



**Federal Aviation
Administration**

How to Obtain a Good Weather Briefing



Introduction

Here are some tips on how to get a good weather briefing. This document complements other pilot educational material published by the Federal Aviation Administration (FAA) and other aviation organizations.

Just like everything else in life, practice makes perfect, or nearly so. If you practice getting a weather briefing on a regular basis, then after just a few sessions you will be like an old pro and will know how to get a quality weather briefing.

Note: The use of the generic terms “Flight Service” and “Flight Service Station (FSS)” in this document should be understood to include both Automated Flight Service Stations and nonconsolidated Flight Service Stations. Flight Service should not be confused with “Flight Watch,” which is the call sign for En Route Flight Advisory Service (EFAS).

Anatomy of a Good Weather Briefing

A good weather briefing begins with developing a total awareness of the overall big picture before obtaining a detailed or standard briefing. Many pilots start by monitoring weather patterns through commercial television, such as The Weather Channel, several days before the flight. The day or evening before the flight, pilots may wish to obtain an outlook briefing from Flight Service or electronically from a Direct User Access Terminal (DUAT) vendor, or they may choose to download weather and forecast charts from the Internet. (When using DUATs, don't hesitate to contact Flight Service to clarify any information you do not fully understand.) As close to departure time as possible, call Flight Service or log on to DUAT for a standard briefing. (Of course, you can also access high-quality weather products on the Internet or via other sources, but first make sure that the menu of products is suitable for aviation use and the products are current.) If you obtain a standard briefing several hours before the flight or when the weather is questionable, it is a good practice to call an FSS for an abbreviated briefing just before takeoff.

The FAA has established a universal toll-free telephone number for FSSs: 1-800-WX-BRIEF (1-800-992-7433). Before contacting Flight Service, you should have the general route of flight worked out. When you reach Flight Service, you will first hear a recorded announcement, followed by instructions. The system will provide a voice selection to the following options: Briefer or Telephone Information Briefing Service (TIBS) or for Special Announcements. If you say “Briefer” or “TIBS,” you will be prompted to speak the State you are calling from and, in some cases, a more specific area. (Example: if you say “Florida,” you will then be asked if you want Northern Florida or Southern Florida. If you then say “Northern Florida,” you will hear “please wait while I connect you to a briefer.”)

To help the briefer provide you with the best service, state your request (that is, a standard, abbreviated, or outlook briefing or to file a flight plan). Provide the briefer with the following background information so that your briefing can be tailored to your needs:

- Your qualifications (for example, if you are a student, private, or commercial pilot and if you are instrument rated).
- Type of flight planned—visual flight rules (VFR) or instrument flight rules (IFR).
- Aircraft N-number or pilot's name.
- Aircraft type.
- Departure point.
- Estimated time of departure.

- Proposed flight altitude(s).
- Proposed route of flight, if other than direct; specify any landing points along the way.
- Destination.
- Estimated time en route.

If you ask the briefer to provide a standard briefing, the briefing will follow specific procedures and use standard phraseology developed by Flight Service personnel. The briefer will first advise you of any adverse conditions along your proposed route of flight. When a VFR flight is proposed and actual or forecast conditions make a VFR flight questionable, the briefer will describe the conditions and may advise you that "VFR flight (is) not recommended." You are still entitled to a complete briefing; however, if you think the weather conditions are beyond your capabilities (or that of your aircraft or equipment), you should consider terminating the briefing (and your flight), enabling the briefer to handle other incoming calls.

Absence of the "VFR not recommended" statement does not necessarily guarantee a flight free from adverse weather effects. Phenomena such as thunderstorms, turbulence, mountain obscurations, and strong winds do not, in and of themselves, warrant this statement. Only you, the pilot in command, know your own capabilities and limitations.

Briefers typically summarize weather reports and forecasts unless you specifically request that these items be read verbatim. Try not to interrupt the briefer unless he or she is speaking too fast. At the conclusion of the briefing, ask for any additional information you may require or for clarification of any point you do not completely understand. The amount of detail in your weather briefing will depend on the complexity of the weather situation. It is both your responsibility and prerogative as a pilot to obtain a standard briefing.

