

B. TASK**WEATHER INFORMATION****OBJECTIVE**

To determine that the applicant exhibits commercial pilot knowledge of the elements of weather information by explaining:

KEY ELEMENTS

- Importance of thorough weather check
- Sources available for obtaining weather information
- Use of weather reports, forecasts, and charts
- Use of PIREPS, SIGMETS, and AIRMETS
- Recognition of aviation weather hazards and their effects on balloon operations
- Factors to be considered and making a “go no/go” decision

SCHEDULE

- Discuss objectives
- Review material
- Development
- Conclusion

EQUIPMENT

- FAR/AIM
- Balloon flight manual
- Sources
- APPS
- References
 - AC 00-6, AC 00-45, AC 61-23, AC 61-84
 - AIM

**INSTRUCTOR
ACTIONS**

- Discuss lesson objectives
- Present lecture
- Questions
- Homework

**STUDENT
ACTIONS**

- Participate in discussion
- Take notes

**COMPLETION
STANDARDS**

- Participate in discussion
- Take notes

B. TASK

WEATHER INFORMATION

INTRODUCTION

**SOURCES FOR
OBTAINING
WEATHER
INFORMATION**

1-800-wx-brief

**What to say to a
weather briefer:**

WEATHER REPORTS

It is vital that pilots understand how to acquire and interpret various weather charts and briefings.

FLIGHT SERVICE STATION (FSS)

- The FSS is the primary source for preflight weather information.
- can be obtained 24 hours a day by calling 1-800-WX BRIEF
- The FSS also provides in-flight weather briefing services and weather advisories to flights within the FSS area of responsibility.

WEATHER BRIEFING

Pilots should always contact FSS to get a weather briefing prior to any flight (especially cross country flights). There are three different types of briefing a pilot can request.

Standard Briefing	Abbreviated Briefing	Outlook Briefing
Should always be obtained prior to a cross country flight.	Should be requested when original departure time has been delayed.	Should be requested when departure time is 6+ hours away.

WHO YOU ARE: tail number / type of aircraft
 WHICH BRIEFING YOU WANT: standard briefing
 WHERE YOU PLAN ON FLY: launching KRFI airport
 TIME: around 7am
 ALTITUDE: up to 2000ft
 TIME IN FLIGHT: for 1 hour

B. TASK**WEATHER INFORMATION****SOURCES FOR
OBTAINING
WEATHER
INFORMATION**
(Continued)**Written****Pictured****PIBAL****MICROMETEOROLOGY:**

- meteorology that deals with small-scale weather systems ranging up to several kilometers in diameter and confined to the lower troposphere

WIND OBSERVATION:

www.ryancarlton.com

www.windy.com

PIBAL: Pilot Balloon

- A helium filled 16” Black colored balloon that is released before each flight.
- Pibals ascend at between 250 and 300 feet per minute so a pilot can estimate the direction and speed of local winds and plan the flight accordingly.
- Most accurate and realtime wind reading

Verifying your pibals ascent rate

- Always timing your pibal
- Estimate the height that a distinct change in the wind direction is observed at.
- Compare your pibal observations to what actually occurs early in your flight In Brisbane, there is usually an inversion at about 600 feet above the ground. As the pibal passes through the inversion a change in speed and direction is evident.

Materials needed for Pibal release:

- Black 16” balloon
- Helium
- Stop watch
- Compass

B. TASK**WEATHER INFORMATION****INTRODUCTION****Metar****METARs and TAFs****METAR**

- METAR stands for: Aviation Routine Weather Report.
- Current surface weather observations.
- Updated hourly.

Taf**TAF**

- TAF stands for: Terminal Aerodrome Forecast.
- Forecasted weather for a 5 NM radius around airport.
- Issued 4 times per day at: 0000Z, 0600Z, 1200Z, 1800Z.

METAR and TAF Reports	
KOGD	Station Identifier.
091753Z	Time and Date of Report.
VRB05KT/13015	Wind Direction and Velocity.
10SM	Reported Visibility.
CLR/SCT/BKN/OVC	Sky Condition.
09/M02	Temperature and Dewpoint.
RMK	Remarks.

Pirep**PIREPs**

- Stands for: Pilot Reports.
- Weather conditions reported by pilots in flight.

UA/UUA	Routine Report/Urgent Report.
TM	Time of Report.
FL	Flight Level.
TP	Type of Aircraft.
SK	Cloud Coverage (Sky Coverage).
WX	Weather.
TA	Air Temperature.
WV	Wind Direction and Velocity.
TB	Turbulence.
IC	Icing.
RM	Remarks.

B. TASK**WEATHER INFORMATION****INTRODUCTION****Airmet
Sigmet****Winds & temps
aloft****Prog charts**AIRMETS and SIGMETs

- AIRMETS = Significant weather reports pertinent to smaller aircraft.
- SIGMETs = Significant weather reports pertinent to all aircraft

Types of AIRMETS	
Sierra	IFR Conditions and/or Mountain Obscuration.
Tango	Turbulence.
Zulu	Icing.

