Controlled Aerospace

- Subject to air traffic control.
- IFR flight are controlled from Takeoff to Touchdown
- VFR flight contact only in terminal area, Takeoff & Land
- Separation of traffic main job of ATC

- FAR require use of aircraft transponder in controlled aerospace
  Transponder give identity of aircraft on Radar Scope
  - give position and altitude

Air operable 4096-code transponder with mode C capability is required to operate within Class A aerospace, B aerospace, within 30 Nautical mile of class B primary airport and class C.

So Transponder : above 2500ft AGL
above 10000 MSL
Name A, B, 30 NM S B, C.

Class E airspace -

- Most of the flying here.
- no communication required but can request advisory service which ATC provides as workload permitting.
- Cannot fly in Class E if ceiling is below VFR minimum rules => instrument holder.
  IFR flight plan
  ATC clearance

Federal airways are Victor airways are based on VOR or VORTAC navaids and are identified by a V and the airway number.

Feeder routes are based on LF/MF (low/medium frequency) navaids or VHF (these are called colored airways and are designated by a color and a number in Alaska & Coastal North Carolina

Class E airspace segments include Federal or Victor airways which usually extend to 4 nautical miles on each side of the airway centerline and other instrument procedures extend from 1200 AGL to 17999 MSL

To allow IFR traffic to remain in controlled airspace while transitioning from enroute to the Terminal environment, the base of the class E extends closer to the ground near many airports.

At airports without control towers which have approved instrument approach procedures, Class E airspace begins at 700 ft AGL or at the surface.

Class E airspace consist of several different regs the weather minimum depend if you operate below, at, or above 10000 MSL.

Below 10000 MSL → 3 SM Visibility
at or Above 10000 MSL → 5 SM.

Below 10000 MSL ⇒ 500 ft below
1000 ft Above
2000 ft Horizontal.

at or Above 10000 ft. → 1000 ft below
1000 Above
1 SM Horiz.

Student Pilot - VFR traffic advisories on frequency workload permitting

Class D airspace

An airport which has an operating control tower, but does not provide the same services as in Class B or C airspace, is surrounded by Class D airspace.

The Control Tower provides sequencing and traffic advisory to VFR aircraft operating into and out of the airport and IFR traffic separation.

You must establish two way radio communication with the tower prior to entering Class D airspace and maintain radio contact during all operations to, from or on the airport.

Avoid Class D airspace except to T/k of/or land at an airport within the area.

 Airspace at an airport with a part time control tower is classified as Class D airspace only when the associated tower is in operation.

At airport where the Tower operate part time

The airspace change to class E or a combination of class E and G when the Tower is closed.
see A / F D. for Tower hrs operation & airspace designation

In some Class D airspace areas, a satellite airport may be located within the airspace designated for the primary airport.
If a control Tower is in operation at the satellite airport you should contact it for arrival and departure. ☒
When the satellite airport is a non Tower field you must establish contact with the primary airport control Tower.
When departing a non tower satellite airport in class D airspace, contact the controlling tower as soon as practicable after T/O.

Some satellite airport have been excluded from class D. Airspace may be carved out for class D, to allow for IFR to arrive and depart from a non Tower satellite airport

☐ Class D airspace is depicted on a sectional chart by a blue segmented circle

Within class D - 3 state Mode availability.
500 ft below, 1000 ft above, 2000 horz distance for VFR - VFR traffic advisory workload permitting

Class D airspace normally extends from the surface to a designated MSL altitude (approximately 2500 ft AGL)
Due to requirement unique to each airport extension for instrument approaches and departures may be included.

Class C Airspace
Within class C airspace, ATC provide radar service to all IFR and VFR aircraft
MANDATORY. Usual Class C airspace. Some have unique aspect.
Must establish a 2 way communication and maintain it in and out until out completely.
In class C and airspace above it from ceiling up to 10000 MSL must have transponder with mode C capability.
Beneath a Class C not ~~oblige~~ oblige to have transponder.
ATC not full time in class C same rules as class D -

In class C - 3 SM visibility
2500 ft below
1000 ft above
2000 ft horizontal

if operate in satellite airport dont have class C, contact ATC as soon as pass off ATIS off

A Class C area normally consist of a 5 nautical mile radius core area which extend from the surface to 4000 ft above the primary airport. A 10 nautical mile radius shelf area usually extends from 1,200 ft to 4000 ft above the airport elevation. An outer area usually extend out to 20 nautical from the primary airport.

