

Instructions for Software/Data on Accompanying CD-ROM

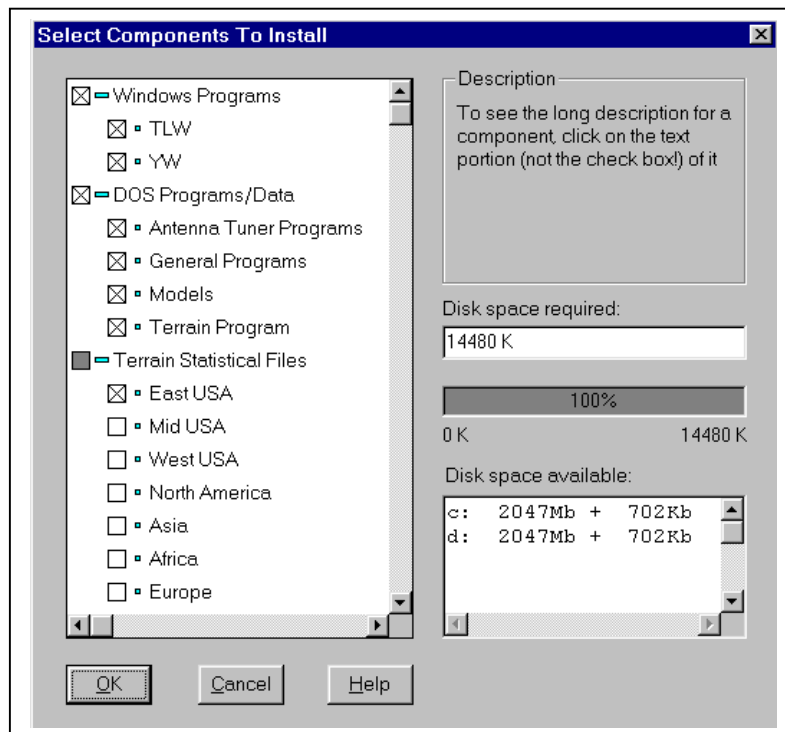
(Revised January 22, 2001)

The companion CD-ROM for the 19th Edition of *The ARRL Antenna Book* includes software associated with several areas of the book (to find descriptions of the programs in the book itself, look in the book index under “Programs:”).

SOFTWARE INSTALLATION

To install the Antenna Book Software, do the following:

1. At the lower left-hand of your Desktop, click **Start**, then **Run**.
2. Click on the **Browse** button and then select the drive corresponding to your CD-ROM. We'll assume here that it is drive D.
3. Select the *ABSETUP* program by clicking on it twice and then clicking **OK**.
4. Follow the on-screen instructions to choose your target directory (the default is c:\AntBk19) and then Program Group (the default is Antenna Book Software).
5. When the menu tree “Select Components to Install” appears, select all the components you want. The installation program selects a number of default choices for you.



6. Select or de-select any choices you want and then click **OK** to start the installation.
7. Afterwards, allow the computer to shut down and reboot.

Possible Problems During Installation

You may possibly encounter warnings or problems during installation. Windows programs use DLLs (Dynamic Linked Libraries) and other files (such as OCX, ActiveX Controls) supplied from Microsoft, Compaq or other software manufacturers. Software manufacturers will occasionally update their DLLs and OCXs, which are usually stored as system files in the \Windows\System subdirectory.

If the installation program finds an older system file that should be updated, it may warn you that the file is currently in use. This might happen because that system file is being used either by Windows itself or by another program that is running in the background, such as an anti-virus program, for example. This problem seems to occur most often for the OLEAUT32.DLL file. Warnings may pop up twice during installation—once for *TLW* and once for *YW*. The installation program will display an error message saying something like:

“Message: Unable to install to c:\WINDOWS\SYSTEM\OLEAUT32.DLL.” This error-message has three buttons: **Retry** and **Cancel**, plus the **X** exit button at the upper right corner of the message box. Click on the **Cancel** button. This installs the latest OLEAUT32.DLL file the next time you reboot your computer. (Note: If you click **Retry** nothing will happen, and if you click on the **X** exit button, the latest OLEAUT32.DLL file will not be installed. The *TLW* program can work with older versions of OLEAUT32.DLL, but the *YW* program usually needs the latest file.)

