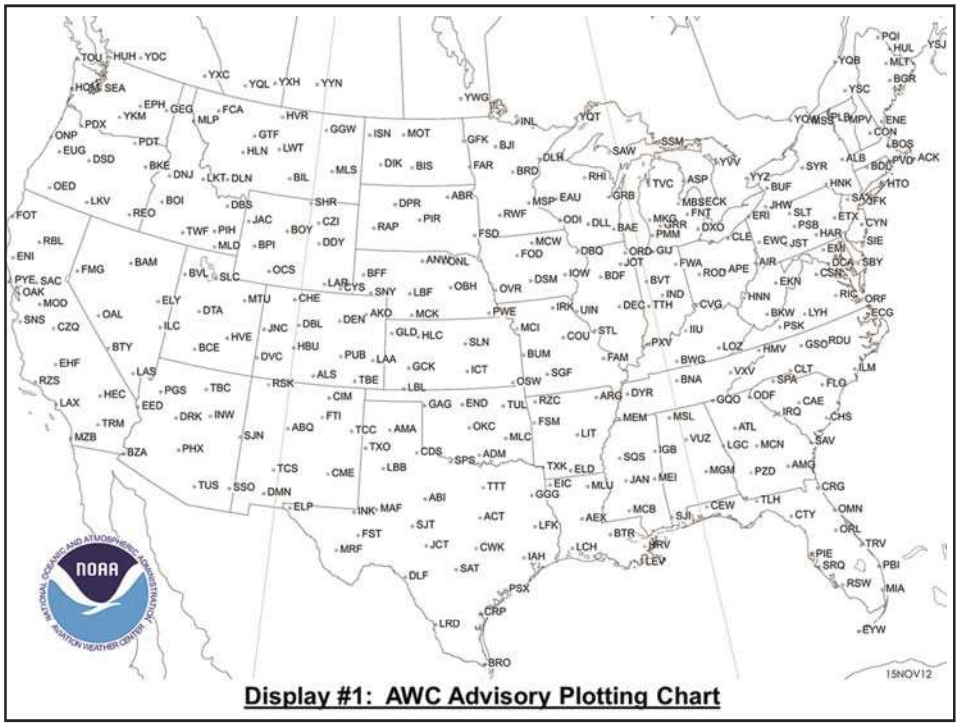
WEATHER TO FLY

BY DAN GUDGEL

Encoded Advisory Points

In recent installments of *"Weather To Fly"* I have portrayed the decoding of weather products utilizing the METAR code as not being particularly difficult – if one has a little understanding of the date/time groups, along with the hints provided by a few identifying suffixes and prefixes on encoded data; e.g. "*KTS*" abbreviated for knots thereby identifying the preceding group as the "wind group," "*SM*" classifying the preceding number as the visibility value in statute miles, etc. However, identifying the location and boundaries of weather phenomena by use of 3-Letter station identifiers used in various aviation weather advisory products constantly challenges certificated pilots and students alike in their weather self-briefings.

Per the *National Weather Service Instructions (NWSI)*, NWS Directives System *Section #10-8, Aviation Weather Services*, and specifically *Paragraph 10-811, Enroute Forecasts and Advisories*, the location of weather phenomena in aviation weather advisory products is delineated by the high-altitude Very High Frequency (VHF) Omnidirectional Radio Range (VOR) points around the country. The NWS Aviation Weather Center (AWC) courteously provides a chart locating these High-Altitude VOR points on their Internet Homepage [See ***Display #1: AWC Advisory Plotting Chart***]. Since the list of aviation 3-letter and other abbreviated site identifiers numbers in the thousands, an abridging of that identifier list is necessary for the convenience of briefers and weather forecasters. The Aviation Branch of the Office of Climate, Weather, and Water in NWS Headquarters has mandated the use of this abridged list of sites as a standard by all forecasters who encode and issue aviation weather products [See ***Display #2: AWC Lists of Advisory Points***].



Display #1: AWC Advisory Plotting Chart

While products such as the Area Forecast (FA) describe the coverage of a weather phenomenon generally by state or a region, occasionally the location of the adverse weather needs to have its boundaries other than those served by state descriptors. In such cases, the use of the *Advisory Plotting Chart* points comes into use. As stated, the list of 3-letter points is abridged for briefing convenience by keeping the number of points manageable. For weather hazards that need to have their boundaries placed between the chart points, a convention is established so that an intermediate location for that hazard boundary can be defined. This intermediate point definition uses a convention of specifying a distance and azimuth from a point on the identifier list. Referencing ***Display #3: Area Forecast (FA) Use of Location Identifiers***, the provided *FA Synopsis* excerpt cites the "trof" (an axis of low pressure) as a line extending on a line "*RBL-MOD-50W HEC-EED*", or decoded "*Red Bluff, to Modesto, to 50 nautical miles west of Hector, and to Needles*". [A product user can find the 3-letter identifier locations and information by use of the *AWC Lists of Advisory Points*.] Again, an intermediate point of defining a weather phenomenon uses distance (in nautical miles) and an azimuth (expressed as one of sixteen compass points in a direction *from* the *Advisory Plotting Chart* 3-letter identified point).