VFR pilot not required to contact ATC prior to entering the outer area. But it is helpful to do so, ATC give same service in outer area C

core = 5 SFC to Outer

You must establish two way radio communication with ATC facility prior to entering class C airspace

Class B airspace.

To separate arriving and departing traffic
Look like an upside down wedding
cake. — Mountain 3 Statute Mile Visibility, Clear
of cloud.

Must have a two way radio communication
and a Mode C transponder.

Transponder within 30 Nautical Mile of class
B primary airport from SFC to 10000ft MSL

VOR or TACAN is required for IFR
operations.

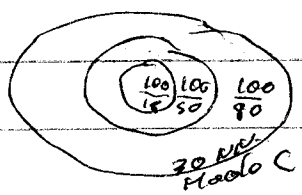
- Must have at least a Private Pilot Certificate
Student certificate appropriate logbook endorsement
from CFI. But some airport prohibited
i.e. FAR Part 91.

Prior to enter Class B airspace you need a
ATC clearance.

You must address ATC of your intended altitude
and route of flight before departing an
airport in class B.

Solide blue line for lateral boundaries of class B

From 10000 MSL



You must have
a Mode C Transponder

VFR Terminal Area Chart. Help when flying VFR in or around part of Class B. Shows land on larger scale (1:250,000) more detailed topographical features.

Sectional charts display a blue border around Class B airspace to indicate the area by a VFR terminal area chart.

VFR Flyway planning chart are published on the reverse side of some VFR terminal area chart.
The Flyway planning chart shows VFR routes for transitioning around, under and through Class B airspace.
These routes are not intended to discourage request for VFR operation, but to avoid congested area, such IFR arr / dep
Flyway chart omit terrain features and spec info because not for navigation.
Major landmarks are shown.

A VFR Corridor is airspace with specified vertical and lateral boundaries which allows pilot to fly through Class B airspace without clearance from or communication with ATC

You can fly along a VFR flyway in the vicinity of class B airspace without actually entering the airspace. An ATC clearance is not required to operate on a VFR flyway.

Class A airspace.
It is from 18000 ft MSL up to FL60000.
It covers the majority of the contiguous 48 and Alaska and extend 12 nautical mile out from the US coast.

You must be instrument rated, have airworthy aircraft operate under an IFR plan, and be controlled by ATC clearance. Due to speed not VFR allowed.

Operations from the floor of class A airspace up to and including FL450

All aircraft have to set altimeter on 29.92

ATC use the term flight level (FL)

Special VFR clearance allow you to operate within the surface area of class B, C D & E if the visibility is 1 statute mile and you can remain clear of cloud

No Night special VFR from sunset to sunrise unless instrument rated & equipped

Some major airport do not allow Special VFR for fixed wing ⇒ NO S VFR on chart

Airspeed limitation.

Below 10 000 MSL → Max indicated airspeed 250 kt

In class C or D airspace or at or below 2500 AGL and within 4 Nautical mile of the primary airport = 200 knot IAS
class B and VFR corridor through class B = 200 KIAS.

Special use airspace = are.
Alert area (A). Military Operation Area (MOA)
Warning area (W). Restricted Area (R),
Prohibited area (P), Control firing area,
National security area.

Alert Areas - designated by the letter A followed by a number - A-260.
Training in unusual types of activities - parachute jumping, glider towing and high concentrations of student pilot training.

☐ Collision avoidance in alert areas rest with all pilots.

Be especially cautious when flying through alert areas.

Military Operation Areas (MOA) is a block of airspace in which military training activities are conducted.
MOA have specified floors and ceiling that contain military activities.
VFR are allowed in MOA but it is better to avoid.

FSS (flight service station) outside MOA are informed of live operations.

Be cautious MOA.

Warning Areas is an airspace dimension extending from three nautical miles outward from the coast of US that contain activity which may be hazardous to nonparticipating aircraft.
Can be over domestic or international water.
Hazard such as aerial gunnery or guided missiles.

