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2012 Air Show Special!



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- Refueling the USAF's Thunderbirds
- MT Reviews: WinRADIO G39DDCe

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A How-to Guide to Monitoring Air Shows

The 13th Annual MT Air Show Guide

By Larry Van Horn, MT Assistant Editor



B-52 arrives at Pease Vermont Air National Guard (Photo by Kevin Burke)

If the bits of radio chatter in the adjacent box sound familiar to you, chances are you have monitored the exciting communications transmitted by the U.S. Navy Blue Angels at a military air show in the recent past. And nothing will stir up the milcom monitoring enthusiast's juices more than those two magical words – *Air Show!*

Anyone who has attended one of these events will tell you it is thrilling to watch the close quarter flying of the Blue Angels' delta formation or the hair splitting maneuvers of the Thunderbird opposing solos. But there is a way you can add to the visual experience by monitoring the performing teams' radio communications. With a radio scanner in hand, you will experience a whole new perspective of the show that few attendees will get experience – the sounds from the aircraft cockpit.

Every year, from March through November, millions of people hit the road to watch the excitement and thrills as military and civilian aero teams put their high performance aircraft through their paces to entertain the crowds and perform at air shows all over the world.

To indulge in monitoring the air show experience you need a current and well researched list of frequencies that the various performers may use during their performance. That requirement is the reason this feature is presented every year in March in the pages of *Monitoring Times*.

What started out as an answer to a question by an *MT* reader in my *Milcom* column 13 years ago has now grown into one of the most eagerly anticipated features in this magazine each year,

and with good reason. Not only will I give you the frequencies you need to monitor the air show groups, but you also get my recommended list of radio equipment needed to listen to these events (see this month's *Milcom* column).

So here we are again at the start of another air show circuit. It is time to pack up those radio wagons, charge up the scanner batteries, and get ready for a new season of thrills on your scanner. *Monitoring Times* proudly presents our 13th annual *Milcom Air Show Guide*.

*“A little more pull, a little power.
Standby boards ---- boards!”*

Where do you hear the action?

From time to time, frequencies for air show teams do change, by design or by need, so it's important to know where to search for potential new frequencies.

You should be able to locate most air show activity at the event you are attending by searching in the frequency bands below. If you have a scanner that has the Close Call® or Signal Stalker® functions, that will help speed up the process of determining the active frequencies in use during the show.

118.000-137.000	25 kHz search steps (AM)
122.700-123.575	25.0 kHz search steps (AM)
138.000-144.000	12.5 kHz search steps (AM/ Narrowband FM or NBFM)
148.000-150.800	12.5 kHz search steps (AM/ NBFM)
162.000-174.000	12.5 kHz search steps (NBFM)
225.000-380.000	25.0 kHz search steps (AM)
380.000-400.000	12.5 kHz search steps (NBFM and AM)
406.100-420.000	12.5 kHz search steps (NBFM)

Note: All frequencies in this article are in MHz and the mode is AM unless otherwise indicated.

U.S. Navy Blue Angels

The premier U.S. Navy/Marine Corps military flight demonstration team on the air show circuit is the Blue Angels flying the F/A-18 Hornet aircraft.

The team is based at Forrest Sherman Field, Naval Air Station Pensacola, Florida. However, the squadron does spend January through March each year training pilots and new team members at the Naval Air Facility in El Centro, California.

The Blue Angels are scheduled to fly approximately 69 air shows at 35 air show sites in the continental United States during this, their 66th season. This year also marks the 26th year the team has flown the F/A 18 Hornet. Since its inception in

1946, the Blue Angels have performed in front of more than 474 million fans.

During their performances the Blue Angels exhibit the skills possessed by all naval aviators. These include the graceful aerobatic maneuvers of the four plane diamond formation, in concert with the fast paced, high performance maneuvers of the two solo pilots. At the close of every show, the team illustrates the pinnacle of precision flying, performing maneuvers locked as a unit in the renowned, six jet Delta formation.

The other major piece of flying hardware in the squadron is their C-130T Hercules transport aircraft, affectionately known as “Fat Albert Airlines.” It is the only Marine Corps aircraft permanently assigned to support a Navy squadron and it is flown by an all Marine Corps crew of three pilots and five enlisted personnel. “Fat Albert Airlines” flies more than 140,000 miles during the course of a show season. It carries more than 40 maintenance and support personnel, their gear, and enough spare parts and communication equipment to complete a successful air show.

Blue Angel Aero Frequencies

237.800 Solos when not in the show box (Solo #2) and cross country air/air [Channel 8]
251.600 Air/Air nationwide and at NAS Pensacola
255.200 Circle/arrivals discrete and cross country air/air [Channel 17]
265.000 Diamond formation secondary



KC-135 taking off (Photo by Kevin Burke)

- 275.350 Diamond formation when not in the show box, cross country air/air, and their Pensacola squadron common [Channel 9]
- 284.250 Show box for diamond, solos, delta and cross country air/air [Channel 16]
- 289.800 Air refueling during cross country trips
- 305.500 Fat Albert "Bert" primary, solo aircraft (West Coast), and maintenance officer [Channel 10]
- 305.900 Fat Albert "Bert" – First heard during the 2009 San Francisco Fleet Week, at the 2009 Pensacola homecoming show (no 305.500 MHz comms heard), and the solo aircraft used this frequency during their annual Naval Academy graduation flyover at Annapolis, Maryland.
- 333.300 The Diamond formation was monitored on this frequency during Fleet Week in San Francisco.
- 346.500 "Checklist Freq" – Pre-show checklist, ground start/roll out and maintenance [Channel 18]

Blue Angel Aircraft Radio Preset Plan

Frequency	Usage
Channels 1-7	NAS Pensacola (KNPA) frequencies
Channels 8-10	Team frequencies
Channels 11-15	Show site frequencies
Channels 16-18	Team frequencies
Channels 19-20	Unknown usage

Blue Angel Organization

The Blue Angels' support team is made up of the Events Coordinator, Maintenance Officer, Flight Surgeon, Administrative Officer, Public Affairs Officer, Supply Officer and approximately 110 enlisted Navy and Marine Corps volunteers. Alternating crews of about 45 team members travel to each show site.

The squadron consists of seven distinct departments that are jointly responsible for guaranteeing the team's readiness. A tribute to this dedicated team is the fact that the Blue Angels have never cancelled an air show due a maintenance problem.

Administration – The Administration Department is responsible for executive and official correspondence, squadron records, pay and travel orders. Administration maintains instructions and notices, handles promotions and awards, and controls legal and security concerns.

Aviation Medicine – The Aviation Medicine Department is responsible for the health and wellness of each team member. The medical team performs annual physical examinations and emergency medical procedures, keeps medical and dental readiness up to date, and acts as a liaison for advanced medical care.

Events Coordinator – The Events Coordination Department schedules preseason visits with show site sponsors and secures accommodations and ground support for each demonstration show.

Fat Albert Airlines – As mentioned previously, the all-Marine flight crew assigned to the squadron's Lockheed-Martin C-130 Hercules is responsible for transporting road-crew personnel, supplies and equipment to and from each show site throughout the season.

