

Field Day Primer

Second Edition

Adapted by John Langridge, KB5NJD, from the Nashua Area Radio Club, N1FD, Field Day Primer

Forward

For over two decades the Southwest Dallas County ARC has participated in the American Radio Relay League's Field Day. The club has been consistently among the top scoring clubs in the North Texas Section and placed first in the 3A commercial class in 2004 and 2nd in 2003. In 2005, the club placed 5th overall in 3A and top 3A in the West Gulf division as well as first overall in North Texas.

The Field Day Primer was first published in 2005 with two objectives in mind:

1. To provide an introduction to Field Day for those who have not been involved in past Field Days, and
2. To serve as a guide to Field Day participants (in the hope that we could move up in the overall standings).

This, the second edition of the Primer, has been revised somewhat to include some additional information.

The author, as usual, would appreciate any constructive comments for improvement or suggestions for additional topics to be included when and if subsequent editions are prepared.

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1. What is Field Day?

Field Day is a competitive event sponsored by the American Radio Relay League (ARRL). The objective is for participating individuals and organizations to:

1. Go to a location where there is normally no communications capability.
2. Create one.
3. Contact as many stations as possible during the operating period.
4. Tear the site down, and pack it away for a real emergency.

Stations can be contacted on any or all of the amateur bands (except for the 10, 18 and 24 MHz "WARC" bands) during the 27-hour operating period (1800 UTC Saturday through 2100 UTC Sunday). There are limitations on how much of the 27 hour period may be used depending upon when station setup is begun. Field Day is normally conducted on the **fourth full weekend** in June of each year. This is usually, but not always, the last full weekend.

Competition is open to all United States and Canadian amateurs, including the Yukon and Northwest Territories. Foreign amateur stations may be contacted for credit, but they are not eligible to compete.

Emphasis is placed on learning to operate under simulated emergency conditions and acquainting the public with amateur radio. The scoring structure provides bonus points to prevent the die-hard Contesters from ignoring the public and emergency preparedness aspects of the event.

2. How is the SWDCARC involved?

The SWDCARC conducts Field Day as a multipurpose event. It provides an opportunity to expose the general public to amateur radio. It is ***the*** major social event of the year for the club. It provides an opportunity for "friendly" competition with other ARRL affiliated clubs throughout the country. And it provides an opportunity for learning new skills related to station setup and operating, especially under adverse or emergency conditions.

The club's Field Day activity is publicized in the local media to alert the general public to the event and its location. Club members conduct informal tours of the operating stations and answer questions regarding the Field Day operation and ham radio for non-ham visitors.

Socializing competes heavily with the actual Field Day related operating activities. The Saturday evening meal is a large-scale event that draws additional club members and guests to the site for a family outing.

The SWDCARC participates in "Class A," (one of several categories of competition) which is for club and non-club portable operation. In this class,

stations must be set up at locations that are not regular station locations. Additionally, use of facilities or structures permanently installed for Field Day are prohibited.

In recent years, the club field day site has been located at Valley Ridge Park in the Lake Ridge addition of Cedar Hill, Texas. Beginning at 1400 UTC on the Saturday of the Field Day operating period, club members transform the grassy soccer and football fields into an antenna field. There are 75-foot Light standards that are used to support wire antennas for the CW, 3rd station, and GOTA station. The SSB station will be erecting a trailer based 48-foot tower with a Hygain TH-3 Jr. triband Yagi. Additional wire antennas will also be erected for 80 and 40 meters using the tower as part of the support. The transformation is typically complete by the time the operating period begins.

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In addition to tower erection, antenna installation, and shelter (tents/camping trailers) setup for stations; setup involves major logistics facilities, power and food. The club's own power distribution team sets up electrical power generation facilities and runs distribution wiring to all of the operating locations. A field kitchen area is set up in the pavilion where meals are prepared and served. Sanitary facilities are in the same pavilion complex.

3. **Preparation.**

Preparations for Field Day actually begin, each year, about three to four months before the event. A series of planning meetings are conducted by the volunteer Field Day chairman. No one individual could possibly handle all of the arrangements necessary to pull off a successful Field Day on the scale of the SWDCARC. Other volunteers assume the responsibility for various areas of preparation. These areas include Power generation, the kitchen, and each of the operating stations planned for service during Field Day. The planning meetings provide a forum to report on progress, discuss problems encountered and sharing ideas for improving club performance.