The installation procedure overwrites older versions of DLLs and OCXs with the latest versions located on the CD-ROM. It is normally best to allow this updating (by clicking **Cancel**, since older programs that also use the same DLLs and OCXs should still work—in other words, they should be backwards compatible. On very rare occasions, however, a newer DLL or OCX will not function with older programs. Should this occur, please contact the publisher of the other program or contact ARRL, using the e-mail address at the end of this document.

We have found that some auxiliary “Uninstall” programs can interact with an installation because some of these programs automatically make DLLs and OCXs “read-only.” Consult your operator’s manual for such uninstall programs if you see a warning message about a “read-only” file during this installation. You should click the **Cancel** button if the warning box is displayed.

After the installation, you may have to run your “Uninstall” program to update its directory information, and then reinstall the *Antenna Book* software.

Putting Icon(s) on Your Desktop

You may want to put the program group containing all the Antenna Book Software on your Desktop for easy access, or you may want to place an individual icon from the “Antenna Book Software” program group on your Desktop as an icon.

To place the entire “Antenna Book Software” **program group** on your Desktop, do the following:

1. From the Desktop Taskbar in Windows 95 or 98 at the lower left-hand corner of the screen, select **Start**, then **Programs**.
2. Scroll down to find the “Antenna Book Software” listing and right click on it. Now, select **Send To** and then click on **Desktop (create shortcut)**.

The procedure for putting a single program’s icon on the Desktop is similar. In this case, you right-click on the program icon you want, say the *TLW* icon, which will be located to either the left or right side after you have placed the mouse cursor over the Antenna Book Software program group. Right-click, select **Send To** and then click on **Desktop (create shortcut)**.

Incidentally, if you’d like to alphabetize the program listings in the Program Group, click on **Start, Programs** and place the mouse cursor anywhere in the program listings. Right click the mouse and then choose **Sort by Name**.

DIRECTORY STRUCTURE

Although you may override it, the default subdirectory *ABSETUP* creates on your hard drive is C:\AntBk19, with 9 subdirectories beneath it:

\AntBk19\AntTuner

\AntBk19\BeaconWiz

\AntBk19\General

\AntBk19\GeoClock

\Antbk19\Models

\AntBk19\Terrain

\AntBk19\uninst

\AntBk19\XmsnLine

\AntBk19\Yagis

Listed below are short descriptions of the files in each subdirectory. Note that the “uninst” subdirectory holds the uninstall files. Leave these alone, please, so that you may uninstall the programs gracefully and completely, should you desire to do so in the future.

On the CD-ROM itself is located the **DOS_Only** subdirectory, which contains only PC-DOS executable files and data for those who are not yet running Windows 95/98/2000/NT operating systems.

In the \AntBk19\AntTuner subdirectory:

AAT.EXE

The *AAT* program automatically evaluates antenna tuner networks over a very wide range of load impedances. You can use a word processing program to read the two output ASCII files. See Chapter 25 for more information on this program. An icon is automatically created in the Antenna Book Software program group for *AAT*. The documentation file is *AAT.TXT* or *AAT.PDF*.

In the \AntBk19\BeaconWiz subdirectory:

Active Beacon Wizard ++

The setup file *ABWSetup.EXE* for the shareware *Active Beacon Wizard ++* program by Jim Tabor, KU5S, is located in this subdirectory. *Active Beacon Wizard ++* is usually installed automatically when you use the main installation program, *ABSETUP*, but you may re-install it using this program from **Start, Run** from your Desktop. Note that the icon for this program is placed on your Desktop, not in the Antenna Book Software program group. (Note also that in order to un-install *Active Beacon Wizard++* you must do so from **Start, Settings, Control Panel, Add/Remove Programs.**)

Active Beacon Wizard ++ can tell you when each beacon in the NCDXF network is active, and can also access internet time stations to set your computer’s clock according to WWV. It can also retrieve propagation bulletins from numerous Web sources.