Maintenance – The Maintenance Department consists of the airframes, avionics, corrosion control, crew chiefs, life support, maintenance control, power plants, quality assurance and video shops. The maintenance team is responsible for all aircraft upkeep.

Public Affairs Office – The Public Affairs Office documents and promotes the Blue Angels. It designs, writes, photographs, edits, publishes and distributes all promotional materials. The

Public Affairs Office also coordinates coverage and interviews with local, national and international media, and manages the VIP rider program.

Supply – The Supply Department researches, procures, stores, and issues spare parts, tools, and uniforms. Supply also researches future squadron logistical needs and initiates contracts for services required to support daily operations.

The Blue Angel ground maintenance crews have their own set of communication frequencies in support of their mission. They carry with them a communications cart "comcart" for their ground maintenance net. The two confirmed frequencies used by this cart are:

- 139.8125 Ground maintenance crews and equipment checks [Bravo] NBFM 67.0 Hz PL tone
- 142.6125 Ground maintenance crews and equipment checks [Alpha] NBFM 67.0 Hz PL tone

In 2007, 141.5625 MHz was reported as an additional comcart frequency. In 2009, I received another report that this frequency was used at a West Coast air show. Since this frequency has been reported sporadically, I believe that it is used only at locations where one of the two regular comcart frequencies listed above are in regular use at an air show site. I am especially interested in reports on this frequency and any P25 activity noted in use.

A new development occurred in 2011 regarding the team's ground communications. It now appears they also have radios that they can use on the new DoD 380-400 MHz trunk radio systems.

At the NAS Jacksonville air show, the ground maintenance team was observed using the Navy Southeast Region 380-400 MHz trunk radio system. Talk group 29529 was being used by aircraft ground handlers and for tower to comm cart communications. Talk group 29530 was confirmed when the team conducted comm checks and used it during the start of their performance. These two talk groups fit perfectly the known talk group plan that has been observed in use here in the southeast United States.

If you attend an air show this year at a base that has one of these new DoD 380-400 MHz trunk radio systems, be sure to program systems in your scanner, and you might be treated to some interesting ground communications on talk groups 29529 and 29530.

U.S. Air Force Thunderbirds

The U.S. Air Force has a flight demonstration team of their own known as the Thunderbirds. This year marks the 59th season that the T-Birds have performed air shows and they will conduct 60 shows in 33 locations, including two shows in Canada.

They will kick-off the 2012 season by performing a flyover for the 54th running of NASCAR's Daytona 500 on February 26.

During each show the team performs formation flying and solo routines. Like the Blue Angels, the four aircraft diamond formation demonstrates the training and precision of Air Force pilots, while the solos highlight the maximum capabilities of the F-16 aircraft. The Thunderbirds recently completed a swap of their older F-16 Block 32 Fighting Falcon for more advanced and powerful F-16 Block 52 aircraft.

A Thunderbirds' aerial demonstration is a mix of formation flying and solo routines. The pilots perform approximately 40 maneuvers in a demonstration. The entire show, including ground and air, runs about one hour. Like the Blue Angels, the T-Bird air show season lasts from March to November, with the winter months used to train new members at their home base at Nellis AFB, Nevada.

The U.S. Air Force Air Demonstration Squadron is an Air Combat Command unit composed of eight pilots (including six demonstration pilots), four support officers, four civilians and approximately 110 enlisted Airmen performing in more than 29 Air Force specialties.

U.S. Air Force Thunderbird Aero Freqs

Frequency	Usage
139.225	Diamond formation [Victor #]
139.800	Diamond formation [Victor #]
140.700	Diamond formation [Victor #]
141.075	Diamond formation [Victor #]
235.250	Pre-engine start/solo aircraft on/off show center/linked to PA system [Uniform 1]
235.350	New frequency: Thunderbirds solo aircraft (5-6) air/air (first noted at the Cheyenne Wyoming air show)
318.850	Thunderbirds air/ground and air/air training at Nellis AFB
322.950	Engine starts/solo aircraft (5-6) air/air [Uniform 2]

Thunderbird Maintenance/Ground Team Frequencies (Mode NBFM)

216.725	Announce PA feed - Music and show narration [Channel 55]
216.775	Announce PA feed - Music and show narration [Channel 56]
216.975	Team air show frequency feeds/mix air/air simulcast [Channel 60]
413.275	Ground maintenance – Analog (DCS 431)/P25 NAC293
413.325	Ground maintenance – Analog (DCS 503)
413.375	Ground maintenance – Analog (monitored in Hawaii)
901.500	Comm cart headset
905.350	Comm cart headset

Previously reported frequencies used by the team are listed below. If you hear any of



F-16 landing at Pease Vermont Air National Guard. (Photo by Kevin Burke)



*United States Navy Legacy Flight
(Photo by Brian Topolski)*

these frequencies in 2012, please contact us at our email address listed in the Milcom column masthead.

143.250	Pre-engine start
143.700	Heard at air show in Wyoming, same audio as 235.250 MHz
148.850	Alternate diamond [Victor 2]
150.150	Alternate diamond [Victor 2]

One question that pops up from time to time is, "Who is using the Thunderbird 14 call sign?" This is normally used by an Air Mobility Command transport aircraft carrying the team maintenance/ground crew personnel and their equipment to the various shows. Typically this is one of the huge C-17 transport aircraft operated by the U.S. Air Force Air Mobility Command.

Other U.S. DoD Military Flight Demo Teams

This air show season, we will see a major curtailment of Air Force sponsored single-ship flight demonstration team activity. Shortly before we went to press with this issue, the Air Force Air Combat Command issued the following press release:

"ACC statement about reduction of single-ship demo teams in 2012

"We face significant fiscal constraints and are making tough decisions about the best ways to continue providing combat airpower to war-fighting commanders, which is what we do as the Air Force's primary force provider.

"One decision we've made is to sponsor one single-ship demonstration team for the 2012 air show season, scaling back from the six teams we've historically sponsored – A-10 East & West, F-16 East & West, F-15E and F-22.

"For the 2012 season, we're sponsoring our F-22 demonstration team to perform at up to 20 shows. In addition to the F-22 demonstration team, the Thunderbirds are set to complete a full season . . .

"The opportunity to showcase our aircrew at air shows around the country is important – and we're confident our Thunderbirds, F-22 demonstration team and the Air Force Heritage Flight Foundation will continue highlighting the extraordinary work of all our Airmen."

Even though we may not see many of the Air Force Flight demo teams in 2012, that policy could change at any time, or units could be added to the schedule. So I will still publish below the VHF and UHF frequencies these units have used during their performances in the past couple of years. I have also included frequencies for the other DoD service teams.

