NEWS AND VIEWS

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Coming Events

1. Next COPA 26 Meeting is Tuesday September 12, 2023. Details to follow. Have a Great summer!
2. The next Pilot Decision Making (PDM) Zoom Workshop is Sept 6, 2023. To join, send an email to cykf.pilotworkshop@gmail.com.
3. Gary Grass will speak at the Sept 12, 2023 meeting. Gary was a pilot and maintenance engineer on the Martin Mars water bomber and will share his stories and photos of firefighting with this iconic water bomber!

In this Issue!

Welcome!

Brainteaser
By Warren Cresswell

SKEW THE WEATHER IN YOUR FAVOUR

On a VFR flight do you ever wonder what the likelihood of fog or haze will be at point of origin or along the route of flight? Where the cloud bases will actually be? For IFR pilots, do you ever wonder how thick the clouds really will be, at what altitude the tops will be found and where the freezing level really is? If you get into icing, under the prevailing circumstances, is it better to climb or descend to reach warmer air? If there are layers of cloud, where will the clear air be found? To help answer these questions, you should consider trying to skew your pre-flight weather briefing more in your favour by augmenting your usual weather diagnostic tools with a Skew-T Log P chart (Skew-T for short). The purpose of this article is to build awareness and encourage pilots to augment their standard pre-flight weather briefing tools with this little-understood and little-used weather product called Skew-T charts.

Some of the benefits of Skew-T charts are:

•Provides good insight as to where fog is likely to occur.

•Indicates at what altitude cloud bases and tops are likely to be.

Coming Events!

- The remaining Trillium fly-out dates are: July 12 and 26, August 9 and 23, and Sept 6 and 20. Contact the Editor (geoff.gartshore@gmail.com) if you wish to be on Ivan's mailing list.
- Every Wednesday there is a fly-in BBQ at St. Thomas airport (CYQS), hosted by the St. Thomas COPA group from 5-7 pm.
- The Edenvale Gathering of the Classics this year is on Saturday August 12, 2023 - typically from 0900 to 2 pm. Come check it out at Edendvale aerodrome (CNV8)!

Thank-You!

A special thanks to Rick and Derek Hammond for hosting our June meeting BBQ at Flightline. The food was delicious, there was a good turnout, and several aircraft were on display. Check out Pat Hanna's photos on the COPA 26 Facebook page.

•Indicates what altitude the freezing level will be.

•Provides guidance on escape routes from icing to warm air altitudes- climb or descend?

•Provides data on winds aloft.

•Indicates altitudes where turbulence/windshear is likely to be found.

•Gives indication of stability or instability of airmass and likely nature and intensity of cloud type – stratus vs. convective.

•Forecasts atmospheric data that goes out for up to 18 hours and is updated HOURLY.

These charts, which can be accessed for FREE or via a low-cost application for your iPad, come from the meteorological world.

Skew-Ts are used extensively by MET professionals to assess airmass characteristics as an aid in weather forecasting.

While some pilots are using Skew-Ts, this useful tool is not in wide usage amongst the pilot community.

Skew-Ts are not covered in typical flight training or many aviation publications. Periodically, short articles occur in some aviation publications, but these are often overly complex, try to explain too much extraneous information for pilots, and do a poor job of providing sources for Skew-Ts.

Accordingly, many pilots feel that Skew-T charts are simply too complex and arcane to bother with. The result is that many pilots are missing out on a very useful source of weather information that could make their pre-flight weather briefings more comprehensive and accurate.

WHAT'S WITH THE WEIRD NAME?

Let's get the weird name out of the way first. The Skew-T Log P chart (Skew-T for short) is a rather unconventional looking chart – as we will see shortly.

The layout was invented in 1947 by a Norwegian meteorologist who wanted to be able to capture a wide range of atmospheric data all on one chart.

Unlike X-Y axis charts we are familiar with, the Skew-T chart has temperature isotherms rising with altitude, which instead of being vertical are "skewed" to the right at a 45-degree angle.

The Log P part of the name stands for **Log**arithmic (Atmospheric) **P**ressure, which is plotted on the horizontal axis with a logarithmic scale. Much information depicted on Skew-T charts benefits meteorologists, including things such as isobars, isotherms, dry and saturated adiabats, lifting condensation levels, hadographs and several others. Many of these are plotted in an unfamiliar manner to non-meteorologists and the charts seem confusing and busy. Perhaps this is one of the main reasons that pilots have shied away from Skew-Ts.

Fortunately, the key aspects of the atmospheric information depicted on Skew-Ts that are germane for pilots, are simple and easily interpreted from a Skew-T chart and can be quite valuable.

WHERE DOES THE SKEW-T ATMOSPHERIC DATA COME FROM?

Basically:

- The source data come from the Rapid Refresh Model ("RAP") which is a numeric forecast model of the atmosphere at and below 40,000 feet, covering North America (except the most northerly parts of Canada). RAP provides the very best and most accurate and reliable forecast of atmospheric conditions throughout North America. Think of RAP as providing a 3D snapshot of the atmosphere from the surface up to 40,000 feet. In selecting a grid (eg. 40 sq.km.) to chart and analyze, a Skew-T chart will provide all the atmospheric information in a square column from the surface right up to 40,000 feet.