1. ***The Station Boss.***

Early in the planning stage, one individual assumes the responsibility as "Station Boss" for each station that will be operating during Field Day. Typically, there will be a boss for each mode/station planned for use. In some cases, such as "VHF," one individual may assume the responsibility for several bands and/or modes.

As the title implies, the Station Boss is the "Boss" of a station; with the responsibility of ensuring that all required equipment, supplies, and immediate area facilities are available and operational at the start of the operating period. Further, the Station Boss must arrange for primary and relief operators needed to maintain operations during the full 24-hour operating period.

The SWDCARC owns and provides many of the major items needed to set up the stations. Towers, guy wire, many (but not all) of the needed HF antennas, generator, and coaxial cable needed to put stations on the air on both modes (SSB and CW) are available from club assets or members personal equipment. The Station Boss should verify the availability and condition of an antenna and coaxial cable for his particular station. Power distribution team only guarantees to provide power so be prepared to bring an extension cord.

2. ***Computer logging.***

The SWDCARC uses computer logging for all of the high volume stations. In addition to making the job of logging much easier during the contest, it makes the post-contest job of score calculation and double checking for duplicate contacts much easier. Before computer logging, dupe checking and scoring took weeks of effort by several people. Since all logs are computerized using the same logging software, the merging of logs, duping, and preparing the formal entry is accomplished in a matter of a few hours by one person.

The preferred computer type for Field Day is a desktop with external monitor. The software is DOS based and runs from a floppy disk, rather than from the HD.

3. ***Electromagnetic Interference.***

Minimizing interference between many stations operating simultaneously within such a small geographic area (all stations must be within a 1000 foot diameter circle) is a major technical challenge. There are many things that must be considered to keep the interference level down to a point that other stations can be heard and contacted. Selection of transceivers and antennas, location of towers, orientation of antennas, assignment of stations to towers, all must be considered. Even with power being limited to the 100-watt class, as we do, interference can be a serious and frustrating problem in a multi-transmitter environment. Locations for the towers, assignment of stations to the several towers and orientation of antennas have been optimized empirically based on experience at the site.

Use of transceivers that exhibit a minimum of transmitter "phase noise" is very important. Transmitters with high phase noise broadcast broadband noise across large sections of the spectrum that cannot be filtered out by nearby receivers. Even though the transmitters may comply with FCC requirements, the small distances involved at the Field Day site can result in locally generated noise being much higher than the signal level of the stations that are being worked. There are several models of solid state, synthesized transceivers that are notorious for their phase noise. Newer

transceivers have been improved as this type of problem has become more well known.

On the receiver side, transceivers with a “bullet proof” front end are essential. With the potential for more than a dozen transmitters being on the air at the same time that one station is trying to hear a weak signal, the receiver must be able to tolerate very high “out of band” RF levels without generating (internally) unacceptable intermodulation products. Certainly the preferred complement of transceivers would be in the classes of the Kenwood 870 or IC-775. To minimize internal receiver intermodulation, receiver RF amplifiers (preamplifier) should be switched **OFF**. If the receiver has a built in, selectable attenuator; try adding 10 dB of attenuation while watching the receiver’s S-meter. If the S-meter reading drops more than 10 dB when the attenuator is switched in, the receiver front end is “overloaded,” and you will probably be able to copy stations (even weak ones) with the attenuator.

By the way... unless that fluorescent desk lamp that you’re thinking about using has been proven to be “quiet”, leave it home and grab an incandescent table lamp!

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4. **Operating.**

As stated previously, the object during Field Day operation is to log valid contacts with as many other stations as possible during the allowed operating period. A valid contact requires exchanging call signs and additional information consisting of the station’s operating class and their ARRL/Canadian section.