The need for more extensive use of intermediate points defining a location of a weather hazard is often evident in the issuance of AIRMET and SIGMET products. In the example *AIRMET SIERRA* provided [See ***Display #4: AIRMET (WA) Use of Location Identifiers***], the location of IFR conditions and mountain obscurement for the Washington, Oregon, and California areas extensively uses the intermediate point convention. An excerpt in the reference AIRMET describes a polygon-shaped area around the California Coastal Waters (CA and CSTL WTRS) by the following points: "*30SE FOT TO 20ESE ENI TO 30W SAC TO 30N RZS TO 50S RZS TO 40E LAX TO 30ESE MZB TO 220SW MZB TO*

AWC Home > AWC Info > Advsry Plotting Chart

AWC Advisory Plotting Charts

These are the points referenced in AWC text products

Images
- JPG (3184 x 2176)
- PDF

Lists of Advisory Points:
- For Printing (8.5 x 11)
  PDF Word Text

ID	NAME	ST	CO	LAT/LON (100's)		LAT/LON(deg min)	
ABI	ABILENE	TX	US	3248	-9986	32 29	-99 52
ABQ	ALBUQUERQUE	NM	US	3504	-10682	35 02	-106 49
ABR	ABERDEEN	SD	US	4542	-9837	45 25	-98 22
ACK	NANTUCKET	MA	US	4128	-7003	41 17	-70 02
ACT	WACO	TX	US	3166	-9727	31 40	-97 16
ADM	ARDMORE	OK	US	3421	-9717	34 13	-97 10
AEX	ALEXANDRIA	LA	US	3126	-9250	31 16	-92 30
AIR	BELLAIRE	OH	US	4002	-8082	40 01	-80 49

Display #2: AWC Lists of Advisory Points

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FAUS46 KKCI 131045
FA6W
SFOC FA 131045
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 140500
CLDS/WX VALID UNTIL 132300...OTLK VALID 132300-140500
WA OR CA AND CSTL WTRS
.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.
.
SYNOPSIS...SFC...10Z TROF FM ERN AB-NW MT-LOW PRES SE WA. TROF
RBL-MOD-50W HEC-EED. HI PRES RMNDR. MOIST AMS OVR ERN OR AND
NERN-ECNTRL CA. LTL CHG THRU 05Z. ALF...LOW PRES OVR NERN NV.
NWLY FLOW OVR CA. LGT/VRBL FLOW ELSW. 05Z UPR LVL LOW PRES NW UT.
WLY FLOW CA.
.
WA CASCDS WND
CASCDS-OLYMPICS...SKC. OTLK...VFR.
CSTL...OVC010 TOP 020. TIL 18Z OCNL VIS 3SM BR. 21Z BKN015 TOP
025. OTLK...MVFR CIG.
RMNDR...OVC010 TOP 015. TIL 19Z OCNL VIS 3-5SM BR. 20Z SKC.
OTLK...VFR.
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Display #3: Area Forecast (FA) Use of Location Identifiers

140WSW FOT TO 30SE FOT". The location identifiers from the point list are: FOT (Fortuna), ENI (Ukiah), SAC (Sacramento), RZS (Santa Barbara), LAX (Los Angeles), MZB (Mission Bay), and back to FOT. Again, the distance from the advisory list point is in nautical miles and a compass direction from the listed point.

The point list referenced is relatively recent having switched from more widely known 3-letter station identifiers from decades-past to that of the high-altitude VOR names, e.g., RZS for Santa Barbara as opposed to the well-known identifier of SBA, and use of MZB for Mission Bay contrary to the more recognized nearby San Diego identifier of SAN. Because the point list is abridged, pilots routinely flying in a particular region of the country can research and quickly become familiar with the name and location of the "local" point identifiers. Having become familiar with the identity and location of the advisory chart's referenced points, they can quickly picture the extent of the weather hazard or phenomenon in an aviation weather product.