- RAP is administered by the National Oceanic & Atmosphere Administration ("NOAA").

- The raw atmospheric data come from a wide variety of sources and weather forecast models. Some of the raw data come from daily radiosonde weather balloons launched from 92 sites, several times per day. This is augmented by thousands of aircraft with airborne sensors transmitting atmosphere observation. METAR and TAF data also feeds in. RAP has more than a dozen different input sources.

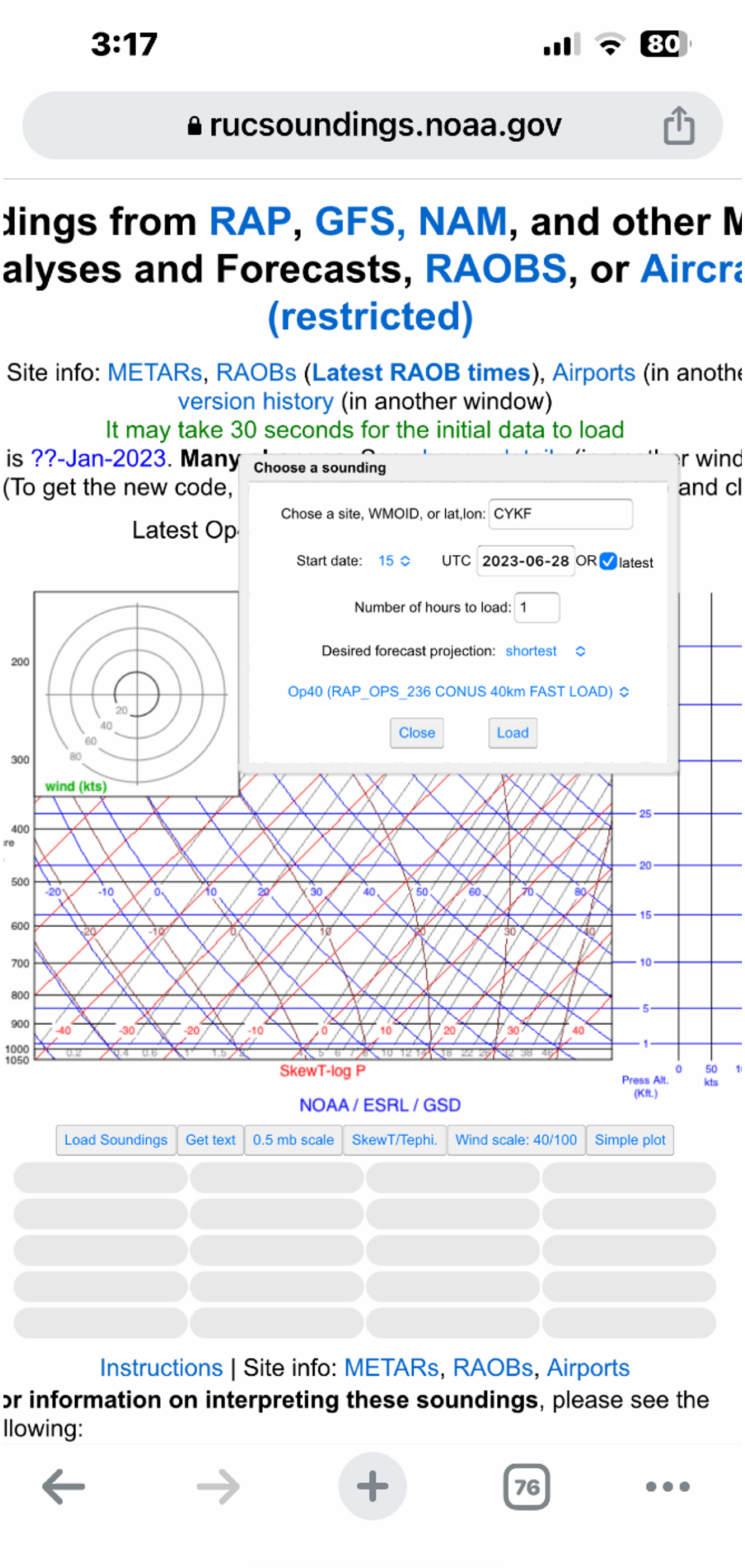
- When accessing RAP data, you can produce Skew-T charts for the atmosphere above user-defined grids (eg. 20 or 40 sq. km.). The centre of the grid could be user-defined lat./long coordinates, METAR sources, airports or radiosonde balloon launch sites (called a ROABs). If centering your grid on an airport, include the "C" in the identifier eg. CYKF. For U.S. airports do not include the "K" in the identifier. Eg. Buffalo would be BUF.

It is important to note that the validity of the data depicted in the Skew-T chart relates only to the selected grid size. If you picked, say, a 40 sq.km. grid, the Skew-T data are accurate within that grid but not necessarily for adjacent grids or grids further away. Think of Skew-T data as a localized source of atmospheric information that can help you confirm or refute the "big picture" from the other weather forecasting tools you use. Skew-Ts can also help fill in weather data gaps where other weather reports are missing or possibly suspect.