Types of Weather Briefings

Standard Briefing

The standard preflight briefing includes the following elements:

- **Adverse Conditions.** Significant meteorological information (SIGMET) (for example, thunderstorms, icing, turbulence, low ceilings or visibility) that might influence you, the pilot, to alter your proposed route of flight or even cancel your planned flight entirely.
- **Synopsis.** A brief statement about the cause of the weather (for example, fronts or pressure systems) that is pertinent to your proposed route of flight.
- **Current Conditions.** When your proposed time of departure is within 2 hours, current conditions include a summary of the current weather, including Pilot (weather) Reports (PIREPs) and radar weather information applicable to your planned flight.
- **En Route Forecast.** The briefer will summarize the forecast conditions (unless requested to read the forecasts verbatim) along your proposed route in a logical order (that is, climbout, en route, and descent).
- **Destination Forecast.** The briefer will provide the destination forecast for your estimated time of arrival, including any significant changes expected within 1 hour of your planned time of arrival.
- **Winds Aloft.** The briefer will summarize Forecast Winds Aloft (FD) for the proposed route. Temperature information will be provided on request.

- **Notices to Airmen (NOTAMs).** The briefer will provide current NOTAMs pertinent to your proposed route of flight in a standard briefing. Information on Global Positioning Systems outages, Long Range Navigation Military Training Routes (MTRs) and Military Operations Areas (MOAs) and *published NOTAMs* must be specifically requested.

When requesting the status of MTRs and MOAs, please provide the briefer with the MTR route number identifier or MOA name. It is always good practice to inquire whether the briefer has access to all military activity along your proposed route or whether you will also need to contact another FSS (on standard FSS radio frequencies) along your route of flight to check on the activity and status of designated military areas.

Abbreviated Weather Briefing

Request an abbreviated briefing when you need information to supplement other electronically acquired data (for example, TIBS or DUAT) or update a previous briefing or when you need only one or two specific items. Provide the briefer with appropriate background information, the time you received the previous information, and the specific items needed. You should indicate the source of the information already received so that the briefer can limit the briefing to the information that you have not received and provide significant changes in meteorological conditions or aeronautical information since your previous briefing. To the extent possible, the briefer will provide the information in the sequence used in a standard briefing.

If you request only one or two specific items, the briefer is required to advise you if adverse conditions are present or forecast. Details on these conditions will be provided at your request. Often, and especially when doing local flying, you may want to receive an update of the weather at a specific airport. To do so, you may directly dial an automated weather system, if available, at that airport. *Note: A more detailed description of Automated Observation Systems (AWOSs) is in the Aeronautical Information Manual.*

Outlook Briefing

Request an outlook briefing whenever your proposed time of departure is 6 or more hours in the future. In this case, the briefer will provide you with available forecast data applicable to your proposed departure time. This type of briefing is provided for planning purposes only. You should obtain a standard briefing as close to departure time as possible to obtain the latest current conditions, forecasts, and NOTAMs. Often, graphical weather depictions obtained through DUAT or the Internet can provide excellent trend information and may be used accordingly.

In-Flight Briefing

If at all possible, obtain a preflight briefing by telephone or by electronic means before departure. If you are already in flight and need to obtain a standard briefing or update a previous briefing in flight, contact Flight Service, not Flight Watch. After contact, advise the specialist of the type of briefing you require and provide appropriate background information, the specialist will then provide information as specified in the preceding paragraphs, depending on the type of briefing you request.

EFAS (Flight Watch) is not meant to provide you with a full standard briefing. Rather, rely on EFAS to provide you with the most current en route weather. When using EFAS, always give a PIREP so other pilots may benefit from your reports of the weather, ride, and so on.

In-Flight Datalink Weather

Technology advancements now enable suitably equipped aircraft to receive textual and graphical datalinked weather products and other information. Just like using weather information received over the Internet, however, the pilot, especially when in flight, must use the most current information, not out-of-date or invalid weather products. Also, the pilot needs to remember while airborne to judiciously divide his or her time between “head in the cockpit” and looking outside for other traffic. That is good judgment.

Weather Judgment

Judgment, often defined as the ability to arrive at a wise decision, is the combination of knowledge and skills, tempered by experience. Studies show that pilot judgment can, in large part, be learned and that the learning process starts with sound pilot education. You can improve your go or no-go weather judgment by setting personal weather minimums based on your level of training and experience. For instance, you might use personal minimums of 2,000 feet and 5 miles instead of the regulatory VFR minimums of 1,000 feet and 3 miles. You may then gradually reduce your personal minimums to whatever limits you find comfortable at or above the legal limits.