From the closing screen of *Active Beacon Wizard ++*: “We will donate 20% of all contributions to the NCDXF. <http://www.ncdxf.org/>. Your contribution will help us continue

developing software for amateur radio and swl use.” We urge you to contribute \$10 to further the development of this useful and unique software.

In the \AntBk19\General subdirectory:

EFFLEN.FOR

EFFLEN.FOR is described in Chapter 2. It is an ASCII Fortran file that illustrates the principle behind the Schelkunoff tapering algorithm. This converts a tapered element into a single “monotaper” that can be modeled with a method-of-moments program like *NEC-2* or its derivatives. This is not a complete program, only a fragment of the core code used in the *YW* program.

GAMMA.BAS, GAMMA.EXE

GAMMA.BAS is described in Chapter 25. It is an ASCII text file that can be run in QBASIC or GWBASIC to compute the parameters for a gamma match. *GAMMA.EXE* is a compiled, executable file you can run directly from the DOS prompt or by clicking on the icon in the Antenna Book Software program group. (Note that GAMMA is updated from earlier versions to eliminate a bug.)

MOBILE.EXE

MOBILE.EXE is described in Chapter 6. This is a terrific DOS program by Leon Braskamp, AA6GL, for evaluating and designing mobile whip antennas and the coils used for loading these short antennas. You can access *MOBILE* by clicking on its icon in the Antenna Book Software program group.

LPCAD28.EXE

LPCAD28.EXE is described in Chapter 10. We thank Roger Cox, WBØDGF, who wrote this DOS program for computing LPDA designs. There is an icon for *LPCAD28* in the Antenna Book Software program group. Instructions for use of *LPCAD28* are in *LPCAD.TXT* (*LPCAD.PDF*).

ANTPLNR.PDF

This Adobe PDF document is titled “Antenna Height and Communications Effectiveness.” It is subtitled *A Guide for City Planners and Amateur Radio Operators* and is written to help amateurs obtain building permits to put up their towers and antennas.

In the \AntBk19\GeoClock subdirectory:

GeoClock

This is where the program files for the shareware *GeoClock* program are located. An icon has been placed in the Antenna Book Software program group to access *GeoClock*, which is an innovative and useful program by Joe R Ahlgren. Using *GeoClock* you can determine the sunrise/sunset times for any location in the world for any date, as well as determine graphically the direction and distance between any two points. An icon is automatically created in the Antenna Book Software program group for *GeoClock*.

To quote from the *GeoClock* manual: “*GeoClock* is distributed as shareware. This means that if you use and enjoy the program, you are expected to register it.” We urge you to register and support such innovative and useful software!

In the \AntBk19\Modeling Data subdirectory:

This subdirectory contains a number of *EZNEC* data files for antenna designs described in the book. These files are located in subdirectories below the *Models* subdirectory named after the chapters in printed version of *The ARRL Antenna Book*. Manually copy the files you are interested in modeling onto your hard disk and access them using *EZNEC*. Note that we do not include *EZNEC* with this book. You may purchase *EZNEC* from: Roy Lewallen, W7EL, PO Box 6658, Beaverton, OR 97007, or e-mail at w7el@eznec.com.

In the \AntBk19\Terrain subdirectory:

YT (Yagi Terrain analysis)

This subdirectory contains the *YT* program and sample terrain data for evaluating the effect of uneven local terrain on the launch of HF signals throughout the world. See *YT.TXT* (or *YT.PDF*) documentation file on disk. The program *YT* is described in detail in Chapter 3 and may be accessed using the icon in the Antenna Book Software program directory.