WHERE CAN YOU FIND FREE SKEW-T CHARTS ON THE INTERNET?

Go the NOAA website at: rucsoundings.noaa.gov. A screen, depicted below, will come up and represents a menu for various selections you make for the type of Skew-T chart you want. To begin:

- Select "Load Soundings" tab (located below the chart, left side.
- Select Op40 (40km grid).
- Enter a valid time eg. "Latest" [actual] or if you want a forecast enter the data for when you want the forecast period to begin.
- Enter the desired # of forecast hours, if applicable.
- Enter name of where you want the 40km grid to be: Let's use CYKF for this example.
- Hit Enter. The first chart will populate and appear on the screen. In the case of a multi-hour forecast the individual forecasts (up to 18 hours) will appear in boxes below the main chart. Tap on the one(s) you wish to see. It's that simple.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version history (in another window)
It may take 30 seconds for the initial data to load
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Chose a site, WMOID, or lat,lon: CYKF
Start date: 15 UTC 2023-06-28 OR latest
Number of hours to load: 1
Desired forecast projection: shortest
Op40 (RAP_OPS_236 CONUS 40km FAST LOAD)
Close
Load
wind (kts)
SkewT-log P
NOAA / ESRL / GSD
Load Soundings
Get text
0.5 mb scale
SkewT/Tephi.
Wind scale: 40/100
Simple plot
Instructions | Site info: METARs, RAOBs, Airports
or information on interpreting these soundings, please see the
llowing:

SAMPLE SKEW-T CHART (see next page)

The Skew-T chart contains a large amount of information, and it does look unusual and complex. The items of most interest to pilots boil down to a few key items which are easily understood:

- Atmospheric Pressure (millibars) is shown on the left-hand vertical axis. The equivalent Pressure Altitude is shown on the right-hand vertical axis. This chart covers all altitudes between sea level up to 40,000 feet. If, for example, you want atmospheric data for 10,000 feet, enter the chart from the left at 700mB which is equivalent to 10,000 ft. Pressure Altitude. A conversion table is provided in the appendix for those interested.

- The temperature scale is given on the X-axis in degrees Celsius and shown in 10-degree increments. For any temperature, follow the straight diagonal 45 degree red line that angles up to the right. These are isotherms – points in the atmosphere where the temperature is the same.

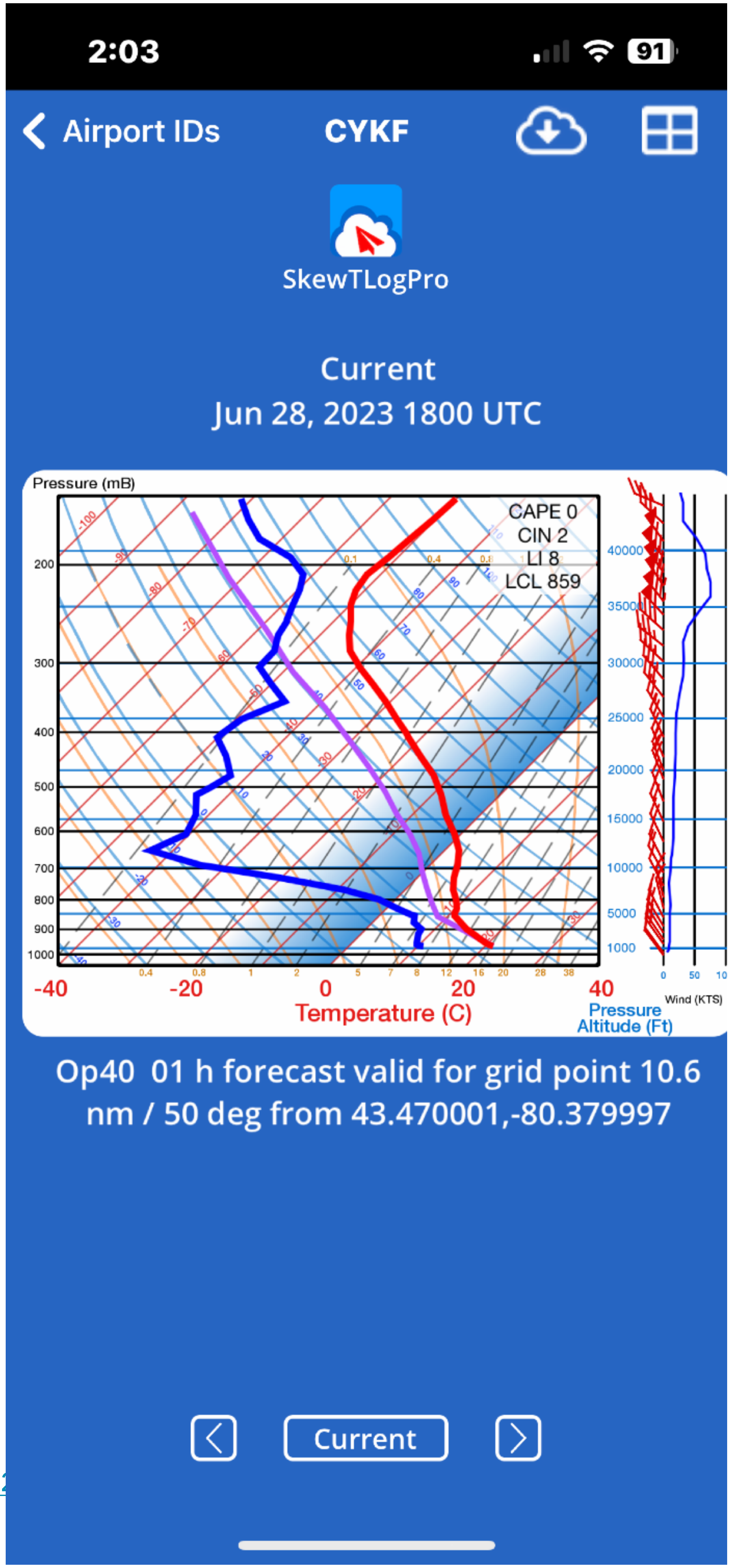
- The squiggly RED line shows what the temperature (Celsius) is at each altitude in the defined atmosphere. For the purpose of this article, we'll call this "Tp" meaning "Temperature Plot". Where the 0-degree temperature (thin red line going up to the right from 0-degrees on X-axis) line intersects the thick red line (Tp) is the altitude where the freezing level is.

