



COLLIN COUNTY



**McKinney  
Amateur Radio Club**

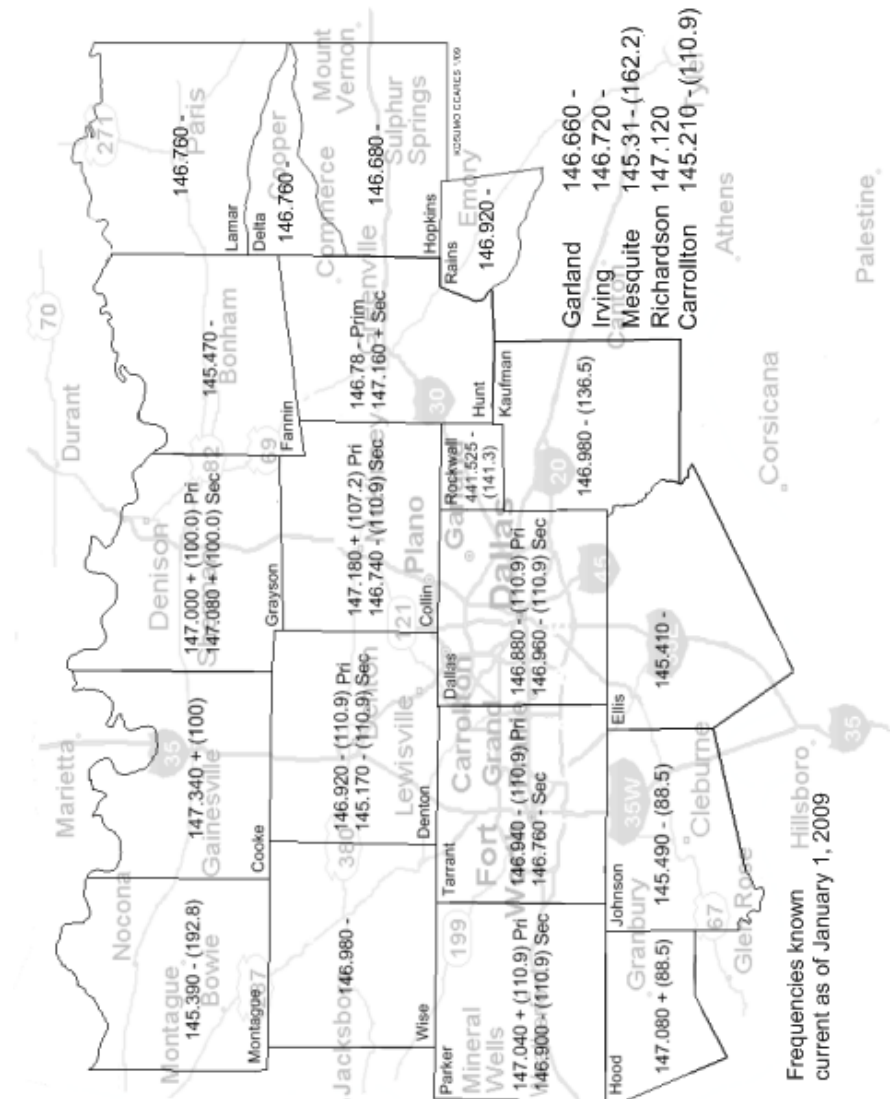


**Plano  
Amateur Radio  
Klub**

Field Operations Guide

2011 Version 1.2

### North Texas Skywarn Frequency Map



Frequencies known Hillsboro current as of January 1, 2009

Area frequencies taken from:  
<http://www.srh.noaa.gov/fwd/repeat.html>  
<http://www.n5lxi.com/>  
<http://www.k5kj.net/freqs.htm>  
<http://www.caps.ou.edu/~kbrews/spotfreq/tx-ne.html>

What to Do	Why do it
<ul style="list-style-type: none"> <li>Listen, Listen, Listen.</li> </ul>	<ul style="list-style-type: none"> <li>To make sure your transmission won't interfere with another communication.</li> <li>To be aware of other things going on.</li> </ul>
<ul style="list-style-type: none"> <li>Think about what you will say before you transmit.</li> </ul>	<ul style="list-style-type: none"> <li>To effectively communicate your idea.</li> <li>To use only the air time needed and no more.</li> </ul>
<b>Making the Call</b>	
Give: <ul style="list-style-type: none"> <li>The call sign or tactical call of the station called.</li> <li>The words "<b>This Is.</b>"</li> <li>The call sign or tactical call of the station calling.</li> </ul>	<ul style="list-style-type: none"> <li>To be clear.</li> <li>To be understood reliably on the first call.</li> <li>To use a standard procedure.</li> </ul>
<b>Communicate</b>	
<ul style="list-style-type: none"> <li>Speak clearly.</li> <li>Plain English – no codes.</li> <li>Repeat back critical items for confirmation.</li> </ul>	<ul style="list-style-type: none"> <li>To be understood.</li> <li>To be fast.</li> <li>To avoid confusion.</li> <li>To be accurate.</li> </ul>
<b>Use Phonetics for</b>	
<ul style="list-style-type: none"> <li>Call Signs.</li> <li>Station Identification.</li> <li>Spelling words and names that are not easily understood.</li> </ul>	<ul style="list-style-type: none"> <li>To be clear.</li> <li>To be accurate.</li> <li>To be fast.</li> <li>To use a standard procedure.</li> </ul>
<b>Emergency Traffic</b>	
<ul style="list-style-type: none"> <li>Use the pro words "Break Break" to silence the net for life threatening emergencies.</li> <li>Do not use "Break Break" for non-life threatening emergencies.</li> <li>Do not use for severe weather such as tornados if in a weather net.</li> <li>Be prepared to call 911 first if possible.</li> </ul>	<ul style="list-style-type: none"> <li>To convey emergency status.</li> <li>For fastest response.</li> <li>To use a standard procedure.</li> </ul>

## ITU Phonetic Alphabet

A - Alpha (AL fah)	N - November (no VEM ber)
B - Bravo (BRAH VOH)	O - Oscar (OSS cah)
C - Charlie (CHAR lee)	P - Papa (pah PAH)
D - Delta (DELL tah)	Q - Quebec (keh BECK)
E - Echo (ECK oh)	R - Romeo (ROW me oh)
F - Foxtrot (FOKS trot)	S - Sierra (see AIR rah)
G - Golf (GOLF)	T - Tango (TANG go)
H - Hotel (hoh TELL)	U - Uniform (YOU nee form)
I - India (IN dee ah)	V - Victor (VIK tah)
J - Juliett (JEW lee ETT)	W - Whiskey (WISS key)
K - Kilo (KEY loh)	X - X Ray (ECKS RAY)
L - Lima (LEE mah)	Y - Yankee (YANG key)
M - Mike (MIKE)	Z - Zulu (ZOO loo)