US Military Flight Demo Teams

Air Force ACC A-10 Thunderbolt Demonstration Teams:

East Coast Demo Team

23 Wing based at Moody AFB, Georgia

122.475	136.575	138.150	138.275
138.425	138.875	139.275	139.700
139.725	140.200	140.425	141.650
142.600	143.000	143.150	143.600
143.750	226.100	227.800	227.850
228.075	233.475	234.025	240.100
242.150	251.200	251.975	268.100
271.100	275.650	275.900	283.700
289.300	292.100	295.000	327.300
371.200	375.650	379.500	376.025
384.550			

West Coast Demo Team

355 Wing based at Davis Monthan AFB, Arizona

136.575	139.2875	139.600	139.625
139.700	139.725	141.050	141.775
143.550	229.050	233.475	238.500
283.700	326.775	327.700	372.175
384.550			

Air Force ACC F-15E Strike Eagle Demonstration Team:

East Coast Demo Team

4 FW Seymour-Johnson AFB, North Carolina
370.025 375.925 376.025 (Demo to Safety) 376.100 377.850 384.550

Air Force ACC F-16CJ Viper Demonstration Teams:

East Coast Demo Team – 20 FW Shaw AFB, South Carolina

123.150	136.475	136.575	136.675
138.150	138.950	139.825	139.900
140.200	140.275	140.375	141.025
141.150	141.175	141.550	141.650
141.675	141.700	141.900	141.950
142.225	142.400	149.875	252.100
273.700	311.200	376.025	384.550

West Coast Demo Team – 388 FW Hill AFB, Utah, Call signs: Viper 1 and Viper 2

136.475	136.575	136.675	138.150
138.4375	138.750	138.950	139.1125
140.450	141.150	141.650	141.950
142.1125	142.600	142.700	142.900

142.9625	143.250	143.625	143.700
252.100	369.000		
376.025	376.100	384.550	

Air Force ACC F-22A Raptor Flight Demonstration Team: East Coast Demo Team – 1 FW Langley AFB, Virginia

233.225	236.550	252.775	292.700
308.600	375.925	376.025	384.550

Air Force ACC Heritage Flight

122.475	123.150	123.475	136.475
136.575	136.675	375.925	376.025
384.550			

Air Force AFRC C-130 Dobbins ARB, Georgia

– Air Drop Demonstration
239.975 379.525

Air Force AMC C-17/C-47 Heritage Flight

123.150

Air Force B-2 Bomber Flyover/Static Displays 509 BW Whiteman AFB, Missouri

233.025	257.100	260.250	265.825
267.000	320.525	354.350	375.925
376.025	388.850		

Air Force B-52 Bomber Flyers

376.025

Air Force Combat Search and Rescue (SAR) Demonstrations

236.000 [SAR Bravo] 251.900 [SAR Alpha] 282.800

Army Sky Soldiers Demonstration Team (Army Aviation Heritage Foundation)

N149HF (CV-2B Caribou) N599HF (AH-1P)
N737HF (AH-1G) N992CH (OH-6A)
123.025 123.450 234.500 242.400

Coast Guard Aircraft/SAR Demonstrations

(Air frequencies)

237.900 282.800 326.150 345.000 379.050

Coast Guard Aircraft/SAR Demonstrations

(VHF marine frequencies, NBFM mode)

157.050 Show Control/Show Center Boats [Channel 21]
157.075 Search and Rescue Demo/Command Post [Channel 81]
157.100 Show Warning Broadcast [Channel 22]
157.125 Unknown usage [Channel 82]
157.150 Show Control/Show Center Boats/HITRON Drug Interdiction Demonstration [Channel 23]
157.175 Boats to Show Center [Channel 83]

Maine Corps AV-8B II Flight Demonstration Teams:

East Coast – MCAS Cherry Point, North Carolina 363.300

West Coast – MCAS Yuma, Arizona

Frequency information is needed for the west coast harrier units

Marine Corps Helicopter Demonstrations

315.375 315.400

Navy F/A-18C Hornet and Navy F/A-18F Super Hornet Flight Demonstration Teams:

East Coast – VFA-106 NAS Oceana, Virginia

237.800 349.900

West Coast – NAS Lemoore, California

Frequency information is needed for the west coast units

Military Parachute Demonstration Teams

One of the fan favorites on the air show circuit is the U.S. Army Golden Knights based out of Fort Bragg, North Carolina. Look for their communications on the often reported frequencies of 122.775, 123.150, 123.400, 123.475 or 123.500 MHz. The team aircraft used during air shows is either the C-31A Friendship or UV-18A Twin Otter.

The Golden Knights aren't the only parachute team that performs around the country. The U.S. Army Special Operations Command has a parachute team known as the Black Daggers. Several frequencies have been uncovered for them during the last few seasons including 123.150, 123.450, 136.000, and 136.500 MHz.

Another performing U.S. Army parachute team is the Silver Wings based out of Fort Benning, Georgia. They were recently heard using 34.650 and 44.900 MHz (NBFM). However, both these frequencies were common landing zone frequencies in the area they were performing in. So if neither of these two frequencies above is heard at the event you are attending, I suggest you initiate a search for them in VHF-low band military frequency subbands.

In addition to the VHF low band frequencies mentioned above, ground and safety personnel associated with this team have also been heard using 467.6125 MHz (FRS Channel 10/GMRS NBFM) for communications. There was also one report that the team was even using an Intra Squad radio frequency of 397.500 MHz.

The famed 101st Airborne Division has a parachute demonstration team known as the Screaming Eagles. They are based out of Fort Campbell, Kentucky and have been reportedly using 44.200 MHz (NBFM).

The U.S. Army has several more teams, but we still do not have frequency information for them. We would appreciate your field reports on the following U.S. Army teams if you catch them performing this air show season.

82nd Airborne All American Free Fall Team
Fort Bragg, North Carolina
Black Knights Parachute Team
US Military Academy, West Point, New York
Green Beret Parachute Team
Fort Bragg, North Carolina

The U.S. Special Operations Command has a parachute demonstration team based out of MacDill AFB in Florida. They have been heard using 122.450, 123.450, and (no, this is not a misprint) 151.625 MHz (NBFM), a nationwide business itinerant frequency.

The U.S. Air Force Academy has a parachute team called the Wings of Blue and it is based at the academy in Colorado. Two frequencies that are reportedly used for air-to-ground jump coordination are 121.950 and 407.500 MHz (NBFM).

And last, but certainly not least: the colorful U.S. Navy Seal Parachute Team, known as the Leap Frogs, are frequent visitors around the country at various sporting/civic events and air shows. This team has been regularly reported on 270.000 and 407.500 MHz (NBFM 131.8-Hz PL tone) over the last several years.

This year this team will conduct several jumps in the San Diego area and monitors in that area are asked to submit any reports of frequencies used by this team to our *MT* email address.

Foreign Military Flight Demonstration Teams

The U.S. military doesn't have an exclusive when it comes to military demonstration teams. Several countries have teams, and some of those teams have even performed here in the United States. I have included a list of the teams that we have received recent reports on below.

