

## Inflight Advisories - Timely and accurate aviation weather warnings from the NWS

“Attention all aircraft...” begins the ATC announcement that describes a weather hazard that may well impact flight operations and flight safety. The controller reads the Navaids and airports that outline the area for a Convective SIGMET. Any conversation among the crew or passengers stops, and eyes become fixed in a gaze of concentration. The duty now is to form a mental picture of the area described. Then quickly, the task becomes that of assessing the short term impact of these thunderstorms.

SIGMETs, Convective SIGMETs, and AIRMETs are Inflight Advisories that are skillfully and meticulously maintained for aviation safety by forecasters at the Aviation Weather Center. Convective SIGMETs are short term aviation warnings for thunderstorms that pose a danger to all aircraft. Here are the basics:

A. Meteorological criteria

1. Severe thunderstorms due to:
  - a. surface wind gusts greater than or equal to 50 knots.

- b. hail at the surface equal to or greater than 3/4” in diameter.
    - c. tornadoes.
  2. Embedded thunderstorms.
  3. Lines of thunderstorms.
  4. Thunderstorms greater than or equal to Level 4 affecting 40 % or more of an area that is 3,000 square miles in size.
- B. Issuance and valid times
  1. issued hourly at H+55.
  2. valid for 2 hours, but replaced hourly.
  3. outlook portion valid 2 to 6 hours discusses technical aspects that are producing the thunderstorms.
  4. numbered sequentially beginning at 0000 UTC
  5. uses Navaids to locate the threat.
  6. uses 3 sections of the country - West, Central, and East to reduce the size of each hourly bulletin - W, C, or E are appended to the number to denote the section of the country for which they apply.



Figure 1. If you could “see” Inflight Advisories in effect on any day, you may wonder just how free you are to choose your altitude and route without encountering weather problems.

*In this issue:*

*Anatomy of Convective SIGMETs*

*Center Weather Advisories - The Inflight Advisory that augments Convective SIGMETs*

*NCWF - National Convective Weather Forecast - a graphical Nowcast tool*

*Sectorized plotting charts - new compact tools for the cockpit for locating Inflight Advisory areas*

**Mission Statement**

*To enhance aviation safety by increasing the pilots’ knowledge of weather systems and processes and National Weather Service products and services.*

All pilots need to keep current on weather. That's just common sense, and that includes keeping abreast of Inflight Advisories, since there is no more urgent product issued for pilots. Yet, a review of the FAA test questions for Private Pilot/Flight Instructor, Instrument, and Commercial ratings shows that there are no questions that test a pilot's ability to actually interpret any Inflight Advisory.

The very few questions about Convective SIGMETs that do exist focus mainly on the issuance criteria. That's like asking a pilot, "when is an altimeter used" and not providing simulated altimeter depictions to test the pilot's ability to interpret this crucial instrument.

The Aeronautical Information Manual (AIM), section 7-1-5 does a pretty good job of describing SIGMETs and Convective SIGMETs. Perhaps a graphic explaining the content of Convective SIGMETs would be more helpful. That's the focus of the following pages.

When Inflight Advisories were first introduced, the only source was Flight Service, and that was verbal. Gradually, DUATS matured giving pilots their first direct access to NWS products. Then private vendors created airport weather terminals for use at FBOs. Today the Internet delivers a plethora of weather text products, maps, and graphics to pilots. Does just having them available mean that pilots can remain current with these products? Perhaps, but let's study a couple of Inflight Advisories, namely Convective SIGMETs and Center Weather Advisories and get reacquainted.

The AWC home page,

<http://aviationweather.noaa.gov/>

has menu options on the left-hand side that take you directly to the Convective SIGMET page shown in Figure 2. The current WSTs are plotted in red, and outlooks are plotted in green. Options at the bottom of that page offer two other map displays as well as the ability to display the text message only.

The text versions can be plotted on the AWC's advisory plotting chart shown in Figure 3. That chart is available at:

<http://aviationweather.noaa.gov/awc/advrsy/advrsypltn.html>

The anatomy of a Convective SIGMET is shown in Figure 4 on the next page. The individual advisories shown there are the ones plotted in Figure 3.

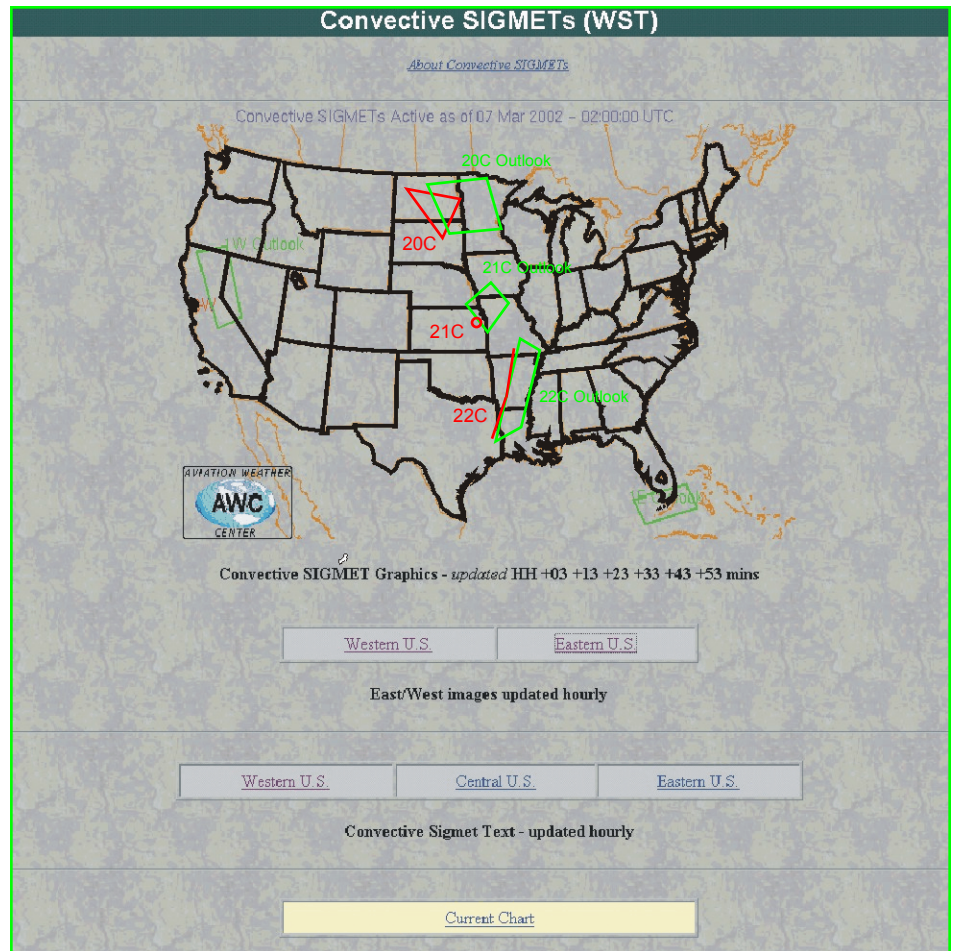


Figure 2. The Convective SIGMET page displays plots of WSTs in red and outlook areas in green. The map can be divided into east and west portions using the clickable tabs below the map. Text versions of the Convective SIGMETs are also available using the three tabs near the bottom of the page. Access it from the AWC home page, or go direct to this page with: <http://aviationweather.noaa.gov/awc/awc-wsts.html>