## ITU Phonetic Numbers

- 0 – “ZEE-RO”
  - 1 – “WUN”
  - 2 – “TOO”
  - 3 – “TH-UH-REE” or “TREE”
  - 4 – “FOW-ER”
  - 5 – “FI-IV” or “FIFE”
  - 6 – “SIX”
  - 7 - “SEV-EN”
  - 8 – “ATE” or “A-IT”
  - 9 – “NIN-ER”
- DECIMAL = “DAY-SEE-MAL”

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**Ready Kit Sources – Radio & Electronic Gear**

Texas Towers	<a href="http://www.texastowers.com">http://www.texastowers.com</a>
Tanner Electronics	<a href="http://www.tannerelectronics.com">http://www.tannerelectronics.com</a>
Fry's Electronics	<a href="http://www.frys.com">http://www.frys.com</a>
Radio Shack	<a href="http://www.radioshack.com">http://www.radioshack.com</a>
iPortableUS.com	<a href="http://www.iportableus.com">http://www.iportableus.com</a>

**Ready Kit Sources – Personal Supplies**

Academy Sports	<a href="http://www.academy.com">http://www.academy.com</a>
REI	<a href="http://www.rei.com">http://www.rei.com</a>
Sports Authority	<a href="http://www.sportsauthority.com">http://www.sportsauthority.com</a>
Sportsman's Warehouse	<a href="http://www.sportsmanswarehouse.com">http://www.sportsmanswarehouse.com</a>
Bass Pro Shops	<a href="http://www.basspro.com">http://www.basspro.com</a>
Cabela's	<a href="http://www.cabelas.com">http://www.cabelas.com</a>
Tactical Gear Now	<a href="http://www.texasarmynavy.com">http://www.texasarmynavy.com</a>
Minimus.biz	<a href="http://www.minimus.biz/">http://www.minimus.biz/</a>
Countycomm	<a href="http://www.countycomm.com">http://www.countycomm.com</a>
MRE Info	<a href="http://www.mreinfo.com">http://www.mreinfo.com</a>
Adventure Medical Kits	<a href="http://www.amkdealer.com/">http://www.amkdealer.com/</a>
Moore Medical	<a href="http://www.mooremedical.com">http://www.mooremedical.com</a>

**Ready Kit Sources – Tools & Vehicle**

Home Depot	<a href="http://www.homedepot.com">http://www.homedepot.com</a>
Lowe's	<a href="http://www.lowes.com">http://www.lowes.com</a>
Sears	<a href="http://www.sears.com">http://www.sears.com</a>
Harbor Freight	<a href="http://www.harborfreight.com">http://www.harborfreight.com</a>
Northern Tool + Equipment	<a href="http://www.northerntool.com">http://www.northerntool.com</a>

**Ready Kit Sources – Containers**

MTM Case-gard (spud boxes)	<a href="http://www.mtmcase-gard.com">http://www.mtmcase-gard.com</a>
Plano Molding	<a href="http://www.planomolding.com">http://www.planomolding.com</a>
SKB	<a href="http://www.skbcases.com">http://www.skbcases.com</a>
Pelican	<a href="http://www.pelican.com">http://www.pelican.com</a>
Tac-Comm	<a href="http://www.tac-comm.com/">http://www.tac-comm.com/</a>

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**Organization**

**Operations Section**

**Operations Chief**

- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS
- Alternate NCS

**Chadwick Stelzl \***

- Allan Batteiger
- Keith Berry
- Tony Campbell
- Robert Davis
- David Dunbar
- Kipton Moravec
- Dave Patrick
- Bruce Dingman
- Rick Wilson
- Walter Lemmons
- William Fell

- KD5UMO**
- WB5QNG
- KE0FV
- W5ADC
- AD5NR
- N0RQ
- AE5IB
- W7DAV
- N5BYL
- W5TUX
- AE5IT
- KK5PB

**Planning Section**

**Planning Chief (Acting)**

- Collin County EOC Liaison
- City of Allen Liaison
- City of Fairview
- City of Frisco Liaison
- City of Lucas Liaison
- City of McKinney Liaison
- City of Plano Liaison
- City of Wylie Liaison
- Nat. Weather Service Liaison
- American Red Cross Liaison
- Medical Reserve Corps Liaison
- CERT Liaison
- Safety Officer
- Technical Advisor

**Bruce Dingman**

- Bill Fell \*
- Gary Drescher \*
- Sean Kelly
- Andy Duckworth \*
- Bobette Mauck \*
- Rick Wilson\*
- Fred Varian \*
- Allen Miner
- Chadwick Stelzl \*
- Pete Loveall \*
- Tony Campbell \*
- Rick Wilson \*
- Richard Phillips
- Chadwick Stelzl \*

- N5BYL**
- KK5PB
- KI5FU
- W5SPK
- K5BAD
- KD5VYK
- W5TUX
- WD5ERD
- KB5WED
- KD5UMO
- AE5PL
- W5ADC
- W5TUX
- KB5YBQ
- KD5UMO

**Logistics Section**

**Logistics Chief**

- Training Supervisor
- Printing Supervisor
- Field Ops Guide Editor

**Robert Davis \***

- Walter Lemons
- Bob Simcox
- Bill Swanson

- AD5NR**
- AE5IT
- AA9XJ
- K5OBS

\* Assistant Emergency Coordinator (AEC) Staff

## Radio Frequencies

147.18 [+]	PL 107.2	Primary ARES Repeater (PARK)	
	Net Status Repeater Tag	- Morse code "N"	
	Alert Status Repeater Tag	- Morse code "A"	
	Flash Flood Warning Repeater Tag	- Morse code "F"	
146.74 [-]	PL 110.9	Secondary ARES Repeater (MARC)	
145.35 [-]	PL 100.0	N5GI Repeater (IRLP)	
444.250 [+]	PL 79.7	PARK UHF Repeater	
443.200 [+]	PL 100.0	W5MRA Repeater (MERA)	
444.025 [+]	PL 110.9	W5DRH Repeater	
441.575 [+5]	DV	K5PRK D-Star Voice (Allen)	Port B
1295.00 [-20]	DV	K5PRK D-Star Voice	Port A
1255.00		K5PRK D-Star Data	
3.873 MHz		Nighttime Texas Traffic Net	
7.085 MHz	LSB	Regional HF APRS Freq	
7.285 MHz		Daytime Texas Traffic Net	
10.151MHz	LSB	National HF APRS Freq (300 baud)	
14.325 MHz		Hurricane Watch Net	
144.39	Simplex	National APRS VHF Freq (1200 baud)	
144.34	Simplex	National APRS VHF Alternate Frequency	
146.52	Simplex	National 2m Calling Freq / Wilderness Protocol	
146.88 [-]	PL 110.9	D/FW National Traffic System Net	
446.000	Simplex	National 70cm Simplex Freq	
1293.000	[-20]	K5TIT D-Star Voice (Dallas)	
1253.000		K5TIT D-Star Data (Dallas)	

## VHF Simplex Frequencies

(in the TX VHF-FM Society Plan)