Pilots also cannot make good decisions based on incomplete or missing information. Knowing what is going on around you is called situational awareness. The key to safe flying is the combination of situational awareness and sound pilot judgment.

Here are some safety-related “Don’ts” for beginner and pro pilots:

- **DON'T** fly in or near thunderstorms. Scattered thunderstorms may be safely circumnavigated, but do not try to fly through or under one.
- **DON'T** continue VFR into Instrument Meteorological Conditions. Wait it out or turn around if you find en route weather lowering below your personal limits.
- **DON'T** forget that areas en route, or even near airports, may be below VFR minimums, even though reporting stations are at or near VFR minimums. Be especially cautious when the temperature and dewpoint spread is 3 °C or less—fog may form.
- **DON'T** proceed “on top,” hoping to find a hole in the clouds at the other end or hoping to get Air Traffic Control (ATC) to talk you down if you get caught on top. Allow more margin for weather at night. Scud clouds, lower clouds, and even the horizon may be difficult or impossible to see on dark nights. Always stay above the highest terrain until a safe landing is assured.
- **DON'T** fly into areas of rain when the air temperature is near freezing. Ice can form on the windshield, impairing forward vision, and, worse, it can form on the wings, which decreases aircraft performance. Remember, flight into known icing conditions is prohibited for all aircraft not properly certificated for flight in icing conditions or not properly equipped with ice protection equipment.

Finally, if you do get caught in weather, immediately contact Flight Watch, Flight Service, or any available ATC facility. Their specialists will do their utmost to assist you.

The Go or No-Go Decision

Preliminary Flight Planning—Getting the Big Picture

Media sources include the following:

- Newspaper weather maps.
- TV and radio weather reports, such as The Weather Channel.
- The Internet.

Recorded or electronic weather sources include the following:

- TIBS.
- DUAT.
- The Internet.

Obtain a Standard Briefing

Telephone or electronic means include the following:

- FSS.
- DUAT.
- The Internet.

If You Decide To Go

For in-flight weather updates, sources of weather information include the following:

- EFAS (Flight Watch) on 122.0 MHz below FL 180 and as published at FL 180 and above. EFAS provides the latest PIREPs, radar information, and satellite interpretation (real-time weather).
- FSS.
- Hazardous In-Flight Weather Advisory Service.
- Centers and terminal area facilities will broadcast a SIGMET or a Center Weather Advisory (CWA) alert once on all frequencies upon receipt.
- En route weather via datalink.

You can also ask the controller for PIREPs (about ride, icing, and so on) received from other aircraft. To the extent possible, centers and terminal area facilities will issue pertinent information on weather in the immediate area and airport and, when requested, will help pilots avoid hazardous weather areas.

Destination/terminal area arrival weather can be obtained via radio and/or datalink from the following sources, as available:

- EFAS (Flight Watch).
- Flight Service or other ATC facilities.
- UNICOM (evaluate carefully).
- Automatic Terminal Information Service.
- AWOS/Automated Surface Observation System.
- Terminal area datalink.

If You Do Not Go

You always have the option to delay or postpone a flight (and get a later weather briefing) or cancel a trip entirely if the weather is beyond your capabilities and/or that of your equipment.

Weather Resources Used by Briefers and Pilots

Weather Advisories

Weather advisories consist of Airmen's Meteorological Information (AIRMET), SIGMET, Convective SIGMETs, CWAs, and Severe Weather Forecast Alerts, commonly called Alert Weather Watches. These products warn of hazardous or potentially hazardous conditions (IFR conditions, turbulence, icing, thunderstorms, and so on). Typically, to be included in a weather advisory, the phenomena must be widespread (that is, covering an area of 3,000 square miles or more). Pilots should therefore always be alert to local or localized areas of hazardous weather that may not warrant the issuance of a weather advisory. Remember, the absence of an advisory does not necessarily mean the absence of hazardous weather.