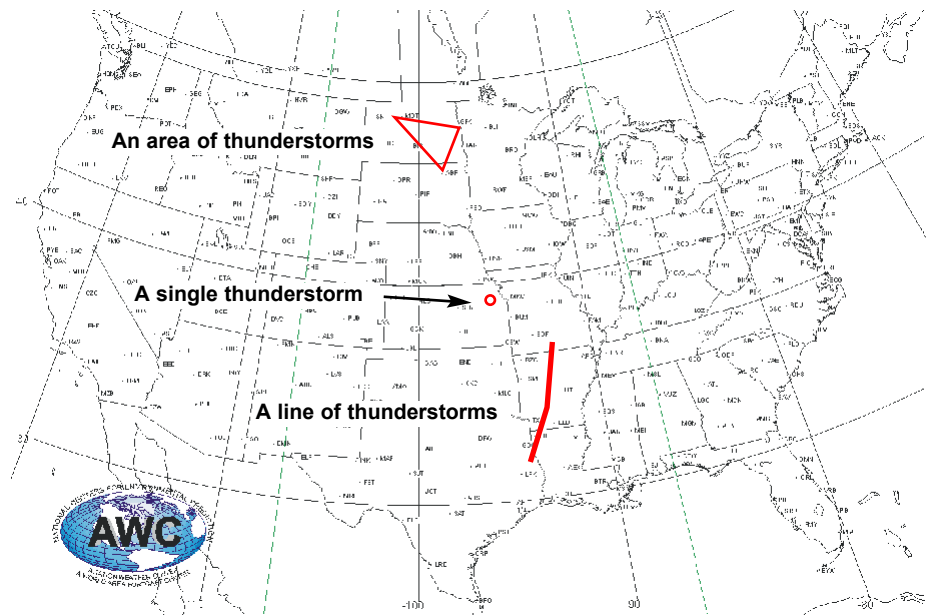


Figure 3. The Inflight Advisory plotting chart is used by Aviation Weather Center to graphically depict the location of SIGMETs, Convective SIGMETs, and AIRMETs. The Convective SIGMETs shown in Figure 4 on the next page are plotted here.

**"WST"** indicates this is a Convective SIGMET

**MKCC** indicates this Convective SIGMET is from the AWC. The end "C" means it is for the central portion of the continental U.S. E or W would be for East or West sections respectively.

**Issuance time:** 22nd day, 1855 UTC

**SIGMET number.** Numbering begins daily at 0000 UTC. The "C" means it's for the "Central" portion of the country.

Expiration time is 2 hours after issuance, but Convective SIGMETs are issued hourly and replace the previous hour's product.

**States affected**

**Area of thunderstorms.** Points are relative to Navaids that outline the threat area. The starting and ending point are identical.

**Single Cell** thunderstorm 35 nm west of Kansas City

**Line of severe thunderstorms** 25 nm wide

Each Convective SIGMET has an outlook that is valid for 2 to 6 hours, but 4 hours is normally chosen. The outlook begins at the expiration time of the SIGMET. The outlook uses Navaids to describe the area. Outlook Area 1 refers to the first SIGMET, in this case, 20C. Outlook Area 2 refers to the second SIGMET in this message, 21C. Outlook Area 3, references 22C.

**MKCC WST 221855**  
**CONVECTIVE SIGMET 20C**  
**VALID UNTIL 2055Z**  
**ND SD**  
**FROM 90W MOT-GFK-ABR-90W MOT**  
**INTSFYG AREA SVR TSTMS MOVG FROM 2445. TOPS ABV FL450.**  
**WIND GUSTS TO 60KT RPRTD. TORNADOES...HAIL TO 2 IN...WIND GUSTS TO 65KT PSBL ND PTN.**

**CONVECTIVE SIGMET 21C**  
**VALID UNTIL 2055Z**  
**KS MO**  
**35W MKC**  
**ISOLD SVR TSTM D30 MOVG FROM 2520 TOPS ABV FL450.**  
**HAIL TO 2 IN. WIND GUSTS TO 65 KT PSBL.**

**CONVECTIVE SIGMET 22C**  
**VALID UNTIL 2055Z**  
**AR MO OK TX**  
**FROM 90SE SGF-70NE TXK-50NE LFK**  
**LN SVR TSTMS 25 MI WIDE MOVG FROM 2745. TOPS ABV FL450.**  
**HAIL TO 2 IN. WIND GUSTS TO 65 KT PSBL.**

**OUTLOOK VALID 222055-230055**  
**AREA 1 FROM INL-MSP-ABR-MOT-INL**  
**SVR TSTMS CONT TO DVLP IN AREA OVR ND. AREA IS XPCD TO RMN SVR**  
**AND SPRD INTO MN AS STG PVA MOVS OVR VERY UNSTBL AMS**  
**CHARACTERIZED BY -12 LIFTED INDEX.**

**AREA 2 FROM DSM-IRK-BUM-PWE-DSM**  
**ISOLD STG TSTMS WILL CON OVR ERN KS AND NWRN MO THRU FCST PD AS**  
**DVRGC ASSOCD WITH UPR LVL TROF MOVS NEWD OVR VERY UNSTBL AMS.**  
**LIFTED INDEX RMNS IN THE -9 TO -10 RANGE.**

**AREA 3 FROM COU-FAM-MCB-LFK-COU**  
**LN SVR TSTMS WILL CONT OVR SRN MO AR NRN LA AND ERN TX ALG RPDLY**  
**MOVG CD FNT. TSTMS MOVG INTO AREA OF SFC DWPTS OF 70 TO 75 AND**  
**CAPE OF 3000 TO 4000 J/KG.**

**"Intensifying area of severe thunderstorms moving from 240 degrees at 45 knots. Storm tops above flight level 4-5-Zero. Wind gusts to 60 knots reported. Tornadoes, hail to 2 inches in diameter, wind gusts to 65 knots possible in the North Dakota portion."**

**"Isolated severe thunderstorm, 30 nautical miles in diameter moving from 250 degrees at 20 knots. Tops above flight level 4-5-Zero. Hail to 2 inches in diameter. Wind gusts to 65 knots possible."**

**"Line of severe thunderstorms 25 miles wide moving from 270 degrees at 45 knots. Tops above flight level 4-5-Zero. Hail to 2 inches Wind gusts to 65 knots possible."**

**"Severe thunderstorms continue to develop in the area over North Dakota. Area is expected to remain severe and spread into Minnesota as strong positive vorticity advection moves over very unstable airmass characterized by a minus 12 lifted index."**

**"Isolated strong thunderstorms will continue ovr eastern Kansas and northwestern Missouri through the forecast period as divergence associated with upper level trough moves northeastward over very unstable airmass. Lifted index remains in the minus 9 to minus 10 range.."**

**"Line of severe thunderstorms will continue over southern Missouri, Arkansas, northern Louisiana and eastern Texas along a rapidly moving cold front. Thunderstorms are moving into an area of surface dew points of 70 to 75 and CAPE of 3000 to 4000 joules per kilogram."**

Figure 4. Convective SIGMETs consist of a warning section on top, each of which is sequentially numbered, and an outlook section below. The numbered areas refer to the warning areas in the same order.