- The squiggly BLUE line shows the dewpoint temperature (Celsius) at each altitude in the defined atmosphere. We'll call this "DPp" meaning "Dewpoint" plot.

- Pilots know that when the temperature and dewpoint on the ground are the same the air is fully saturated and fog, or cloud lying on the ground will exist. The red and blue lines on the Skew-T chart work the very same way at altitude. Where Tp and DPp are far apart, there is unlikely to be fog or cloud. Conversely, when Tp and DPp are close together there is likely to be fog or clouds. As we'll see below, this becomes very useful in determining what inflight visibility is likely to be, and at what altitudes cloud bases and tops are likely to be located.

Editor's Note: The bullet below is extracted from the Skew-T app (described later).

- The purple line on the chart is the Lifted Parcel Line (LPL). This line connects the temperature points for the rising air parcel at different pressure levels (or altitudes). The LPL is then compared with the environmental temperature profile (the thick red line) to assess atmospheric stability. If the LPL is **warmer** than the environmental temperature at a certain altitude, it indicates the parcel is buoyant and will continue to rise, suggesting an unstable atmosphere. Conversely, if the LPL is **cooler** than the environmental temperature, the parcel will sink, indicating a more stable atmosphere.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Airport IDs
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SkewTLogPro
Current
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Pressure (mB)
CAPE 0
CIN 2
LI 8
LCL 859
Temperature (C)
Pressure Altitude (Ft)
Wind (KTS)
Op40 01 h forecast valid for grid point 10.6 nm / 50 deg from 43.470001,-80.379997
Current

- On the far right-hand side of the chart are the winds, which are depicted in two ways. The first are the red staffs & barbs we are familiar with from surface wind reports. Intensity of upper winds is depicted in the conventional way with multiple barbs and banners, showing the direction of the wind and how it changes with altitude. You can estimate the value by reading off the chart scale. Better yet, tap on the Skew-T chart and numeric values for wind direction and speed will pop up onto the chart: To the right of these barbs/banners is the other depiction of upper winds, given by a blue line. For this depiction, the wind speed is given on the bottom X-axis showing gradations of 0, 50 and 100 kts.

Skew-T charts can be called up for the latest actual hourly observation or for forecast periods up to 18 hours. Importantly, all the chart data are updated on an hourly basis. There is no more waiting 4-6 hours for the next forecast as is the case for TAFs.

HOW CAN PILOTS USE SKEW-T CHARTS?

Freezing Level/Icing

Follow the red isotherm for 0-degrees as it angles up to the upper right-hand corner. Where this isotherm intersects Tp is the freezing level. Read across to the right-hand scale to see the corresponding Pressure Altitude. Most icing occurs between 0C and -15C and almost always when visible moisture in the form of clouds is present. Clouds are most likely present when Tp and DPp are depicted close to each other. When this coincides with isotherms that are in the 0C to -15C range, the risk of icing is highest.

The relationship between Tp and the zero-degree isotherm can help pilots determine how best to escape an icing encounter. If Tp moves sharply right with your planned cruise altitude and to the right of the 0-degree isotherm, warmer air is above. This is an inversion, and climbing might be the best play to escape icing. Conversely, if Tp above your planned altitude moves sharply to the left into colder air, climbing to escape ice is probably the wrong play, unless that colder air is below -25C or so – a temperature where ice usually will not form except in highly convective air. Descend to warmer air below to escape icing.

Skew-T charts can also identify multiple freezing levels in more complicated air masses and aid the pilot in avoidance.

- Based on the Skew-T chart above, for CYKF at 1800 UTC on June 28, 2023, the following can be determined:
  - There is a good temperature/dewpoint spread, with a cloud layer at around 3000-5000 ft (confirmed in the METAR), and minimal risk of any icing.
  - The LPL (purple line) is cooler than the environmental temperature (thick red line), indicating a more stable atmosphere.