Restricted Areas: have invisible hazard to aircraft, artillery firing, aerial gunnery, guided missile.

☐ You must have the controlling agency permission to fly through a restricted area

Prohibited Areas. for security or national welfare, aircraft are prohibited.

You must obtain permission from the controlling agency to operate in it.

P 26

Controlled firing area activity, area discontinued immediately when a spotter aircraft, radar or ground (lookout see the aircraft (. they are Not depended on aeronautical chart

Other airspace areas

- National security area
- Airport advisory area
- Military training route
- Temporary flight restriction
- Flight limitation and restriction (Restricted)
- Parachute jump area
- Terminal radar service area (TRSA)

National Security Area (NSA) at location where there is a need for increased security & safety of ground facilities. Voluntarily avoid flying through NSA. Sometimes NSA are published as NOTAM issued for any length

Airport Advisory Area extend 10 nmile statute mile from airport where there is a flight service station located on the field and no operating control tower.
Contact FSS on CTAF 123.6 MHz prior entering it. The FSS provide local airport advisory service (LAA) for wind direction, velocity favored RWY, alti, traffic in area

Military ~~Flexibles~~ Training Routes (MTR)
for low level, high speed military training fly

- MTR below 10000 ft MSL for operations at speed > 250 knot.
- Route at and < 1500 ft AGL → VFR.
- Route > 1500 ft AGL → IFR

Not restricted to fly through MTR, but check FSS within 100 NM for info on activity of MTR. MTR are classified as VR or IR and are identified with a 3 or 4 number based on the type and altitude of ope in the route.

~~[illegible] PIC for [illegible] to [illegible]~~

→ [illegible] PIC in [illegible] uncontrolled.
→ Clearance delay [illegible]
→ Search [illegible]
→ Sales of [illegible]
- Tow a glider.
- To pay its fare [illegible]

Mertaha

To check on rides [illegible] flight [illegible] airplane

- ground & flying training ~~endorsement~~ from CFI in [illegible] [illegible] simulated flight.
- One time endorsement in your log [illegible] of a CFI on > 25000 ft MSL ground & flight training High Altitude airplane endorsement from CFI.

~~Fe~~ Flight on routes marked I are conducted in accordance with instrument flight rules regardless of the weather.
MTRs with no segment above 1500ft AGL are identified by four number, while a three number designation indicates that the MTR has one or more segment above 1500 ft AGL

Temporary flight Restriction are imposed by FAA to protect person & property on SFC or Air. To provide a safe environment for rescue/relief operation, prevent unsafe congestion of sightseeing due to public interest.

The FAA issue a NOTAM for the event & apply it in case for things such, toxic spills, volcanic eruption nuclear incident, aircraft hijacking and forest fire

For rescue/relief, restricted airspace is 2000 above the SFC, 3 NM Radius.
In Class B, C or D no NOTAM only normal procedure

Notam info => FAA coordination facility
Reason for restriction
agency directing relief
Tel N°.

Chapter 6 Meteorology for Pilot - Weather Theory

The Troposphere is the atmospheric layer extending from the surface to an average altitude of 36 000 feet. Above the troposphere is the stratosphere, mesosphere and thermosphere.

Because of heating inequalities, heat is transported or circulated from one latitude to another by a process known as convection.

In the three cell circulation model, the Hadley, Ferrel and Polar cell generate predictable wind patterns and distribute heat energy.

Pressure reading on weather maps connect point of equal pressure with line called isobars. When isobars are spaced closely apart, the pressure gradient is considered to be weak, while closely spaced isobars indicate a strong gradient.

A high is a center of high pressure surrounded on all sides by lower pressure. Conversely a low is an area of low pressure surrounded by high pressure.

A ridge is an elongated area of high pressure while a trough is an elongated area of low pressure. A col can denegrate either a neutral area between two high or two lows or the intersection of a ridge and a trough.

Coriolis force causes all free moving object to be traced a curved path due to the earth's rotation. In the northern hemisphere, the deflection will be to the right of its intended path while the opposite will occur in the southern hemisphere

Frictional force cause the wind to shift direction when near the earth surface.

A sea breeze blow from the cool water to the warmer land during the day. A night a land breeze blows from the cooler land to the warmer water.