Several Convective SIGMETs can be listed in each hourly bulletin if convection stretches over a wide area and if the clusters of thunderstorms are distinct from each other.

These bulletins consist of a warning section on top, in which each Convective SIGMET is sequentially numbered. Below that is an outlook section which is a concise short term forecast (up to 6 hours) for each respective area of thunderstorms. It's carefully crafted by AWC forecasters using satellite cloud motion and motion vectors from NWS NEXRAD data, as well as model output from the RUC (Rapid Update Cycle), ETA, MesoETA, and AVN atmospheric models. The numbered outlook areas are listed in the same sequence as the warnings above. In other words, Area 1 in the outlook refers to Convective SIGMET 20C.

Technical terms are used in this outlook section, and discuss the most important meteorological features that are contributing to the thunderous disruptions of air traffic.

Normally, Convective SIGMETs serve the country quite well. Sometimes though, a thunderstorm develops rapidly in an area of high traffic volume, or a portion of a storm cluster will affect a large terminal and disrupt the tight flow of traffic. One of these particular storms may

not meet Convective SIGMET criteria, but it may pose a problem for Air Traffic Control.

Center Weather Advisories (CWA) are another type of Inflight Advisory and were created for this very purpose. CWAs are equal in urgency to Convective SIGMETs but are issued by Center Weather Service Units (CWSU) in the Air Route Traffic Control Centers (ARTCC). The function of the CWA is to provide real time help when adverse weather erupts or covertly evolves.

Figure 5 is a diagramed example of a CWA. CWAs may augment existing Convective SIGMETs, in which case that fact will be stated in the CWA as shown in Figure 5. CWSU forecasters are direct resources for ATC controllers but are not a pilot's alternative to Flight Watch.

CWAs are available on the AWC web site in the section called the CWSU Corner. Start again at the AWC home page:

<http://aviationweather.noaa.gov/>

Figure 6 shows that home page and where to click to access the CWSU Corner and other AWC products and services.

Figure 7 is the CWSU Corner page. Clicking on the dot under the ARTCC IDs will display any CWAs in effect for that Center at the top left corner of the page.

A new automated tool arrived on the

aviation scene in October, 2001. The National Convective Weather Forecast (NCWF) in Figure 9 depicts six level radar data on a map with ARTCC boundaries and hub airports. To zoom in on one of the hubs, click on the appropriate button at the bottom of the map. The NCWF looks for max reflectivity areas and then projects a one hour future location with a polygon similar to the way that AWC forecasters create the outlook portion of the Convective SIGMET. While the NCWF could be a parallel to the Convective SIGMET program, work is ongoing to assess its performance.

Most pilots have heard Convective SIGMETs read either directly by the controller or by changing to the HIWAS frequency. Controllers will normally summarize the area concerned. But if the controller chooses to read the points that outline the area of thunderstorms, it may be hard to quickly visualize where the area is. This task is nearly impossible if the current flight plan has you in an unfamiliar part of the country.

Does that WST straddle the course between two waypoints that you have entered into your GPS?

One way to find out is take out an en route chart, unfold it and search for the VORs just mentioned. Maybe you need to flip the chart over, or get another one out

ARTCC ID, ZKC is Kansas City Center. The "2" is a phenomenon number for a meteorologically unique event. There are normally only 6 numbers used, and they begin numbering each day at 00 UTC. Urgent Center Weather Advisory Issued 22nd day of the month at 1913 UTC

2nd line of header  
The "2" in "203" is the phenomenon number, a distinct area of thunderstorms.  
The "3" is the number of the CWA pertaining to this phenomenon.  
In other words, this is the 3rd CWA issued for this storm (phenomenon 2). This would be done only if the storm persisted, did not meet Convective SIGMET criteria, but was significant enough to impact the normal flow of air traffic.  
Expiration time, 22nd day of the month at 2113 UTC.

**/D ZKC2 UCWA 221913**  
**ZKC CWA 203 VALID UNTIL 222113**  
**32W MKC**  
**ISOLD LVL 6 TSTM (EXTREME) DIAM 30 NM MOVG FROM 25020KT. TOP TO FL550. TSTM WILL MOV OVR MKC BTWN 2030 UTC AND 2100 UTC. WND GUSTS TO 51 KTS RPTD. SEE CONVECTIVE SIGMET 21C.**

*"32 nm west of Kansas City VOR (MKC)  
Isolated level 6 thunderstorm (extreme) 30 nm in diameter moving from 250 degrees at 20 knots. Tops to Flight Level 5-5-Zero. Thunderstorm will move over MKC between 2030 UTC and 2100 UTC. Wind gusts to 51 knots reported. See Convective SIGMET 21C."*

PAZA - Anchorage	ZLA - Los Angeles
ZAB - Albuquerque	ZLC - Salt Lake
ZAU - Chicago	ZMA - Miami
ZBW - Boston	ZME - Memphis
ZDC - Washington	ZMP - Minneapolis
ZDV - Denver	ZNY - New York
ZFW - Fort Worth	ZOA - Oakland
ZHU - Houston	ZOB - Cleveland
ZID - Indianapolis	ZSE - Seattle
ZJX - Jacksonville	ZTL - Atlanta
ZKC - Kansas City	

Figure 5. Anatomy of a Center Weather Advisory (CWA). CWAs are issued by Center Weather Service Units (CWSUs) for weather threats that are either not covered by SIGMETs or Convective SIGMETs or to add important details for safe and efficient movement of air traffic by ATC.

Air traffic control center IDs used in the headers of Center Weather Advisories.