Winds and Temperatures Aloft

- Give wind directions, velocities, and temperature for particular altitudes.
- Any code beginning with a 6 or higher indicates winds are > 100 knots at that altitude

Example #1	Example #2
2532-08	761912
Winds = 250 True at 32 Knots	Winds = 260 True at 119 Knots
Temperature = -08 Celsius	Temperature = -12 Celsius

Low Level Prognostic Charts

- Forecasted weather covering the 48 Contiguous United States from the Surface to 48,000' MSL.
- They are issued 4 times daily at: 0000Z, 0600Z, 1200Z, 1800Z.

Depiction	Meaning
Red Circles	Weather is IFR in the Charted Area.
Blue Circles	Weather is Marginal VFR in the Charted Area.
Orange Circles	Moderate or Greater Turbulence in Charted Area.
Dashed Turquoise Lines	Freezing Level Above Mean Sea Level.
Jagged Turquoise Lines	Freezing Level at the Surface.

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B. TASK**WEATHER INFORMATION****WEATHER
HAZARDS****Winds:**

- The most critical weather phenomena that affects the balloons.
- The #1 reason that balloon flights are cancelled.
- Balloons fly best with wind speeds ranging from 4 to 8 miles per hour.
- Balloons will never launch in winds higher than 12 mph.
- Strong winds can not only damage the balloon, but it can make a pilot overshoot a landing area, cause a hard landing and require more space for landing.

Winds Aloft: Winds aloft

- can also cause a flight to be cancelled.
- There may be almost no wind on the surface, but just as 300-500' feet above the ground, the wind may be blowing at 20 miles per hour.

Visibility:

- Balloon Pilots operate under FAA VFR conditions.
- NO NIGHT FLYING
- Visibility must be AT LEAST 1 to 3 miles.

Rain:

- Balloons do not launch in the rain
- can damage the balloon
- decrease visibility

Fronts:

- There must be no fronts in the area for a balloon launch to occur
- usually come with a change in wind direction or increased wind speeds

Thunderstorms:

- There must be NO approaching thunderstorms within 100 miles of the launch point for a balloon launch to take place.
- Present hazards to any type of aircraft, but a balloon is the one aircraft that would be affected most by any type of weather condition
- A lightning strike to a balloon is an extremely dangerous hazard.
- Gust fronts can occur up to 100 miles in advance of a storm or line

B. TASK**WEATHER INFORMATION****GO/NO-GO
DECISION
MAKING**

Weather is a major environmental consideration for Balloon flight

*Set your own personal minimums

*Consider operating under the 3 strike rule

Ceiling and Visibility

- what are the current ceiling and visibility and how much room do I have between the reported / forecast ceilings and the terrain along my route?
- does this information suggest any need to change my planned altitude?
- if I have to fly lower to stay out of the clouds, will terrain be a factor?
- where are the cloud base and cloud top?
- are the reported and forecast ceilings above my personal minima ? (Note: personal minima for a typical 50-100 hour/year private pilot should be at least basic 3000 feet for daytime flight, raised to 4000 feet for night flight in non-mountainous terrain and at least 5000 feet for **Visual Flight Rules (VFR)** night flight in mountainous terrain).
- what visibility can I expect for each phase of flight (departure, enroute, destination)?
- are there conditions that could reduce visibility during the planned flight ? (Hint: look for indications such as a small and/or decreasing temperature/dew point spread).

Winds

- consider winds at the airports being used and the strength of the crosswind component (Note: for most GA pilots, personal minima in this category might be for a maximum gust of 5 knots and maximum crosswind component 5 knots below the maximum demonstrated crosswind component) .
- if flying in mountainous terrain, consider whether there are strong winds aloft. Strong winds in mountainous terrain can cause **severe turbulence** and downdrafts and be very hazardous for aircraft even when there is no other significant weather.

Other Phenomena

- are there any **thunderstorms** present or forecast?
- what is the forecast freezing level for this flight?
- are there any indications for **wind shear** or convective activity (thunderstorms) which, apart from the possible impact on departure / approach, may indicate the possibility for turbulence to occur.

May be freely distributed. **Aircraft performance** information remains in tact. www.AubreyAire.com

a) given temperature, altitude, density altitude, and aircraft loading, what is the expected aircraft performance on:

B. TASK**WEATHER INFORMATION****GO/NO-GO
DECISION
MAKING**
(Continued)**Aircraft performance**

- given temperature, altitude, density altitude, and aircraft loading, what is the expected aircraft performance on:
 - - takeoff distance
 - - time & distance to climb
 - - cruise performance
 - - landing distance
- Are these performance values sufficient for the runways to be used and the terrain to be crossed on this flight? (Note: remember that it is always good practice to add a 50% to 100% safety margin to the “book numbers” you derive from the charts in the aircraft’s flight manual).
- If icing conditions are encountered, is the pilot experienced at operating the aircraft’s deicing or anti-icing equipment? Is this equipment provided and if yes, is it in good condition and functional? For what icing conditions is the aircraft rated, if any?
- After all this **consider the possibility that the weather may be different from forecast. Have alternative plans** and be ready and willing to divert should an unexpected change occur.