constantly changing; often these changes occur quickly, and without warning. Critical decisions should be based on the most current and appropriate data available. When differences exist between FISDL and information obtained by voice communication with ATC, FSS, and/or AOCC, pilots are cautioned to use the most recent data from the most authoritative source.

(4) FISDL products (e.g., ground-based radar precipitation maps) are not appropriate for use in tactical avoidance of severe weather conditions, such as negotiating a path through a weather hazard area. FISDL supports strategic weather decision-making, such as route selection to avoid a weather hazard area in its entirety. The misuse of information beyond its applicability may place the pilot and aircraft in jeopardy. In addition, FISDL should never be used in lieu of an individual pre-flight weather and flight planning briefing.

e. Qualification for Use of FISDL.

(1) Title 14 CFR parts 91, 133, and 137 Operators; part 141 Air Agencies; and part 142 Training Centers Using FISDL. No special qualification is required to authorize the use of FISDL by operators conducting operations under parts 91, 133, or 137. These operators should review the contents of this AC, the Aeronautical Information Manual (AIM), the FISDL avionics manufacturer's information (including the Airplane or Rotorcraft Flight Manual (AF / RFM) Supplement), and the guidance provided by the FISDL provider before using FISDL during flight operations. Part 141 and 142 operators should revise their syllabi to reflect training in the use of FISDL in ground and flight lessons that involve obtaining weather and operational information in-flight.

(2) Title 14 CFR parts 121, 125, and 135 Air Carriers and Operators Using FISDL. Air carriers and operators that conduct operations under parts 121, 125, or 135 and wish to use FISDL should revise their General Operations Manual (GOM), or its equivalent, to reflect company policies and procedures for FISDL use. The training programs for flight crewmembers and dispatch personnel should be revised to provide training for these airmen in the use of the FISDL system(s). Special emphasis should be placed on understanding the differences between the information available in the cockpit and the aircraft dispatcher duty station. Proficiency checks should be included in the training program qualification modules to evaluate flight crewmembers' and aircraft dispatchers' knowledge and skill in the use of the FISDL system used by the air carrier/operator.

(3) Part 135 air carriers and operators who wish to use FISDL, and are not required to have GOMs and Training Programs (such as single pilot operators and single pilot in command operators) should review the contents of this AC, the AIM, the FIS receiver manufacturer's information and the guidance provided by the FIS provider. The certificate holder should include FIS in the airmen initial and recurrent testing programs to ensure compliance with 135.293(a)(7) and (8). Once an operator is qualified, authorization to use FISDL should be indicated in operations specifications (OpSpecs) paragraphs A-9, Airport Aeronautical Data, and A-10, Aeronautical Weather Information. This authorization may refer to the appropriate sections of the GOM or equivalent, if appropriate.

(4) Title 14 CFR part 63 Flight Navigator and Flight Engineer Schools. Operators of Flight Navigator Schools under part 63, appendix B, should revise their syllabi to include FISDL as a source of aviation weather data and operational information. Operators of Flight Engineer Schools under part 63, appendix C, should revise their syllabi to include FISDL as a component of the aircraft avionics system and a source of aviation weather data and operational information.

(5) Title 14 CFR part 65 Dispatcher Schools. Operators of Aircraft Dispatcher Schools under 14 CFR part 65, appendix A, should revise their syllabi to include the use of FAA FISDL as an FAA communications service and non-FAA FISDL as a company communications service (e.g., ACARS).

7. RESPONSIBLE USE OF FISDL. The FAA recognizes that effective pilot training is a critical element in the use of FISDL services. When used correctly, FISDL information can enhance a pilot's overall situational awareness and contribute to improved pilot judgment and decision-making. To ensure that the maximum benefits from FISDL services are realized, appropriate training materials should be used.

8. REQUESTS FOR INFORMATION. Persons requesting additional information on the use of FAA FISDL or having comments regarding this AC should direct their questions to:

Federal Aviation Administration
Flight Technologies and Procedures Division
Flight Operations Branch, AFS-410
800 Independence Ave., S. W.
Washington, DC 20591

Questions related to the services of non-FAA FISDL providers should be directed to the specific provider.

/s/ John M. Allen for
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