Game Day Frequency Coordination
Procedure Manual

Society of Broadcast Engineers
National Football League

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1 Introduction

The intent of this document is to guide you, the volunteer Game Day Frequency Coordinator (GDC), in the procedures necessary to successfully coordinate an NFL Football Game. This is not intended to be an all-encompassing set of rules, but rather a group of guidelines and suggested standards. The guiding light in any sort of frequency coordination effort should be common sense, integrity and if necessary, the FCC Rules.

The goals of this program are simple: to provide the Game Day Coordinator with the tools necessary to successfully coordinate a football game. One possible definition of successful coordination might be to maximize the number of RF devices that can operate as interference-free as possible at any event. Because these goals coincide with the goals of the National Football League (NFL), the NFL will supply many of the tools necessary to help the GDC accomplish this task. As the NFL is one of the many entities that generate many of these itinerant events, a win-win situation exists for everyone.

As coordinators, we are all aware of the time it takes to coordinate an event properly. Recognizing that we have real jobs, one of the goals of the program is to minimize the time required by the coordinator in doing mundane tasks, such as frequency selection and confirmation of coordination. There are two different software programs that are available to the GDC: one written by the NFL and the other written by The Society of Broadcast Engineers (SBE). It is beyond the scope of this document to describe the operations of both pieces of software, but the GDC can use whichever tools he or she thinks is appropriate.

This program cannot hope to succeed without the cooperation of the local users. Another critical goal incorporated into this program is the education of all RF users. Without their cooperation and understanding of the need to frequency coordinate all RF devices, including, but not limited to, low-power wireless mics and microwave transmitters, the program cannot hope to succeed. For example, a typical user thinks that a low-power mic or IFB does not need to be coordinated. At a large event, hundreds of these devices can descend into a few square blocks and chaos reigns if they are not coordinated properly.

1.1 This Program is Continually Under Development

While the Game Day Frequency Coordinator program has been in operation since 1999, it is continually being updated to accommodate changes in technology, the FCC Rules, spectrum allocations and the ideas suggested by people affiliated with the program. Your patience, suggestions and ideas are always a welcome addition to the process.
2 Overview

2.1 Your Responsibilities

You are a key part of the Itinerant Event Frequency Coordination process. All the software, hardware, and procedures detailed in this document are worthless if you don't take an active role in the process.

2.1.1 Identify & Resolve Conflicts

The ultimate goal of this program is to create an interference-free RF environment. Please note that we are not saying we will eliminate all interference, as there are many reasons why (mostly because they are out of our control), interference will continue to exist despite your best efforts.

These procedures, combined with the software being provided, will help you identify many of the common reasons for interference. In most cases, the problem can be resolved long before a user gets to the event. In a best-case scenario, the potential interference is identified in advance and the coordinator takes steps to resolve the problem. The conflict is usually resolved by making both users aware of the potential problem and letting them work out a solution. If there is a conflict that cannot be resolved, the coordinator may have to familiarize a user with the FCC rules governing the use of their wireless devices, which will help solve the conflict. In all cases, tact and common sense are the most important tools for solving conflicts.

However, for any number of reasons, a user may show up with a device that has not been coordinated and therefore causes interference to another user. In this case, the coordinator should do their best to identify the interfering party and resolve the interference. Users must realize that a coordinator does not possess magical powers, and will do our best to identify how and why the conflict exists. Methods used to solve the conflict will be detailed in section 6, "How do I deal with problems?".

2.1.2 Go to the Game!

You or your backup is required to attend each home football game. The NFL will provide you with two OFFICIAL (ALL ACCESS) credentials, a PARKING pass and reserved seat somewhere in the stadium. This seat should have a clear view of the RF environment (playing field), a counter top large enough to accommodate a laptop, telephone and an RF monitor. The telephone should be a direct outside line for your use in helping to identify and solve problems that may be encountered on game day.

2.2 What we ARE

Logically, the title of the person doing the coordination of an event should be Event Coordinator. However, the NFL already has a position on every team called Event Coordinator who is related to the operation of the game itself. Therefore, the official title that will be used for this job function will be that of the NFL Game Day Frequency Coordinator; usually shortened to Game Day Coordinator or GDC. At every NFL event, the GDC will coordinate not only the FCC Part 74 (Broadcast Auxiliary Frequencies), but will also act as a clearinghouse for FCC Part 15 (license-free devices) and Part 90 (Private Land Mobile) frequencies in use at the event location.

The GDC should also be aware of users at or near the venue in land mobile, cellular/PCS phones and public safety. Some of these frequencies can include food vendors, parking lot attendants, security, medical, maintenance crews, stadium management, team management, cleaning and coach-to-quarterback radios. As we have no authority to coordinate Part 90 radios, we will simply identify potential conflicts in all frequencies in use at the event. Any conflicts found will be reported to the appropriate personnel, on behalf of the NFL. The procedure used to report these problems can be found later in section 6, "How do I deal with problems?".
2.2.1 Coordinator: Identifier of Conflicts, Potential or Otherwise

In doing event coordination, we will act in much the same capacity as the local SBE coordinator, as a clearinghouse of information. However, in this case we will look not only at Broadcast Auxiliary frequencies, but all other frequencies, some of which are listed above. In the ideal world, we will be able to identify conflicts and put the conflicting users together to solve problems before any interference occurs. But we live in the real world, so we may be asked to identify the cause of real-time interference. To help you identify real-time interference, the NFL will provide a frequency counter, scanner/receiver, and a directional UHF antenna with a switchable RF attenuator that will allow you to listen to and hopefully find potential problems. Do your best to identify and solve any real time interference issues you may encounter. However, interference can be an elusive target to find; in most cases preventing the interference in the first place is the best way to deal with the problem.

2.2.2 Volunteer Representatives of the SBE

The role of the Game Day Coordinator is that of a volunteer. As a volunteer, you represent the SBE and should conduct yourself in a manner befitting that of the SBE. The SBE and NFL are available to help in any manner you and/or the local SBE coordinator request. As a volunteer, you will have the opportunity to request reimbursement of out-of-pocket expenses and a small gratuity as a thank you for your efforts. The procedure to request reimbursement and the gratuity is explained later in this manual.