The class is composed of a number and a letter. The number signifies the total number of transmitters operated. Over ninety-eight percent of Field Day operations use between 1 and 6 stations, with the higher numbers rarely heard. Less than one half of one percent operates in the double-digit categories. Prior to 1998 you were allowed one phone and one CW (or digital) station per amateur band. Beginning in 1998, the digital modes are allowed as a separate mode. This raised the maximum number from 46 to 69. The letter (A, B, C, D, E or F) signifies the type of operation. “A” is a club or group of 3 or more amateurs operating portable with emergency power (generator, battery, etc.). One or two people operating portable with emergency power use “B”. Class A and B stations have a subcategory, Battery, where operation is QRP (less than 5 Watts) and entirely from batteries. Mobile stations use “C”. Home stations operating from their normal commercial power source use “D”. “E” is a home station operating with emergency power. Class “F” is an amateur radio station at an established Emergency Operations Center (EOC) activated by a club or non-club group. This list can be found in the operating aids included in the Primer.

The class in which the SWDCARC will operate during the 2005 Field Day will be determined a few weeks before the event. Prior to 2004, the club operated 2A. In 2004, a 3rd station was added with the primary purpose of digital modes and a secondary purpose of niche operating.

For the purposes of the example exchanges that follow, 3 Alpha is used for the club, and 2 Alpha is used for the other station (AB4NC).

The section follows the class information, which for the SWDCARC's operation is "North Texas" or "NTX". Many states have more than one ARRL section, so it is a good idea to have a list of the sections and their common abbreviations handy at the operating position. This information, along with a complete list of the ARRL/CRRL sections and definitions of the Field Day operating classes is also included in the operating aids.

1. *Typical Contacts.*

Phone. On phone, in response to hearing another stations "CQ," you respond with the full call sign (W5AUY) being used by the club for Field Day. If the station you call hears you, he will respond giving your call sign and his exchange information. You enter the information in the log and respond with your exchange information including call sign. On CW, the process is the same. A typical "search and pounce" contact would go as follows:

	Phone	CW
He calls	CQ Field Day Alpha Bravo Four November Charlie	CQ CQ FD de AB4NC
You would respond	Whiskey Five Alpha Uniform Yankee	W5AUY
He answers with	W5AUY Two Alpha North Carolina	W5AUY 2A NC
You complete your part with	Three-Alpha North Texas W5AUY	3A NTX W5AUY
He confirms and moves on...	Roger, QRZ Alpha Bravo Four November Charlie	"TU QRZ AB4NC" or "TU AB4NC"

When "running" a frequency (staying on the same frequency and calling CQ), roles are reversed from the above and would go like this:

	Phone	CW
You make a general call	CQ Field Day, CQ Field Day Whiskey Five Alpha Uniform Yankee	CQ FD W5AUY
You listen...and hear	W5AUY here is Alpha Bravo Four November Charlie	AB4NC

You respond	Alpha Bravo Four November Charlie Three-Alpha North Texas	AB4NC 3A NTX
He answers	"Two Alpha North Carolina" or "Two Alpha North Carolina AA4NC"	"2A NC" or "2A NC AB4NC"
You confirm and move on	Roger, QRZ Whiskey Five Alpha Uniform Yankee	TU W5AUY
You listen, and if no one answers, repeat	CQ Field Day, CQ Field Day Whiskey Five Alpha Uniform Yankee	CQ FD W5AUY

2. Operating Tips.

To maximize the number of contacts, there are several practices that should be followed.

Call CQ. Most of the participating Field Day stations will be "casual" operations whose goal may be to work their last needed state for Worked All States or 5-Band Worked All States. These stations will not be calling CQ! They will be tuning the bands "searching and pouncing" on stations that they need to achieve their individual goals. The **ONLY** way to log a contact with one of these stations is to keep "W5AUY" on the air to be heard and called by them.

Keep your calls and listening periods short. Don't make stations wait for you to end a long-winded "CQ." Give them frequent opportunities to call you. Similarly, allow enough time for someone to begin a response before calling again, but don't wait longer than necessary. Timing this properly takes some practice. On CW, using QSK if available on the transceiver allows you to catch the "slow starter."