A cold downslope wind flows down hill from snow covered plateaus or steep mountain slopes.

Warm downslope wind sometime drama

valley wind the T out the base of the mountain

Key Terms

Atmosphere	Pressure gradient
Troposphere	High
Troposphere	Cold
Stratosphere	Ridge
Mesosphere	Trough
Thermosphere	Col
Circulation	Pressure gradient force
Convection	Coriolis Force
Ozone	Frictional forces
Sea Breeze	Mountain Breeze
Land Breeze	Valley Breeze
	Katabatic Wind

Chapter 6 Notes for Relat Weather Patterns S-B-

Stability is the atmosphere resistance to vertical motion.

- The rate at which T° decreases with an increase in altitude is referred to as its lapse rate - As you ascend in the atmosphere, T° decrease at an average rate of 2°C (3,5°F) per 1000 ft

- When T° increase with altitude a T° inversion exist.

Evaporation is the changing of liquid ~~cop~~ water to ~~vap~~ invisible water vapor - Condensation occurs when water vapor, ~~while the transformed~~ changes to liquid. Sublimation is the change of ice directly to water vapor, while the transformation of water vapor to ice is known as deposition - In both state the liquid state is bypassed

Relative humidity is the actual amount of moisture in the air compared to the total amount that could be present at that T°.

The T° at which air reaches a state where it cannot hold no more water is called dewpoint.

Frost forms on aircraft when the T° of the collecting surface is at or below the dewpoint of the surrounding air and the dewpoint is below freezing. If frost is not removed from the wing before flight, it may decrease lift and increase drag to a point which seriously compromises safety.

When the T°/dewpoint spread reaches 4°C (2°C and continues to decrease, there is nearing the saturation point and the probability of fog and low cloud forming increasing.

Since they normally form below 6,000 feet AGL, stratus, stratocumulus and nimbostratus are classified as low cloud.
Altostratus and altocumulus are classified as middle cloud and have bases that range from about 6,000 to 20,000 feet AGL. High cloud have bases beginning at altitudes above 20,000 feet AGL. The 3 basic types of high cloud are cirrus, cirrostratus and cirrocumulus. Extensive vertical

development is characteristic of a cumulus, towering cumulus and cumulonimbus clouds

Fog is a low cloud which has its base within 50 feet of the ground. If the fog is less than 20 feet it is called a ground fog

Although a cloud usually forms when the atmosphere is saturated, it doesn't necessarily mean that the cloud will produce precipitation. For precipitation to occur, water or ice particles must grow in size until they can no longer be supported by the atmosphere.

As they fall, snowflakes and raindrops may change into other type of precipitation depending on the atmospheric condition beneath the cloud. In addition to snow and rain, falling moisture also can take the form of drizzle, ice pellets or hail.

An air mass is a large body of air with fairly uniform T° and moisture content. As an air mass moves, it is modified by the T° and moisture of the area over

which it moves.

Stable air is generally, encountered with layered or stratiform cloud, instability is usually associated with widespread areas of cloud and steady rain or drizzle. Moist unstable air causes the formation of cumuliform cloud, showers, turbulence and good surface visibility.

A cold front is one where cold air is moving to displace warmer air. In a warm front, warm air is displacing cold air. A stationary front has no movement. When cold and warm merge they create an occluded front.

Frontal descendants refer to the comparatively rapid changes in the meteorological characteristic of an airmass. When you cross a front, you move from one airmass into another and will normally experience changes in T°, pressure & wind.

Key Terms

Stability
Adiabatic Heating
Adiabatic Cooling
Lapse Rate
Melting
Freezing
Deposition
Humidity
Relative Humidity
Dewpoint
Saturated
Dew
Frost
Condensation nuclei
T° / Dewpoint Spread
Stratus
Stratocumulus
Nimbostratus
Fog
Radiation Fog
Ground Fog
Advection Fog
Altostratus
Altocumulus
Cirrus

Temperature Inversion
Evaporation
Condensation
Sublimation
Cirrostratus
Terminal Velocity
Cumulonimbus
Precipitation
Supercooled Water Droplet
Virga
Precipitation Indicator
Ice Pellets
Hail
Freezing
Rime
Snow
Frost
Cold Front
Warm Front
Stationary front
Occluded front
Cold Front Occlusion
Warm Front Occlusion