2.2.3 Work closely with the Local SBE Coordinator

In those cities where the GDC is not the local/regional frequency coordinator, the GDC acts as an extension of the local coordinator. Work closely with your local SBE chapter and local coordinator with regard to how they organize this program. Please be aware that this program is intended to help the local coordinator coordinate these events. In all cases, the local SBE coordinator has the final say as to what frequencies are in use by the local broadcast community. This is intended to be a cooperative effort between the local/regional coordinator, the Game Day Coordinator, the NFL, local users and itinerant users. The success of this program depends in large part on all of the above working together.

2.3 What we ARE NOT

In setting the goals of this program, there were some things that we believe are not conducive to achieving those goals. While none of these procedures are etched in stone, the recommendations in this document are suggested to give the program the best chance of success.

2.3.1 Frequency Cops

This program was designed as a cooperative effort to allow users to coexist. It is not designed to be a search-and-destroy mission if an uncoordinated user is not creating any RF interference. Much of this manual is based on the successes we have had in coordinating past Super Bowl events and years of regular and pre-season games. In every case, we have found that the coordination effort works best if users are not afraid to coordinate the use of their radios. It makes sense to get all frequencies into the database; helping to identify potential problems before they become interference. A large part of this program involves educating users on the need to coordinate their radios; it may be counterproductive to the coordination effort to alienate users with a “you can’t use that here” attitude. The education of the user and the reduction of conflicts are the prime goals of this program. If necessary, there are other methods and agencies available to play cop. Frequency Coordinator is a big enough job.

2.3.2 Coordinator of All frequencies

The FCC has assigned different entities to act as coordinator for the various parts of the FCC Rules. The SBE, and by extension you, have no authority to coordinate non-part 74 frequencies. It is very important to remember that as coordinators, we can only identify conflicts and put users together to allow them to find a solution to the problem.
3 Tools

Everyone wants this program to succeed. To foster the success of this program, the NFL is supplying some equipment to assist you in the coordination of its events. Although these tools, both software and hardware were carefully selected, as we gain experience with this program there will be opportunities to enhance their worth.

Responsibility of and care of NFL supplied equipment

The equipment supplied by the NFL is the property of the National Football League and is provided to you in an effort to help with the coordination of NFL events. This equipment should not be used to coordinate any other football event. The NFL requests you keep all packing material so that you may return the equipment at the end of the season for updates if necessary. It is intended that you bring the equipment to each game and remove it after the game. Please store this equipment in a safe and secure area. Treat it as you would your own equipment.

3.1 Hardware

Each NFL venue will receive a laptop computer, a frequency counter, a scanning receiver/monitor, directional antenna with a switchable RF attenuator and a walkie-talkie. The equipment should be already in the possession of the primary GDC for each venue.

Specifications for the devices are listed below.

3.1.1 Laptop Features and Specifications

Pentium Mobile 1.5GHz,
512MB RAM,
40GB HDD,
15 SXGA+ (1400x1050) TFT LCD,
32MB ATI Radeon 7500,
24x10x24x/8x CD-RW/DVD,
Intel Pro 802.11b wireless (MPCl),
Modem/Bluetooth combo (CDC),
Ethernet (LOM),
Secure Chip (TCPA),
IEEE 1394, eight-cell battery,
WinXP Professional SP1

IBM Thinkpad R40
3.1.2 Scanner Features and Specifications

**Icom R-10 Specifications:**

- **Range:** (U.S.) 0.5000-823.999, 849.0001-868.999, 894.0001-1300.0000 MHz
- **Channels:** 1000
- **Banks:** 18
- **Modes:** AM, FM, WFM, USB, LSB, CW
- **Priority:** 1 channel
- **Conversion:** Triple
- **Scan:** 6 channels/second
- **Search:** 17 steps/second
- **Audio:** 120mW at 10% THD
- **Power:** 4 AAs 4.6-16V DC
- **Size:** 2.3”(W) x 5.1”(H) x 1.2”(D)
- **Weight:** 10.9 oz
- **Interfaces:** BNC, speaker, CI-V, DC
- **Accessories:** Antenna, belt-clip, hand-strap, AC adapter, four AA NiCd batteries
- **Features:** VFO, band scope, auto-store, SIGNAVI, alpha-tagging, AFC, NB/ANL, search-skip, S-meter, attenuator

Included with the GDC laptop is programming software for the R-10 scanner and a USB programming cable. This allows the GDC to create, save and program frequencies into the R-10 scanner using the laptop.

3.1.3 Directional Antenna and Switchable RF Attenuator

During the past few Super Bowl games, it was found that finding interference was much easier if the GDC had a method of direction-finding. Additionally, many of the problems were caused by wireless mics that...
were outside of the bandpass of most antennas available to the GDC. The log-periodic antenna (above left) and switchable attenuator (above right) are provided to help the GDC in tracking interference.

3.1.4 GDC Radio

The NFL has provided every Team and GDC a portable radio to allow the GDC to be contacted if the GDC is not at his or her seat in the pressbox. Additionally, the GDC was issued either a headset or earpiece to go along with the assigned radio. Each of the antennas on the team radios has a piece of yellow heat shrink on it to identify the radio as the GDC Radio.

Each team was issued a CT250 radio (right) and is responsible for making sure its radio is charged and is brought to the game. The team radios are supposed to be placed in a holster that is mounted to the side of the Telex Coaches Intercom rack on both sides of the field.

The GDCs were issued either a Motorola Visar (left) or a CT250 radio (right) as determined by a lottery. The GDC is responsible for making sure their radio is charged and bring it to the game for their use.

Note: the Motorola Visar (left) that was issued does not have the keypad on it as shown in the picture.

Motorola Visar

Motorola CT250

All GDC radios across the league are on a common frequency and equipped with a common PL code. We chose a common frequency to allow each team to travel with its radio and to allow broadcast entities to talk to the GDC at each venue without having to wonder what frequency the GDC is operating on.