- The winds at 3000 ft asl are from the northwest at about 8-10 kts, again confirmed by the winds aloft on Foreflight at that time. At 35000 ft asl, the winds increase dramatically in speed to almost 75 kts, based on the wind plot on the right side of the chart.

Skew-T chart data can also guide the pilot flying at an altitude where the temperature aloft is at or below 0 degrees but where Tp and DPp are widely spaced apart. This indicates that there are unlikely to be clouds present – so typically no icing risk.

Poor Ground Visibility

Where Tp and DPp are depicted close to each other, or folded together up to a certain altitude, this is the classic fog signature on Skew-T charts. By tapping on the Skew-T chart actual numeric figures showing temperature and dewpoint for that point will appear and you will be able to read the numeric values right on the Skew-T chart. When the differential between Tp and DPp is about 3-5 degrees, fog or haze will likely be present. At the altitude where Tp and DPp begin to rapidly diverge is where the clear(er) air begins. If the depicted plots are far apart, there is much less chance of fog as the air is not highly saturated.

Cloud Bases

Locate the point where the Tp and DPp are depicted close to each other (3 degrees or less), read across to the corresponding Pressure Altitude. This will be where the cloud bases are. A spread of 3-5 degrees means that hazy conditions will prevail. When Tp and DPp are farther apart, the air is dry at this altitude and cloud bases, if they exist that day, will be at higher altitude.

Cloud Tops

Locate the point where Tp and DPp diverge from an altitude range where they have been very closely located (3 degrees or less). The point of divergence of the two plots is where the air dries out and represents the cloud tops. Read across to the Pressure Altitude to find the altitude where this cloud top can be expected. Forecasting cloud tops is one of the areas where conventional weather tools are somewhat deficient. GFA's provide some guidance. The best guidance comes from PIREPS, but these are often unavailable. Skew-T data can come in handy to fill the information gap.

Bottoms and Tops for Multiple Cloud Layers Aloft

Skew-T data can also be helpful in more complex air masses which have multiple cloud bases and tops. This can be handy for an IFR pilot looking to find a cloud-free altitude to cruise at.

Caution on Cloud Bases and Tops

Skew-T cloud base and tops depictions are somewhat more accurate in stable air masses with stratus-type clouds than in unstable air masses with highly convective clouds. In the latter, it makes sense to add some buffer factor to the altitude where the Skew-T chart indicates you can reach a base or top.

Airmass Stability

The shape and curvature of the Tp gives good insight into how stable or unstable the airmass is, which itself suggests whether the clouds you will encounter are likely to be stratus, convective or strongly convective. The farther the Tp bends to the left the colder the air aloft is. Any warmer air below this altitude could rapidly rise through it to a higher altitude. With enough moisture and support from upper air circulations this is a recipe for instability and can set the stage for TCUs or thunderstorms in the warmer months of the year. If the Tp is depicted rising pretty much straight up, you have an isothermal situation. Clouds of vertical development will not be excessive. If Tp is leaning up to the right, into warmer air, an inversion is present and warm air above will generally impede colder air below from climbing. There won't be much vertical development of cloud.

Turbulence from Windshear

Using the wind plots graphically depicted at the right side of the Skew-T chart and augmented by tapping the interactive chart to get corresponding numeric data, look for changing wind direction and speed within a narrow band of pressure altitude. Windshear is signalled when the wind barbs and banners are all jumbled up in conflicting directions and speeds in a narrow band of altitude.

These are flight plan altitudes to avoid in light GA aircraft. Low level windshear will also be depicted on the wind barbs and wind profile.

Latest Actuals, But Forecasts Too Which Can Go Up To 18 Hours, Updated Every Hour

Skew-Ts can be pulled up for all grid locations and show the latest actual data for that location. Perhaps even more importantly, the Rapid Refresh Model ("RAP") can provide forecast information for the grids. Users can select how far out in time they wish to see Skew-T charts for up to 18 hours, and these forecast Skew-T charts are updated EVERY HOUR. This can be quite useful when the TAFs along the planned route of flight might be updated only every four hours or so, or perhaps won't be updated until the following morning. You can access Skew-T data 24/7 for the grids you are interested in.