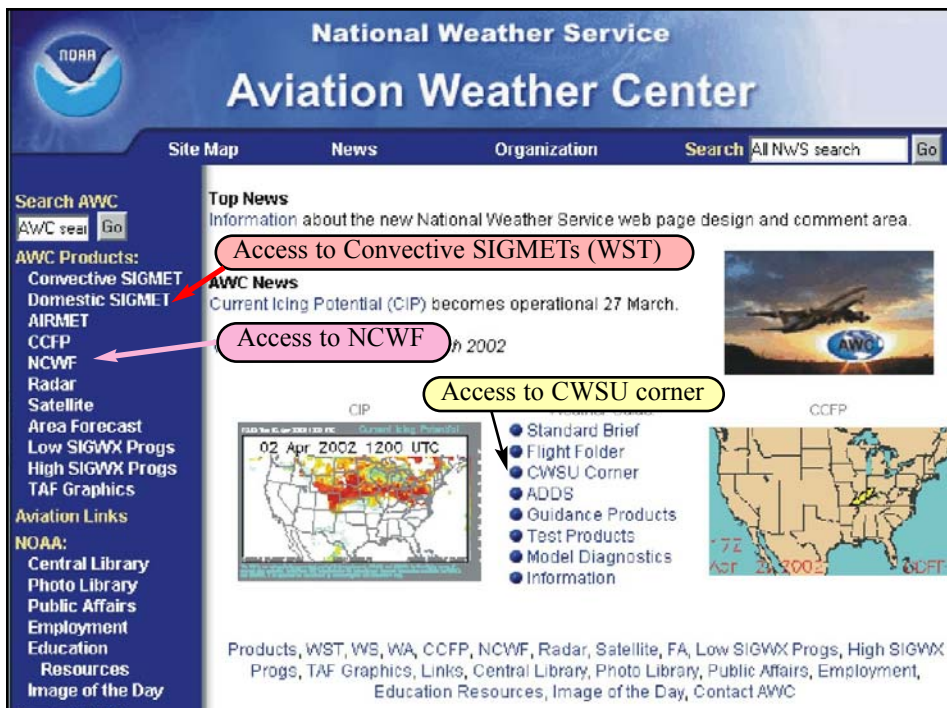


Figure 6. Convective SIGMET maps and text are available with a single click. Two other useful links are available. The CWSU corner will reveal Center Weather Advisories. The National Convective Weather Forecast (NCWF) is a new automated product used to forecast movements of thunderstorms.

of the flight case wedged behind the seat.

What's really needed is some way to easily locate the hazard areas without clutter or confusion in the cockpit, especially when you're in the terminal environment, or in a hold upstream from your destination.

What if you had a compact map that clipped right on the yoke or to your knee

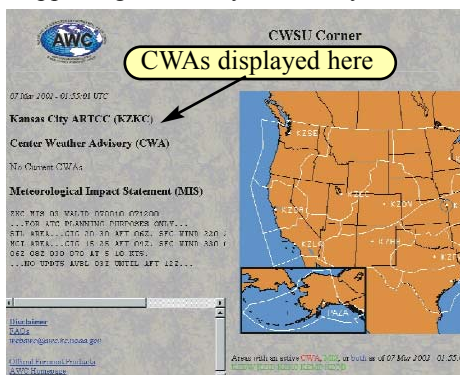


Figure 7. The CWA Corner page at AWC offers Center Weather Advisories.

board? What if the map served as a quick reference and kept the cockpit clutter-free so you could perform your primary duties without distraction? Would you then take the time to locate the hazard that you just received from HIWAS?

The maps on the following pages should help with that. The AWC's advisory plotting chart has been divided into

three separate maps, each covering one of the Convective SIGMET sections, West, Central, and East. There is some overlap into the adjoining sections.

The list of Nav aids also has been sectorized. Only those that are in or near each section are listed. So your search for the Nav aids will be reduced considerably.

With these pages, you can make your

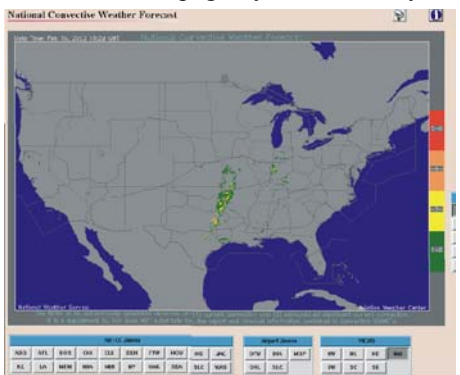


Figure 8. The National Convective Weather Forecast (NCWF) is a new operational tool used to forecast very short term movements of thunderstorms.

own Inflight Advisory plotting chart. Here's how. Make a photocopy or a printer copy of the maps for any section (West, Central, or East). Load that map back in the copier or printer so the next copy will be on the back side. Then print or photocopy the page of Nav aids for that section

onto the backside of the maps. You may have to do this a couple times to get the maps and Nav aid list to be oriented correctly.

If done correctly, you'll get two slightly different plotting charts. One will have the map on one side, and the list of plotting points upside down on the back. The two circles will be at the top on both the front and the back. This map can be clipped to the yoke of your aircraft or on your knee board. When ATC reads the Nav aids and airports for an Inflight Advisory, you'll be able to locate them easily on this sectorized chart. If you're unfamiliar with any or all of the Nav aids, simply flip up the map and find them in the list on the back. They'll be oriented so you can read them without removing the chart from the yoke clip or knee board.

The other chart that you've made with this process is intended to be filed in a three ring flight book like those in which you might keep instrument approach procedure charts. On this map, the Nav aids and airports are readable merely by turning the page as you would in any book. Which map you choose is purely a matter of personal preference. These maps have been added to the bottom of the AWC page shown in Figure 2.

Until cockpit data uplinks are common in all aircraft, pilots will need a way to locate and follow Inflight Advisories without affecting the primary task of safe flying and good cockpit management. Techniques learned here should help.