Belgium: Swallows – Belgian Air Force Display Team 130.725

Brazil: Esquadilha da Fumaça (The Smoke Squadron) – Brazilian Air Force Air Demonstration Squadron 127.050 130.450 130.550 130.650 132.250

Canada: 15 Wing, Moose Jaw, CT-156 Havard II Trainers, Call sign: Viking # 275.800

Chile: Escuadrilla de Alta Acrobacia Halcones (Falcons High Aerobatics Squad) – Chilean Air Force 136.175

Finland: Midnight Hawks – Finnish AF Academy Demo Team 140.625

France: Patrouille Acrobatique de France – French Air Force Military Flight Team
121.850 123.600 138.450 141.825 (Main formation) 143.100 (Main formation)
143.850 242.650 (Solos) 242.850 (Solos)
243.850 (Team Transport) 263.350 266.175

Ireland: Silver Swallows – Irish Air Corps 130.550

Italy: Frece Tricolori – Italian Military Flight Team 123.475 140.600 263.250 (Displays) 307.800 362.625 387.525 (Displays) 440.450 (NBFM) (Ground Support Team/Commentator)

Jordan: Le Royal Jordanian Falcons – Sponsored by Royal Jordanian Airlines and Air Force 123.500 126.800 456.4625 (NBFM) Ground Crews

Morocco: Marche Verte [Green March] – Royal Moroccan Air Force 135.000 (Ground) 135.500 (Air/Air) 135.925 (Ground) 135.975

Netherlands: Dutch Air Force F-16 142.475 281.800 (Air/Air)

Netherlands: Grasshoppers – Royal Air Force Helicopter Team 281.100

Netherlands: Team Apache 128.450 130.000 135.925 138.325 138.450

Poland: Team Iskry – Polish Air Force Team 123.600

Poland: Team Orlik – Polish Air Force Team Frequency reports are requested

Portugal: Asas de Portugal, Esquadra 103 (Wings of Portugal 103 Squadron) Flight Team (Note: This team was deactivated in 2010 before the start of the air show season. Future activity unknown.)

Slovak Republic: Biele Albatrosy or White Albatroses Display Team – Slovakian Air Force Aerobatic Team (Frequency reports are requested)

Spain: La Patrulla Aguila – Spanish Fixed Military Flight Team 130.300 130.500 241.950 (ex-252.500) 337.975

Spain: La Patrulla Aspa – Spanish Military Helicopter Flight Team 119.000

Spain: PAPEA Military Team 250.240 350.240 310.800

Sweden: Team 60 – Swedish Air Force Aerobatic Team (frequency reports are requested)

Switzerland: Patrouille de Suisse – Swiss Military Flight Team
244.300 266.175 288.850 312.350 359.450 375.450 388.075

Switzerland: Swiss PC-7 Display Team – Swiss Air Force (Frequency reports are requested)

Turkey: Turkish Stars Display Team – Turkish Air Force

141.475 142.325 225.750 235.250 243.450 264.400 279.600

United Kingdom: Army Air Corps Historic Aircraft Flight (AHAF) 380.200

United Kingdom: Battle of Britain Memorial Flight (BBMF) 120.800 122.700 380.200

United Kingdom: Black Cats – Royal Navy Helicopter Display Team 280.475

United Kingdom: Blue Eagles – Royal Army Air Corps Helicopter Flight Team, Call sign: Blue Eagles 44.650 (NBFM) 135.950 135.975 136.975 [VHF-1] 143.600 237.800 252.000 259.600 275.350 284.250 305.500 382.800 [UHF-1]

United Kingdom: Falcons – Royal Air Force Parachute Jump Team
255.1000 (Drop Zone Air/Ground) 256.9000 445.3375 (NBFM) 465.1000 (NBFM)

United Kingdom: Red Arrows – Royal Air Force Flight Team, Call sign: Red #
120.800 242.000 242.050 (Primary) 242.200 243.450 253.450 370.600

United Kingdom: Red Devils – British Army Parachute Team 462.6250 (Ground Support) 462.925 [Ch 3 Ground Support] 464.250 [Ch



Black Diamond Jet Team
(Photo by Brian Topolski)

1 Drop Zone A/G] 464.550 [Ch 2 Drop Zone A/G]

United Kingdom: Royal Navy Historic Flight (Frequency reports are requested)

United Kingdom: The Great War Display Team (GWDT) (Frequency reports are requested)

Canadian Flight and Parachute Demonstration Units

The Royal Canadian Forces flight demonstration team, the 431 Air Demonstration Squadron Snowbirds, is based with the 15 Wing at RCAF Moose Jaw and are regulars on the U.S./Canada air show circuit.

The following frequencies have been recently reported for this popular aerial demonstration team: 123.150 (Solos) 123.325 (Air-to-Air Off Show Center) 227.600 242.600 [13] 243.400 245.500 245.750 272.100 (Primary) [11] 284.900 299.500 333.300 [14] 340.100 MHz. A strange VHF frequency in the nav aids segment of the civilian aircraft band has been used by this team's solo aircraft in recent years -116.000 MHz.

Some additional Snowbird frequencies that have been reported and need further confirmation by field reports include: 227.650 236.800 239.900 240.500 245.000 245.700 266.300 316.500 321.700 378.500 MHz.

The Canadian Forces also has a CF-18 flight demonstration team. A few of years ago Brian "Check your Six" Topolski in Connecticut passed along the frequencies below for this team.

128.975 129.025 130.075 245.500 263.500 263.700 264.600 (East Ops) 274.450 285.975 312.550 (Air/Air) 316.550 323.300 333.300 335.600 340.200 (West Ops) 341.700

The Canadians also have a parachute jump team - the Skyhawks. Frequencies that have been reported for them include 123.000 and 294.700 MHz.



Air Force One lands at Andrews Air Force Base. (Photo by Brian Topolski)

Civilian Air/Parachute Demonstration Teams

At most air shows, the military flight demonstration units aren't the only aerial performers. Civilian organizations, companies, and individuals sponsor a host of aerobatics teams and parachutist teams. A wide variety of civilian aeronautical frequencies are used by these organizations. Load your scanner with the following frequencies and you should be able to catch most of the communications used by the civilian aero acts.

Aircraft (air carrier and private) 122.825 122.875
 Aircraft (air carrier and private)/Aviation support 122.775 123.300 123.500
 Aircraft (air carrier and private)/Flight test 123.125 123.150 123.175 123.200 123.225 123.275 123.325 123.350 123.375 123.400 123.425 123.450 123.475 123.525 123.550 123.575
 MULTICOM 122.850 122.900 122.925
 Private aircraft helicopter 123.025
 Private fixed wing aircraft air/air communications 122.750
 UNICOM 122.700 122.725 122.800 122.950 122.975 123.000 123.050 123.075

Some specific frequencies recently reported to us for select foreign and U.S. civilian demonstration teams are listed below.