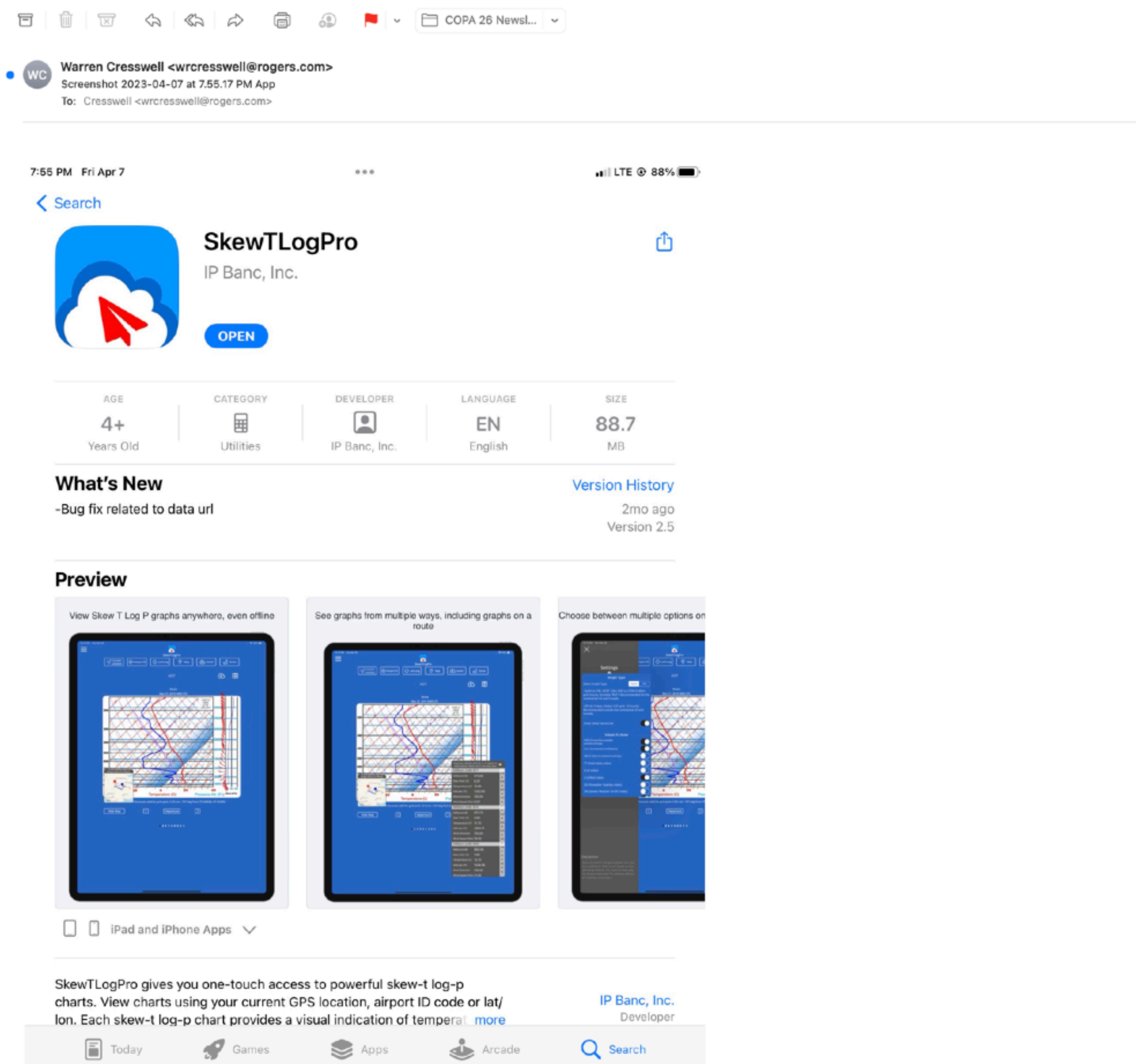
Skew-Ts Can Help Fill the Weather Information Gaps with Conventional Weather Reports

Skew-T data are also useful when the enroute portion of the flight, or perhaps the airport of origin or destination does not have published/broadcast weather, or that weather is temporarily unavailable.

For example, flying from Sherbrooke, Quebec to Fredericton, New Brunswick requires the pilot to fly a long distance over hostile terrain where there is little or no weather reporting. PIREPS, which could provide useful information of conditions aloft, are quite rare along this route. A pilot planning to fly this route could look at the weather for Sherbrooke and Fredericton using conventional tools, then augment this with several Skew-T 40 sq.km. grids between these points to have some idea of the weather that could expect to be encountered. This could aid the pilot's "big picture" analysis for expected weather along this route of flight.

THERE'S AN APP FOR THAT

There is a commercial Skew-T application for iPad called: SkewTLogPro. The current version is 2.5. The data source is NOAA – ie. the same as for rucsoundings.noaa.gov. It can be purchased for a one-time cost of $28.00 Cdn, at the present time (2023). A screenshot of the App purchase menu is provided below.



The app lets you view charts using lat./long. coordinates, airport ID codes or any point on the supplied map. You can also enter a route, time parameters for departure and arrival and specify a mileage interval for which you want a Skew-T chart provided. The application will calculate and display Skew-Ts along your route of flight at each specified mileage interval. Quickly scrolling through these, you can easily ascertain what can be expected on this flight.

If you don't use the route function, the app shows Skew-T charts for the previous 3 hours, the current actual chart and forecasts for each of the succeeding 17 hours for the grid point you select.

In the upper right hand corner of the app, there is a grid box icon.   When you have called up the Skew-T chart for the desired location, simply tap the grid box and all data will be presented in tabular form, as shown in the sample screenshots below, for the full altitude range desired.   The data include temperature, dewpoint, pressure, altitude, wind speed and direction.

The app is user-friendly, much easier and less time-consuming than the rucsoundings.noaa.gov site. It is also modestly priced at $28.00 Cdn (one time purchase). This is a bargain for pilots wishing to incorporate Skew-Ts into the mix of their weather analysis products.

Lastly, if you had a way to access the internet when airborne/ enroute, you could access hourly updates for your Skew-T charts via this app as you fly along your route.

