

EXPERIMENTAL PRODUCT DESCRIPTION DOCUMENT

Aviation Digital Data Service Flight Path Tool

APPROVED _____ **Date:** _____

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Product/Service Description Document
Aviation Digital Data Service
Flight Path Tool

Part I – Mission Connection

The objective of the National Weather Service (NWS) Aviation Weather Services Program is to provide quality weather forecast information and services to the aviation community for the protection of life and property, and to increase the efficiency of the National Airspace System.

The Federal Aviation Administration requires National Weather Service to operate ADDS in order to provide the safety benefit(s) intended from Safer Skies Joint Safety Analysis Team (JSAT) Recommendation 1: “Provide better information to pilots on the location severity of weather hazard areas, and better methods of using weather information to make safe decisions on how and when to make a flight.”

The FAA Aviation Weather Research Program (AWRP) is an initiative of the Weather and Flight Service Systems Integrated Product Team. The goal of the AWRP is to increase the scientific understanding of atmospheric conditions that cause dangerous weather, which in turn, impacts aviation. The research is aimed toward producing weather observations, warnings, and forecasts that are more accurate and more accessible. AWRP funds research into aviation meteorology as it relates to problems in aviation safety or National Airspace System capacity and traffic management which may be solved or mitigated by the results of dedicated scientific studies. Various partner organizations (<http://www1.faa.gov/aua/awr/partners.htm>) conduct or test the research. AWRP is part of the Weather Sensors and Aviation Weather Research Product Team.

The National Weather Service is responsible for placing some of the experimental products and services of the Aviation Weather Research Program into an operational environment.

The Aviation Digital Data Service makes available to the aviation community through the internet digital and graphical analyses, forecasts and observations of meteorological variables (A separate Product Description for ADDS can be found at <http://adds.aviationweather.gov/>). Developed as the data distribution component of the Aviation Gridded Forecast System (AGFS), ADDS is a joint effort of NOAA Forecast Systems Laboratory ([FSL](#)), NCAR Research Applications Program (RAP), and the National Centers for Environmental Prediction (NCEP) Aviation Weather Center (AWC). ADDS makes access to National Weather Service aviation observations and forecasts easy by integrating this information in one location, and by providing visualization tools to assist the application of this information for flight planning.

One of the applications of the Aviation Digital Data Service is the Flight Path Tool.

a. Product/Service Description

The flight path tool (FPT) allows a user to view data along a specified route of flight as the graphic to the right shows. The user clicks to enter points along the route to view icing potential, temperature, winds, humidity, etc. both horizontally and vertically. A tutorial for the FPT is available at http://adds.aviationweather.gov/tutorials/fltpath_tut/.

The information displayed on a FPT display include:

- Current Icing Potential (CIP) and Forecast Icing Potential (FIP) <http://adds.aviationweather.gov/icing/>
- National Convective Weather Forecast (NCWF) <http://adds.aviationweather.gov/convection/>
- Graphical Turbulence Guidance (GTG) <http://adds.aviationweather.gov/turbulence>
- Winds and temperatures aloft <http://adds.aviationweather.gov/winds/>
- Pilot Reports <http://adds.aviationweather.gov/pireps/>
- SIGMETs and AIRMETs <http://adds.aviationweather.gov/airmets/>

The flight path tool integrates all this information to maximize the effective use of this information for the purposes of flight safety. To maximize flight planning effectiveness for the purpose of safety, the Aviation Weather Research Program developed the Flight Path Tool to help pilots integrate the various types of forecast information, especially high resolution forecast information.

b. Purpose and Intended use

The safety of any flight depends on the effective integration of all of these weather products during preflight planning. Throughout aviation history, effective integration of this information to ensure a safe flight has been a difficult process not only because a pilot must understand the implication to safety in the horizontal, but also in the vertical. Ceilings, visibility, icing, turbulence, precipitation forecasts and applicable pilot reports must be applied to the planned route and altitude of flight.

For decades the skill of professional pilot weather briefers from the Federal Aviation Administration and National Weather Service have helped pilots interpret and apply weather observation and forecast information to a specific route of flight. Lately, with the increasing ability of pilots to directly access NWS forecasts over the internet and through federally sponsored programs such as DUATs, pilots do not have an intermediary to help interpret, integrate, and apply the various forecast products to the planned route of flight. Additionally, the desire for more accurate and specific icing, turbulence, ceiling and visibility information has resulted in product detail much more difficult to visualize, understand, and integrate with other information specific to the intended route of flight.

To maximize flight planning effectiveness for the purpose of safety, the Aviation Weather Research Program developed the Flight Path Tool to help pilots integrate the various types of forecast information, especially high resolution forecast information.

The flight path tool allows the pilot to plan a safer flight by integrating the new forecast products along the pilots intended route and approximate time of flight through a java application. This allows the pilot to visualize applicable forecast information in the vertical for the intended route of flight.

The flight path tool is a part of the Operational Aviation Digital Data Service operated by the National Weather Service and produced through funding from the FAA's Aviation Weather Research Program. It is accessed through the commodity internet for the purpose of providing weather information to pilots and dispatchers.

c. Audience

Pilots, dispatchers, Flight Service Station briefers, and meteorologists.

d. Presentation Format

The flight path tool is a java applet which displays high resolution National Weather Service graphical products containing icing, turbulence, and winds aloft data. This tool allows the user to view the graphical forecasts in the horizontal, vertical, and time dimensions. In the future detailed ceiling, cloud top, and visibility information may be presented in a similar format. The flight path tool is accessed on the internet using the link http://adds.aviationweather.gov/flight_path/.

e. Feedback

Feedback concerning the Flight Path Tool will be received through August 31st 2003, can be sent to:

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1325 EAST WEST HWY
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Part II - Technical Description

- a. Format and Science Basis – User interactivity is important to obtain maximum value from the four-dimensional, high resolution forecast information concerning icing, turbulence, and wind for the pilot geographic area of interest. Java was selected to facilitate this interactivity to allow users to interrogate the forecast dataset at desired levels and along desired line segments. All products displayed using the FPT are

either traditional National Weather Service products or new products approved by the Aviation Weather Technology Transfer Board.

b. Availability

The flight path tool is available 24 hours a day, 7 days a week.

- c. Additional Information – The flight path tool is a part of ADDS and is operated by the Aviation Weather Center, Kansas City, Missouri. The development and maintenance of ADDS is done by the Aviation Forecast Product Development Team of the Aviation Weather Research Program. Comments and recommendations concerning the flight path tool and the Aviation Digital Data Service can be submitted through the ADDS forum located at <http://NWS.FTP.Comments@noaa.gov>. User recommendations to ADDS developers are provided to the Aviation Forecast Product Development Team by the Advanced ADDS User Group that includes representatives from Air Line Pilots Association, Aircraft Owners and Pilots Association, Small Aircraft Manufacturers Association, Air Transport Association, United Airlines, Delta Airlines, Airline Dispatchers Federation, FAA Flight Standards, Purdue University Department of Aviation Technology, and the National Association of Air Traffic Specialists. For more information on this process, contact Mark Andrews at the address indicated in Part I-e.