The **AIRMET** contains hazardous weather conditions generally of concern to small aircraft. **SIGMETs** pertain to potentially hazardous conditions that may affect the safety of all aircraft. **Convective SIGMETs** and **Alert Weather Watches** are issued for thunderstorm or thunderstorm-related phenomena. **CWAs** are advisories of adverse weather conditions possibly hazardous to some aircraft, which are applicable to the airspace under the control of the issuing center. They may precede the issuance or amendment of SIGMETs and AIRMETs or provide warnings of phenomena too small to be included in other advisories.

AIRMET bulletins are issued on a scheduled basis every 6 hours, beginning at 0145 coordinated universal time (UTC) during central daylight time and at 0245 UTC during central standard time. Unscheduled updates and corrections are issued as necessary. Other weather advisories are unscheduled and issued as needed.

Aviation Routine Weather Report

The international Aviation Routine Weather Report (METAR) and special observations (SPECI) weather codes replaced the North American Surface Aviation Weather Report and station pressure formats in 1996. These reports are specific aviation weather observations taken at designated reporting sites throughout the United States. They communicate the actual weather conditions at the reporting location. The observation sites normally are located on airports; occasionally, they are located nearby the airport, outside the airport boundaries. In some rare cases, a METAR may be reported at a remote location (for example, a mountain pass).

METAR observations are usually taken and transmitted hourly at about 50 minutes past each hour. These observations are generally available within a few minutes after the hour. SPECI are taken whenever changing weather conditions warrant.

Here is an example of a METAR report:

METAR KRDU 010150Z 10009KT 10SM -SHRA OVC050 23/15 A2982 RMK RAB40 FQT LTG DSNT SW SLP094.

Here is the translation:

Aviation Routine Weather Report, Raleigh-Durham Airport, observation the first day of the month at 0150 ZULU, wind from 100 degrees true at 9 knots; visibility 10 statute miles; light rain showers; ceiling 5,000 feet overcast, temperature 23 °C; dewpoint 15 °C altimeter 29.82 inches. Remarks: Rain began at 40 minutes past the hour; frequent lightning to the distant southwest; sea level pressure 1009.4 Hectopascals/millibarH.

Note: When providing wind information to departing or arriving aircraft, terminal facilities will provide wind direction relative to magnetic north.

Pilot Weather Reports

The need for objective PIREPs cannot be overstated. Pilot reports are currently the best source of in-flight turbulence and icing information and often are the only source of en route weather conditions. Although PIREPs can be filed with any ATC facility, to the extent possible, pilots should file these reports with Flight Watch or a FSS to ensure dissemination throughout the system.

The following information should be included in a PIREP:

- Your location (ideally, in reference to a VOR, an airport, or a significant geographical landmark), altitude, and type of aircraft.
- Sky cover, including amount (that is, FEW, SCT, BKN, OVC); bases and tops reports.
- Flight visibility and weather encountered.
- Outside air temperature.
- Observed winds aloft.
- Turbulence and icing.
- Other significant weather data (for example, distant weather observed).

Here is an example of a PIREP:

KLYH UA /OV KRIC-KLYH180010/TM 1415/FL065/TP C152/SK SCT-BKN030 TOPS040/ OVC100/WX FV05M HZ/TA 06/TB LGT/RM MOD TURBC SFC-045 DURGC KRIC

Here is the translation:

Pilot report; from Richmond, VA, to 10 nautical miles south of Lynchburg, VA; time – 1415Z; altitude 6,500 feet mean sea level (MSL); type aircraft, Cessna 152; cloud bases 3,000 feet MSL, coverage scattered to broken, tops 4,000 feet MSL, higher cloud bases 10,000 feet MSL coverage overcast, flight visibility 5 statute miles, haze, temperature 6 °C; light turbulence at 6,500 ft.; remarks: moderate turbulence from the surface to 4,500 feet MSL during climbout from Richmond.

Area Forecasts

Area Forecasts (FAs) are 12-hour aviation forecasts plus a 6-hour categorical outlook giving general descriptions of VFR sky and weather conditions that affect aircraft operations. The FA is not a stand alone product and must be used in conjunction with the AIRMET Bulletins; specifically, AIRMET SIERRA (IFR and mountain obscurations), TANGO (turbulence), and ZULU (icing and freezing levels), which are issued on a scheduled basis.

Heights of cloud bases are referenced to height above MSL, unless otherwise noted as above ground level (AGL) or ceilings (CIG). Cloud tops are always given in MSL.