BEYOND THE BASICS

This article has been intended to remind or, perhaps, introduce readers to the Skew-T Log P charts, how they can be a useful addition to augment the conventional weather briefing tools and how Skew-Ts might contribute to a more comprehensive "big picture" pre-flight weather briefing. This has necessarily focused on only the basics of Skew-Ts. For those wishing to dig deeper and go beyond to learn more about the intricacies of wringing more weather information from Skew-Ts there are many sources on-line.

APPENDIX

ATMOSPHERIC PRESSURE & PRESSURE ALTITUDE CONVERSION

Atmospheric Pressure Millibars (mb)	Pressure Altitude Feet MSL	Atmospheric Pressure Millibars (mb)	Pressure Altitude Feet MSL
Sea level	1,013	977	1,000
942	2,000	908	3,000
875	4,000	843	5,000
812	6,000	782	7,000
750	8,000	725	9,000
700	10,000	670	11,000
644	12,000	595	14,000
550	16,000	500	18,000
400	24,000	300	30,000

Banner Towing Service at KW!

Alex Lojitna at FliteLine (KW Airport) provides banner towing and can supply a good addition for advertising for a company or social/personal event. He can also provide special messages (you missed a birthday or anniversary, or need spousal OK to buy a plane….). Alex's contact information is:

Alex Lojitna
519-514-0530 (Ext 510)
charters@fliteline.ca

Judging Your Glide distance!
(From - Pilot Workshops)

"I've used the glide ring on both ForeFlight and the Garmin GPS in my panel. They're great at first when I head for an airport or low terrain, but I have trouble knowing if I can make it or not in the last 1000 feet or so. The pretty displays aren't helpful anymore. Is there a visual technique for that last part?"

This is an important question and could be the difference between an incident and an accident.

All aircraft have different glide ratios with the engine off, but a general rule is that you should be able to glide to anything within a 45-degree angle below the airplane. Some airplanes are better and some are worse. Naturally, the wind will have a significant effect on your glide distance as well.

The first thing you need to do is configure and trim the aircraft at its best glide speed. Do you know what that means for the airplane you are flying? Now point the airplane at your intended landing area and while maintaining the proper speed, notice if the area is moving up or down in the windshield. If it is moving lower in the windshield, you should make it. If however it is moving up, you need to make alternate plans. Don't wait until you are very low to give up on your field, make those plans early while you still have options.

Be careful about maintaining that best glide speed as there is a great tendency when the landing area begins to move up in the windshield to pull the nose up to try to make the picture look better. This only causes the airspeed to decrease and will actually shorten your glide.

My suggestion is to select a landing area that you can easily make and use the extra altitude to make a pattern around the field. Gliding straight-in to a far-off field can be tricky and rarely works.

My personal technique is to understand that my airplane will glide approximately 2 miles for every 1000 feet I am above the ground. So, if I am cruising at 7000 AGL, I can glide approximately 14 miles – plus or minus the wind. I keep my GPS moving map on the 35-mile scale so I am aware of airports within that range. If there are no airports on the screen, I realize that if I have an engine failure I will likely not land at an airport.

Even with all that good electronics, I still need to recognize what my intended landing area is doing in relation to the windshield and take action accordingly.

MEMBERS' CORNER

Engine Failure - Are you Ready?
(Geoff Gartshore)

Successful emergency road landing after Runway 26 departure at CYKF - Can you guess the road?

It's not a common event, but it does happen.

Are we ready?

Hopefully we've all practiced simulated engine failures in our aircraft, with landings at the target runway…..correct?

And it's our current practice to brief ourselves on emergency procedures, including engine failure, prior to every takeoff….correct?

If we answer "no" to these questions, or "rarely", perhaps it's time to re-calibrate our thinking on the subject….

One of our best strategies for preparation is to know our aircraft characteristics and performance intimately, through both a careful review of the POH and real world testing at altitude. For example, do you know your Vx (best angle), Vy (best rate) and Vg (best glide) speeds?

After Warren's excellent article on the "Impossible Turn" in the last Newsletter issue (May-June 2023), I thought about where I might consider doing a forced landing after departing Runway 26 at Waterloo (CYKF). As you all know, the departure path from that runway takes one over the Grand River South subdivision, with few open areas for a forced landing.

While I am not advocating always attempting to land on roads (which have their own inherent risks), I was curious to see how feasible it would be to do an emergency landing on Fairway Road, Kitchener, which services that subdivision, following an engine failure after departure on Runway 26.

Obviously practicing this in real life would typically be frowned upon…..

So I fired up XPlane 12, loaded up the Cessna 172 (which I trained in), departed Runway 26 at CYKF, and had a series of engine failures at various altitudes and climb configurations.

These tests were done under the following parameters:

- Winds were moderate (11 gusting 14 kts) and favouring Runway 26
- Departures were done under 2 climb configurations, either Vx (62 kts) or Vy (75-80 kts) - (based on published C172 data)
- Pitching to best glide (65 kts) as soon as engine failed (mixture pulled out), prop windmilling and aiming toward Fairway Road

The results were as follows:

- **Climbing at Vx**, and following the above procedure, Fairway Road was not reachable when the engine failure occurred at either 1600 or 1700 ft asl (600 or 700 ft AGL).