Civilian Flight Demonstration Teams and Air Show Companies

Aeroshell Aerobatics Team (AT-6 Texans) 122.775 123.150
 Aerostars CJ-6/YAK-52 Flight Formation Team (UK) 118.700 122.475 122.775 122.950 123.150 123.350 124.450 129.925
 Breitling Jet Team (France) 118.325 127.350 129.050 130.200
 Breitling Wingwalkers (ex-Team Guinot) - AeroSuperBatics Ltd (UK) Call sign: Wingwalk 118.000
 Civilian Air Show Discrete Common 123.150
 Dave Schultz Air Shows 118.700 (Ground Ops) 132.950 (Operations) 135.650 (Airboss) 238.150 (Airboss) 350.300
 Falcon Flight Formation Flying Team 123.150
 Flight for Diabetes (Michael Hunter) 123.425
 Firecat (Rich Perkins) 123.500
 Flying Colors Hang Glider Aerobatic (Dan Buchanan) 123.150 123.300 123.450
 Geico Extra 300 (Tim Weber) 123.150
 Geico Skytypers Team 122.750 122.775 123.425 (Formation) 122.775 123.150 123.425 123.450 (Solos)
 Hamster Biplane (Ed Hamill) 123.150
 Heavy Metal Jet Aerobatics Team 122.475
 Herb and Ditto (T-28 Aircraft) (Herb Baker) 123.450
 Iron Eagles Aerobatic Team 122.925 123.150 123.475
 John Klatt Air shows 123.475
 Julie Clark's (T-34) American Aerobatics 135.925
 Lima Lima Flight Team 123.150 123.175 123.425 123.575
 Manfred Radius Glider Aerobatics Team 123.1500
 Matt Chapman/Michel Mancuso Aerobatics 136.975
 Oreck Vacuum Cleaners Aerobatic Demo (Frank Ryder) 122.825 123.425 123.450
 Otto the Helicopter 123.150 123.300
 Patty Wagstaff Air Shows Inc 122.750 123.475
 Red Bull Air Force 123.450
 Red Eagles Aerobatic Team 122.125 123.150 123.425 123.475
 Ritchie's Pyro 467.6375 (NBFM 233.6 Hz PL)
 Robasaurus - World's First CAR-NIVOROUS Monster Spotter 462.7125 (NBFM DCS464)
 SIAI Marchetti SF260 (Debbie Gary) 123.150
 Showcopters 123.150
 Super Decathlon (Greg Koontz) 123.150
 Swift Magic Aerobatic Team 122.775 122.925
 Team Oracle (Sean Tucker) 122.8750 122.950 123.150 123.450 123.475 133.000
 Team Red 123.350
 Texas T-Cart Aerobatic Aircraft (Randy Henderson) 118.400



VAW -120 Greyhawks (Photo by Brian Topolski)

The Blades Aerobatic Display Team (UK)	121.175	136.175
The Horseman P-51 Aerobatic Team	122.925	136.675
The Patriots (L39) Jet Team	127.300	
The Red Star Formation	127.050	
The Tumbling Bear (Rob Harrison)	134.700	
Tora Tora Tora Warbirds Team (Commemorative Air Force)		
122.850 122.875 123.150 123.425 123.450 469.500 (NBFM)		
469.550 (NBFM)		
Vintage Thunderbird (T-33) Aerobatics (Fowler Cary)	123.150	
Yakovlevs Team (UK)	124.450	130.900

This year's civilian frequency list is dedicated to an air show legend that we lost unexpectedly in 2011 – Greg Poe.

GMRS Frequencies

Several years ago I received several reports that the Golden Knights were using GMRS (General Mobile Radio Service) frequencies 462.6250, 467.5625 and 467.6125 MHz NBFM. In addition to hearing air show demo crews, monitors have found vendors, exhibitors, air show companies, and military ground units using GMRS frequencies. You should make these frequencies part of your scanner load-out prior to the air show. The frequency pair of 462.675/467.675 MHz NBFM is allocated as a national emergency frequency pair for the GMRS service.

A	B	C
462.550	467.550	462.5625
462.575	467.575	462.5875
462.600	467.600	462.6125
462.625	467.625	462.6375
462.650	467.650	462.6625
462.675	467.675	462.6875
462.700	467.700	462.7125
462.725	467.725	

Legend:

- A Base station, mobile relay, fixed station, or mobile station
- B Mobile station, control station, fixed station operating in duplex mode.
- C Interstitial frequencies, base and portable simplex

Family Radio Service and Intra-Squad Radio Frequencies

Ground pyrotechnics personnel from the Tora Tora Tora and Warbirds flight demonstration teams have been monitored at air shows using FRS or Family Radio Service handhelds for communications during shows. In fact, quite a few people and organizations use FRS at air shows. So load up FRS frequencies below (NBFM mode) in your scanner, or better yet, carry a FRS radio to the show. If you are lucky, one of these FRS frequencies might help you make a new milcom monitoring friend or give you a chance to meet one of those high tech radio enthusiasts dragging around one of those fancy radio wagons at the show.

462.5625 [Ch 1]	462.5875 [Ch 2]	462.6125 [Ch 3]	462.6375 [Ch 4]	462.6625 [Ch 5]	462.6875 [Ch 6]	462.7125 [Ch 7]	467.5625 [Ch 8]	467.5875 [Ch 9]	467.6125 [Ch 10]	467.6375 [Ch 11]	467.6625 [Ch 12]	467.6875 [Ch 13]	467.7125 [Ch 14]
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Blue Angels in the Air Tonight (Photo by Brian Topolski)

The government version of the Family Radio Service is known as the Inter-Squad Radio or ISR. There have been numerous reports over the last few years of military units, including the Civil Air Patrol (CAP), using ISR frequencies at air shows. I highly recommend programming these frequencies (NBFM mode) into your scanner and also making them a permanent part of your regular monitoring frequency load out.

In the last year I have confirmed that there are now only 12 ISR frequencies, instead of the 14 that were originally allocated by DoD several years ago. So ISR channels 13/14 (399.925/399.975 MHz) can be removed from your scanner load out.

396.875 [Ch 1]	397.125 [Ch 2]	397.175 [Ch 3]	397.375 [Ch 4]	397.425 [Ch 5]	397.475 [Ch 6]	397.550 [Ch 7]	397.950 [Ch 8]	398.050 [Ch 9]	399.425 [Ch 10]	399.475 [Ch 11]	399.725 [Ch 12]
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U.S. Civil Air Patrol Frequencies

Finally, you should also program U.S. Air Force Civil Air Patrol frequencies in your scanner. We have received field reports of CAP frequencies (repeater and simplex) being used for ground support at several air shows.

The Civil Air Patrol frequency plan has been in transition to their new narrowband allocations / equipment over the last year. At this time, per CAP Headquarters at Maxwell AFB, Alabama, all units should have made the transition to their new frequency assignments and equipment as listed below.

Repeater out/in	PL Tone	Usage [Channel]
141.5750 Simplex	127.3 Hz	Command control 1 [CC1]
141.0000 Simplex	131.8 Hz	Command control 2 [CC2]
149.2750 Simplex	141.3 Hz	Air/Air [Air 1]
150.5625 Simplex	151.4 Hz	Air/Air [Air 2]
150.2250 Simplex	162.2 Hz	Back up guard channel [Guard 1]
139.8750 Simplex	173.8 Hz	Tactical use (Miscellaneous use) [TAC 1]
148.1250 Simplex	100.0 Hz	Primary talk-around [PA TA]
148.1500 Simplex	100.0 Hz	Secondary talk-around [PB TA]
148.1375/143.6250	203.5 Hz	Airborne/Tactical repeater

148.1375/143.6250	192.8 Hz	Airborne/Tactical repeater
148.1375/143.6250	131.8 Hz	Airborne/Tactical repeater
148.1375/143.6250	162.2 Hz	Airborne/Tactical repeater
148.1250/143.5500	Various PLs	National repeater pair
148.1500/143.7000	Various PLs	National repeater pair

There are more frequency designators built around the nationwide repeater pairs mentioned above. That list of nationwide repeater pairs and private line (PL) tones was published in the May 2010 *Milcom* column in *Monitoring Times*.