145.600	145.030 – SW Collin County
145.700	K5BAD-10, W5RAE-10
146.520 – National Calling Freq	145.050 – NE Collin County
146.550	N0RQ-10
146.560	145.070 – NW Collin County
146.580	KD5CTQ-10
147.420	145.090 – SE Collin County
147.440	N5BYL-10, K5PRK-10,
147.510	KI5FU-10, K5EEN-10

### Collin County VHF Winlink Frequencies/Paolink Stations

(\*\*US 75/380 create quadrants)

## Helpful Links

### Organizations

Amateur Radio Relay League	<a href="http://www.arrl.org">http://www.arrl.org</a>
Collin County ARES	<a href="http://www.collinares.net">http://www.collinares.net</a>
Plano Amateur Radio Klub	<a href="http://www.k5prk.net">http://www.k5prk.net</a>
McKinney Amateur Radio Club	<a href="http://www.mckinneyarc.org/">http://www.mckinneyarc.org/</a>
Texas Traffic Net	<a href="http://www.texastrafficnet.org/">http://www.texastrafficnet.org/</a>
DFW Traffic Net	<a href="http://www.dfwtrafficnet.org/">http://www.dfwtrafficnet.org/</a>
Texas Interconnect Team	<a href="http://www.k5tit.org/">http://www.k5tit.org/</a>
NTX Repeater Association	<a href="http://www.ntxra.com/">http://www.ntxra.com/</a>
N5TIM D/FW PSE list	<a href="http://www.n5tim.info/">http://www.n5tim.info/</a>
"A" tone decoder plans	<a href="http://www.qsl.net/wd4bis/atone.htm">http://www.qsl.net/wd4bis/atone.htm</a>
Emergency Management Inst.	<a href="http://www.training.fema.gov/EMIweb/">http://www.training.fema.gov/EMIweb/</a>
American Red Cross	<a href="http://www.redcross.org">http://www.redcross.org</a>
Salvation Army	<a href="http://www.salvationarmy.org">http://www.salvationarmy.org</a>
SATERN	<a href="http://www.satern.org">http://www.satern.org</a>

### Weather

Ft. Worth Forecast Office	<a href="http://www.srh.noaa.gov/fwd/">http://www.srh.noaa.gov/fwd/</a>
Storm Prediction Center	<a href="http://www.spc.noaa.gov/">http://www.spc.noaa.gov/</a>
National Hurricane Center	<a href="http://www.nhc.noaa.gov/">http://www.nhc.noaa.gov/</a>
Texas Mesonet	<a href="http://mesonet.tamu.edu/">http://mesonet.tamu.edu/</a>
Texas Severe Storms Assn.	<a href="http://www.tessa.org/">http://www.tessa.org/</a>

### Yahoo Groups

CCARES Yahoo Group	<a href="http://groups.yahoo.com/group/collinares/">http://groups.yahoo.com/group/collinares/</a>
NTX APRS User Group	<a href="http://groups.yahoo.com/group/ntx_aprs_ug/">http://groups.yahoo.com/group/ntx_aprs_ug/</a>
Ready Jump Kits	<a href="http://groups.yahoo.com/group/Radio_Jump_Kits/">http://groups.yahoo.com/group/Radio_Jump_Kits/</a>
Winlink 2K list for Emcomm users	<a href="http://groups.yahoo.com/group/wl2kemcomm/">http://groups.yahoo.com/group/wl2kemcomm/</a>

### Software Resources

Winlink Home	<a href="http://www.winlink.org/">http://www.winlink.org/</a>
AGWPE	<a href="http://www.sv2agw.com/ham/agwpe.htm/">http://www.sv2agw.com/ham/agwpe.htm/</a>
APRS Home	<a href="http://www.aprs.org">http://www.aprs.org</a>
APRS-IS Home	<a href="http://www.aprs-is.net/">http://www.aprs-is.net/</a>
Findu	<a href="http://www.findu.com/">http://www.findu.com/</a>
APRS Software List	<a href="http://www.dxzone.com/catalog/Software/APRS">http://www.dxzone.com/catalog/Software/APRS</a>
D-Star User Resource	<a href="http://www.d-starusers.org">http://www.d-starusers.org</a>
Echolink	<a href="http://www.echolink.org">http://www.echolink.org</a>

## Collin County Police & Fire Numbers

For all emergencies, call **911**

<u>City</u>	<u>Police</u>	<u>Fire</u>
Collin County Sheriff	972-547-5100	
Allen	214-509-4321	214-509-4321
Anna	911	972-924-2143
Blue Ridge	911	972-736-1310
Celina	911	972-382-2653
Fairview	911	972-562-0522 x225
Farmersville	911	972-782-6151
Frisco	972-335-5505	972-335-5525
Lowry Crossing	911	972-562-1141
Lucas	911	972-727-1242
McKinney	972-547-7600	972-547-7650
Melissa	911	972-837-1268
Murphy	972-468-2000	972-468-4343
Nevada	911	972-853-3166
Parker	911	972-442-6811 x211
Plano	972-424-5678	972-941-7159
Princeton	911	972-736-6668
Prosper	911	972-347-2424
Royse City	911	972-636-2091
Westminster	911	972-924-2626
Weston	911	972-382-2216
Wylie	972-442-8170	972-442-8110
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Fire department numbers from  
[http://www.co.collin.tx.us/fire\\_marshall/fire\\_departments/area\\_contacts.jsp](http://www.co.collin.tx.us/fire_marshall/fire_departments/area_contacts.jsp)  
 Police department numbers from city & county web sites

## CCARES Radio Nets

Collin County ARES Nets use **147.18 [+]** (Plano Amateur Radio Klub Repeater) as the primary frequency. When emergencies arise, the backup frequency is **146.74 [-]** (McKinney Repeater).

Emergency Nets are convened as needed, as determined by coordination with the National Weather Service and local Emergency Agencies. When a Net is in progress, the courtesy tone is set to the Morse letter "N" (-.). As is the case whenever you communicate via Amateur Radio, listen first to determine the nature of any communications or Nets already in progress before transmitting. It is not necessary to "kerchunk" the repeater. Listening for a short time will inform you of the status. If an Emergency Net is in progress, be sure to wait for the Net Control Station (NCS) to indicate the Condition of the Net, and the desired communications before transmitting. For information about Net Conditions, and other Storm Spotting information, refer to the "Spotter Information" page.

### Equipment Requirements

Persons participating in CCARES nets need to provide equipment capable of transmitting a clear, strong signal to the area repeaters, under adverse conditions, from the area in which they will be operating. Members are responsible for testing their equipment before participating in a net. Mobile users are expected to have a 2M (144MHz to 148MHz) radio with a minimum output of 25w, and a 5/8 wave antenna, on a good ground plane. Fixed Station users should plan on having similar hardware. Handy-Talkies (except with an amplifier) are generally not sufficient, for most nets.

Members are requested to run APRS when in a mobile net. APRS equipment should be tested and made operational outside a radio net. APRS operation should NOT BE DISCUSSED during the net, unless requested by the NCS station.