During the installation process you normally specify the region in which you live so that appropriate statistical elevation-angle files can be installed along with *YT*. The statistical elevation angles are computed for the full 11-year solar cycle from transmitting sites indicated by the filename.

If you like, you may copy statistical files for other areas of the world into this subdirectory using *ABSetup*. You will find, however, that the directory listing in *YT* for elevation files becomes rather cluttered if you carry this process too far.

The statistical files in the North American set are Alaska, Mexico, and VP2E. If you are in the USA, use the East-USA, Mid-USA or the West-USA file set. In Europe, use the Europe set; in Africa, use the Africa set, etc.

In the \AntBk19\XmsnLine subdirectory:

TLW (Transmission Line for Windows)

This subdirectory contains installation files for *TLW* (Transmission Line for Windows), plus the DOS program *TLA.EXE*, along with its documentation files *TLA.TXT* and *TLA.PDF*. *TLA.EXE* (short for Transmission Line, Advanced) computes many parameters for transmission lines and antenna-tuners—including detailed losses and stresses. If you have an older computer running DOS or Windows 3.x you would use *TLA.EXE*. Otherwise, you will want to run the *TLW* (Transmission Line for Windows) under Windows 95, 98, NT or 2000. An icon for *TLW* is created automatically in the Antenna Book Software program directory and the documentation file is *TLW.PDF*.

In the \AntBk19\Yagis subdirectory:

YW (Yagi for Windows)

In this subdirectory is located the *YW* (Yagi for Windows) program. Also included are 80+ optimized Yagi antenna designs. See *YW.PDF* for documentation. *YW* is described in Chapter 11. An icon is automatically created in the Antenna Book Software program group for *YW*.

The DOS program *BVYAGI.EXE* is also located in this subdirectory. It has similar functionality to *YW* (Yagi for Windows) but with a very sparse DOS interface. It is available for those who may not be running Windows 95 or a later version of the Windows operating system. The documentation file for *BVYAGI.EXE* is *BVYAGI.TXT* (or *BVYAGI.PDF*).

SCALE.EXE

Another useful DOS program called *SCALE.EXE* is located in this subdirectory, along with its documentation files *SCALE.TXT* and *SCALE.PDF*. This program uses the same Yagi data

files used by *YW* to scale to different frequencies or different element taper schedules. An icon is automatically created in the Antenna Book Software program group for *SCALE*.

HF PROPAGATION TABLES

Summary HF propagation tables are located on the CD-ROM. Because of the size of all the data (almost 18 MB), you would not normally copy these files to your hard disk. There are 155 different QTHs represented in these files, organized according by continent (except for the large section dedicated to the USA).

Each set of tables for a particular location cover all 12 months of the year, for six different levels of solar activity, ranging from Very Low to Ultra High. The individual table sets are listed below.

Summary Propagation Tables

USA	W7M Helena, MT	KL7 Anchorage, Alaska
W1B Boston, MA	W7N Las Vegas, NV	KP2 Virgin Islands
W2A Albany, NY	W7O Portland, OR	TI San Jose, Costa Rica
W2N Buffalo, NY	W7U Salt Lake City, UT	V3 Belmopan, Belize
W3D Washington, DC	W7W Seattle, WA	VE1 Halifax, Nova Scotia
W4A Montgomery, AL	W7Y Cheyenne, WY	VE2 Montreal, Quebec
W4F Miami, FL	W8M Detroit, MI	VE3 Toronto, Ontario
W4G Atlanta, GA	W8O Cincinnati, OH	VE4 Winnipeg, Manitoba
W4K Louisville, KY	W8W Charleston, WV	VE5 Regina, Saskatchewan
W4N Raleigh, NC	W9C Chicago, IL	VE6 Calgary, Alberta
W4T Memphis, TN	W9I Indianapolis, IN	VE7 Vancouver, British Columbia
W5A Little Rock, AR	W9W Milwaukee, WI	VE8 Yellowknife, NWT
W5H Houston, TX	WØC Denver, CO	VO1 St. John's, Newfoundland
W5L New Orleans, LA	WØD Bismarck, ND	VP2 Anguilla
W5M Jackson, MS	WØI Kansas City, MO	VP5 Turks & Caicos
W5N Albuquerque, NM	WØK Middle of US, KS	XE1 Mexico City, Mexico
W5O Oklahoma City, OK	WØM St. Louis, MO	YVØ Aves Island
W5T Dallas, TX	WØN Omaha, NE	Europe
W6L Los Angeles, CA	WØS Pierre, SD	CT Lisbon, Portugal
W6S San Francisco, CA	Other, North America	DL Bonn, Germany
W7A Phoenix, AZ	6Y Kingston, Jamaica	
W7I Boise, ID	HP Panama City, Panama	