## Coming up next time...

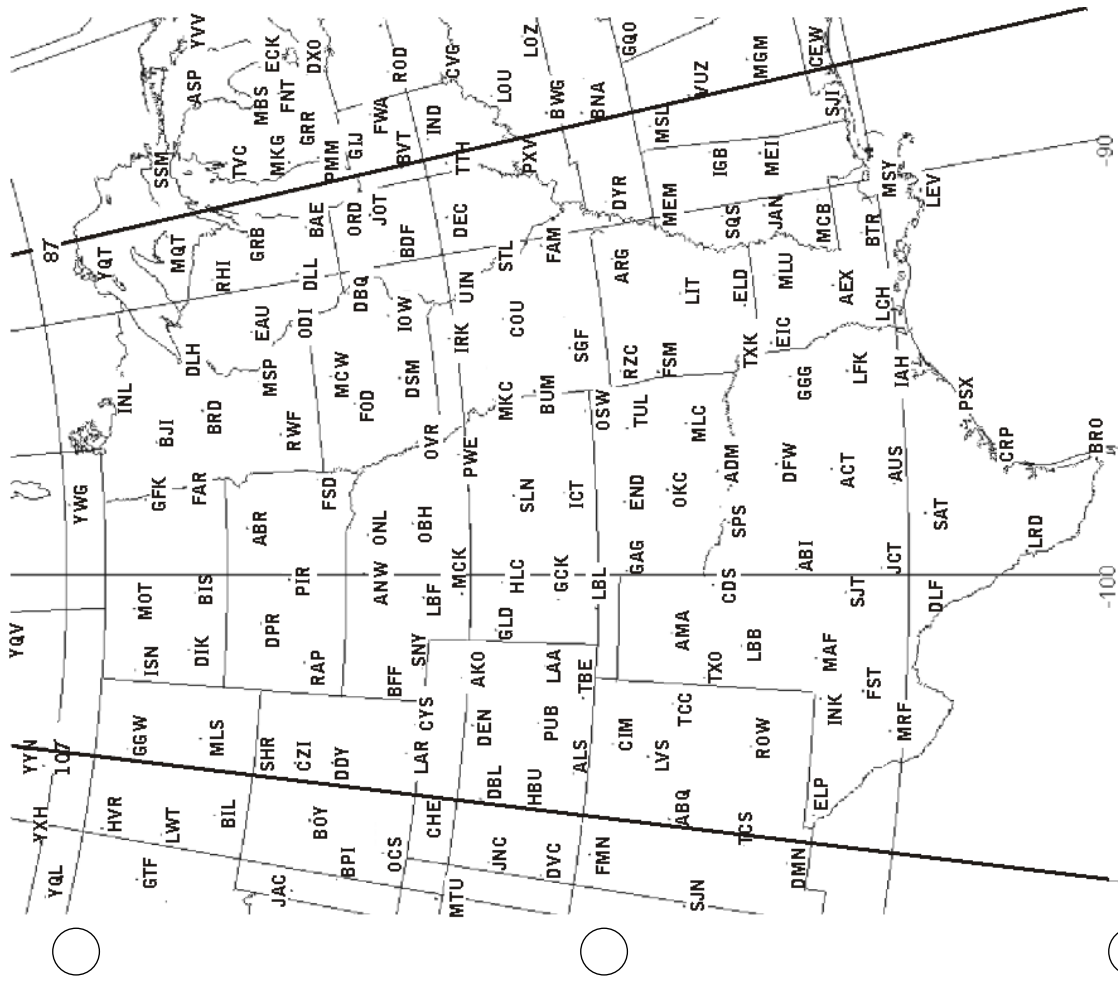
*Explaining the indices and tech terms found in Convective SIGMETs*

*Web sources where these observed and forecast indices can be found so pilots can get a jump on convective potential for the day.*

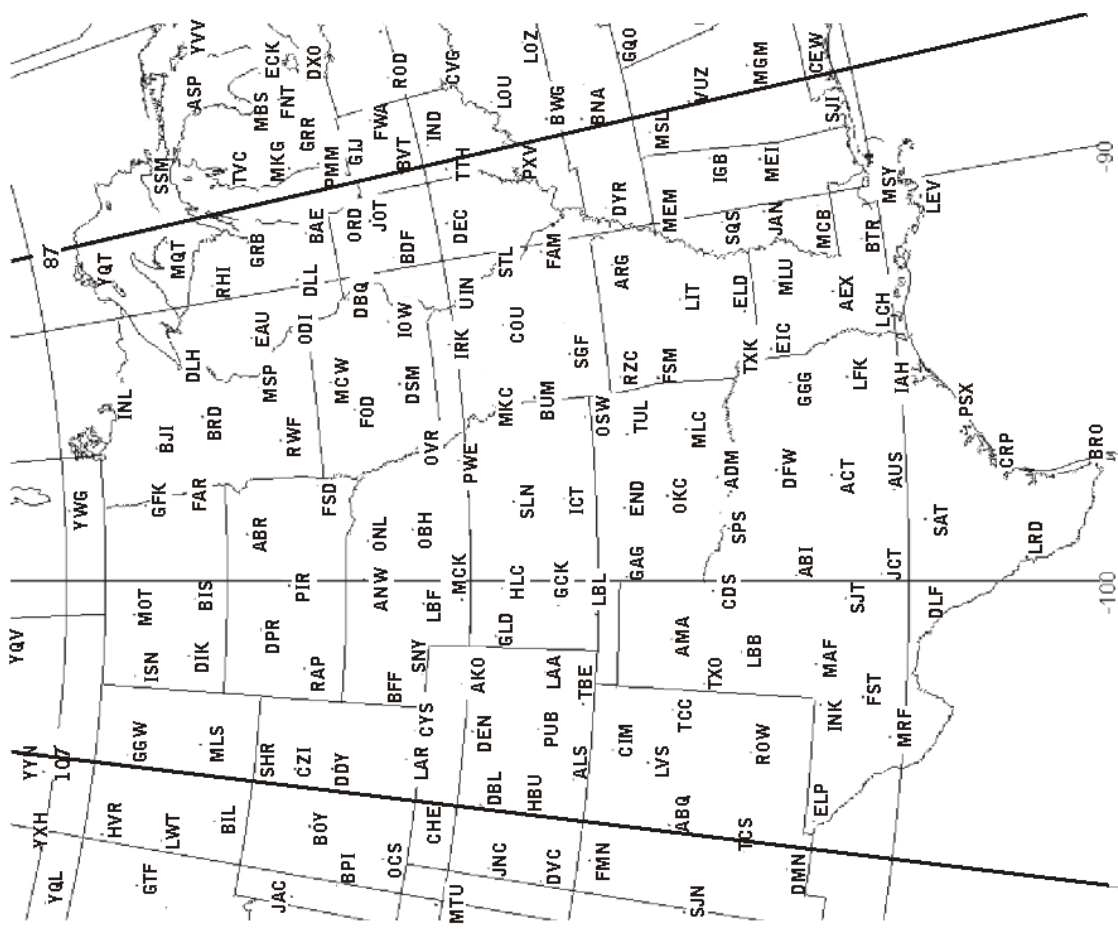
Special thanks go to Jim Roets of the Aviation Weather Center, Philip Kennedy, NOAA Corps pilot, and to FAA Flight Service Green Bay, Wisconsin for their technical advice and insight.