In this particular current series of articles in regard to self-briefings, use of the encoded weather products saves time and electronic device screen space for efficient information conveyance. Familiarity with the date/time groups and typical weather parameter descriptors leads to fast decoding of the weather events. And in summary, by becoming familiar with a finite set of 3-letter location identifiers list of points, the boundary of any adverse weather or weather phenomenon can become easily identified by a pilot.

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WAUS46 KKCI 131445
SFOS WA 131445
AIRMET SIERRA UPDT 3 FOR IFR AND MTN OBSCN VALID UNTIL 132100
AIRMET MTN OBSCN...WA OR CA
FROM 20ENE HUH TO 60ENE SEA TO 50SE PDX TO 40ESE EUG TO 30WNW
OED TO 50NNE FOT TO 30ESE FOT TO RZS TO 50W RZS TO 20W ENI TO
20SW FOT TO 80WNW OED TO 40SSE HQM TO TOU TO 20ENE HUH
MTNS OBSC BY CLDS/BR/FG. CONDS ENDG 18-21Z.

WAUS46 KKCI 131445
SFOS WA 131445
AIRMET SIERRA UPDT 3 FOR IFR AND MTN OBSCN VALID UNTIL 132100
AIRMET IFR...CA AND CSTL WTRS
FROM 30SE FOT TO 20ESE ENI TO 30W SAC TO 30N RZS TO 50S RZS TO
40E LAX TO 30ESE MZB TO 220SW MZB TO 140WSW FOT TO 30SE FOT
CIG BLW 010/VIS BLW 3SM BR/FG. CONDS CONTG BYD 21Z THRU 03Z.
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Display #4: AIRMET (WA) Use of Location Identifiers

Information

Reference Websites:

NWS Aviation Weather Center Internet Homepage
< *http://www.aviationweather.gov* >

NWS Aviation Weather Center; "AWC Advisory Plotting Charts"
< *http://www.aviationweather.gov/static/info/advsry* >

NWS Directives System; "NWSI 10-811"
< http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf >

AWC Advisory Plotting Chart Locating Sequence:
Go to the Aviation Weather Center Internet Homepage;
On the Left Edge Menu and under "*Contact Us*";
Click on "*Site Information*"; and scroll down the displayed lists;
Click on "*Advisory Plotting Charts*".

WINCHING WORLD

BY BILL DANIELS

As covered in month's column on winch operations at public airports, one must run a disciplined operation to maintain access. After a while, a winch group may envy the more relaxed atmosphere of a private airfield. Fortunately, the economics of winch launch can help make this dream a reality.

If winches are used intensively, as many European clubs do, something magical happens – they make money. The Eurozone probably makes more than 2 million winch launches a year. They estimate the cost of providing those launches at about 2 Euro each but charge 7 or more producing at least 5 Euro positive cash flow per launch. It's not unreasonable to think winches might be contributing as much as 10-20 million Euros a year to the support of glider clubs.

No wonder they have nice gliders! The financial magic of winch launch allows a club to make money while having fun. So much so that some European clubs refer to their winch as a "money printing machine." Add club dues and glider rental fees to the revenue stream, and they have the financial means to own an airfield.

It may be difficult for some in the US to see how this works since high aero tow costs have reduced the number of daily flights for so long we've come to accept it as normal. It's common to see pilots standing around waiting for the first Cu to pop before committing to a $50 aero tow. From this perspective, it's hard for a club doing 15 aero tows a day to see how they might do 100 winch launches.

Winch launches are so cheap, lift just doesn't matter that much. Get in the launch queue to practice a few landings until the lift starts. You may find a thermal earlier than you expected. Firing up a winch early and continuing late in the day opens a big window for rides and training flights that otherwise wouldn't have happened. You certainly won't have to worry about tow plane noise annoying the neighbors. This is a big change in thinking, but it dramatically increases winch utilization, and the financial magic starts to work.

Airports offer inexpensive access, but most flat space suitable for winch operations is on fallow farm fields and public lands. In the Rocky Mountains and further west, vast tracts of land are controlled by various government agencies. The Prescott, Arizona, Soaring Club has obtained a lease of public land in the Prescott Valley near Coyote Springs where they have established a winch-launch-only glider port. It seems nonprofit organizations have a head start negotiating a low-cost lease.

On the High Plains east of the Rockies, the water table in the vast Ogallala Aquifer has sunk so low in places it's no longer economical to pump irrigation water. Some farms have sold their water rights to nearb growing cities, since the water itself is becoming more valuable than the crops once grown with it. Without cheap irrigation water, farmland sets idle. You might not have to offer a farmer much to lease a field he has no other use for.