EA Madrid, Spain
EI Dublin, Ireland
F Paris, France
G London, England
I Rome, Italy
JW Svalbard
LA Oslo, Norway
OH Helsinki, Finland
OK Prague, Czech Republic
ON Brussels, Belgium
OZ Copenhagen, Denmark
UO Kishinev, Moldova
SV Athens, Greece
TA Ankara, Turkey
TF Reykjavik, Iceland
UA3 Moscow, Russia
UA6 Rostov, Russia
UB Kiev, Ukraine
YO Bucharest, Romania
YU Belgrade, Yugoslavia

South America

CE Santiago, Chile
CP La Paz, Bolivia
FY Cayenne, French Guiana
HC Quito, Ecuador
HC8 Galapagos Islands
HK Bogota, Columbia
LU Buenos Aires, Argentina
OA Lima, Peru
P4 Aruba
PY1 Rio de Janeiro, Brazil
PY0 Fernando de Noronha
YV Caracas, Venezuela

ZP Asuncion, Paraguay
Asia

1S Spratly Islands
3W Ho Chi Minh City,
Vietnam
4S Columbo, Sri Lanka
4X Jerusalem, Israel
9N Katmandu, Nepal
AP Karachi, Pakistan
BY1 Beijing, China
BY4 Shanghai, China
BY0 Lhasa, China
HS Bangkok, Thailand
HZ Riyadh, Saudi Arabia
JA1 Tokyo, Japan
JA3 Osaka, Japan
JA8 Sapporo, Japan
JT Ulan Bator, Mongolia
UA9 Perm, Russia
UA0 Khabarovsk, Russia
UD Baku, Azerbaijan
UL7 Alma-Ata, Kazakh
VS6 Hong Kong
VU New Delhi, India
VU7 Andaman Islands
XZ Rangoon, Myanmar

Oceania

3D2 Fiji Islands
DU Manila, Philippines
FO Tahiti
H4 Honiara, Solomon Islands
KH0 Saipan, Mariana Islands
KH6 Honolulu, Hawaii
KH8 American Samoa

KX6 Kwajalein, Marshall
Islands

VK2 Sydney, Australia
VK6 Perth, Australia
VK8 Darwin, Australia
YB Jakarta, Indonesia
ZL1 Auckland, New Zealand
ZL3 Christchurch, New
Zealand

Africa

3B9 Rodrigues
3C Bata, Equatorial Guinea
5N Lagos, Nigeria
5R Antananarivo,
Madagascar
5U Niamey, Niger Republic
5Z Nairobi, Kenya
6W Dakar, Senegal
7Q Lolongwe, Malawi
7X Algiers, Algeria
9J Lusaka, Zambia
9L Freetown, Sierra Leone
9X Kigali, Rwanda
C9 Maputo, Mozambique
CN Casablanca, Morocco
D2 Luanda, Angola
EA8 Canary Islands
J2 Djibouti
ST Khartoum, Sudan
SU Cairo, Egypt
VQ9 Chagos, Diego Garcia
XT Burkina Faso
ZS1 Capetown, So. Africa
ZS6 Johannesburg, So. Africa

These summary PDF files contain propagation prediction tables valid from the transmitting site indicated in the filename to seven generalized receiving locations throughout the world. The user selects a single transmitting site closest to his/her location. The easiest way to access this data is to open Adobe Reader and open the file **PropagationTables.PDF** in the root directory on your CD-ROM disk and choose “Summary Tables”.