Send comments and suggestions to:  
[craig.sanders@noaa.gov](mailto:craig.sanders@noaa.gov)  
[sally.pavlow@noaa.gov](mailto:sally.pavlow@noaa.gov)

The Front is published bimonthly and is always available at:  
<http://www.crh.noaa.gov/crh/aviation/thefront.html>



**Convective SIGMET  
- Central -**



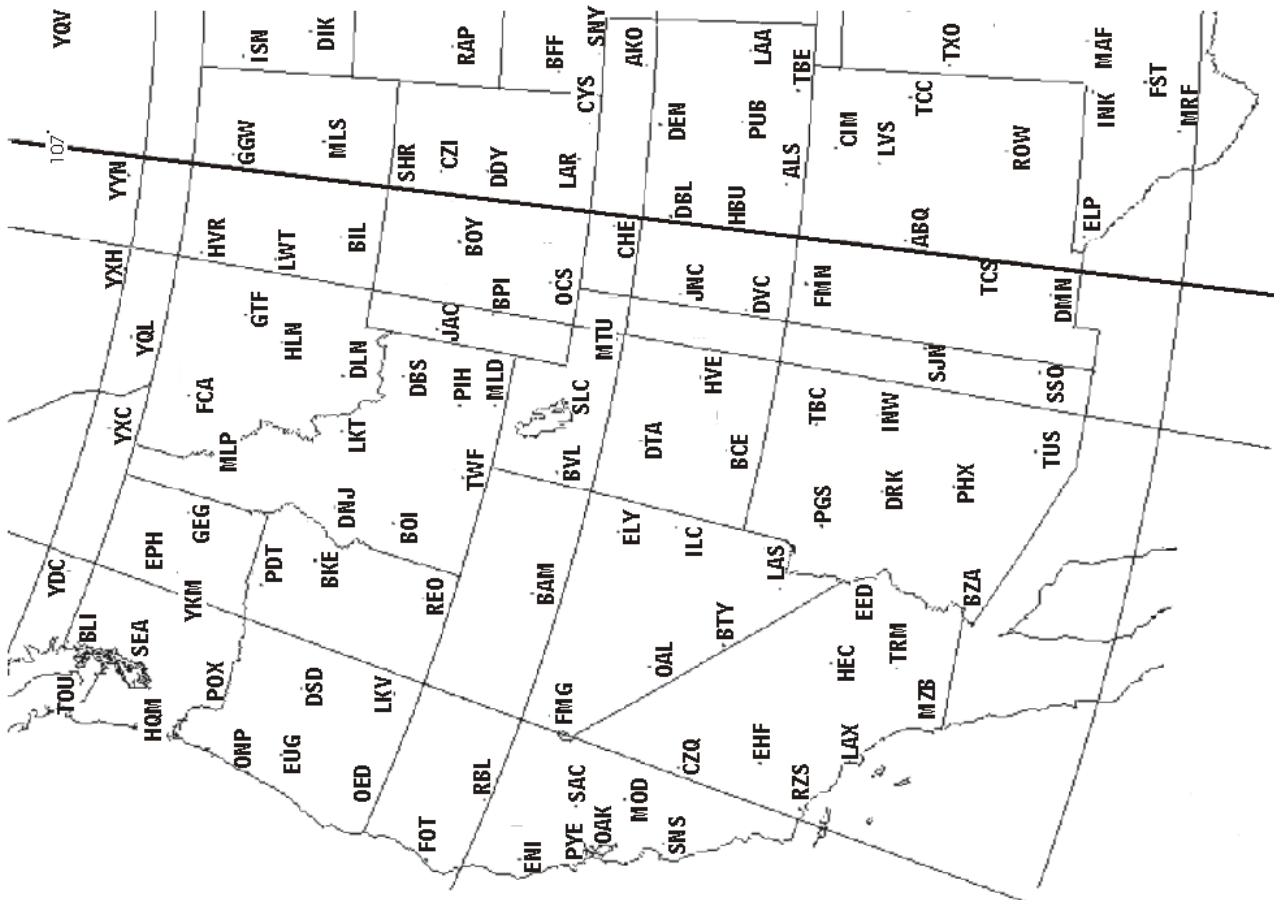
**Convective SIGMET  
- Central -**



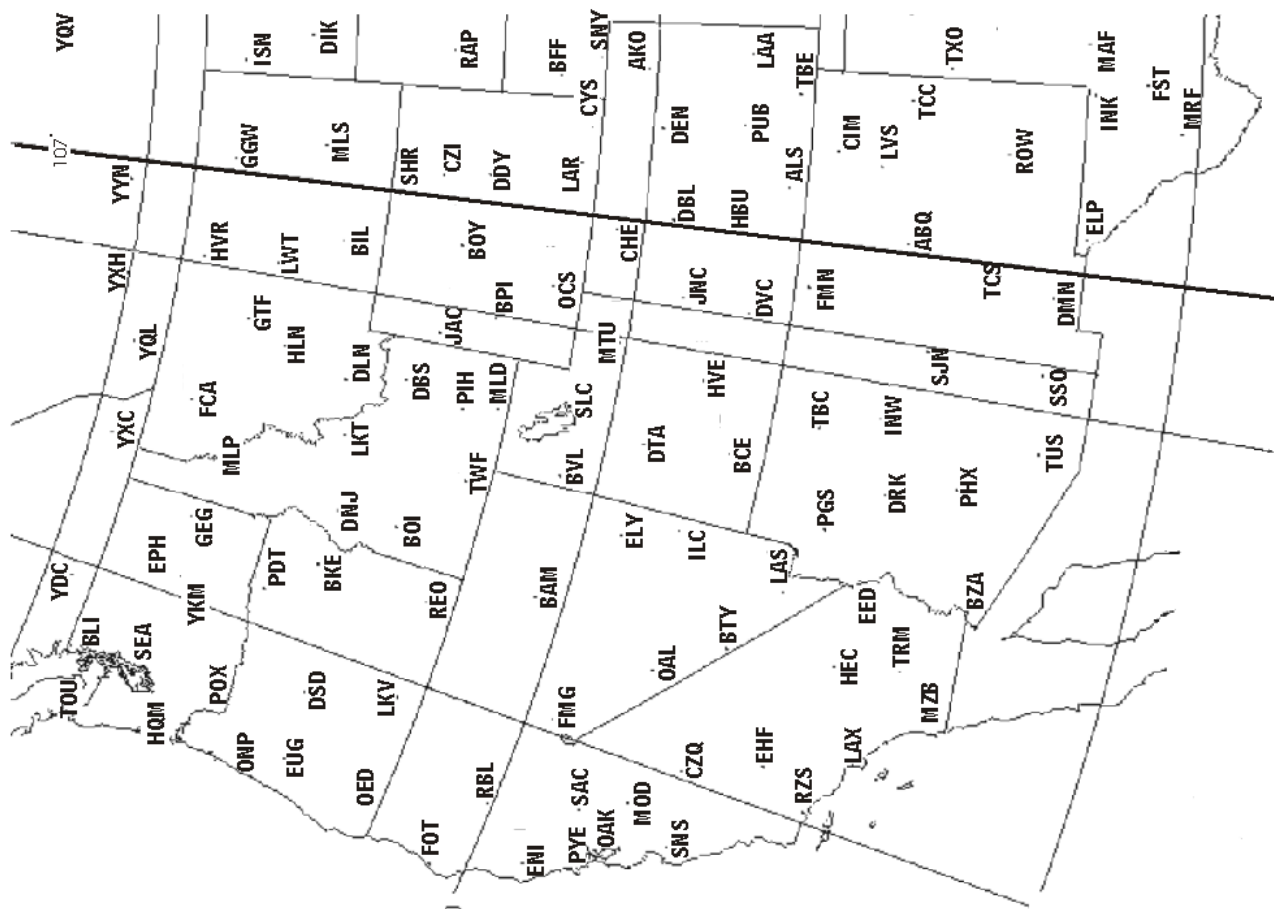




ID	NAME	STATE	ID	NAME	STATE	ID	NAME	STATE	ID	NAME	STATE
A ABY	Aalbany	GA	M MSL	Muscle Shoals	AL	E ETX	East Texas	PA	M MSL	Muscle Shoals	AL
A ACK	Nantucket	MA	MSS	Massena	NY	EWC	Ellwood City	PA	MSS	Massena	NY
A AEX	Alexandria	LA	MSY	New Orleans	LA	EYW	Key West	FL	MSY	New Orleans	LA
A AIR	Bellaire	OH	ODF	Toccoa	GA	FAM	Farrington	MO	ODF	Toccoa	GA
A ALB	Aalbany	NY	ODI	Nodine	MN	FLO	Florence	SC	ODI	Nodine	MN
A AMG	Aalma	GA	OMN	Ormond Beach	FL	FMY	Ft Meyers	FL	OMN	Ormond Beach	FL
A APE	Appleton	OH	ORD	O'Hare Int'l	IL	FNT	Flint	MI	ORD	O'Hare Int'l	IL
A ARG	Walnut Ridge	AR	ORF	Norfolk	VA	FWA	Ft Wayne	IN	ORF	Norfolk	VA
A ASP	Au Sable/	MI	ORL	Orlando	FL	FJG	Gipper	MI	ORL	Orlando	FL
A ATL	Oscoda	MI	P BI	Palm Beach	FL	QDG	Choo Choo/	TN	P BI	Palm Beach	FL
B BAE	Atlanta	GA	P BE	St. Petersburg	FL	GRB	Green Bay	WI	P BE	St. Petersburg	FL
B BDF	Badger/	WI	PLB	Plattsburgh	NY	GRR	Grand Rapids	MI	PLB	Plattsburgh	NY
B BDL	Bradford	VT	PMW	Pullman	ME	GSO	Greensboro	NC	PMW	Pullman	ME
B BGR	Windsor Locks	CT	PQI	Presque Isle	PA	HAR	Harrisburg	PA	PQI	Presque Isle	PA
B BKR	Bangor	ME	PSB	Phillipsburg	VA	HMV	Holston Mt.	TN	PSB	Phillipsburg	VA
B BKW	Beckley	WV	PSK	Dublin	RI	HNK	Hancock	NY	PSK	Dublin	RI
B BNA	Nashville	TN	PVD	Providence	RI	HNN	Henderson	WV	PVD	Providence	RI
B BOS	Boston	MA	PXY	Pocket City	IN	HNT	East Hampton	NY	PXY	Pocket City	IN
B BTR	Baton Rouge	LA	R RDU	Raleigh-	NC	HUL	Houlton	ME	R RDU	Raleigh-	NC