As of June 13, 2005, the GDC frequency used across the league has been changed. The new frequency is 457.8625 MHz and continues to have a Tone PL of 250.3 Hz. Please note that the GDC frequency has been narrow-banded and operates with the transmit deviation set at 2.5 kHz on 12.5 kHz channel spacing.

3.1.5 Frequency Counter

The frequency counter provided by the NFL is an Optoelectronics Cub and has the following features:

- 1MHz - 2.8GHz frequency range
- Nine-digit LCD display for better visibility and longer battery life
- Six-hour discharge time from full charge
- Eight-selectable gate times
- 1MHz - 250MHz direct count capability for high resolution

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3.2 Software
Several software programs have been pre-installed in the laptop. Per the manufacturer’s software licensing agreements, all Microsoft products included with the laptop are the property of the NFL and may be used only on the laptop provided. As the event coordination program is a cooperative program between the SBE and the NFL, it is licensed for use by any SBE frequency coordinator. The NFL Event software was donated to the SBE; so both programs can be used by SBE Coordinators, GDCs and others as the SBE Board may direct.

3.2.1 NFL Event Coordination Program
The NFL Event Coordination Program automates many parts of the coordination process and has been loaded on each NFL supplied laptop. It is based on Sybase’s SQLAnywhere and includes an equipment database, allowing the GDC to quickly look-up the standard frequencies supplied on many of the wireless devices currently in use at any large event. It can also lookup all FCC licenses within a 100 mile radius of the NFL venue by frequency or frequency range – allowing the GDC to quickly find a licensed user that could cause a conflict to a frequency in use at the event. If the laptop has an Internet connection available, the software can send e-mail confirmation messages on behalf of the GDC to users requesting frequencies at the event.

3.2.2 SBE Toolbox
The SBE Toolbox Program automates many parts of the coordination process and has been provided to each GDC and each GDC assistant. It is based on FileMaker Pro and includes an equipment database that allows the GDC to quickly look-up the standard frequencies supplied on many of the wireless devices currently in use at any large event. The software can send e-mail confirmation messages or print a hard copy letter on behalf of the GDC to users requesting frequencies at the event. An added feature of this software is the local database of TV stations and local BAS services. This FileMaker solution also imports iterate requests directly from a Web-based program.

3.2.3 Icom R10 Programming Software
A copy of the Icom R-10 programming software and USB programming cable has been included with the GDC laptop. The software license that was purchased allows the software to be run on the NFL-supplied GDC laptop only. Users interested in purchasing their own copy of the software should call the manufacturer, RT Systems, directly at the phone number shown in the screen capture to the left.

3.2.4 FCC Database
The NFL supplies an extract of the FCC license database for a 100-mile radius of each venue. This data snaps into the NFL Event Coordination program and allows the GDC to look up FCC licenses issued within 100 miles of the NFL venue. This data is updated on a yearly basis and distributed on a CD to each GDC.
Additionally, the website www.fccinfo.com is a very useful reference for the GDC if he or she has Internet access.

3.2.5 Microsoft Products

A reminder, per the software licensing agreements between the NFL and Microsoft, the following programs are only licensed for use on the NFL-supplied laptop.

**NFL Licensed Software Specs**

- Windows XP Professional SP-1
- MS-Office Professional 2003
- Access
- Word
- Excel
- Outlook
- Infopath
- Norton Anti-Virus 2003

It should be noted that there is a yearly charge affiliated with keeping the Norton Anti-Virus software up to date. The NFL requires that the anti-virus software be kept up to date. Please forward the charges for the yearly update to the NFL via Jay Gerber for direct reimbursement.

3.3 Phone

A direct inward dial telephone has been requested for the Game Day Coordinator's exclusive use at his or her operating position. The phone number should be listed as the “Game Day Frequency Coordinator” throughout the stadium, and published in all team documentation and distributed by the GDC locally. The GDC Program should already have the phone numbers at each GDC operating position, but please send any changes in this phone number to Jay Gerber via e-mail at jay.gerber@films.nfl.com.

3.4 Stadium Access and Credentials

Credentials are issued to the GDC directly from the Game Operations Department of the NFL. Two OFFICIAL credentials and one PARKING pass will be provided for all preseason, regular season, and postseason games. These credentials will allow the coordinator or assistant to search for an errant transmitter if necessary. These credentials are valid anywhere in the stadium; please use good judgment not to abuse their use. If you are in other parts of the stadium, be sure there is good reason to be there. The League and the team carefully monitor credential abuse and unwarranted loitering could jeopardize the entire program.

**As this credential allows you free access to all parts of the game environment, under no circumstance should you approach any player, coach, official or game activity participating person for a non-GDC reason.** In addition, you are not to treat your GDC position as if you are regular fan, gathering pictures, autographs or memorabilia.

Credentials for the preseason and regular season are mailed to the primary GDC as soon as they are available from each team.

For identification purposes, the NFL provides a wallet size photo ID card for each of the coordinators and their backups. The ID card will have a bull clip that is removable enabling you to wear the badge if you so choose.

Note: Some of the teams have issued the GDC an official team photo ID season credential and parking pass. For those GDCs, the league will not provide any game credentials. If your team issues such credentials, please make sure that any credential created by the team has the proper OFFICIAL - ALL ACCESS authority.
3.5 Parking

The NFL will provide one parking pass, allowing the coordinator to park somewhere near the stadium. Parking at all stadiums is at a premium, please be careful that you park in your assigned spot.

Note: There are a few stadiums in the League that have a serious lack of media parking availability. As a result, the League has allotted as few as two parking passes from those teams. These passes must take care of the game referees, the instant replay officials, the League game official and numerous other personnel that are assigned by the League as well as you. Obviously, like the GDC, many of those people will also be without media parking. When necessary, the team will look into alternative parking arrangements.

3.6 Business Cards

The NFL provides business cards for each GDC and his or her backup. This card includes the phone number of the GDC’s work area, e-mail address and frequency details of the GDC radio system. Cards are distributed as necessary before the start of the season.