A sample set of a Detailed Propagation Table is also available for you to check out. From Adobe Reader open the file **PropagationTables.PDF** on your CD-ROM disk and choose “Sample Detailed Table” to see an example for Athens, Greece. A complete set of these detailed propagation tables are available on the CD-ROM version of *The ARRL Antenna Book*.

Each transmitting location is organized by six levels of solar activity over the whole 11-year solar cycle:

- VL (Very Low: SSN between 0 to 20)
- LO (Low: SSN between 20 to 40)
- ME (Medium: SSN between 40 to 60)
- HI (High: SSN between 60 to 100)
- VH (Very High: SSN between 100 to 150)
- UH (Ultra High: SSN greater than 150)

The seven generalized receiving locations throughout the world are:

- EU = Europe (all of Europe)
- FE = Far East (centered on Tokyo, Japan)
- SA = South America (centered on Asuncion, Paraguay)
- AF = Africa (centered on Lusaka, Zambia)
- AS = southern Asia (centered on New Delhi, India)
- OC = Oceania (centered on Sydney, Australia)
- NA = North America (all of USA).

These propagation files show the highest predicted signal strength (in S-units) throughout the generalized receiving area, for a 1500-W transmitter and rather good antennas on both sides of the circuit. The standard antennas are 100-foot high inverted-V dipoles for 80 and 40 meters, a 3-element Yagi at 100 feet for 20 meters, and a 4-element Yagi at 60 feet for 15 and 10 meters.

Discount the S-Meter readings to reflect a smaller station:

Subtract 2 S units for a dipole instead of a Yagi

Subtract 3 S units for a dipole at 50 feet instead of a Yagi at 100 feet

Subtract 1 S unit for a dipole at 50 feet rather than a dipole at 100 feet

Subtract 3 S units for 100 W rather than 1500 W.

Shown below is a 1/3-size image of a table printout from San Francisco to the rest of the world, for Very High solar activity. The real image will be printed full-size in landscape mode if your printer is capable of this.