Members are requested to have a VHF Winlink email station for use at fixed locations. Where feasible, members may construct stations that provide both APRS and Winlink functionality to be used as appropriate.

### Net Alerts

Collin County ARES has several means of notifying members that a net is starting. On the 147.18 repeater we will send two sets of tones for 2-tone sequential pagers. The tone pairs are 330 Hz, then 349 Hz, followed by 634 Hz, then 707 Hz. Also, a long DTMF "A" tone will

sound for radios and pagers that respond to the "A" tone. The "A" tone is a combination of 697 Hz and 1633 Hz. Plans for "A" tone decoders are available from <http://www.qsl.net/wd4bis/atone.htm>.

We also use a paging scheme for pagers and mobile phones that can receive text messaging. In addition to Net in Progress, we attempt to alert members with these pagers of all weather watches or warnings for Collin County. Please be aware that this is done by amateur volunteers and is on a "best effort" basis, but we cannot guarantee that we will page out each and every alert. Pages delivered through cell phones have been known to be delayed.

**NOTE!** This service is for active Collin County ARES members only! If you are an active Collin County ARES member, have a pager and would like to take advantage of this, please complete the information in the ARES membership application. Paging is a manual process and relies on computer equipment and the Internet; therefore not fool-proof. An all-hazards alert radio is also recommended.

**“Lights Out” Paging Policy**

CCARES has adopted a “Lights Out” paging policy.

We will NOT Page between 10pm and 6am for:

- Severe Thunderstorm Watches
- Flash Flood Warnings

We will page 24 hours a day for:

- Severe Thunderstorm Warnings
- Tornado Watches
- Tornado Warnings

The repeater tags will be adjusted 24 hours a day to reflect the current condition of:

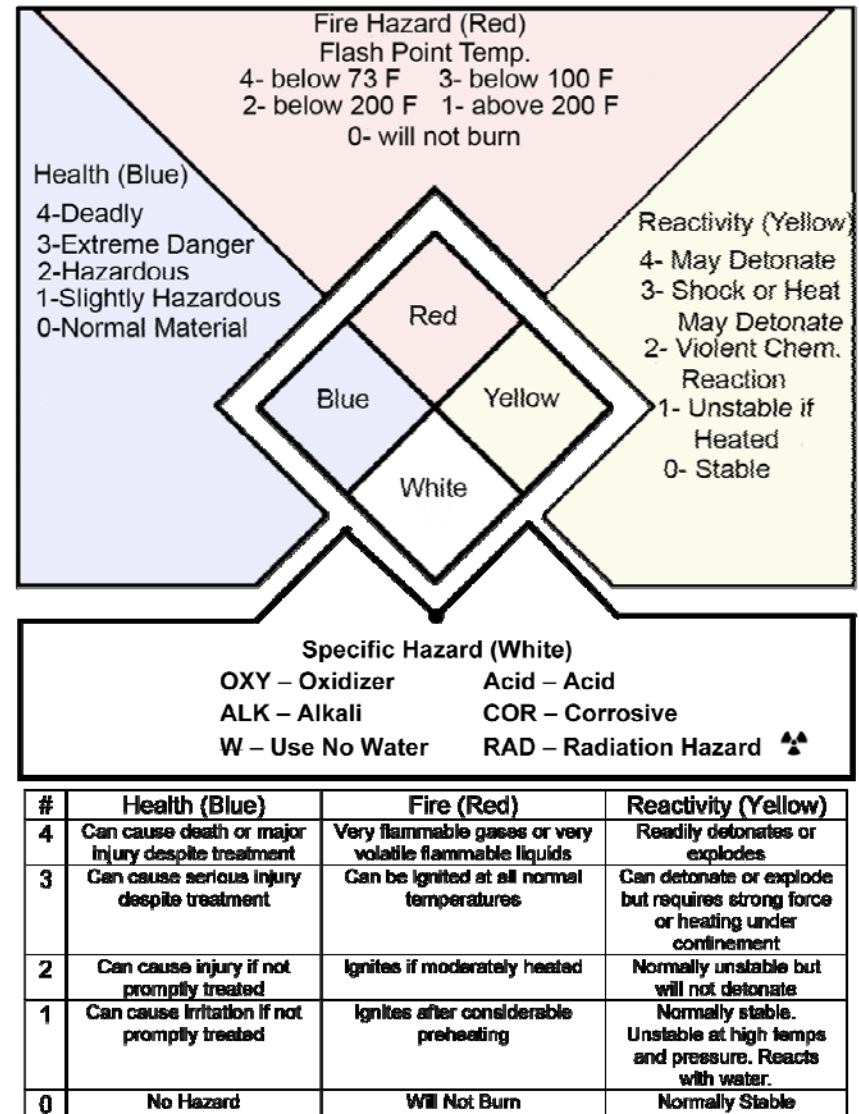
- Severe Thunderstorm and Tornado Watches (“A” Tag)
- Nets (“N”)
- Flash Flood Warnings (“F” Tag)

It is not feasible nor our practice to alert by specific areas of Collin County.

**Basic Radio Procedures**

- Controlled nets are under the direction of a Net Control Station (NCS). You ask to enter a net by transmitting your call sign. The

**NFPA Hazard Identification System**



Information Source: National Fire Protection Association web site. Only 2 symbols are authorized for the “White” quadrant. The “~~W~~” with horizontal “strikethrough” (Indicating unusual reactivity with water) and the “OX” (Oxidizer). The others shown may also be used. Bill Swanson - K5OBS 01/2009

# Heat Index Chart

		Air Temperature (F°)																	
		90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105		
Relative Humidity (%)	100	131	137	142															
	95	126	131	136	142														
	90	121	126	131	136	141													
	85	117	121	125	130	135	140	145											
	80	113	117	121	125	129	133	138	143										
	75	109	112	115	120	124	128	132	136	140	145								
	70	106	109	112	115	119	122	126	130	134	138	142							
	65	102	105	108	111	114	117	121	124	128	132	136	140	144					
	60	99	102	104	107	110	113	116	119	122	126	129	133	137	140	144			
	55	97	99	101	104	106	109	111	114	117	120	123	127	130	133	137	141		
50	94	96	98	100	103	105	107	110	113	115	118	121	124	127	130	134			
45	92	94	96	98	100	102	104	106	108	111	113	116	119	121	124	127			
40	90	92	94	95	99	99	101	103	105	107	109	111	114	116	119	121			
<b>HOT</b>																			
<b>← Effective (feels like) Temperature (F°) →</b>																			
<b>VERY HOT</b>																			

Source: NWS

Collin County ARES

K5OBS 01/2009

Net Control Station will recognize you and take your traffic as soon as possible.