Chapter 6 Meteorological Weather Hazard S-C

Terms

A ordinary thunderstorm are relatively short lived storm which rarely produce large hail. Severe thunderstorm produce wind gust of 50 knots or more, hail 3/4 inch in diameter or larger and or tornados

The life of a thunderstorm pass through 3 distinct stages. The cumulus stage is characterized by continuous updraft. When precipitation begin to fall, the thunderstorm has reached the mature stage. As the storm dies during the dissipating stage, updraft weaken and downdraft become predominant

Some weather hazard associated with thunderstorm such as turbulence lightning and hail are all confined to the cloud itself

If you encounter severe turbulence during flight you should establish maneuvering speed and try to maintain a level flight attitude.

Mechanical turbulence is often experienced in the traffic pattern when wind forms eddies and blows over hangars, land of trees or other obstruction.

When sufficient moisture is present, cumulus cloud typically indicate the presence of convective turbulence.

Wingtip vortices are created when an airplane generate lift. The greatest vortex strength occur when the generating aircraft is heavy slow and in a clean configuration

Mountain wave turbulence can be anticipated when the wind across a ridge are 40 knots or more and the air is stable. The crests of mountain wave may be marked by lens shaped or lenticular cloud.

Wind shear can exist at any altitude and may occur in a vertical or horizontal direction. A microburst is one of the most dangerous source of wind shear.

The 3 types of structural ice are rime, clear and mixed

Volcanic ash clouds may be hundred of miles wide and thousand of feet thick

Key Terms-

Hermass Thunderstorm
Severe Thunderstorm
Supercell
Supercell line
Multicell
Squall line
Essential Thunderstorm
Cumulus stage
Mature stage
Quest front
Roll Cloud
Dissipating stage
Shear Zone
Tornado
Waterspout
Low level Turbulence (LLT)
Mechanical Turbulence
Convective Turbulence
Capping Stable Layer
Essential Turbulence

Wake Turbulence
Jet Engine Blast
Clear Air Turbulence (CAT)
Jet Stream
Mountain Wave
Rotor
Wind Shear
Microburst
Low level Wind Shear Alert System (LLWAS)
Terminal Doppler Weather Radar (TDWR)
Runic Ice
Clear Ice
Mixed Ice
Sleet
Snow
Rime
Volcanic Ash

Chapter 7 Interpreting Weather Data-Forecasting Process 2+

- Predicting that the weather you are experiencing at the moment will continue to prevail is referred to as the persistence method of forecasting

- The trend forecast assumes that the weather system which are moving in one direction and speed will continue to do so in the absence of any intervening circumstance

Climatological forecasts are based on the average weather in a region

The analogue forecast use past weather pattern as a guide to predict what will occur in the future

A meteorological forecast uses the forecasters scientific knowledge of the atmosphere and the process to generate a weather prediction

Numerical weather prediction develops a forecast using mathematical equation which relate atmospheric conditions with other variable

Weather stations determine current conditions

worldwide several time a day. Observations are subsequently relayed to three World Meteorological Centres where the data are transmitted to meteorological centres in each participating country, including the National Centres for Environmental Prediction (NCEP) in US.

Information produced by the NCEP is sent to National Weather Service (NWS) facilities across the country as well as other public and private agencies worldwide.

Of all forecast, short term predictions are generally the most accurate.

Key Terms
Persistence Method.
Trend Forecast
Climatological Forecast.
Analogue Forecast.
Meteorological Forecast
Numerical Weather Prediction.

Chapter 7 Interpreting Weather Data - Limited Report & forecast

SB

An Aviation routine weather report (METAR) is an observation of surface weather which typically contain 10 or more seperate element in a standard format.

When a significant change in one or more element occurs, a non-routine aviation weather report (SPECI) is issued

Prevailing visibility is the greatest distance an observer can see and identify object through at least half of the horizon

Runway visual Range (RVR) is based on what a pilot in a moving aircraft should see when looking down the runway. If included in a METAR, RVR will be reported following prevailing visibility

A ceiling is the height above ground level of the lowest layer of cloud aloft which is reported as broken or overcast or the vertical visibility into an obscuration

Radar weather report (SDs) defines general area of precipitation, particularly thunderstorms.