3.7 GDC Hat

The NFL provides an official GDC hat for each GDC and assistant. Many people affiliated with game operations have been assigned a different color hat for ease of identification. For example, the Yellow Hat, is the user responsible for the operation of the Coach’s Intercom system, the Green Hat is the person that interfaces with the TV truck to coordinate TV time-outs, etc. The GDC has been assigned a maroon hat.

3.8 E-mail Alias

To make it easier for users to send e-mailed coordination requests to the appropriate GDC, a standardized e-mail alias has been created for each team’s GDC. Users can directly contact the GDC and his or her backup by e-mailing to the following address: NFLteamname@sbe.org. For example, to send a message to the Arizona Cardinals GDC, send a message to NFLcardinals@sbe.org. A complete listing of the name of each team’s GDC, the backup GDC and their associated e-mail aliases can also be found on the SBE website at http://www.sbe.org/nfl/index2.htm. Additionally, coordination requests can also be made using the SBE website.

3.9 Frequency Coordination Signs

As part of the user education process, the NFL has created signs that help educate users about frequency coordination. These signs should already be installed at every stadium. If not, please contact Jay Gerber to order these signs and work with your team contact to make sure the signs are placed in appropriate area(s) of your choosing. It is the team’s responsibility to install the signs properly.
4 The Game Day Coordination Process

Because each market is different, we allow each GDC to operate with whatever procedures make sense for that market. However, based on experience, we have found that the following procedures are extremely effective and request that each GDC try to include as many of these ideas in their local coordination program. This program is a work in progress, so if you have any questions, comments or suggestions regarding these procedures, please pass them on to Jay Gerber via e-mail at jay.gerber@films.nfl.com.

4.1 Pre-season

There are several things the GDC should be doing to prepare for the upcoming season. During the off-season, several databases are updated to reflect changes that happened during the season or changes in the FCC Rules. As the data for many of these changes come directly from the FCC, it may be necessary to fine-tune the data to reflect the actual environment in your city or venue.

The actual updating process of the software is beyond the scope of this document. If you have any questions on how to perform any of these procedures, feel free to contact Karl Voss, Dan Collins or Ralph Beaver. They are more than willing to guide you through the process.

4.1.1 Add Events into Coordination Software Database

Someday in mid-summer, the NFL will release the schedule of games for the upcoming season. You will receive an e-mail message when that schedule is released and it is recommended that you use the schedule to add all the home games into your software. This will allow you to coordinate frequencies for any game as soon as you receive a user’s request.

4.1.2 Update TV Station Table and Equipment Database

As more digital TV (DTV) stations go on the air in each market, the spectrum available to place low-powered wireless users shrinks. While the event software is designed to flag frequencies that are co-channel to active TV stations as unavailable, the ability of the software to guide you in frequency selections is only as good as the data it has to work with. On a regular basis, a list of TV stations active in your area is generated from FCC data and distributed to the GDCs. It is not only important to load this update into your software, but verify it accurately reflects the TV stations that are actually on the air.

Additionally, the equipment database is updated on a regular basis. This may include changes in the CQB frequencies, new wireless mic frequency plans from a vendor and any other frequency changes that are sent to Karl Voss for inclusion in the database.

Keeping these databases current is important because the software uses them to provide a list of available frequencies for the GDC to choose from. If either of these databases is out of date, the software may provide inaccurate results – which is something we try to avoid.

4.1.3 Program Upcoming Critical Frequencies into Scanner

Because the game schedule changes from year to year, and the teams travel with their own CQB equipment, the list of critical frequencies may change from year to year. Once the upcoming seasons schedule is released and the equipment database is updated, the GDC should create a list of critical frequencies to monitor during the season. These frequencies should include at least the following:

1. All CQB frequencies for the teams playing in your venue during the entire season, including any backup CQB channels that a team may have
2. Referee’s pager (Instant Replay Pager)
3. GDC calling channel
4. Greenhat frequency (TV Timeout Official)
5. Referee’s wireless mic
6. Telex Coaches Intercom, including the base and beltbackpack frequencies for both sidelines
7. Any venue specific frequencies that you are aware of

It is recommended that the GDC program these frequencies in groups, allowing the GDC to lockout certain channels as appropriate. For example, The Coaches Intercom and referee’s mic are continuous-duty transmitters and should not be in the normal scan list. It is very helpful to have these frequencies pre-programmed into the scanner should there be a problem with one of these frequencies.

4.1.4 Scan Upcoming Critical Frequencies for Conflicts

One of the goals in this program is to identify and solve frequency conflicts in advance to minimize interference problems during the game. One of the methods that has been found to be especially effective in identifying problems was to have the GDC scan the frequencies for upcoming games. This will hopefully give the GDC plenty of time to identify possible problems and work out a solution before the conflicted frequency is needed for the game. This is especially important for the CQB channels, as each team travels with their own CQB system – meaning the frequencies change from game to game.

It is highly recommended that the GDC monitor all of the CQB frequencies for the teams playing at your venue during the entire season. This will give you plenty of time to deal with any possible conflicts in advance rather than trying to find someone that is causing a problem on game day.

4.2 Pre-game

The NFL requests that you arrive at the stadium at least two hours before kickoff. This gives you time to check in with the various users of RF equipment and deal with any problems that may be encountered. Also, much of the success of the GDC program comes from educating users about the need to coordinate, and much of the education process happens during the pre-game.

4.2.1 Setup Equipment

Upon arrival at the stadium, it is best to stop at your designated work area in the press box to verify that it is properly setup; meaning the phone has been installed and works, there are chairs for you to use and to deal with any other issues you may encounter.

4.2.2 Make Rounds Through Stadium

The pre-game is the best time to walk the stadium and be sure you are ready for the game. This is also a good time to verify that users are properly coordinated and to educate users on proper procedures.