Wherever you are, it's reasonable to buy land with a mortgage. Interest rates are at a historic low and land prices will most likely rise, creating a profit opportunity. No matter when you buy land, it will seem expensive, then later seem to have been an incredible bargain. As Frank Whiteley points out, make sure your incorporation papers and tax status are in order. A 501(c)(3) nonprofit glider club can often avoid paying property taxes. It also behooves clubs to very carefully construct their bylaws since owning land involves serious amounts of money creating "stakeholders" which can produce a different social dynamic. Hiring a lawyer with expertise in both areas is highly recommended. On the positive side, winch launch is an intrinsically team-building activity. A group which learns to operate a winch efficiently is likely to run a gliderport well.

So, what sort of land makes a great winch gliderport? Cropland – after years of hard work removing rocks and smoothing it to allow efficient use of farm machinery – makes these fields a wonderful runway surface. A quarter section of land (160 acres) one mile by a quarter, aligned with the prevailing wind, would be an ideal find, but smaller parcels will work. Probably the minimum is 3000 feet by 200 feet if you back the gliders up to the approach end before launching them. This allows launches to as much as 1500' AGL and leaves room for gliders to land parallel to the winch strip. Longer strips of land result in higher launches and provide for landing areas so gliders can conveniently roll to a stop near the launch point.

Undulating land can be good or bad depending on the topography. A broad, shallow "M" contour is nice. Slight

uphill slopes at the approach ends can significantly shorten glider landings. A wide, low area in the middle causes the rope to rise off the ground quicker, extending its life. Conversely, land higher in the middle will increase rope wear, plus the winch operator can't see the glider at the start point. It's important to avoid a cross slope in the takeoff and landing areas, since this increases ground-loop risk.

In the desert west, you'll be stuck with dirt or gravel runways – at least until a club has grown wealthy enough to pave a strip. Fortunately, a winch doesn't need a paved strip to protect a tow plane's propeller, nor does it raise much dust.

In wetter climates, it is said, "something will grow on your runway, and it might as well be grass." However, many wild grasses form clumps which can shake a glider or rope retrieve car to pieces. There are usually domesticated local varieties derived from hardy native grasses such as "*Buffalograss*" which form a lawn-like turf without requiring much water. Whatever grows on your runway, just accept the fact you'll have to mow it. A depressing number of ground loop accidents have resulted during attempts to launch from tall grass. Mowing 160 acres is a nontrivial task, so you'll need appropriate equipment like a small tractor with a "Bush Hog." Some European clubs have a deal with local farmers to graze sheep on the airfield during weekdays, thus getting their field "mowed" and fertilized at the same time.

Whether gravel or grass, a massive roller produces wonderful results. A roller will crush rocks into sand, squash cactus into extinction and mash clump grass into something resembling turf. A Colorado extension agent once told me that even wild grasses can be "trained" to form turf if mowed and rolled frequently. The glider strip at Boulder, Colorado uses a derelict asphalt rolling machine to good effect.

A gliderport needs infrastructure like water, sewer, power and Internet access. Fortunately, winch launches are so cheap there's considerable leeway to add a "green fee" to pay for these. Great facilities are a huge asset in growing club membership.

Operational rules, though less strict than those on a public airport, are still important. The most important one will be "Perimeter Control." Winch operations require a "Safety Exclusion Area" (SEA) between the launch point and the winch where no one is allowed. This area should be at least 75 yards wide, starting at the glider and extending to a circular area around the winch. People on foot and in vehicles must be strictly forbidden to enter this area. The only exception is the rope retrieve vehicle, driven by a trained individual. Just as at an airport, safe areas for people and cars should be designated. The glider landing area must be kept clear of people, cars and gliders. A NOTAM is a good idea as is getting the gliderport on maps with the glider activity symbol.

Communications between the winch and launch point must be just as reliable as at a public airport, but you'll have more options, such as a buried telephone line and/or high-intensity LED light signals.

A few clubs have found a private gliderport is one situation where the aging pilot population can be turned to an advantage. Making provisions for one or two retired glider pilots to take up residence at the field provides for airfield security and the potential for operations every day of the week. This can be a huge win-win for both parties.

In summary, a private airfield with great facilities is a wonderful asset for any club, and a winch can help pay for it. However, it needs to be approached carefully and thoughtfully with the assistance of experts such as a lawyer and maybe a farm extension agent from a state university.

This completes the first part of this series on winch equipment and facilities which is intended to set the scene for winch launch operations. Please don't take it as a encyclopedia on the subject. Next month, I'll start on techniques for flying a winch launch and operating the winch.