- Fairway Road was reached with successful landings if the aircraft had reached 1800 ft asl (about 800 ft agl). Of course at circuit height or higher, I could easily make a right turn and successfully land on Runway 14, with enough height to allow use of flaps before touchdown.

- **Climbing at Vy (en route climb),** I could easily make successful Fairway Road landings after engine failure at 700 ft agl (1700 ft asl), and even at 600 ft agl (1600 ft asl). This was because the aircraft covered a bit more distance toward Fairway Road at the time of engine failure.

Successful landing on Fairway Road after engine failure at 1700 ft asl from Runway 26 departure (Fairway Road bridge across the Grand River in the background)

With engine failures at circuit height (2200 ft asl), and taking off from all 4 runways at CYKF, I had the following results:

Takeoff Runway	Successful Landing At
14	26
32	14
26	14
08	26

Feel free to interpret these results as you see fit.

The straight line distance from the end of Runway 26 to the touchdown point on Fairway Road was consistently about 3500 to 3800 ft, in my simulated C172 trials.

Before every takeoff. either on the apron or while taxiing to the runway, I do a pre-takeoff emergency procedures briefing so that I have a clear plan for immediate action if things go south.

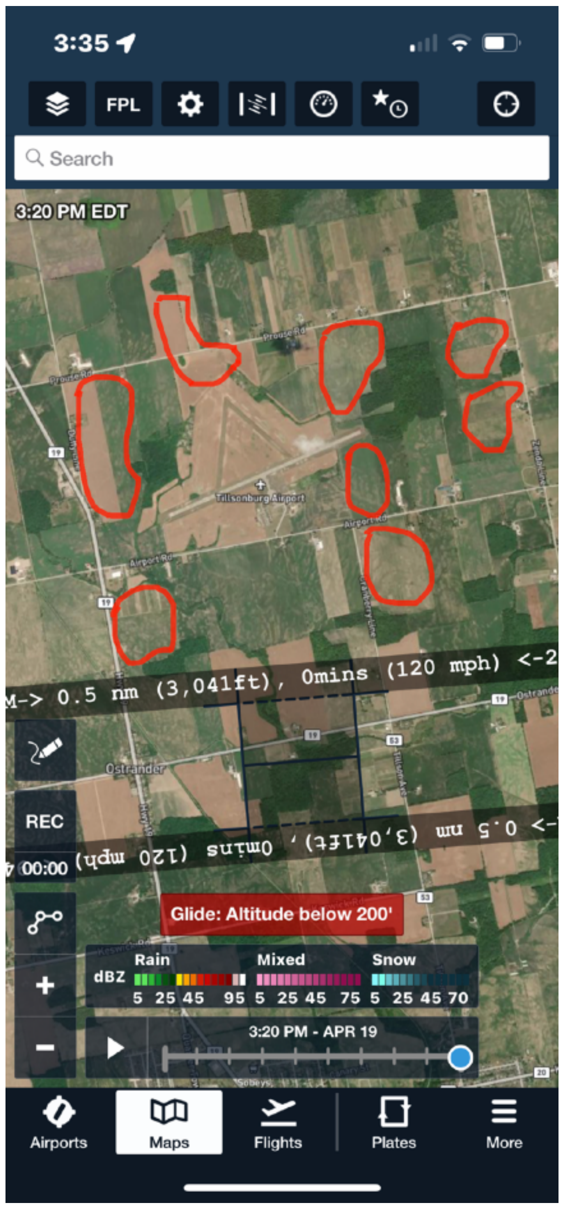
My pre-takeoff briefing covers the following:

- Any concerns/issues during the takeoff roll (temps/pressures, airspeed, power, or just something feeling 'off") prompts an immediate abort, with maximum braking (as required), and systems shutdown (if/as required)

- After lift-off, and under 1000 ft agl (2000 ft asl - for my Zenith aircraft based on flight testing), I plan to land somewhere forward within a 30-45 degree arc, with subsequent emergency procedures as required. In the photo below, I have made notations on Foreflight (red circles) indicating fields suitable for an emergency landing at CYKF under those conditions, in my aircraft (glide ratio of 8:1)

I have done similar notations for the majority of airports I visit throughout southern and central Ontario, all saved on Foreflight, as a quick reference for potential emergency landing sites near each airport, based on site conditions and personal knowledge. Again, this is for off airport landings where I cannot feasibly return to the runway.

Here is an example for Tillsonburg Airport (CYTB). Also note that the selected landing areas can be reached in cases where I am making a turn from over the runway at the time of engine failure, once I know there is not enough suitable runway remaining to land on.



- At circuit height (2200 ft asl, or 1200 ft agl) or higher, I will consider a turnback maneuver, or possibly more likely a partial turnback with a landing on another runway, again based on my specific performance knowledge of my aircraft

This is my strategy for emergency landings, in my aircraft. Feel free to glean whatever you feel might be useful, as you consider and develop your own personal emergency strategy.

Happy and safe flying - Have a Great Summer!

(Sept-October 2023 Issue - Rescuing a Spitfire!)