4.2.2.1 Verify Frequencies on Coaches Intercom

Each base station and beltpack on the current Coaches Intercom has two frequencies on which it can operate. While all these frequencies should be entered into your database in advance, it is critical to know exactly what frequency, meaning A or B, the system is actually operating on. If there is a problem with the intercom system, you will probably be told that there is a problem with “Beltpack 7”, but the users usually do not know which channel “Beltpack 7” is actually operating on. It is well worth the time to physically verify which channel the system is using before the game.

4.2.2.2 Introduce yourself to Key Game Personnel

It is important that RF users know who you are in the event of a problem. The best time to introduce yourself to the key RF users is pre-game, when they are not as busy as they are during the game. Some of these key RF users include the following.

4.2.2.2.1 Team Equipment Managers

All teams have a person responsible for the operation of their Coach to Quarterback (CQB) systems. While the person responsible varies from team to team, it is usually best to introduce yourself to both team equipment managers. If the equipment manager is not the person responsible for the CQB system, he or she
can direct you to the person who is. Even if there are no problems with the CQB system, it makes political sense to introduce yourself to the person responsible for the CQB system – it’s all part of the education process.

4.2.2.2.2 Network TV and Radio Technical Managers

Another major user of RF devices are the radio and TV broadcasters that broadcast the game. It is very helpful to stop by their booths or the TV trucks and introduce yourself. Many times they will be extremely busy doing the final setup and testing of their facilities while you are making your rounds, so don’t be surprised if they are hard to find. Make the attempt anyway.

4.2.2.3 Yellow Hats on Both Sidelines

The Yellow Hats are the people responsible for the setup, testing and troubleshooting of the Telex Coaches Intercom System. For quick identification, they wear a yellow NFL hat. There should be one assigned to both intercom systems – one on each sideline. They interface directly with each team and will usually be the first person you hear from if there is a problem with the intercom system. These people are supplied by the home team and are usually the same people for each home game.

4.2.2.3 Check News Photographers for coordination

The third large user of RF devices at a football game is the local and itinerant news crews covering the game. The local news crews will be fairly consistent throughout the season; you will likely see the same people at every game. Any wireless devices used by the home media users should be collected at the start of the season and entered into your venue static frequencies – protecting them for all home games at your venue.

The itinerant (visiting team’s media) news crews are supposed to coordinate the use of their wireless devices with you in the week before the game. This has been an on-going challenge as many news crews simply think that wireless mics are something that you just use without any coordination. The education of these users on the need to coordinate is high on the priority list of the GDC program.

4.2.2.3.1 Note “Coord-Not”s and Have Them Fill in Paperwork

While checking in with the various media representatives, you will undoubtedly come across someone who has not coordinated the use of their devices. Many of these “coord-nots” go from city to city and plead ignorance of the need to coordinate every time they are caught. The NFL takes this problem very seriously and has started a database of users that are caught running wireless devices without coordination. If a user or entity continually shows up in this database, steps can be taken to revoke the credentials for this user/entity. This is the biggest tool we have for getting people to understand the need to coordinate.

If you encounter one of these users, use this not only as an opportunity to educate the user on the need to coordinate but also collect any information that is helpful in turning these “coord-nots” around. Minimally, we need the user’s name, affiliation (such as KXYZ-TV), contact phone number and who assigned them to work at the event. The NFL will send a letter to any media outlet that is consistently found in the coord-not database. If they continue to ignore the need to coordinate, then steps can be taken to revoke their credentials to cover the game – effectively solving the problem.

4.2.3 Scan Critical Frequencies

In the pre-season, a listing of critical frequencies was built and you programmed them into your scanner. This is a good time to scan the critical frequencies and look for current and future conflicts. It is highly recommended that the GDC scan at least the CQB frequencies (repeater input and output frequencies for both team’s main and any backup frequencies) for the current and any upcoming games, the referee’s pager, the greenhat and any other frequencies that you think are important. At the conclusion of the game, it is okay to lockout the visiting team’s CQB frequencies, but please continue to scan the CQB frequencies for the upcoming visiting teams.

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4.3 Game-time

Assuming that everyone coordinated properly, the actual game can be almost boring; at least coordination wise! Please remember that you are considered to be working during the game and refrain from taking any pictures, obtaining autographs or any other fan-related activities.

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4.3.2 Investigate Interference Complaints

Should any interference happen during the game, you will probably be one of the first to hear about it. Many times, what is reported to be interference is actually equipment problems, so it is important that you get as many details as possible from the person reporting the problem. Additionally, you may be the only technical person attending the game and many non-technical people automatically assume interference whenever a piece of RF equipment doesn’t work as expected.

That doesn’t mean that actual cases of interference don’t exist. But don’t automatically assume that interference is the problem simply because someone is complaining of interference. Take a moment to investigate the problem and don’t forget to take notes as you are investigating. Don’t be afraid to ask for help if it becomes a serious problem, the NFL and the SBE have people available, even during game time, to help.

4.4 Post-game

It is helpful to check in with certain users after the game is completed to see if there were any minor problems. In many cases, minor problems are simply worked around instead of reported as interference and fixing a minor problem can stop it from escalating into a bigger problem. Also, many of the good ideas that have been included in this program started out as an after-thought by a tech manager in a post-game meeting.

4.4.1 Post Mortem: Network TV and Radio Technical Managers

Radio and TV broadcasters are known for working around problems because of the nature of their business. As noted above, they are invaluable in identifying problems that you may not be aware of.

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4.4.3 Post Game Report to E-mail Reflector
The GDC program has an e-mail reflector that is used to communicate between GDCs. Please post a short game report to the reflector at your convenience. These post-game reports are an invaluable method of making everyone aware of any problems, or lack thereof, which you may have encountered in the coordination process. In most cases, someone else has already experienced the problem that you had and may have a fix for it. Don’t hesitate to use the reflector to ask for help if you need it.

4.5 Post Season
For most GDCs, the season ends when their teams have been eliminated from the playoffs. However, should your team make it to the Super Bowl, the GDC for the two teams are invited to join the folks coordinating frequencies at the Super Bowl. Additionally, one GDC will be asked to coordinate the Pro Bowl that is held in Hawaii each year.