B BUF	Buffalo	NY	RHI	Durham	NC	HUL	Houlton	ME	RHI	Durham	NC
B BVT	Boiler/	IN	RIG	Rhineland	WI	IGB	Bigbee	MS	RIG	Rhineland	WI
C BWG	Lafayette	IN	RIK	Richmond	VA	ILM	Wilmington	NC	RIK	Richmond	VA
C CAE	Bowling Green	KY	ROD	Rosewood	OH	IND	Indianapolis	IN	ROD	Rosewood	OH
C CEW	Columbia	SC	SAX	Savannah	GA	IOW	Iowa City	IA	SAX	Savannah	GA
C CHS	Crestview	FL	SBI	Salisbury	MD	IRK	Kirksville	MO	SBI	Salisbury	MD
C CLE	Cleveland	OH	SIE	Sea Isle	NJ	IRQ	Irksville	MO	SIE	Sea Isle	NJ
C CLT	Charlotte	NC	SJI	Semmes	AL	JAN	Jackson	MS	SJI	Semmes	AL
C CON	Cconcord	NH	SJT	Spartanburg	SC	JFK	Charlotte	NC	SJT	Spartanburg	SC
C COU	Columbia	MO	SLS	Slate Run	PA	JFK	Charlotte	NC	SLS	Slate Run	PA
C CRG	Craig/	MO	SSM	Sarasota	FL	JST	Johnston	PA	SSM	Sarasota	FL
D DBQ	Dubuque	IA	SSM	Sault Ste.	MI	LCH	Lake Charles	LA	SSM	Sault Ste.	MI
D DCA	Decatur	GA	STL	St. Louis	MO	LEV	Levellie/	VA	STL	St. Louis	MO
D DEC	Decatur	IL	SYR	Syracuse	NY	AG	Grand Isle	VT	SYR	Syracuse	NY
D DLH	Duluth	MN	TLH	Tallahassee	FL	AG	Grand Isle	VT	TLH	Tallahassee	FL
D DLL	Dells	WI	TLH	Tallahassee	FL	AG	Grand Isle	VT	TLH	Tallahassee	FL
D DXR	Detroit	MI	TVG	Traverse City	MI	AG	Grand Isle	VT	TVG	Traverse City	MI
D DYO	Dyersburg	TN	U UIN	Union	VA	AG	Grand Isle	VT	U UIN	Union	VA
E EAU	Eau Claire	WI	V VRB	Vero Beach	FL	AG	Grand Isle	VT	V VRB	Vero Beach	FL
E ECG	Elizabeth City	NC	VUZ	Vulcan	VA	AG	Grand Isle	VT	VUZ	Vulcan	VA
E ECK	Elkins	MI	VXV	Volunteer/	TN	AG	Grand Isle	VT	VXV	Volunteer/	TN
E EKN	Elkins	MI	Y YOW	Ottawa	ON	AG	Grand Isle	VT	Y YOW	Ottawa	ON
E ELD	El Dorado	AR	YAT	Thunder Bay	ON	AG	Grand Isle	VT	YAT	Thunder Bay	ON
E EMI	Westminster	MD	YSC	Sherbrooke	QC	AG	Grand Isle	VT	YSC	Sherbrooke	QC
E ENE	Kennebunk	ME	YSJ	St. John	NB	AG	Grand Isle	VT	YSJ	St. John	NB
E ERI	Erie	PA	YVW	Watson	ON	AG	Grand Isle	VT	YVW	Watson	ON
E ERI	Erie	PA	YZZ	Toronto	ON	AG	Grand Isle	VT	YZZ	Toronto	ON