In Closing

It is always difficult to predict what changes a new air show season will bring, so I strongly encourage readers to watch my *Milcom* Blog, my new Twitter feed (MilcomMP) or the *Monitoring Times* Blog RSS feed on the *MT* home page for any late breaking news or frequency information during the 2012 air show season.

Before I close, I would like to publicly thank the real heroes of this annual air show guide – the hundreds of radio monitors who took the time to share with me what they have heard at the air shows. Without these caring radio hobbyists, there would be no guide. So to each of you, I want to dedicate this latest edition of *MT's Air Show Guide*.

If you have found this guide useful and you would like to help, how about taking a minute or two and pass along what you are hearing this next season? It is important that we get reports from the field since I can't make many shows. We just don't have a budget for that sort of thing.

Even if it is already on our list, pass it along anyway. It all goes in the mix and helps us to compile our next annual guide. You can reach me via my snail mail address at *MT Milcom*, 7540 Highway 64 West, Brasstown, NC 28902 or via e-mail at larryvanhorn@monitoringtimes.com.

So, now it is time once again to break out your scanners, plug in your air show frequencies, crank that volume up, and get ready for the ride of a lifetime. It is an experience you will never forget when you can listen to the sounds from the cockpit at the air show!

"Blue Angels Delta Formation – Stand by Boards – Boards!" **MT**

Radio and the Air Show Experience

By Brian and Jo Marie Topolski
(Photos by the authors)

Air show season will soon be upon us and what an excellent time of year! Sunshine, warm temperatures and air shows in abundance are scheduled from sea to shining sea. If you're ready for the sights, sounds and thrills of pure adrenalin in motion, come with us. Let's take a trip into the wild, blue yonder!

Jet teams, prop planes, WWI and WWII aircraft, parachute jump teams, wing walkers, helicopters, jet powered trucks and static displays – in combination, these components are all designed to thrill, enlighten and inspire. There's something for everyone to enjoy at today's modern air show. This is where we all have the opportunity to learn how the power of flight has changed the face of world history and how our armed forces provide the finest cooperative defense system in the world.

The Black Diamond Jet Team

Who? Yes, you heard right: The Black Diamond Jet Team is the latest sensation on the air show circuit. Formed in 2011, they were

originally known as the Heavy Metal Jet Team. In 2012, they changed their name to Black Diamond because they “wanted a team name that reflected skill, challenge and expertise.” Comprised of seven expert pilots, each with thousands of hours of flight experience in multiple aircraft, the Black Diamond is a seven-plane aerobatic, civilian-owned, jet demonstration team based in Lakeland, Florida.

Last year there were only six jets, but they recently added a seventh for the opposing solo position. Their planes consist of five Aero L-39 Albatross jets along with two MiG 17s, all sporting an impressive arctic camouflage paint scheme. If you love seeing extreme aerobatic and formation flying that'll keep you on the edge of your seat, check out The Black Diamond Jet Team; these guys are awesome!

I first experienced them in Atlantic City, New Jersey during the “Thunder over the Boardwalk” air show in August, 2011. This show featured the United States Air Force Thunderbirds, who are renowned for their amazing flying skills. Traditionally held on a Wednesday, sky conditions were cloudy for the Tuesday practice

show. Rain storms shadowed the area before ultimately moving in and forcing cancellation of all flying activity for the afternoon.

But, on Wednesday it was show time, a picture perfect beach day with bright sunshine and hot summer temperatures. This resulted in the largest air show attendance I had ever seen! The crowd count was estimated at 800,000 people. The performances unfolded flawlessly throughout the day, and you'd never know that practices were cut short the previous day. Admission was free, but if you weren't there early, you were stuck in traffic on the Atlantic City Expressway.

One thing missing last year was the dominating presence of the F-22 Raptor Jet Demonstration Team. With its seemingly other-worldly flying maneuverability, this aircraft is always a crowd pleaser. We did not see it because all F-22 squadrons had to be temporarily shut down pending an investigation of a problem with the oxygen supply system to the pilot. This now being fixed, we welcome them back for the 2012 season!

Getting Geared Up

Let's talk about how we listen at the air show. Something new in my air show radio arsenal is the grab-and-roll comm-cart I call “The Gator Box.” I conceived and built it on the fly in Atlantic City during Thunder over the Boardwalk. I had to think of something in lieu of my main wagon rig, which is too heavy to roll smoothly through thick beach sand. The grab-and-roll is a scaled-down version of the four radio wagon setup that I usually bring with me.

In the grab-and-roll, everything is rack mounted inside a sturdy plastic Gator case, which comes with removable front and rear covers. Gator is a company name that manufactures equipment cases for the music industry. The bottom radio and speakers are bolted to a steel rack mounted shelf.

The top radio is held by heavy-duty Velcro to the lower radio. The two antenna mounts with BNC connections are securely mounted with magnets, each to a galvanized steel washer which is attached by Velcro to the case. The cart is a collapsible/foldable hand truck purchased at any Lowe's or Home Depot store. Everything is secured to the cart using bungee cords.

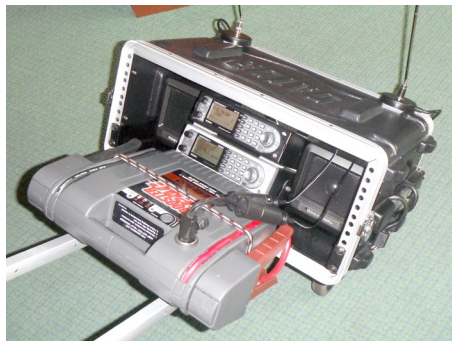
Thunderbirds parked with Comm-cart



It's like a travel suitcase, but the bottom line is that it works most everywhere, but not in sand. It needs larger tires so it can ride higher above the grainy particles that can ultimately wreak havoc on your electronics. Another great feature is the fact that this communication setup has the ability to operate continuously, even while you "walk and roll" down the tarmac. This way, you won't miss a beat if you find that you have to relocate.

When the time comes to put it away, all cables, along with the antennas, can be placed in a ballistic nylon carry pouch and securely stowed in the back of the case.

The radios you see in the Gator Box photo are temporary. On the bottom is the Uniden BCD-996T, on top is the Uniden BCT-15X. The ultimate version for 2012 will be just as you see it, but the radios are being replaced by two matching Uniden BCD-996XT's, each with digital receive capability.



The metal enclosed speakers are Texas Rangers. They project very well and are warm sounding (not tinny) and can take the power of a small amplifier should you decide to add one. Power is derived from a rechargeable 12 volt/900 peak amp battery used in jump-starting cars.

Remember to always keep your rig looking neat and professional. This helps to ease the mind of security personnel when you're going through a checkpoint. It makes it easier for them to inspect your equipment and know exactly what it is you have. As I've mentioned before, plan on being searched. It doesn't always happen, but be prepared.