4.5.1 Playoffs
The playoffs are run just like a normal football game, with the home team GDC coordinating the event.

4.5.2 Super Bowl
The Super Bowl is such a large and specialized event that there is a dedicated group of people that works with the GDC and SBE Coordinator for the city the game is being held in. The coordination of this event is started sometime in late August; coordination requests start arriving in September and continue until the day before the game actually happens. As noted above, the GDCs representing both teams playing in the Super Bowl are invited to work on the coordination team.

4.5.3 Pro Bowl
Due to the success of the GDC program, the NFL has asked for the Pro Bowl to be coordinated. Sometime late in the season, a lottery is held to select the GDC who will be asked to travel to the Pro Bowl. Any GDC that works on the Super Bowl is not eligible to work the Pro Bowl.
5 How Does the Actual Coordination Process Work?

"Enough background info. Tell me how the process works and more importantly, benefits me!" The process can be broken into three parts; a request is made, the request is processed, and finally the selected frequencies are e-mailed back to the user requesting them. Much of the process is designed to allow data to automatically flow or import from one part of the program into the next. The coordinator will need to do some initial setup of the software, like inputting local TV stations, venue, event and local user information. The user making the request will handle the tedious part of the process, the data entry of their request. This makes the requesting user responsible for ensuring the accuracy of his or her data, minimizes typo mistakes on the part of the coordinator and allows the coordinator to use his or her time doing the technical part of coordination. Let’s look at the process in detail.

5.1 Requesting User: Submitting Frequency via E-mail or the Web

The best way to collect requests was either by e-mail or via a Web-based request engine. The requesting user can either directly e-mail his request directly to the GDC using the team alias e-mail address or can go to the SBE website and fill in the information that pertains to the facilities he is requesting. The completed request is e-mailed to the coordinator responsible for the area the person is requesting frequencies for.

If the coordinator is using the SBE software, he or she will then import each request into the database program for processing whereas the NFL software currently requires the GDC to enter the data manually.

5.2 The NFL Supplies Critical Frequencies

The NFL collects all the frequencies that travel from city to city with the teams, for example: coach to quarterback (CQB), Greenhat, frequency coordination, security, game operations, team video operations, etc. The NFL also collects the frequencies in use at each venue such as parking, security, stadium management, etc. These frequencies are included in the Equipment Database, making it easy for the GDC to quickly import team specific frequencies into the event database.

5.3 So I Have the Requests, Now What do I do?

Requests are processed in the order they are received. Because the local requests are inputted in the initial setup of the program (in the Venue Static Frequencies), they are automatically given priority as they are already listed in every event that happens in the venue. It is important to ask local users not to request every wireless mic frequency they have, but to request the frequencies that have the best odds of being at the game. If everyone requests every frequency he or she has at home, it can be difficult for itinerant users to find an available frequency. But, home users become itinerants when they follow their teams on the road.

The coordinator processes each request in the order they are received. The software will flag conflicts with any frequencies already shown in use at that event, frequencies that conflict with local TV stations, as well as frequencies too close to one another. This will help the GDC in selecting the best frequencies for use at the event being coordinated.

After pre-filtering the requested frequencies, the software will present the coordinator with a list of frequencies for the coordinator to select from. The coordinator will select as many of these pre-filtered frequencies as the user requires and if the GDC computer has an Internet connection, finally e-mail a frequency coordination confirmation back to the requesting user. Then the GDC can process the next request until there are no more requests to process.

5.3.1 Part 74 vs. Part 90, and Other Frequencies

While most of the frequencies the coordinator will be asked to coordinate are FCC Part 74 (Broadcast Auxiliary), there will be some Part 90 (Business and Public Safety) as well as Part 15 (license-free) frequencies. Many of the frequencies requested are critical to the operation of the game, such as Coach to
Quarterback, Greenhat (Commercial Timeout officials), stadium operations frequencies, etc. While the SBE is not the coordinator for many of these frequencies, we should identify conflicts if they show up in the database. The Coordinator’s responsibilities for dealing with these conflicts are limited to identification of the problem and allowing the user(s) to resolve the conflict. The solution to these problems in some cases is beyond the scope of the volunteer coordinator.

Part 74 Broadcast Auxiliary conflicts can be dealt with just like any SBE coordinator would deal with a problem. Identify the users and get them together to work out a solution. If necessary, refer to the FCC Rules to remind users of priority of use, local vs. itinerant and other methods of solving the conflict. The FCC Rules, common sense and tact are both your friend and tools used in solving Part 74 conflicts.

5.3.1.1 Confidential/critical frequencies

Many of the Business Band and Public Safety frequencies should be considered confidential and not disclosed to anyone. Although these frequencies should be licensed and therefore are a matter of public record, vendors have reluctantly released these confidential frequencies with the understanding that they will be treated with discretion. Problems with frequencies such as the referee pagers, Greenhat and Coach to Quarterback system have a serious impact on the game. All Business Band frequencies should be treated as confidential.

Part 74 Broadcast Auxiliary frequencies on the other hand can be published to authorized Part 74 users. However, in certain instances, wireless microphones may be used for recording proprietary signals and should be treated as highly confidential. The GDC should not normally release these frequencies to other users.

5.3.2 Priorities:

As noted above, the priorities can change depending on what part of the FCC rules the frequency falls under. Conflicts involving Part 90 Business Band frequencies that cannot be resolved simply should be referred to the NFL Frequency Organization Group appropriate personnel as noted in section 6.3.

On the other hand, there is a definite order of priorities in solving Remote Pickup (RPU) Broadcast Auxiliary conflicts. The priority for resolving Part 74 RPU conflicts can be found in the FCC Rules at 74.403(b). In all cases, a local user has priority over an itinerant user. In the case of 2 equal users, the following priorities are used:

1. Communications during an emergency or pending emergency directly related to the safety of life and property
2. Program material to be broadcast
3. Cues, orders, and other related communications immediately necessary to the accomplishment of a broadcast
4. Operational communications
5. Tests or drills to check the performance of standby or emergency circuits
5.3.3 How do I deal with all these requests?
The requests should be processed in the following order:
1. Local users first
2. Itinerant users based on request date

The software was designed to process requests in the order requests are received. Loading the local user information first and then the itinerant requests will automatically set priorities. Users who are organized and make their requests early have the best chance of getting the facilities they request.