CA (San Francisco), Feb., for SSN = Very High, Sigs in S-Units. By N6BV, ARRL

UTC	80 Meters						40 Meters						20 Meters						15 Meters						10 Meters						UTC					
	EU	EE	SA	RF	AS	OC	NA	EU	EE	SA	RF	AS	OC	NA	EU	EE	SA	RF	AS	OC	NA	EU	EE	SA	RF	AS	OC	NA	EU	EE		SA	RF	AS	OC	NA
0	-	-	-	-	-	-	9+	3	-	5	5	-	-	9+	8	7	9+	9	7	9	9+	-	9	9+	9	6	9+	9+	-	9	9+	9	1	9	9+	0
1	-	-	2	-	-	-	9+	5	-	7	6	2	2	9+	8	8	9+	9	8	9+	9+	-	9	9+	8	9+	9+	-	9	9	8	6	9	9+	1	
2	-	-	5	4	-	-	9+	6	-	8	7	2	6	9+	8	8	9+	9+	8	9+	9+	1	9	9+	9	8	9+	9+	-	9	9	2	7	9	9	2
3	3	-	6	5	-	3	9+	6	-	9	8	2	9	9+	8	9	9+	9	8	9+	9+	1	9	9	8	8	9+	9+	-	8	3	-	7	9	5	3
4	4	-	7	5	-	7	9+	7	1	9	8	-	9	9+	8	9	9+	9	8	9+	9+	1	8	9	2	6	9+	8	-	1	-	-	-	9	6	4
5	4	-	8	5	-	9	9+	8	3	9	8	-	9+	9+	7	9	9+	8	7	9+	9+	-	1	6	-	-	9+	6	-	-	-	-	-	5	6	5
6	1	-	8	5	-	9	9+	6	5	9	8	1	9+	9+	1	8	9+	8	1	9+	9+	-	6	-	-	9	6	-	-	-	-	-	-	-	6	6
7	2	1	6	1	-	9+	9+	7	7	9	8	2	9+	9+	4	1	9+	4	-	9+	9+	-	2	-	-	6	6	-	-	-	-	-	-	-	6	7
8	2	5	8	-	-	9+	9+	7	8	9	6	4	9+	9+	2	-	9+	8	-	9+	9+	-	3	-	-	1	6	-	-	-	-	-	-	-	6	8
9	2	6	8	-	-	9+	9+	7	9	9	4	5	9+	9+	1	-	9	8	-	9+	9+	-	3	-	-	6	-	-	-	-	-	-	-	-	6	9
10	2	7	8	-	-	9+	9+	7	9	9	1	5	9+	9+	-	1	9	2	-	9+	9+	-	1	-	-	6	-	-	-	-	-	-	-	-	6	10
11	2	7	7	-	-	9+	9+	7	9	9	-	6	9+	9+	-	6	7	-	-	9+	9+	-	6	-	-	6	-	-	-	-	-	-	-	-	5	11
12	2	7	6	-	1	9+	9+	7	9	8	-	6	9+	9+	-	6	2	-	-	9	9	-	6	-	-	6	-	-	-	-	-	-	-	-	5	12
13	2	8	2	-	2	9+	9+	6	9	7	-	7	9+	9+	-	4	9	2	-	9	9+	-	6	-	-	6	-	-	-	-	-	-	-	-	5	13
14	1	8	-	-	3	9+	9+	6	9	4	-	6	9+	9	5	-	9+	4	-	7	9+	-	9	2	-	9	-	-	-	-	-	-	-	-	5	14
15	-	7	-	-	1	9	9+	5	8	1	-	6	9	9+	8	-	9	7	5	8	9+	2	-	9	6	-	-	9+	-	-	9	4	-	-	9+	15
16	-	1	-	-	5	9+	2	8	-	-	3	9	9+	8	9	7	7	8	9	9+	8	-	9	8	1	5	9+	1	-	9+	8	-	-	9	16	
17	-	-	-	-	-	9+	1	6	-	-	1	7	9+	7	9	2	7	6	9+	9+	8	6	8	8	4	9	9+	7	-	9	8	-	8	9+	17	
18	-	-	-	-	-	9+	1	3	-	-	1	2	9+	6	8	1	6	5	9+	8	8	9	8	8	-	9+	9+	3	5	9	9	-	7	9+	18	
19	-	-	-	-	-	9+	-	1	-	-	-	9+	6	6	1	5	5	9	8	6	8	8	8	-	9+	9+	-	3	9	9	-	9+	9+	19		
20	-	-	-	-	-	9	-	-	-	-	-	9+	6	7	4	5	4	8	8	1	-	8	8	-	9	9+	-	-	9	9	-	9	9+	20		
21	-	-	-	-	-	9	-	-	-	-	-	9+	7	6	6	4	6	9	1	8	9	9	-	9	9+	-	-	9	8	-	9	9+	21			
22	-	-	-	-	-	9+	-	-	-	-	-	9+	6	5	8	8	5	6	9+	-	8	9	9	-	9	9+	-	8	9	8	-	7	9+	22		
23	-	-	-	-	-	9+	1	-	1	1	-	-	9+	7	5	9	9	6	6	9+	-	9	9	9	1	9+	9+	-	8	9	9	-	8	9+	23	

There are also a number of tables describing when the bands are open. These are located in the zipped file FIG6TAB.ZIP (also FIG6TAB.PDF). Use the *Windows Explorer* or *WINZIP* or *Acrobat Reader* to view these files, which are organized by US call sign area.

73,

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