- When you are operating in a controlled net, do not leave your radio unattended. If you must be away from your radio or leave the net, always notify Net Control. Check back into the net when you return.
- Always acknowledge calls to you as quickly as possible, even if only to say “stand by.”
- Use crisp, clear, factual transmissions. Think about what you want to say before transmitting. Remember that there are others monitoring your traffic.
- Speak in a calm steady manner. A hastily spoken message leads to misunderstanding or requests to be repeated.
- Leave a short pause after the previous finishes transmitting. This allows other stations to call in with emergency traffic.
- If you see an accident and have a phone, call 911.
- Do not use VOX on your radio.
- When using a microphone, speak across the mic, rather than into it. Speaking into a mic causes the sound of your breath to be transmitted.
- The manner in which you conduct yourself can leave a lasting impression.
- Last, but not least . . . LISTEN, LISTEN, LISTEN!

## Repeater Failure

In the event of a repeater failure, **STAY ON THE FREQUENCY!** The net control will work with stations capable of working the county on simplex on the output of the repeater to issue instructions on how to resume the net. There is not an automatic change to another frequency.

## Emergency Traffic

Only the pro words “break, break” will be recognized as a life threatening emergency at any time during the net. The NCS will give the station priority to pass the emergency information. All other communication should cease. Depending on the situation, the NCS may ask the reporting station to phone 911 by cell phone or may ask the station to give exact location of the emergency and then have the back-up NCS call 911. This is to be done only for a life-threatening emergency. Other situations such as power outages, lightning strikes on buildings, power lines down, etc, require that the reporting station or a designee call 911 to report the situation. Life threatening severe weather such as a tornado should be reported as a part of regular reporting, not as emergency traffic.

## SKYWARN™ Nets

SKYWARN nets serve the National Weather Service by providing real time ground truth related to hazardous weather events. Ground truth is defined as observations of hazardous weather precursors, elements, and their impacts, made by spotters, and used by the National Weather Service (NWS) to make warning decisions, supplement radar observations, and verify forecasts.

### Safety

Throughout any weather net, safety is a primary concern. The responsibility for a spotter's safety and property lies with each individual spotter. If at any time, a spotter feels unsafe because of approaching weather or any other condition, they are encouraged to move to safety and report their status to the NCS when practical.

- Spotters must think safety, especially at night, and plan escape routes should destructive weather move toward their location.
- Spotters are expected to obey all laws and avoid creating a safety hazard to other people.
- Mobile spotters are urged to avoid distractions such as computers and other devices while driving.
- A partner is strongly encouraged and recommended for mobile operations.
- It is recommended that spotters carry a cell phone to report situations that fall outside of net guidelines (for example, power lines down, lightning strikes, and automobile accidents.)
- Spotters must stay alert to unusual hazards such as slippery roads due to hail or flooded roadways after heavy rain.
- Flash flooding is extremely dangerous, and spotters are urged to never risk driving through water covering a roadway.
- Lightning is a deadly hazard, and mobile spotters should stay inside their vehicles as much as possible.
- APRS is not required to participate in a weather net, but spotters are asked to turn it on if available for safety reasons, and are encouraged to consider including it in their mobile equipment.

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## Wind Chill Chart

### New Wind Chill Effect Chart

Wind Speed (mph)	Actual Thermometer reading (°F)											Time to Frostbite 30 min.	
	40	35	30	25	20	15	10	5	0	-5	-10		-15
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57

Wind speeds greater than 40 mph have little added effect.

Collin County ARES

Source: NWS new wind chill formula.

N5TIM 11/01

## Radio Equipment Checklist for Standard Resource Functions

### **Resource CRF- S - Shadow Kit**

2-meter HT  
2-meter magmount antenna  
2x 25ft coax  
Ear phone, external speaker  
Extra batteries  
Battery chargers  
Audio patch cords

### **Resource CRF- M – Mobile Kit**

2-meter mobile radio & mic  
2-meter magmount, antenna  
1x 25ft coax extension  
RF adapters  
Headphones, external speaker  
Audio patch cords  
RF Connectors  
Batteries, chargers  
GPS receiver would be handy!

### **Resource CRF- DA & DM**

2-meter mobile radio  
Laptop w configured software  
TNC or equivalent  
20 ft portable mast  
Guy wires & tripod  
Base antenna (j-pole or other)  
2x 25ft coax, 2x 50ft coax  
Headphones, external speaker  
Audio patch cords  
RF Connectors  
Batteries / generator  
Power supply  
12v DC to 120v AC converter

### **Resource CRF- B - Base Kit**

2-meter mobile radio  
20 ft portable mast  
Guy wires & tripod  
Base antenna (j-pole or other)  
2x 25ft coax, 2x 50ft coax  
Headphones, external speaker  
Audio patch cords  
RF Connectors  
Batteries / generator  
Power supply  
Fluorescent or LED desk lamp

### **Resource CRF- H – HF**

HF radio for 20, 40, 80 meters  
20 ft portable mast  
Guy wires & tripod  
Standard antennas  
NVIS antenna  
2x 25ft coax  
2x 50ft coax  
Headphones, external speaker  
Audio patch cords  
RF Connectors  
Batteries / generator  
Power supply  
Fluorescent or LED desk lamp

### **Resource CRF- DT**

2-meter mobile radio & mic  
2-meter magmount, antenna  
TNC, Tinytracker or equivalent  
GPS receiver  
GPS to TNC cables  
TNC to Radio cables  
1x 25ft coax extension  
RF adapters  
Batteries, chargers

## Three Stage System Leading to a Weather Net

The severe weather forecast system often, but not always, will progress through a three stage process leading up to a severe weather event. The three stages and their approximate lead times before the event are: outlook (6-72 hours), watch (2-6 hours), and warning (0-1 hour). In each stage, spotters should increase their state of readiness.

**Outlook stage:** Severe weather is in the Storm Prediction Center (SPC) Convective Outlooks or NWS Hazardous Weather Outlook. Spotters should be aware of these statements and should prepare radio equipment, batteries, and ready kits. Spotters should listen for updates including the NWS Hazardous Weather Outlook and watch issuance. In some cases, information will be sent via the Collin County ARES email reflector or updates will be communicated on the repeater.

**Watch Stage:** SPC issues a weather watch box that includes Collin County. The NCS-on-call sets the “A” (Morse dit dah) alert tag on the repeater. Spotters should make final personal preparations for a net and be sure that pagers are turned on to receive activation messages. When severe weather is imminent, likely to move into the county, or activation is requested by the NWS, the NCS changes repeater tone to “N” tag, and initiates the net.

**Warning stage:** A weather net is activated on the primary repeater frequency, **147.18 [+]** **PL 107.2** and indicated by the “N” tag (dah dit) on the repeater. Spotters should listen and follow the instructions of the NCS. The NCS will position spotters and direct the net through a series of “conditions” as detailed below. The watch and warning stages are the most active and are detailed in the following sections.

Because of the uncertainties in weather, not all severe weather events will fit into these guidelines. It is possible, for example, for a severe storm to develop rapidly within the county before any watch or warning has been issued and that spotter reports actually initiate the warning. When necessary, the NCS shows the best adaptability possible to meet the needs of the situation, keeping in mind that the purpose of the net is to pass accurate and relevant ground truth observations to the NWS.