Pilot weather report (PIREPs) include information such as the height of bases and tops of cloud layers, in flight visibility, icing conditions, wind shear, and turbulence.

A prediction of what the weather will be in the future at a specific airport is contained in the associated terminal aerodrome forecast (TAF)

An Aviation area forecast (FA) can not only provide a good source of info for enroute weather, but it can also help you determine the conditions at airports which do not have their terminal aerodrome forecast.

An estimate of wind direction in relation to true north, wind speed in knots, and the T° in C° for selected altitudes can be found in the wind and T° aloft forecast (FD).

A convective outlook (AC) forecast general thunderstorm activity for the next 24 hrs issued

Area of possible severe thunderstorms or tornados are defined by a severe weather watch bulletin (WW).

AIRMETs are issued every 6 hrs with amendment issued as necessary, for weather phenomena which are potentially hazardous to light aircraft. AIRMETs are issued for moderate icing, moderate turbulence sustained winds of 30 knots are made at the surface, ceiling less than 1000 feet and/or visibility less than 3 miles affecting over 30% of an area at any one time and extensive mountain obscurement.

SIGMETs are issued for hazardous weather such as severe icing, severe and extreme turbulence, dust storms, volcanic eruptions and volcanic ash lowering visibility to less than 3 miles.

Existing or forecast hazardous convective weather, which is significant to the safety of all aircraft, is contained in convective SIGMETs (WSTs)

Key Terms

Aviation Routine Weather Report (METAR)
Non-Routine (Special) Aviation Weather Report (SPECI)
Forecasting Variability
Runway Visual Range (RVR)
Ceiling
Radar Weather Report (SD)
Pilot Weather Report (PIREP)
Terminal Aerodrome Forecast (TAF)
Aviation Area Forecast (FA)
Winds & Temperatures Aloft Forecast (FD)
Hurricane Advisory (WH)
Convective Outlook (AC)
Severe Weather Watch Bulletin
Alert Severe Weather Watch (AWW)
AIRMET (WA)
SIGMET (WS)
Convective SIGMET (WST)

Chapter 7. Interpreting Weather Data - Graphic Weather Product S-C

To get a picture of atmospheric pressure pattern at the earth's surface, you can refer to the surface analysis chart.

The surface analysis chart provides information from surface weather observation for a large number of reporting point throughout the US

The Weather depiction chart is produced hourly useful during the preflight planning process for determining general weather conditions and areas of IFR and MVFR weather.

The Radar summary chart shows the location, size shape and intensity of areas of precipitation, as well as the intensity trend and direction of movement. Although the chart plots the location of line and cells of hazardous thunderstorms, it does not show cloud formations.

Both visible and infrared (IR) imagery are available from weather satellites. The visible picture is used generally to indicate the presence of clouds as well as the cloud shape and texture.
IR photos, which depict thermal radiation emitted by the

by the convective cloud tops and the earth's surface can be used to determine cloud height.

The U.S. low level significant weather prog chart cannot only help you avoid areas of significant turbulence but it also can provide you with information to help you avoid areas where temperatures are conducive to aircraft icing. The chart is valid from the surface up to 24,000 feet.

The upper panels of the low level significant weather prog chart show areas of non convective turbulence and freezing level as well as areas of IFR and MVFR and VFR weather. The surface prog panels, contain the lower level portion of the chart, use standard symbol for fronts and pressure centers

The severe weather outlook chart is a two panel chart which forecast thunderstorm activity over the next 8 hrs. The left panel depict the outlook for general thunderstorm activity and severe thunderstorm for the first 4 hrs period beginning at 1200Z. The right panel of the severe weather outlook chart provide forecast for the next day beginning at 1200Z

The forecast winds and T° aloft chart contains eight panel each of which correspond to a forecast level - 6000, 9000 - 12000 - 18000 - 24000 30000 - 34000 - 39000 feet MSL. The chart is issued at 1200Z and is valid for a 12 hrs forecast period

The Volcanic ash forecast transport and dispersion chart (VAFTAD) forecast the concentration of volcanic ash over 6 - and 12 hours - time interval, beginning 6 hrs following a volcanic eruption. The VAFTAD chart is not intended to take the place of SIGMET regarding volcanic eruptions; it is designed specifically for flight planning purposes.