It is tough to know when to stop CQing and go to a "search and pounce" mode of operation. There are a few stations, serious competitors, in the 2 to 6 station classes that may not do much, if any, "search and pounce" operation. If the rate at which you are getting calls drops off, there may be another station on your frequency that you can't hear (and can't hear you) because of propagation. If the adjacent frequency is clear, you may want to move up or down a bit and try there. Otherwise, a quick pass through the band "searching and pouncing" may be more productive, at least until you can find a new frequency to camp out on, and...you know...**call "CQ!"**

When you are in the "search and pounce" mode, the logging program's "CHECK PARTIAL" feature is invaluable for identifying stations worked before. As soon as you have typed at least 2 characters in the CALL field, a list of all calls in the log containing that character sequence will be displayed. As additional characters are entered, the list is updated.

Even after operating in many contests, the decision of when to "search and pounce" is a difficult one, and always subject to second-guessing afterwards. If in doubt....**call "CQ!"**

Don't Ragchew. Even though Field Day is a somewhat "laid back" contest, don't fall to the temptation to ragchew, especially if you have been receiving one or more responses to each CQ call. The serious competitor will not wait for you to finish chatting! He will recognize that he could log 2, 3 or more contacts while he waited (and possibly you could also have logged as many more!). Be polite, but don't waste time.

Keep your transmissions short. Not only to save your voice but to save time for other contacts, keep the content of your transmissions short and limited to only the essential information. It is not discourteous to omit "73" from the end of each contact. If you are "searching and pouncing," you need not formally acknowledge receipt of the "CQing" stations information but need only to respond with your own. If you didn't catch all of his information, a simple "AGAIN?" on phone, or "?" on CW should be enough to get the information repeated before you give your portion of the exchange.

Use the full callsign. When "searching and pouncing" always call the station using your full callsign, **never** use just the last two letters. No competent operator working a frequency wants to have to ask anyone to repeat their call if they can copy it initially. They can't copy it if you don't give it! The two letter "call" is very poor operating practice at any time, regardless of how often you may hear it in DX pile ups.

Don't bother duping during the operating period. If you are stuck using a paper log, follow the advice about CQing to the limit, and don't waste time checking to see if a station calling you has been logged before. Let the stations calling you do the duping during the contest. If you follow the advice to call CQ throughout the contest, your dupe rate will be no worse than if you used one and you will log more contacts.

Rework "dupes" that call you. Even if you have worked him before, it is faster to work him again and indicate "dupe" in the log than it is to discuss it. There is no score penalty for working a station more than once on a band, as long as points are not claimed for the duplicate contact(s).

Always end with your call sign. It is very frustrating to be rapidly tuning across a band, "searching and pouncing" and hear a "CQ" or "TEST" and then silence. You know the station is looking for contacts, but who is it? You have to make a quick decision whether to wait for the station to call again; to call him "blind," not knowing whether you have worked him before; or to move on without calling him.

Either of the first options are time consuming and utterly wasted if you have worked before.

Frankly, the best option for maximum time efficiency is to quickly store the frequency in memory and move on. Check back later, (switching between Memory and VFO modes) in between other contacts. Don't force these measures on others or lose needed contacts...always end with the call sign!

"QRZ W5AUY" not "W5AUY QRZ"

5. Summary/Operating Aids.

ARRL / RAC Contest Section Abbreviation List

Non US and Canadian stations should be logged as DX.

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SECTION	ABBREVIATION	SECTION	ABBREVIATION
1			
Connecticut	CT	Rhode Island	RI
Eastern Massachusetts	EMA	Vermont	VT
Maine	ME	Western Massachusetts	WMA
New Hampshire	NH		
2			
Eastern New York	ENY	Northern New York	NNY
NYC / Long Island	NLI	Southern New Jersey	SNJ
Northern New Jersey	NNJ	Western New York	WNY
3			
Delaware	DE	Maryland-DC	MDC
Eastern Pennsylvania	EPA	Western Pennsylvania	WPA
4			
Alabama	AL	South Carolina	SC
Georgia	GA	Southern Florida	SFL
Kentucky	KY	Tennessee	TN
North Carolina	NC	Virginia	VA
Northern Florida	NFL	Virgin Islands	VI
Puerto Rico	PR	West Central Florida	WCF
5			
Arkansas	AR	North Texas	NTX
Louisiana	LA	Oklahoma	OK
Mississippi	MS	South Texas	STX
New Mexico	NM	West Texas	WTX
6			