Carry proper identification such as a drivers license with you at all times! Military bases are usually more intensive than civilian sponsored shows. If you're a licensed ham radio operator,

C-5 Galaxy transport at Andrews Air Force Base, Maryland.



certainly bring along a copy of your license. This credential gives you valid reason for having radios on your person.

Photo Opportunities

For my air show photography I use the Nikon D-90 camera with two lenses. Lens number one is a Nikon 18-100 mm zoom. I use this for close-up photos, including people and aircraft on static display. Lens number two is a Sigma 70-300 mm zoom. I use this one for objects that are farther away, such as an aircraft in flight. I select the fastest shutter speed available for jets and other fast movers.

Hints: keep both eyes open while looking into the camera viewfinder. This enables you to see other aircraft coming into photographic view via your peripheral vision. This technique is especially useful when trying to capture two opposing jets in a crisscross maneuver. You don't know where the second one is, if you can't see it. For propeller driven aircraft, I use a slower shutter speed. This helps to blur the propeller and give the viewer a sense that the aircraft is actually flying.

One show definitely worth attending this year is the Boston-Portsmouth Air Show at Pease Air National Guard Base in New Hampshire. For more information go here: www.newengland

airshow.com. It takes place June 30-July 1, 2012 and will feature the United States Navy Blue Angels. Oh, and did I mention the Black Diamond Jet Team will also be there? Don't miss them!

Directly from there, it's off to Boston, Massachusetts for their Independence Day celebration. This year is especially historical because it commemorates the bicentennial of the "Star Spangled Banner" composed by Francis Scott Key during the War of 1812. In addition to fireworks, and an Esplanade concert by the Boston Pops Orchestra, the city of Boston, in coordination with the United States Navy and "Operation Sail" (also referred to as Op Sail), will host numerous tall ships from around the world sailing to and docking in Boston Harbor. Op Sail is a national non-profit organization dedicated to sailing ship training and promoting goodwill among nations. Included in this extravaganza will be a flyover by the Blue Angels over Boston Harbor on the 4th of July, an excellent scanning and photo opportunity! This huge undertaking takes place June 28-July 4, 2012. For information visit: www.bostonharborfest.com.

For this venue, have your scanners and this issue of *MT* ready. Among top monitoring targets are the Blue Angels, Massachusetts State Police (using a Motorola Type II Trunked Radio System), City of Boston Police/Fire and EMS (conventional radio system), City Of Cambridge (Motorola Type III Hybrid Trunked Radio System), United States Coast Guard (conventional system), Civilian Maritime (conventional system), Boston's Logan International Airport Tower (conventional system), and the Massachusetts 104 Fighter Wing F-15 Eagles (they usually do the Boston Esplanade flyover) air/air tactical used: 159.60/159.90/264.85 (all am mode). www.radioreference.com is an excellent source of frequency information for the above named public safety agencies.

And, if you happen to see us at an air show, please come over and say hello. We're always up for a good rag chew and frequency exchange. In the meantime, "keep your head to the sky; see you on the flightline!" Check Six... Good Hunting!



Snow Birds Ascending



Monitoring the Air Show Experience

Equipment and Tips

Now that you've read this month's cover story and you know who are the crack military flight demonstration teams and where to find the frequencies they use for air-ground coordination and other communications (all found in that article), let's turn to another important consideration for successful monitoring: the equipment required to monitor air show communications.

I am frequently asked which scanner I recommend for air show monitoring. While I don't have a favorite, I have prepared the list of receivers and scanners that meet all the requirements as outlined below.

Most of the scanners sold in the marketplace today are suited for air show monitoring. On the other hand, most of the older scanners on the used market are not suitable for air show monitoring. There are certain requirements your air show radio has to meet in order to successfully monitor the two major military aerial demonstration teams – the Blues and T-Birds.

If you are going to a Thunderbird team event, then you will need a scanner that can monitor the 138-150 MHz military land mobile band in the "AM mode." Most of the older



Uniden scanners cannot be used for air show monitoring due to their lack of independent transmission mode selection.

In addition to the civilian aircraft band (118-137 MHz), you will also need a scanner that has the 225-400 MHz military aeronautical band in it. Most of the action (especially the Blues) will be heard in this military UHF portion of the spectrum.

Adding these two criteria to the mix, the list of possible radios again narrows down our choice for air show scanners even further. Table one is our list of scanners that meet all of the criteria for monitoring all the military flight demonstration teams at air shows worldwide.

Another area of air show monitoring that has become increasingly popular the last couple years is tuning in to the land mobile radio systems at the military bases that sponsor these shows and open houses. Most of the smaller bases, including National Guard bases, still use either simplex or repeater systems for their internal communications. In most cases these are analog narrowband FM mode communications. Some bases have moved over to the APCO P25 digital mode, so if you want to monitor them, you will have to have a scanner capable of decoding the APCO P25 digital stream.

Many of the major military bases have moved most, if not all, of their land mobile communications to trunk radio systems. The major bands for these trunk radio systems are 138-150.8 MHz (excluding the two meter ham band), 406-420 MHz and the new DoD 380-400 MHz LMR subband.

While some of the legacy trunk systems still use analog communications and the 406-420 MHz band, these are rapidly disappearing and being replaced by digital trunked systems in the 138-150.8 and 380-400 MHz bands.

So, in order to monitor these trunk radio systems, our list below gets a bit thinner. Scanners suitable for this task have been marked with an asterisk.

❖ Tips for enjoying a great day at the air show

If you want to have a great time at the air show, you should plan ahead and get some stuff together to take to the event. Here are some suggestions from my personal list from which I gather things to take with me to the air show.

TABLE ONE: MILITARY AIR SHOW CAPABLE RECEIVERS

Digital trunk radio system capable scanners are marked with an asterisk.

Handhelds

Alinco	DJ-X3, DJ-X7T, DJ-X11T, DJ-X30, DJ-X2000T
AOR	AR-8200 MK III, AR-Mini U
GRE	PSR-310, PSR-500*, PSR-700, PSR-800*
Icom	IC R-5 Sport, IC R-6, IC R-20, IC-RX7
MFJ	MFJ-8322
Radio Shack	Pro-106*, Pro-107, Pro-164
Uniden	BC-246T, BC-346XT, BCD-396XT*, HomePatrol-1*
Yaesu	VR-500

Base/Mobile Units

AOR	AR-8600 Mk IIB
GRE	PSR-410, PSR-600*
Radio Shack	Pro-163, Pro-197*
Uniden	BCT-15X, BCD996XT*
Yaesu	VR-5000

Computer Receivers

Icom	PCR-1500, IC-R1500, PCR-2500, IC-R2500, R-9500
WinRadio	WR-G305e, WR-G305i, WR-G305e/PD, WR-G305i/PD, WR-G315e, WR-G315i, WR-3150e, WR-3150i-DSP, WR-3500e, WR-3500i-DSP, WR-3700e, WR-3700i-DSP

Discontinued radios/scanners that are capable of air show monitoring (per requirements listed above)

Alinco	DJ-X2T, DJ-X10T
AOR	AR-16B, AR-1000, AR-1500, AR-2515, AR-2700, AR-3000AB, AR-5000+3B, AR-7000B, AR-8000, AR-8200B, AR-8600B
Icom	IC-R1, IC-R2, IC-R3, R10, R100, R7000, R7100, PCR-100, PCR-1000, PCR-1500
Kenwood	RZ-1
Radio Shack	Pro-2004, Pro-2005, Pro-2006, Pro-43
Uniden	BCT-15, BC-296, BR-330T, BC-796, BCD-396T*, BCD996T*
WinRadio	WR-1000i/e, WR-1500i/e, WR-3000i-DSP, WR-3100i-DSP
Yaesu	VR-120, VR-120D

Hats - Wearing a hat can make a lot of difference to your comfort level while at the show. Ball caps are okay, but you will have to watch out for sunburn on your lower face and neck if you wear one. Many people prefer to wear hats with wide brims for better protection.