## Ready Kits

Each member of an ARES organization must always consider that he or she will be asked to take a field assignment providing communication as a part of an emergency service response. In order to respond as quickly as possible, it is important to have a “Ready Kit”. Your ready kit should contain all necessary equipment to operate your radio station and to support yourself for assignments up to 72 hours in duration. (*96 hour kits are now being recommended.*)

**Power** – Your radio 72-hour kit should have several sources of power in it, with extra battery packs and an alkaline battery pack for your HT. For mobile VHF and UHF radios, larger batteries are needed. Gel-cell or deep cycle marine batteries would be good sources of battery power. You must keep them charged and ready to go. Have more battery capacity than you think you might need. Have several methods available to connect your radios to different power sources.

It is also wise to have alternative means available to charge your batteries during the emergency. You can charge smaller batteries from other larger batteries. You can build a solar charging device. If you have access to an electrical generator, be sure to have enough fuel to keep it running when you need it.

**Antennas & Coax** – You can expect to need some kind of gain antenna for your HT, as well as an additional gain antenna that can be used on either your HT or your mobile rig. The extra antenna might be needed by someone else, or your first antenna might break. For VHF and UHF, you can build a J-pole from a TV twin lead, for an inexpensive and very compact antenna. Have several lengths of coax in your kit, totaling at least 50 feet and with barrel connectors to connect the lengths together.

**Personal** – Include staples: water, or a reliable water filtration and purification system; enough food for three days, eating utensils, a drinking cup and, if needed, a means of cooking your food. You will also need any prescription medications, spare eyeglasses, hearing aids and other personal items you might need. You should plan on having shelter and sleeping gear. Here you are only limited by the size of your kit and the thickness of your wallet. At a minimum you should plan on having a tent and sleeping bag.

Light is vitally important if you need to work at night. Make sure that you have several light sources available that will provide you with this ability. All sorts of battery-power are available and propane or gasoline fueled lanterns are also good possibilities.

be used for managing the positioning of spotters. It may, for example, be used to help locate a spotter who is not responding to calls from the NCS. APRS is not required to participate in a net and spotters are asked to refrain from requesting APRS signal checks during a net.

As the net progresses and more spotter reports are made, the NCS must strike a balance between taking reports and checking in spotters for good coverage. There may be a time when the NCS chooses to stop check-ins to keep up with weather reports. It is important for spotters to remember that their presence is appreciated, even if they do not have a report or cannot check-in, and that they will be given an opportunity to be recognized by the NCS before the net shuts down.

## Positioning of Spotters

During the course of a net, the NCS may establish spotter positions. Spotter positions are by the location and expected movement of storms. A common practice is the formation of two “picket lines” perpendicular to the storm movement. A general west to east movement, for example, would call for a north-south line of spotters along Preston Road, and another along US Hwy. 75.

As the storm progresses, another line may be positioned along SH 78. Spotters are asked to maintain their position unless there is a safety threat, or until the storms have completely passed. The NCS will direct the net and call for stations to check out at the appropriate time.

## Reporting Criteria

The NCS will establish and periodically update reporting criteria for each situation. It is very important for to understand these criteria. Spotters are urged to listen carefully and make **reports only within those criteria**. The Spotter location should be reported as a major road or highway intersection along with the city (“Preston Road and FM 720 in Frisco”). CCARES does not use Mapsco or other like reference. Below is a guide to help format your report.

### Hail

- Your time and location.
- Diameter in inches, or similar object? (Do not use quarters)
- Estimated or measured?
- Duration of hail fall?

(continued)

**Wall Clouds**

- Your time and location.
- Direction, and distance to the wall cloud.
- Is it persistent (period of minutes) and organized?
- Is there organized, persistent rotation?
- Is there a funnel?
- Is there a visible clear slot?

**Tornado**

- Your time and location.
- Direction, and distance to the tornado.
- Is there a visible condensation funnel connected to cloud base?
- Is airborne debris visible near the ground?
- Are there consistent ground flashes not associated with lightning (night)?
- (Remember, not all power flashes are associated with tornadoes.)

**Wind**

- Your time and location.
- Speed in miles per hour?
- Estimated or measured?
- Direction From?
- Inflow or Outflow?
- Damage Observed?

**Flash Flooding (to be reportable, water must cover the road)**

- Your time and location.
- The road and closest intersection affected.
- Is water covering the entire road (not just covering curb)?
- Is the water visually flowing?
- Are there people, cars, homes, or buildings affected?

**Reporting Example:**

**Spotter:** Net control, KD5JEO.

**NCS:** KD5JEO, Net Control, go ahead.

**Spotter:** I am near the intersection of Highways 289 and 380 in Prosper. I have a wall cloud approximately 3 miles to my northwest. It appears well organized with visible rotation and there is a visible clear slot. KD5JEO.

**NCS:** Thank you. This is N5BYL, Net Control, taking the net to Condition 2. We are focusing our attention on a wall cloud near Prosper. Do I have any other stations that can verify? All other stations, please stand by.

**CRF- DA (Digital - APRS)**

This resource function provides an APRS station capable of viewing local APRS stations. The operator will provide a VHF radio capable of transmitting and receiving APRS traffic, a TNC or equivalent and a laptop with configured APRS software with Collin County maps. The operator will place the radio, TNC & laptop in a building, run coax, install an antenna and provide power to the radio for a 72 hour shift.

**CRF- DM (Digital – Messaging)**

This resource function provides radio email service. In Collin County, this is done over Winlink. The operator will provide a VHF radio capable of transmitting and receiving Winlink traffic, a TNC or equivalent and a laptop with configured Winlink software. The operator will need to be able to place the radio, TNC & laptop in a building, run coax, install an antenna and provide power to the radio for a 72 hour shift.

**CRF- DT (Digital – APRS Tracker)**

This resource function provides an APRS tracker that can be placed in a vehicle other than their own. The operator may be required to put a tracker in a police car, fire truck or other vehicle. The operator will need to provide the radio, antenna, coax and power sufficient for a 72 hour shift.

**CRF- DN (Digital – Networking)**

This resource function provides a way to extend internet access into a remote location. This may include 802.11 bridging, commercial internet service or D-Star high speed data. The operator will be required to install, configure and connect all equipment to provide internet service to a fixed location with one or more computers. The operator will have to have the equipment and training to be flexible in how this is done.

**CRF- D\_HF (Digital – HF)**

This resource function provides an HF radio capable of transmitting digital messages. In Collin County, digital messages will be transmitted using Winlink, though Pactor operation may be beneficial. The operator will need to be able to place the radio in a building, run coax, install regular and NVIS antennas and provide power to the radio for a 72 hour shift, and provide a laptop with configured software.