East Bay	EB	Santa Clara Valley	SCV
Los Angeles	LAX	San Diego	SDG
Orange	ORG	San Francisco	SF
Sacramento Valley	SV	San Joaquin Valley	SJV
Santa Barbara	SB	Pacific	PAC
7			
Alaska	AK	Nevada	NV
Arizona	AZ	Oregon	OR
Eastern Washington	EWA	Utah	UT
Idaho	ID	Western Washington	WWA
Montana	MT	Wyoming	WY
8			
Michigan	MI	West Virginia	WV
Ohio	OH		
9			
Illinois	IL	Wisconsin	WI
Indiana	IN		
ø			
Colorado	CO	Missouri	MO
Iowa	IA	Nebraska	NE
Kansas	KS	North Dakota	ND
Minnesota	MN	South Dakota	SD
Canada			
Maritime	MAR	Saskatchewan	SK
Newfoundland/Labrador	NL	Alberta	AB
Quebec	QC	British Columbia	BC
Ontario	ON	Northern Territories	NT
Manitoba	MB		

ITU Recommended Phonetics

Alfa	Echo	India	Mike	Quebec	Uniform	Yankee
Bravo	Foxtrot	Juliet	November	Romeo	Victor	Zulu
Charlie	Golf	Kilo	Oscar	Sierra	Whiskey	
Delta	Hotel	Lima	Papa	Tango	X-Ray	

Field Day Entry Categories

(Class A) Club / non-club portable: Club or a non-club group of three or more persons set up specifically for Field Day. Such stations must be located in places that are not regular station locations and must not use facilities installed for permanent station use, or use any structure installed permanently for Field Day use. A single licensee or trustee for the entry is responsible for the group entry. All equipment (including antennas) must lie within a circle whose diameter does not exceed 300 meters (1000 feet). To be listed as Class A, all contacts must be made with transmitter(s) and receiver(s) operating independent of commercial power mains. Entrants whom for any reason operate a transmitter or receiver from a commercial main for one or more contacts will be listed separately as Class A-Commercial.

(Class A - Battery) Club / non-club portable: Club or non-club group of three or more persons set up specifically for Field Day. All contacts must be made using an output power of 5 Watts or less **and** the power source must be something other than commercial power mains or motor-driven generator (e.g.: batteries, solar cells, water-driven generator). Other provisions are the same for regular Class A. Class AB is eligible for a GOTA station if those requirements are met.

(Class B) One or two person portable: Club or non-club station set up and operated for Field Day purposes by no more than two persons. Other provisions are the same for Class A. One and two person Class B entries will be listed separately.

(Class B - Battery) One or two person portable: Club or non-club station set up and operated by no more than two persons. All contacts must be made using an output power of 5 Watts or less **and** the power source must be something other than commercial mains or motor-driven generator. Other provisions are the same as Class A. One and two person Class B - Battery entries will be listed separately.

(Class C) Mobile: Stations in vehicles capable of operating while in motion and normally operated in this manner. This includes maritime and aeronautical mobile. If the Class C station is being powered from a car battery or alternator, it qualifies for emergency power but does not qualify for the multiplier of 5, as the alternator/battery system constitutes a motor-driven generating system.

(Class D) Home stations: Stations operating from permanent or licensed station locations using commercial power. Class D stations may only count contacts made with Class A, B, C, E and F Field Day stations.

(Class E) Home stations - Emergency power: Same as Class D, but using emergency power for transmitters and receivers. Class E may work any class station.

(Class F) Emergency Operations Centers (EOC): An amateur radio station at an established EOC activated by a club or non-club group. Class F operation must take place at an established EOC site. Stations may utilize equipment and antennas temporarily or permanently installed at

the EOC for the event. Entries will be reported according to number of transmitters in simultaneous operation. Eligible for a GOTA station at Class 2F and above.

For Field Day purposes, an Emergency Operations Center (EOC) is defined as a facility established by:

- a) A Federal, State, County, City or other Civil Government, agency or administrative entity; or
- b) A Chapter of a national or international served agency (such as Red Cross or Salvation Army) with which your local group has an established operating arrangement.

Planning of a Class F operation must take place in cooperation with the staff of the EOC being activated.

Other provisions not covered are the same as Class A.

A Class F station may claim the emergency power bonus if emergency power is available at the EOC site.