Key Terms
Surface Analyses Chart
Station Model
Weather depiction chart
Radar Summary Chart
US terminal Significant Weather Prog Chart
Freezing Levels
Severe Weather Outlook Chart
Forecast Winds & T aloft Chart (FD)
Volcanic Ash Forecast Transport and Dispersion chart (VAFTAD)

Chapter 7. Interpreting Weather Data: Source of Weather info S-D.

You can obtain a preflight weather briefing from an FSS/AFSS 24 hr a day by calling the toll free number 1-800-WX BRIEF. When you contact a weather briefer identify yourself as a pilot flying VFR and provide the briefer with your aircraft number, and other relevant background data for the flight.

When you are planning a trip and have not obtained preliminary weather or a previous briefing, you should request a standard briefing.

You should request an abbreviated briefing when you need only one or two specific items or need to update weather information from a previous briefing or other weather source.

An outlook briefing will provide you with forecast information appropriate to the proposed flight to help you make an initial go/no-go decision for the feasibility of your flight.

The Telephone information briefing service (TIBS) provide a continuous recording of area and/or route meteorological briefings, airspace procedures and special aviation oriented announcement.

You can receive weather briefing and file flight plain directly via a personal computer and modem using the direct user access terminal system (DUATS)

Transcribed weather broadcast (TWEBs) which are transmitted continuously over selected NDBs and/or VORs, include route oriented data with specially prepared National Weather Service forecast, in flight advisories, record observation and pre-recorded information such as weather report.

Hazardous in flight weather advisory service (HIWAS) broadcast, which include advisories such as AIRMET, SIGMETs, convective SIGMETs and urgent PIREPs are transmitted on a continuous basis over selected VORs

Un-included weather advisory issued by an ARTCC to alert pilot existing or anticipated adverse weather conditions within the next

This is called a center weather advisory (CWA)

When flying below 18,000 feet MSL, you can contact the enroute flight advisory service (EFAS) on 122.0 MHz for real time weather information including any thunderstorm activity which might affect your route.

The 2 types of weather automated weather observation system currently in use are the automated weather observing system (AWOS) and the automated surface observing system (ASOS)

Key Terms

Preflight Weather briefing
Standard Briefing
Abbreviated Briefing
Outlook briefing
Telephone Information Briefing Service (TIBS)
Direct User Access Terminal System (DUATS)
Transcribed Weather Broadcast (TWEB)
Hazardous in Flight Weather Advisory Service (HIWAS)
Center Weather Advisory (CWA) - Enroute Flight Advisory Service (EFAS)
Flight Watch = Automated Weather Observing System (AWOS)
Automated Surface Observation System (ASOS)

no surface Analyses chart

[K] A Stationary front is depicted with a scalloped warm front symbol and a triangular cold front symbol on the appro

Cold front  Occluded front 

Squall line 

Warm  Trough 

Ridge

[B] for flight planning, the weather depicte chart is the most useful for determining general weather conditions and specific locating areas of adverse weather.

[S] Surface Summary chart depicts location of precipitation, direction & speed Individual Thunderstorm cell as well as lines of thunderstorms are depicted, cloud formation are not.

Chapter 8 Aeroplane Performance Section A

The POH presents numerous charts which allow you to predict the aeroplane performance accurately they pertain to the Takeoff, climb, cruise, descent and landing phase of flight.

Density altitude, wind and runway condition can greatly affect aeroplane performance

Takeoff performance depend mainly upon factors the can be measured or calculated in advance, such as density altitude, pressure altitude, temperature wind, aircraft weight and runway gradient surface.

You can easily break down wind direction and speed into headwind and cross wind component keep every a wind component chart.

Best angle of climb airspeed (V_X) is used to gain the most altitude in the shortest horizontal distance

The best rate of climb airspeed (V_Y) gives the maximum altitude gain in the least amount of time

Typically a normal or cruise climb airspeed is used when climbing for a prolonged period of time.

Climb performance data is included in the POH to provide you with an idea of the approximate performance that can be expected under various conditions.