*If a D-Star digital voice and/or data transceiver is requested in a CFR, that CFR is ordered as a Type III.*

*For detailed Communications Resource Functions descriptions, see the "Resource Types" document in the "Downloads" section on the CCARES web page. (<http://www.collinares.net>)*

## Resource Types

When an incident has occurred, a staging site may be activated. The staging site prepares to take requests from our served agencies for volunteers to provide specific communications services. In practice, every volunteer will have different equipment and may not be able to provide every needed service. Resource Functions provide staging with a high level view of what type of assignment you can serve. It is very important for each CCARES member to understand the Resource Functions and be able to tell staging what resource function you can provide.

### Common Requirements

All volunteers should have a basic 72/96 hour kit, with record keeping materials. Please see the "Ready Kit" section for details.

### Communications Resource Functions (CRF):

#### ***CRF- S (Shadow Operations)***

This resource function acts as a foot mobile station, while shadowing an event or incident official. The operator should be physically capable of performing the duty and have portable battery power for a 72 hour shift.

#### ***CRF- B (Base / Rest Stop / Shelter / NCS)***

This resource function provides VHF at a fixed location. The operator must be able to put a radio in a building, run coax, install a base antenna and provide power for a 72 hour shift.

#### ***CRF- M (Mobile / SAG)***

This resource function provides a VHF radio that can be placed in a vehicle other than their own. The operator may be required to put a VHF radio in a police car, fire truck or other vehicle. The operator will need to provide the radio, antenna, coax and power sufficient for a 72 hour shift.

#### ***CRF- O (Operator)***

This resource function serves that of an operator using pre-deployed equipment. Operator should be familiar with the equipment/software.

#### ***CRF- H (HF / Regional / Strategic Communications)***

This resource function provides an HF radio capable of operating on 20, 40 and 80 meters. The operator will need to be able to place the radio in a building, run coax, install regular and NVIS antennas and provide power to the radio for a 72 hour shift.

## Flash Flood Warnings

A special class of weather warning that will occasionally affect the county is the Flash Flood Warning. The Flash Flood Warning is issued by the NWS when a rapid and life-threatening water rise is occurring or imminent. This is not to be confused with other flood statements which indicate a longer term potential or extended hazard. When a Flash Flood Warning is issued for the county, a Morse code "F" (di-di-dah-dit) tag is activated on the repeater to alert all amateur radio operators that a flood hazard exists. These may occur during heavy rain events or during severe weather events in which torrential rain has fallen over a small area in short period of time.

Although spotters are normally not sent to observe flash flooding, they are encouraged to make reports if they see life-threatening floods occurring, such as moving water over a road. If there is no organized net or NCS available, spotters should alert local law enforcement, if barricades or personnel are not already on site. Flash flooding is extremely dangerous, and spotters are urged to never risk driving through water covering a roadway.

### Net Check-Out

All spotters are asked to make every effort to monitor the net until the NCS permits check-outs. This will permit an accounting of all spotters in the event that a spotter has lost communications and needs help.

### Post-Net Reports

Some spotters may have reports of significant weather or damage that did not fit the minimum reporting criteria at the time it occurred. Spotters are encouraged to make a note of the observation time and description and then pass this information to the NCS when the net moves back to condition 4.

### NWS Position Regarding Severe Weather

Effective January 4<sup>th</sup>, 2010, the National Weather Service nationwide has adopted the following criteria for issuing Severe Thunderstorm Warnings:

1" Hail (Quarter Size) and 55 mph wind

## Other Types of Nets

When needed, CCARES may run nets other than SKYWARN. Nets associated with emergency response will be either staging nets or resource nets and will be run in Condition 1. Condition 1 exists at a time when a major disaster has occurred. The most extreme form of net discipline is required at this time. *Only the highest priority traffic or transmissions will occur.* Information being handled will fit either immediate, emergency or priority classifications.

The descriptions below are for guidelines purposes. It is possible that certain situations may require the handling of various Net Conditions in a manner that do not exactly fit these descriptions.

### Tactical Nets (Operations Net)

The tactical net should always be used and is the working net. The size and nature of the event determine the net structure and types of nets needed. Traffic can range from requesting additional supplies to locating a lost child to request medical help. This net is used to move information and coordinate field unit activities.

Tactical nets are the primary coordination nets for public service or emergency events. They will be directed nets, using tactical calls, restricted to traffic for the event/incident only. The NCS has absolute control over this net.

Types of traffic you might hear on this net would be emergency traffic, message handling, coordination, situation reporting, and informal tactical communications. Traffic logging may generally be informal although some messages will be formal (written).

The tactical net control operator will announce the operation of the resource net and direct volunteer operators to that frequency.

In situations when the event is very large and radio traffic escalates beyond the capabilities of the Tactical net, additional nets may be added. In some cases additional nets may be preplanned to anticipate the needs of the event, incident, or emergency.

Tactical calls may be often be used during this type of net. This allows contact to a function without knowing the FCC call sign of that operator. Example: *“McKinney POD, this is County EOC”*. Pass your traffic and once traffic is completed and at least once per a 10 minute period, identify using your FCC issued amateur radio call sign.

## APRS

APRS is not required to participate in weather nets, but spotters are asked to turn it on if available. CCARES will use APRS at the discretion of an NCS to help manage the position of spotters. Members are encouraged to consider developing equipment that can perform both APRS and Winlink functions (not necessarily at the same time).

For safety reasons, CCARES discourages net participants from using a laptop in their vehicles during nets.

The D/FW area contains a heavy concentration of APRS users. In order to keep the system from being overloaded, all APRS users are requested to use the following settings:

### Frequency

144.390 MHz (National standard)

144.340 MHz (Alternative in portions of DFW for public service events)

### SSID

Your call sign followed by a dash and a number from 1-15.

### Beacon Rates

- Mobile stations - No less than 3 minutes
- Home stations - 20 minutes
- Weather stations - 5 minutes

### Path (for mobile stations in the D/FW Metroplex)

- “WIDE1-1,WIDE2-1”

### Path (for fixed / weather stations in the D/FW Metroplex)

- Use the call of your nearest digipeater

### Beacon Message

- Use your email address so you can be contacted if there is a problem with your station.

### For more information

Various resources are available for APRS users in the D/FW area.

[http://groups.yahoo.com/group/ntx\\_aprs\\_ug/](http://groups.yahoo.com/group/ntx_aprs_ug/)

<http://www.dfwaprs.net/>

## D-STAR

D-Star is a radio system developed by the Japanese government which offers digital voice and data communication. Connectivity is obtained via repeater sites over microwave links and the Internet forming a wide area amateur radio network. It offers new capability and functionality to amateur radio and increases the efficiency of emergency communications.

## Winlink

### Purpose

Collin County ARES has chosen to adopt Winlink 2000 as an additional tool for handling emergency traffic in our area. The system will supplement, but not replace, the reliable voice links that CCARES uses to serve agencies during times of need.

### Benefits

For many years the National Traffic System has served as a means to handle and pass emergency traffic through disaster areas. Elaborate formatting is used to ensure accurate voice and CW traffic handling. This system has served the amateur community well and still will be in place for years to come.