HOW TO OBTAIN A GOOD WEATHER BRIEFING

Categorical outlook terms, describing general ceiling and visibility conditions for outlook planning purposes, are defined in the following chart.

Definition of LIFR, IFR, MVFR, and VFR

LIFR	IFR	MVFR	VFR
Ceilings less than 500 feet and/or visibility less than 1 statute mile	Ceilings less than 1,000 feet and/or visibility less than 3 statute miles	Ceilings between 1,000 and 3,000 feet and/or visibility 3 to 5 statute miles, inclusive	Ceilings greater than 3,000 feet and visibility greater than 5 statute miles

The causes of IFR or MVFR are indicated by either ceiling or restrictions to visibility, or both. The contraction CIG and/or weather and obstruction to visibility symbols are used. If winds of 30 knots or greater are forecast for the outlook period, the word WIND is also included for all categories, including VFR.

Here are some examples:

- LIFR CIG—Low IFR due to a low ceiling.
- IFR FG—IFR due to visibility restricted by fog.
- MVFR CIG HZ FU—Marginal VFR due both to ceiling and to visibility restricted by haze and smoke.
- IFR CIG RA WIND—IFR due both to low ceiling and to visibility restricted by rain; the surface wind is expected to be 30 knots or greater.

FAs, each covering a broad geographical area, are issued three times a day in the contiguous United States and four times a day in Alaska and Hawaii.

Issuance times differ among geographic areas. Specific schedule times for your location can be obtained by calling the nearest FSS. These forecasts are amended as required.

Terminal Aerodrome Forecasts

Terminal Aerodrome Forecasts (TAFs) are issued for specific airports and are valid for a 5-statute-mile radius from the center of the runway complex. They contain information on the expected surface winds, visibility, weather, obstructions to vision, and cloud coverage and heights. They are valid for a 24-hour period.

TAFs are issued four times a day. Each forecast is amended according to prescribed criteria, as required.

TAFs are presented in the following order:

Example and Format of a Winds and Temperatures Aloft Forecast

Station identifier	Issuance and valid times	Surface wind (true north and knots)	Visibility in statute miles	Weather and obstructions to visibility	Cloud layers in ascending order	Cloud heights in hundreds of feet AGL	Remarks
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Here is an example of a TAF:

KBOS 041145Z 1212 34015G25KT 5SM -SHSN SCT010 BKN018 TEMPO 1215 1/2SM SHSN VV008
BECMG 15-17 33012G22KT P6SM BKN050

Here is the translation:

Boston Aerodrome Forecast for the 4th day of the month, valid time 12Z-12Z. Surface wind from 340 degrees at 15 knots with peak gusts to 25 knots; visibility 5 statute miles; light snow showers; scattered clouds at 1,000 feet AGL; ceiling 1,800 feet broken AGL; occasionally, visibility one-half mile in moderate snow showers; indefinite ceiling 800 feet (an indefinite ceiling represents a surface-based phenomena obscuring the whole sky). Becoming between 15Z and 17Z surface wind from 330 degrees at 12 knots with gusts to 22 knots; visibility greater than 6 miles; ceiling 5,000 feet broken.

Winds and Temperatures Aloft Forecasts

Winds and Temperatures Aloft Forecasts (temperature when requested) (FD) provide wind direction, speed, and temperature for selected locations. Winds between forecast points can be calculated by interpolation. Winds and temperatures aloft forecasts are 6-hour, 12-hour, and 24-hour forecasts to the nearest 10 degrees, relative to true north, and include wind speed in knots and temperature in degrees Celsius for selected altitudes. No forecasts are provided for reporting levels within about 1,500 feet (or less) of the surface. Temperature is omitted for the first 3,000-foot level (or at any level within 2,500 feet of the surface).

Forecasts are generated twice daily from 0000Z and 1200Z radiosonde upper air observations. These forecasts are available about 4 hours after each observation.

Example and Format of a Winds and Temperatures Aloft Forecast

Altitude	JFK
3,000	2925
6,000	283300
9,000	293004

Here is a partial translation of the chart above:

Kennedy Airport, at 6,000 feet MSL, the forecast winds are from 280 degrees true at 33 knots with a temperature of 0 °C.