When choosing a cruising speed, you should consider fuel consumption, range and the effect of wind.

Key Terms

Performance	Approach Airspeed
Performance Chart	Best Angle of Climb Airspeed V_x
Interpolation	Best Rate of Climb Airspeed (V_y)
Density altitude	Cruise climb speed
Headwind Component	Absolute Ceiling
Crosswind Component	Service Ceiling
Tailwind Component	Cruising Speed
Runway Gradient	Maximum Level flight Speed
Runway Slope	Maximum Range Speed
Breathe Effectiveness	Maximum Endurance Speed
Hydroplaning	

Chapter 8 - Airplane Performance Weight & Balance Section B

Both the amount and the distribution of weight affect aircraft performance

The reference datum is the location from which all horizontal distances are measured for weight and balance purposes

An Arm is the distance from the Datum. Measurements aft of the Datum are generally positive number while those forward of the Datum are negative number.
A Moment is a weight multiplied by an arm.

To compute the location of the CG, add the moments for each item of useful load to the moment of the empty airplane and divide the total moment by the Total weight.

Ramp weight is the term used to describe the aeroplane loaded for flight prior to engine start.
Subtracting the fuel burned during engine start, run up and taxi yield the take off weight
Landing weight is the takeoff weight minus the fuel burned en route.

To determine an aeroplane useful load, either prior to engine start or at takeoff, you must subtract the basic empty weight from ramp weight or takeoff weight respectively. The useful load includes the weight of the flight crew and usable fuel, as well as any passenger, baggage and cargo. Payload is the term used for the weight of only the passengers, baggage and cargo.

The maximum weight may be denoted into categories such as maximum design ramp weight, maximum takeoff weight and maximum landing weight

When performing calculations the empty weight moment and centre of gravity information is obtained from the individual aircraft weight and balance records.

The POH provide tables and graphs to help the moment of occupant baggage and fuel

An overloaded will have diminish performance It will have a longer takeoff roll, lower angle and rate of climb, higher stall speed, reduced range and cruise speed and a longer landing roll than a properly loaded aeroplane

Moving the CG forward increases stability due to the increased tail down force required for trimmed flight. The aeroplane will also stall at a higher speed due to the increase wing loading.

If the CG is located ahead of the established CG range, the elevator may not have sufficient force to raise the nose for landing.

If an aeroplane is flown with the CG aft of the CG Range it will be less stable in pitch, it will be difficult to control and forward or spin recovery may be impossible to achieve or recover.

Even though the aeroplane is loaded within CG limits its handling characteristic will vary with the location of the CG

Key Terms

Centre of Gravity (CG) Unusable fuel
CG limit / Max Ramp Weight / Crew and Empty Weight
Reference Datum / Usable fuel / Ramp Weight
Basic Empty Weight Take off weight
Landing Weight / Usable load / Arm / Moment
Payload / Moment Table / Moment Limit Table /
Maximum Load Weight.

Chapter 8. Airplane Performance. Flight Computer Scales C

On mechanical flight computers the scale A and B are identical.

Multiplication and division are done by using the unit index on 10 index.

The speed index or 60 index is the unit index for the C scale, which is used for Hours on the scale C corresponds to minute on the B scale

Time Speed and distance problem are solved on the computer side. Fuel consumption, density altitude true airspeed and conversion problem also are done on the computer side

The Wind vector can be separated into two component a headwind or tailwind component and a crosswind component.

Course is the term for the intended path over the ground. Heading is the direction in which the nose of the airplane is pointed. An aircraft flying with a crosswind component will drift off course if the heading is the same as the course

By applying a drift correction angle, you can compensate for drift and remain on course.

Wind correction angles are determined on the wind side of the computer. The effect of predicted wind aloft can be determined prior to takeoff and actual wind aloft can be calculated using heading and ground reference information gathered in flight.

Electronic flight computers duplicate many of the functions of mechanical flight computers and some offer additional features such as time, weight and balance functions.

Key Terms

Computer Side
Wind Side
Speed Index
60 index
A Scale
B Scale
Mil index
CI index
C Scale
Hours Scale
Wind correction Angle (WCA)
Headwind component
Tailwind component
Crosswind Component
Azimuth Plate
Wind Dot
Electronic Computer Divider