Sunglasses - Polarized lenses are especially good for shows that take place near the water, since they reduce glare.

Sun Screen - Speaking of the sun, you obviously want to attend an event with good weather (clear skies and no clouds). This means you'll probably be in the sun a lot. Even if it is on a cloudy or hazy day, beware. You may get more sun than you think. The higher the sun screen SPF the better, and be sure to also take lip balm.

Something to sit on - Take something to use as a drop sheet if you are going to be on the ground. You can lean on your backpack for some support. If allowed, you may consider carrying a lawn or camping chair. Keep in mind that you'll be looking up at an angle for most of the show, so a chair that is somewhat reclined may be more comfortable.

Water - You will probably be at the show for several hours and you really don't want to get dehydrated. Refreshments are normally available at these shows, but your own supply of water may come in handy. Alcohol may make your dehydration worse, so if you do visit the "beer tent" then drink in moderation. Don't rely on soda pop to prevent dehydration.

Snacks - Most air shows have food concessions (hamburgers, hot dogs, etc.), but you might want bring along some lighter snacks in case you need a quick fix and don't want to stand in a long line.

Moist towelettes/wet wipes - Air shows normally have outdoor bathroom facilities and having a way to freshen up afterwards is a good idea.

Notebook and pen - If you are a collector of aircraft serial numbers, radio frequencies, etc. then a notebook and pen are a must. You may also see something you want to make a note about, like website addresses at displays or radio frequencies that you discover.

Binoculars - Low and medium power binoculars tend to work well for checking out distant details. I won't carry higher power binoculars as they are very difficult to use for aircraft in flight.

Camera - Air shows by their nature are very colorful and photogenic events. Many air shows have disposable cameras and film for sale, but you'll probably be happier if you bring along your own. I highly recommend a digital camera, an extra set of batteries, and a couple of extra memory cards since you will probably shoot a lot of pictures. If you bring a video camera, be sure to pack an extra tape or memory card and batteries.

Earplugs - Jets make a lot of noise and/or you may find yourself next to an overly loud speaker system used by the air show announcer.

Scanner - I know it is silly to remind you of this, but be sure to bring along the scanner and our air show guide and extra batteries. You might actually enjoy listening to the air show pilots and demonstration teams.

Small backpack - Yes, security will want to check your backpack before allowing you in to the show, but it is really handy to have some storage space to carry around all the stuff I have mentioned above around the show.

❖ Do's and Don'ts

I have attended a lot of air shows over the years and have developed a list of do's and don'ts you should consider when planning to attend these events.

Do come early and leave late. If you do, you will avoid most of the pedestrian and vehicle traffic headaches. Most air shows have static displays of aircraft and other displays, so before and after the show will afford you some time to look around.

Do find out where you can get medical aid or seek assistance if you need it. If you are in a group and you get separated, where will you meet? If you have children with you, make sure they know how to get help if they get lost.

Do consider where you are going to sit. Most people insist on getting as close to "front and center" as they can. While this is fine, you might be just as happy sitting farther back or at the end of the viewing area where it may be less crowded.

Do stay aware of your surroundings. There are often vehicles or machinery moving around in the public areas such as around the static displays.

Do ask questions. Often there are aircraft owners or representatives at the static displays. Most people are very proud of their airplanes and they'll be happy to answer your questions.

Do appreciate all the aircraft, not just the fastest and the loudest.

Do wear comfortable shoes. You may cover several miles before the day is done

Don't touch the aircraft. Many aircraft in static displays have bits and pieces that can be damaged, broken, or bent. You could get hurt if you don't know what you're doing. Never touch an aircraft unless someone in authority invites you to do so. Never move a propeller, and keep clear of "props" at all times.

Don't smoke around the aircraft. Planes in a static display sometimes vent fuel as the plane heats up in the sun. Some fabric-covered aircraft have coatings that are highly flammable.

Don't litter, as your trash could become a physical hazard to the aircraft (FOD, foreign object damage). Clean up your viewing area once you are done.

Finally, check out the air show website prior to the event to learn about the show hours for the public, any security restrictions (no scanners, backpacks, or coolers, etc), directions in and out of the show, schedules and much more.

On my *Milcom* blog (address in the resource guide), I have posted current schedules for all the major teams and any known websites associated with the air show events they are performing at.

Until next time, 73 and good hunting.

AIR SHOW RESOURCE GUIDE

Milcom Blog <http://mt-milcom.blogspot.com>

Milcom Twitter Feed [MilcomMP](#)

Monitoring Times 2011 Air Show Guide

<http://tinyurl.com/86vjytq>

Canadian Forces Snowbirds 2012-2013 Schedule

<http://tinyurl.com/89kk3k8>

US Air Force Thunderbirds 2012 Schedule

<http://tinyurl.com/84rtev7>

US Army Golden Knights 2012 Schedule

<http://tinyurl.com/8829sgb>

US Navy Blue Angels 2012-2013 Schedule

<http://tinyurl.com/7evlo7g>

US Navy Blue Angels Practice Schedule Schedule

<http://tinyurl.com/7pfqqsp>

Official Websites:

Air Combat Command Aerial Events

www.acc.af.mil/aerialevents/

Blue Angels www.blueangels.navy.mil/index.htm

Golden Knights www.usarec.army.mil/hq/goldenknights/

Leap Frogs www.leapfrogs.navy.mil/

Navy Office of Community Outreach www.navy.mil/navco/

Snowbirds www.snowbirds.dnd.ca/v2/index-eng.asp

Thunderbirds www.airforce.com/thunderbirds

Twitter Feeds:

Air Combat Command Aerial Events

<http://twitter.com/#!/aerialevents>

Blue Angels <http://twitter.com/#!/BlueAngels>

Golden Knights <http://twitter.com/#!/ArmyGK>

Thunderbirds <http://twitter.com/#!/USAFThunderbird>

Facebook Pages:

Air Combat Command Aerial Events

www.facebook.com/aerialevents

Blue Angels www.facebook.com/pages/Blue-Angels/34985920343

Golden Knights www.facebook.com/usarmygoldenknights

Leap Frogs www.facebook.com/leapfrogs

Skyhawks www.facebook.com/group.php?gid=112105354592

Snowbirds www.facebook.com/pages/The-Canadian-Forces-Snowbirds/23613917381

Thunderbirds www.facebook.com/pages/US-Air-Force-Thunderbirds/267550469245