5.4 E-Mail Response to requesting user
After processing the requests, the software has been designed to automatically generate an e-mail response to the user that includes the cleared frequencies.

Clearing a frequency does not guarantee that the user will be interference free, rather it is a statement from the Coordinator that he is unaware of any conflicting frequencies in the area of operation.

The warning disclaimer below is an example of text appended to the bottom of all messages transmitted through the Arizona Frequency Coordination Committee Listserv. The NFL Event software is capable of automatically appending any text that the GDC wishes to the end of the e-mailed confirmation. Simply place the text to be appended to outgoing messages in the file footer.txt. The software will append the contents of this file to the bottom of all coordination confirmations.

This Listserv is provided to facilitate licensee-to-licensee contact and to keep Phoenix-area broadcasters informed about changes in the use of Broadcast Auxiliary frequencies. Information contained in these mailings are to be used for reference purposes only, and does not in any manner indicate that the frequency coordinator has assigned any particular frequency to any given user. No representation is made or implied that operation will be in compliance with the FCC rules, or that operation on these frequencies will be interference free.

To unsubscribe from this list, send a message to majordomo@kpxn.com with the following info in the BODY of the message:
unsubscribe frequent

5.5 What about Expenses?
While the NFL has attempted to make this coordination program as trouble free and low cost as possible, there may be unforeseen expenses incurred by the coordinator. As this is a volunteer position, the NFL and the SBE have set up a method for the Game Day Event Coordinator to submit expense vouchers for reimbursement of any out-of-pocket expenses, up to $150.00 per home game for the pre-season, regular and post-season, exclusive of the Super Bowl. In addition to reimbursement of out-of-pocket expenses, a gratuity in the amount of $100 per game is available as a way of saying thank you for your volunteer service. GDCs may request this gratuity using the same voucher form used to claim the reimbursements. Only one $100 gratuity is available for each regular and post-season game, with the exception of the Super Bowl. The gratuity is not available for pre-season games.

The SBE National Office will receive and process the vouchers from Game Day Event Coordinators on a game by game basis and will mail checks directly to the Game Day Coordinator on or about the 15th and 30th of each month. Only one voucher per game will be accepted so all expenses for that game, including those of any assistants that may be helping the Game Day Event Coordinator, must be included. GDCs must submit their voucher to the SBE within the week following the game.
Vouchers may be obtained electronically from the SBE website at www.sbe.org/nfl/index2.htm using Adobe Acrobat Reader (available free for download at the sbe.org website or from Adobe at adobe.com) or from the SBE National Office by mail or fax. Submit your completed vouchers to the SBE National Office by e-mail, fax or mail, to the attention of:

John Poray,
Executive Director
jporay@sbe.org
Fax: 317-846-9120

or by mail:
John Poray,
Executive Director
SBE
9247 N. Meridian Street, Suite 305
Indianapolis, IN 46260

If you have questions regarding the voucher system or reimbursement policy, e-mail John Poray or call him at 317-846-9000.

5.6 Feedback!
Please forward suggestions, ideas and comments to any of the following people:

For the SBE:
John Poray
SBE Executive Director
jporay@sbe.org
Office: 317-846-9000

For the NFL:
Jay Gerber
Manager, NFL Frequency Organization Group
jay.gerber@films.nfl.com
Cell: 215-805-3801
6 How do I Deal with Problems?

When you encounter interference, the real challenges of frequency coordination are about to begin. There may come a time when everything is going bad, people are running around demanding you do something about this interference and wondering why you have not solved the problem in the last five minutes. During these rare occasions it is very important for you to be the one that keeps his or her head when no one else is. At times like these, you need to stop, take a deep breath, and play detective. Do your best to find the problem, and bring the users together to mutually find a solution.

It is at this point when your diplomacy, tact, common sense and knowledge of the FCC rules are used to solve a problem. The most important thing to remember is that the coordinator’s prime responsibility is act as a clearinghouse for information. While sometimes you may be asked to, it is not the coordinator’s responsibility to engineer a users system or assign a frequency to a particular user. The goal of a coordinator is to bring users together to either prevent or solve a problem.

These can also be the most frustrating of times. People who use RF devices every day to make their job easier may suddenly find their devices not working. They will then look to the coordinator to solve their problems. In some cases you will find the user complaining about interference when in reality, they are the ones responsible for causing the interference. During other times, interference will be intermittent and randomly appear and disappear for no apparent reason. Temps can run short, as users who assume their devices will work and more than likely did not coordinate, suddenly find themselves running microphone cable as the only way for them to operate. People who coordinated will look to you to perform magical feats to clear their coordinated frequencies of interference from an unknown user.

A key tool used by GDCs is to tactfully teach users about the need to coordinate. Users will learn that coordinating in advance protects everyone, not just themselves. As people become aware of the NFL/SBE frequency coordination effort, it is hoped that more people will participate thereby helping to prevent problems before they become problems. While the FCC rules require coordinating all devices, there are many users who are unaware of the FCC rules or simply believe their low-power device could never interfere with anyone! It is those users who either don’t know the rules or don’t think they need to coordinate who usually cause the most problems.

6.1 Interference/Frequency Conflicts

Interference and frequency conflicts in some ways are synonymous. The difference between them depends on when the problem was identified. Potential RF problems identified in advance are then “conflicts”. Problems not identified in advance are known as “interference”. While these terms may be very similar, they are usually handled differently.

In most cases, the problems will involve wireless mics or users that do not coordinate. The following guidelines, loosely based on the FCC rules for remote pickup transmitters, should be used in solving any problems involving Part 74 devices.