Winlink 2000 enhances the ability to pass traffic in and out of disaster areas because of the inherent accuracy and record keeping features of email. Because it works with written text, it allows messages with long lists or complex, technical words to be passed reliably, with less time needed to verify and reduced chance of transcription error.

### History

Winlink 2000, which has been in development since the 1980's, has long provided users to send messages from remote locations. Over time, Winlink was modified to transport messages directly to the internet as email. Originally developed for use over HF, recent adaptations for VHF and UHF packet allow the system to be used for "last mile communication" needed in times of emergency when normal means of communication are interrupted or overloaded.

The VHF/UHF version of the system allows for common email clients to be used to pass traffic via amateur radio RF links to RMS Packet nodes, which act as gateways to the internet, where common email servers can provide forwarding and recording services required by the user. Winlink also provides for local traffic handling in spite of local internet outages.

If you wish to learn more about how we are using Winlink 2000 and get your equipment configured to be able to use the Collin County ARES Winlink system, please contact Bruce Dingman N5BYL at: n5byl@arrl.net.

## Resource Nets (Logistics Net)

The resource net is the primary supply net for public service or emergency events. NCS for the resource net works directly with the staging area manager. The resource net will be a directed net using FCC issued calls, normally restricted to traffic pertaining to the event/incident. All traffic goes through the NCS.

The resource net is to handle non immediate response activities, acquire volunteers and equipment, accept work requests, make work assignments, and conduct situation briefings.

The NCS will ask for specific people/equipment from the resource pool, as they are needed and make requested assignments. If needed, directions to the staging area will be given by the NCS. The resource net is also used as a check-in point before the assigned responder leaves for his/her assignment and check-out when assignment is completed.

Accepts logistic requests from the tactical net and reports completions as requested. Traffic logging with formal (written) messages is generally the norm on the resource net.

Resource nets are created to fulfill specific communications needs. For instance, a major tornadic disaster might require the creation of multiple resource nets, including:

- A County EOC Net
- A Fire / Rescue Net
- A Red Cross Net
- An NTS Net

All of these nets would communicate with the main staging net through liaison stations, whereas deploying operators where and as needed.

## Staging Nets

A staging net is used to manage volunteers responding to disaster. A Staging net may be composed of one or more nets, including

- Intake Net - Where volunteers receive talk-in
- Staging Net - To pass information to volunteers on-site
- Dispatch Net - To handle requests from resource nets

## Training Nets

In addition, CCARES holds Training Nets three times per month:

- 1<sup>st</sup> and 3<sup>rd</sup> Sundays at 2100 CT . . . . . **147.18 [+]** PL 107.2
- 2<sup>nd</sup> Sunday each month at 2100 CT . . . . . **146.74 [-]** PL 110.9

\*\*Nets may be cancelled due to special events or holidays.

## Estimating Wind Speed

Wind Speed (mph)	Effect
< 1	CALM: SMOKE RISES VERTICALLY
1 - 3	DIRECTION OF WIND SHOWN BY SMOKE DRIFT BUT NOT BY WIND VANE
4 - 7	WIND FELT ON FACE; LEAVES RUSTLE; ORDINARY VANE MOVED BY WIND
9 - 12	MOTION; WIND EXTENDS LIGHT FLAG. LEAVES AND SMALL TWIGS MOVED
13 - 18	RAISES DUST; LOOSE PAPER; SMALL BRANCHES ARE MOVED
19 - 24	SMALL TREES IN LEAF BEGIN TO SWAY; CRESTED WAVELETS FORM ON INLAND WATER
25 - 31	LARGE BRANCHES IN MOTION; WHISTLING HEARD IN TELEPHONE WIRES; UMBRELLAS USED WITH DIFFICULTY.
32 - 38	WHOLE TREES IN MOTION; INCONVENIENCE FELT WALKING AGAINST WIND
39 - 54	TWIGS BREAK OFF TREES; WIND GENERALLY IMPEDES PROGRESS
55 - 72	DAMAGE TO CHIMNEYS AND TV ANTENNA; PUSHES OVER SHALLOW ROOTED TREES
73 - 112	PEELS SURFACE OFF ROOFS; WINDOWS BROKEN; LIGHT TRAILER HOUSES PUSHED OR OVERTURNED; MOVING AUTOMOBILES PUSHED OFF ROADS

## Anderson Powerpole Connectors

Housings should be mated per the diagram below. Viewed from the contact side (opposite the wire side), tongue down, hood up, RED on the LEFT, BLACK on the RIGHT. Use of roll pin to lock housings together is not recommended. Roll pins have a tendency to fall out with use. Use a small amount of super glue quick set adhesive.

Powerpole configuration  
15/30/45 amp Modular Housing  
Red= + Black= -



Black this side

Housing accommodates 15, 30 or 45 Amp contacts.  
15 Amp contacts accommodate 16 AWG or smaller wire.  
30 Amp contacts accommodate 16 to 12 AWG wire.  
45 Amp contacts accommodate 14 to 10 AWG wire.

Wire size (AWG)	Current Capacity (amps)
20	5
18	8
16	12
14	18
12	24
10	40

Note: For runs over 15 feet, choose the next wire size if current at maximum for wire size.

### Where to get them

Locally, Anderson Powerpoles are available from hobby shops that sell remote control models. On the web, Powerpoles and accessories are available from stores including:

- <http://www.powerwerx.com>
- <http://www.dcpwr.com>
- <http://www.cablexperts.com>
- <http://www.westmountainradio.com>
- <http://www.mfjenterprises.com>

## Equipment Standards

### Standardized RF & Audio Connectors

Audio

1/8" Mono

Coax Cables HF to 70cm

PL-259

Radio RF Connectors HF to 70cm

SO-239

Coax Cables 70cm and above

N-Male

Radio RF Connectors 70cm and above

N-Female

### Winlink & APRS Equipment

CCARES recommends that users who use Winlink and APRS use a general purpose TNC such as a Kantronics KPC-3, TNC-X or PacComm Tiny-2. Optionally, a PC with a sound card based TNC (such as AGWPE) can be used instead of a hardware TNC. This will allow users to switch between Winlink and APRS operation as needed.

### Standardized Power Connectors

Manufacturer installed "T" connectors should not be removed from VHF or VHF/UHF mobile transceivers. This may adversely affect the units' value. Standardized Anderson Powerpoles should be installed at the power cord to DC power source interface. This allows for maximum flexibility in radio, power and extension cord options. Both legs of the power cord should be fused.

## Estimating Hail Diameter

Actual Size

Pea – 1/4"	Nickel – 7/8"	Ping-Pong – 1 1/2"	Baseball – 2 3/4"
Marble – 1/2"	Quarter – 1"	Golf Ball – 1 3/4"	Grapefruit – 4"
Penny/Dime - 3/4"	Half-Dollar – 1 1/4"	Tennis Ball – 2 1/2"	Softball – 4 1/2"