**CONVECTIVE SIGMET  
WEST**



**CONVECTIVE SIGMET  
WEST**

ID	Name	State	ID	Name	State	ID	Name	State
A	ABQ Albuquerque	NM	E	EPH Ephrata	WA	O	ONP Newport	OR
A	AKO Akron	CO	F	EUG Eugene	OR	P	PDT Pendleton	OR
B	ALS Alamosa	CO	F	FCA Kalispell	MT	PGS	PDX Portland	OR
B	BAM Battle Mount.	NV	F	FMG Mustang/Reno	NM	PHX	Peach Springs	AZ
B	BCE Bryce Canyon	UT	F	FMN Farmington	NM	PIH	Phoenix	AZ
B	BFF Scottsbluff	NE	F	FOT Fortuna	CA	PUB	Pocatello	ID
B	BIL Billings	MT	F	FST Ft. Stockton	TX	PYE	Pueblo	CO
B	BKE Baker City	OR	G	GEG Spokane	WA	RAP	Point Reyes	CA
B	BLI Bellingham	WA	G	GTF Great Falls	MT	RAP	Rapid City	SD
B	BOI Boise	ID	H	HBU Blue Mesa/	CA	RBL	Red Bluff	CA
B	BOY Boysen Resv.	WY	H	HGU Gunnison	CO	REO	Rome	OR
B	BPI Big Piney	WY	I	HEC Hector	CA	ROW	Roswell	NM
B	BTY Beatty	NV	I	HLN Helena	MT	RZS	San Marcos/	CA
B	BVL Bonneville	UT	I	HQM Hoquiam	WA	S	Santa Barbara	CA
B	BZA Bard CA/Yuma	AZ	I	HVE Hanksville	UT	SAC	Sacramento	CA
C	CHE Hayden	CO	I	ILC Haver	WA	SEA	Seattle	WA
C	CIM Cimarron	NM	I	INW Winslow	WY	SHR	Sheridan	WY
C	CYS Cheyenne	WY	I	INK Wink	TX	SHR	St. Johns	AZ
C	CZI Crazy Woman	WY	I	INW Winslow	AZ	SLC	Salt Lake City	UT
C	CZQ Clovis/Fresno	CA	I	ISN Williston	ND	SNS	Salinas	CA
D	DBL Red Table//	CA	J	JAC Jackson Hole	WY	SNS	Salt Lake City	UT
D	DDB Eagle CO	CA	J	JNC Grand Junction	CO	SSS	San Simon	AZ
D	DVC Dove Creek	CO	L	LAA Lamar	CO	TBL	Tuba City	AZ
D	EED Needles	CA	L	LAR Laramie	WY	TBL	Tobe	WY
D	EHF Shafter//	CA	L	LAS Las Vegas	NV	TBL	Tucumcari	NM
D	ELP Bakerfield	CA	L	LAX Los Angeles Int	CA	TBL	Truth or	NM
D	ELY El Paso	TX	L	LKT Lakeview	OR	TBL	Truth or	NM
D	ENI Mendocino/	CA	L	LKV Lakeview	MT	TBL	Truth or	NM
D	UKIAH Ukiah	CA	L	LWS Las Vegas	NM	TBL	Truth or	NM
E	ABQ Albuquerque	NM	M	MAF Midland	TX	TRM	Thermal	CA
E	AKO Akron	CO	M	MLD Malad City	ID	TUS	Tucson	AZ
E	ALS Alamosa	CO	M	MLP Mullan Pass	ID	TWF	Twin Falls	ID
E	BAM Battle Mount.	NV	M	MLS Miles City	MT	TXO	Texico,	TX
E	BCE Bryce Canyon	UT	M	MOD Modesto	CA	YKM	Yakima	WA
E	BFF Scottsbluff	NE	M	MRF Marfa	TX	YDC	Princeton	BC
E	BIL Billings	MT	M	MTU Myton	UT	YGL	Lethbridge	AB
E	BKE Baker City	OR	M	MZB Mission Bay	CA	YGV	Yorkton	SA
E	BLI Bellingham	WA	M	OAK Oakland	CA	YXH	Medicine Hat	AB
E	BOI Boise	ID	M	OAL Coaldale	CA	YYN	Swift Current	SA
E	BOY Boysen Resv.	WY	M	OED Medford	OR			
E	BPI Big Piney	WY						
E	BTY Beatty	NV						
E	BVL Bonneville	UT						
E	BZA Bard CA/Yuma	AZ						
E	CHE Hayden	CO						
E	CIM Cimarron	NM						
E	CYS Cheyenne	WY						
E	CZI Crazy Woman	WY						
E	CZQ Clovis/Fresno	CA						
E	DBL Red Table//	CA						
E	DDB Eagle CO	CA						
E	DVC Dove Creek	CO						
E	EED Needles	CA						
E	EHF Shafter//	CA						
E	ELP Bakerfield	CA						
E	ELY El Paso	TX						
E	ENI Mendocino/	CA						
E	UKIAH Ukiah	CA						

ID	Name	State	ID	Name	State	ID	Name	State
A	ABQ Albuquerque	NM	E	EPH Ephrata	WA	O	ONP Newport	OR
A	AKO Akron	CO	E	EUG Eugene	OR	P	PDT Pendleton	OR
A	ALS Alamosa	CO	F	FCA Kalispell	MT	PGS	PDX Portland	OR
B	BAM Battle Mount.	NV	F	FMG Mustang/Reno	NM	PHX	Peach Springs	AZ
B	BCE Bryce Canyon	UT	F	FMN Farmington	NM	PIH	Phoenix	AZ
B	BFF Scottsbluff	NE	F	FOT Fortuna	CA	PUB	Pocatello	ID
B	BIL Billings	MT	F	FST Ft. Stockton	TX	PYE	Pueblo	CO
B	BKE Baker City	OR	G	GEG Spokane	WA	RAP	Point Reyes	CA
B	BLI Bellingham	WA	G	GTF Great Falls	MT	RAP	Rapid City	SD
B	BOI Boise	ID	H	HBU Blue Mesa/	CA	RBL	Red Bluff	CA
B	BOY Boysen Resv.	WY	H	HGU Gunnison	CO	REO	Rome	OR
B	BPI Big Piney	WY	H	HEC Hector	CA	ROW	Roswell	NM
B	BTY Beatty	NV	H	HLN Helena	MT	RZS	San Marcos/	CA
B	BVL Bonneville	UT	H	HQM Hoquiam	WA	S	Santa Barbara	CA
B	BZA Bard CA/Yuma	AZ	H	HVE Hanksville	UT	SAC	Sacramento	CA
C	CHE Hayden	CO	I	ILC Haver	WA	SEA	Seattle	WA
C	CIM Cimarron	NM	I	INW Winslow	WY	SHR	Sheridan	WY
C	CYS Cheyenne	WY	I	INK Wink	TX	SHR	St. Johns	AZ
C	CZI Crazy Woman	WY	I	INW Winslow	AZ	SLC	Salt Lake City	UT
C	CZQ Clovis/Fresno	CA	I	ISN Williston	ND	SNS	Salinas	CA
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