- Get the users together to discuss the problem
- Local users have priority over itinerant users
- Communications during an emergency or pending emergency directly related to the safety of life and property
- Program material to be broadcast
- Cues, orders, and other related communications immediately necessary to the accomplishment of a broadcast
- Operational communications
- Tests or drills to check the performance of standby or emergency circuits

As stated earlier in this document, the SBE/GDC coordinator’s authority comes from identifying potential problems in advance, getting the affected users together and identifying possible solutions to the identified
problem. Conflicts that cannot be resolved between the affected parties should be handled by making the
NFL aware of the conflict and helping to identify the resolution.

6.1.1 Before the Event, AKA Conflict
The goal of this program is to have all of the conflicts identified in the preliminary coordination process.
Making the users aware of the problem will allow the user with the lowest priority to make other
arrangements. Once the users are aware of the problem, they will usually take the appropriate steps to
resolve it.

The main tool used in identifying conflicts at this stage is the event coordinator software, which is constantly
under development. It will identify all of the most common sources of problems, letting the coordinator
notify the affected users and solving the conflict in advance. Not only is this the easiest way to solve a
conflict, but it is the preferred method.

6.1.2 During the Event
Problems that occur during the event are the most difficult to deal with. Not only is there the pressure to fix
it now, but in some cases, you are the only technical person attending the event who is available to
troubleshoot. Solving problems at this time usually involves a fair amount of detective work. You will be
provided with a scanning receiver, allowing you to listen to the frequency that is having a problem. In many
cases, simply listening will be all you need to do to identify the user causing the problem. Try to stay near
the phone at your assigned location. Sometimes you will get a call from the person causing the interference,
as he or she can hear the person who is complaining. Rather than run around searching for the interfering
party, collect as much information as possible from your operating position to help narrow the search.

Questions to ask include, can the problem be heard? What does it sound like? What are the “other people”
saying or talking about? Does it sound like intermod, desensing the receiver or other hardware problems?
How much power is being used; more power is not necessarily a good thing when a lot of devices are
clustered together. Many times simply lowering the transmitter’s output power would solve the problem.
How is the antenna mounted? Are duplexer or isolators being used, especially on continuous duty
transmitters? Are there any FCC identifiers on the channel? If it sounds like a phone patch, listen for phone
numbers, and call them to try to identify the user.

Sometimes interference will spontaneously appear and then disappear, especially if the device being
interfered with is a wireless mic. Many times a news crew will listen on their receiver, hear someone already
on their channel and use a hard wire. They usually turn off their mic transmitter at this point, but not always!
Even if a crew appears to be using a wired mic, look for RF mic receivers attached to the camera. If there is
a receiver, there is probably a transmitter nearby that may be set aside but still transmitting (especially those
cube mic transmitters). Other times a crew may have a frequency agile mic, and simply change channels.
This can create a domino effect, causing someone else who had a good channel to suddenly have problems.
In fact, it was found at one game that the interference a network user was complaining about was caused by
that network’s own backup mic. They simply forgot to turn off the backup mic after testing it – and were
interfering with their own users!

Use the FCC database to search for licensed transmitters in the area. However, be aware that many people
simply don’t license their radios, so don’t be surprised if there are no licensed users in the database. Other
times people borrow radios from their employer to keep in touch at the game. It is helpful to keep a log of
problems, complaints, discoveries and the like. It may take more than one game to find the problem and
keeping a written log can help spot trends.

6.1.3 After the Event
After the event is over, you may hear people complaining of problems that occurred during the event. While
dealing with these complaints may seem like closing the barn door after the horses escape, this is a perfect
opportunity to educate the person complaining about the need for coordination. Nothing captures a person’s
attention than having to pull a cable because his RF device was non-functional. Use this opportunity to remind the user to coordinate in the future. Obviously, if the person DID coordinate and still had problems, educating the user needs to be done gracefully. Instead of extolling the virtues of frequency coordination, try to collect any information from the user that may be helpful in finding the person causing the problem. Hopefully, information gained this way can be used to avoid future problems.

6.2 Hardware Problems

Please contact Jay Gerber for direction on how to handle the particular problem. The contact person responsible for each piece of equipment is listed below.

6.2.1 Computer, Frequency Counter, DF Antenna and RF Attenuator

Problems should be reported to Jay Gerber.

Jay Gerber
811 Triumphhe Way
Warrington, PA 18976
Cell: 215-805-3801
Fax: 215-491-6905

6.2.2 Scanner and GDC Radio

ICOM R-10 scanner/monitor or Motorola Visar or Motorola CT250 walkie-talkie problems should be reported to Harvey Shuhart. Harvey can be reached at:

Control Dynamics
1979 Stout Drive, Unit 2
Ivyland, PA 18974
Voice: 215-956-0700
Fax: 215-443-5763

6.3 NFL/SBE Contacts

In the event of interference issues that cannot be solved on site, or any non-Part 74 issues, the following people should be contacted in the order shown. They can either give you direction in solving the problem or refer you to the person or organization responsible for the solution.

6.3.1 Jay Gerber

Jay is the Manager of the NFL Frequency Organization Group. He will act as the liaison between the Game Day Coordinators and the NFL if necessary. He should be consulted before contacting anyone at the NFL with any problems. Any special requests that the GDC may have should be directed to Jay’s attention prior to any other contacts.

Jay Gerber
Manager, NFL Frequency Organization Group
jay.gerber@films.nfl.com
Cell: 215-805-3801

6.3.2 NFL Frequency Organization Group

The following people are involved with the management of this program on behalf of the NFL and the SBE. For the resolution of issues, they can be contacted in the order shown.
6.3.3 SBE Regional Coordinators

The most current list of SBE coordinators can be found on the SBE website. See http://www.sbe.org to look up the current coordinator for the area you are interested in.

6.3.4 Game Day Coordinators

The most current list of Game Day Coordinators will be found on the SBE website. See http://www.sbe.org/nfl/index2.htm to look up the current GDC coordinator for the city you are interested in.

6.3.5 On site NFL Official

At every NFL event, there is a person representing the NFL. This person should be contacted only on the direction of Jay Gerber, Manager of the NFL Frequency Organization Group. Jay can tell you who the NFL Official is and how this Official can be contacted or he will contact the Official directly.