Summary

To the extent possible, begin your weather planning several days before your flight. You can use commercial television, such as The Weather Channel, newspapers, or the Internet. The day or evening before the flight, obtain an outlook briefing from Flight Service, DUAT, or the Internet. As close to your departure time as possible, with your preliminary flight planning complete (that is, basic route, altitudes, preliminary alternates selected), call Flight Service or log onto DUAT or the Internet for your standard briefing. If your standard briefing is several hours old or the weather is questionable, again contact Flight Service just before takeoff for an abbreviated briefing.

Briefings should be obtained by phone or electronically. If there is no other alternative, however, request the briefing by radio or datalink after you are airborne. It is far better to obtain the briefing by electronic means after you are airborne than to have no briefing at all.

When contacting an FSS, state your request, followed by the appropriate background information. The briefer will use this information to tailor the briefing to your proposed flight. The briefer will interpret and summarize the weather data to the extent possible and present the information in the sequence designed for the type of briefing requested. When the briefing has been completed, do not hesitate to ask for clarification of any point you did not understand or for any additional information you require.

The briefer may state: “VFR flight not recommended.” This statement in and of itself should not necessarily cause you to cancel or postpone your flight. It does mean, however, that, in the opinion of the briefer, the flight cannot be conducted safely in Visual Meteorological Conditions, and the statement indicates that poor weather conditions exist or are forecast. If the weather appears beyond your capability or personal minimums, you should consider changing your plans. On the other hand, the absence of this statement does not necessarily ensure the absence of adverse weather. Thunderstorms, turbulence, and strong winds, when considered individually, do not necessarily warrant this statement.

Whether VFR or IFR, the absence of a Weather Advisory does not guarantee a flight free from adverse weather conditions. Remember that the weather products available to the briefer have limitations. Weather warnings are not always issued for each occurrence of hazardous weather.

Updated weather should be routinely obtained en route through an FSS or EFAS (Flight Watch) or via datalink. EFAS has the latest reports and forecasts, near real-time radar and satellite imagery, and can help you interpret the data. In addition, EFAS is a central clearinghouse for PIREPs. The need for PIREPs cannot be overstated. PIREPs can be given to any ATC facility; however, to the extent possible, they should be filed with an FSS or EFAS. Even when flying IFR, controllers most often can approve switching to EFAS for a weather update. Whether flying VFR or IFR, you need to obtain weather updates far enough in advance so you can act on them before you encounter adverse weather or before your fuel runs low.

According to a popular aviation saying. *“Aviation in itself is not inherently dangerous, but to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity, or neglect.”*

As a result, ***when in doubt, wait it out.***

Resources

- AFSS Pilot Information Portal (www.afss.com)
- FAA-H-8083-15 Instrument Flying Handbook (http://www.faa.gov/library/manuals/aviation/instrument_flying_handbook/)
- FAA-H-8261-1 Instrument Procedures Handbook (http://www.faa.gov/library/manuals/aviation/instrument_procedures_handbook/)
- General Aviation Pilot's Guide to Preflight Weather Planning, Weather Self-Briefings, and Weather Decision Making. (http://www.faa.gov/pilots/safety/media/ga_weather_decision_making.pdf)
- Personal and Weather Risk Assessment Guide (http://www.faa.gov/education_research/training/Personal%20and%20Weather%20Risk%20Assessment%20Guide-V1.0.pdf)

- PAVE Personal Minimums Checklist (http://www.faa.gov/education_research/training/personal%20minimums%20checklist.pdf)
- CFIT Advisory Circular (http://www.airweb.faa.gov/Regulatory_and_policies/Documents/9FE4D96586256D04006F2065?OpenDocument)

About This Series

The purpose of this series of Federal Aviation Administration (FAA) safety publications is to provide the aviation community with safety information that is informative, handy, and easy to review. Many of the publications in this series summarize material published in various FAA advisory circulars, handbooks, other publications, and audiovisual products developed by the FAA and used by the FAA Safety Team (FAASafetyTeam) for educational purposes.

Some of the ideas and materials in this series were developed by the aviation industry. The FAASafetyTeam acknowledges the support of the aviation industry and its various trade and membership groups in the production of this series.

Comments regarding these publications should be e-mailed to ProductManager@FAASafety.gov.

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