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### Technical Details of the system:

The **KFS WebSDR** HF radio server system is co-located with the **KFS Kiwi** system near the mouth of Lobitos Creek on the Pacific coast, six miles south of Half Moon Bay, California, USA. This RF quiet location, on a 150 foot cliff overlooking the Pacific Ocean, is in maidenhead grid square CM87tj02; the geographic coordinates are 37° 23' 6" North, 122° 24' 45" West. You can easily locate the site using Google Maps or Google Earth by searching for "*KFS WebSDR*".

The individual band receivers are [FiFi SDR receivers](#) with internal sound card chips, mounted in a [custom rack mount chassis](#) (thanks to KO6AQ). The 160 meter receiver is preceeded by a bandpass filter and a [KD9SV Products SV-160](#) 160 Meter Preamp, modified for rack mount, to compensate for the 3-30 MHz antenna response. All but one of the WebSDR receivers are fed from the **Omni** antenna, a TCI Model 530 Log-Periodic. The receiver for the *40ph* band is switched, on a schedule, between the usual Omni and the **SE Sector** antenna, a TCI Model 527B Log-Periodic. The other two TCI 532 LP antennas (NW Sector and NE Sector) are not in use by the KFS WebSDR at this time. See [below](#) for more antenna details.

The server computer uses an [ASUS Z170 motherboard](#) with an Intel i5-7400 CPU in an [ARK rack mount case](#) with 8 GB of RAM, and an ADATA SP580 120 GB solid state drive. Three Startech PEXUSB3S44V 4-port USB cards are installed; they can connect up to 12 receivers. Version 9 of the [Debian](#) Linux operating system provides file system support. The Internet service provider is [Coastside.net](#) in Half Moon Bay. WebSDR server software was written and is maintained by Dr. Pieter-Tjerk de Boer, PA3FWM. Pieter maintains a [list of active WebSDR servers](#) and a [FAQ page](#).

The system operator (Sysop), Craig, W6DRZ greatly appreciates the technical advice and assistance provided by alternate sysop Clint, KA7OEI and by Bob KO6AQ, Steve W7RNA, Paul W7JVY, Hal KK6HY, and Ken WB6CNI. Antenna and rack space facilities are provided as a public service by Globe Wireless Radio Services - maintained by the members of the KFS Radio Club (W6KFS). Also appreciated are the [donations](#) by many users. Comments and questions are always welcome. Please [email Craig](#).

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### KFS Antenna Details:

There are four [TCI](#) receive-only HF antennas at the KFS site. The antennas feed lines

entering the building are connected to a house RF distribution system that provides signals to all co-located HF tenants. Five Redifon MCU100 Antenna Multi-coupler units feed the second-floor tenants including the WebSDR and KiwiSDR receivers. Pictures of the antennas, courtesy of Hal, KK6HY, are [here](#). Each antenna has a friendly name - Omni, NW Sector, SW Sector, or SE Sector - as described below:

**"Omni"** is a [TCI 530 Short and Medium Range Log-Periodic Antenna](#) (Model 530-4-02). Its dimensions are 217 feet long by 217 feet wide. It is supported by a single aluminum tower 92 feet high. The frequency coverage is 3 to 30 MHz. The pattern is omnidirectional with circular, horizontal, polarization. The nominal gain is 6 dBi.

**"NW Sector"** is a [TCI 532 Medium Range Log Periodic Antenna](#) (Model 532-4-02). Its dimensions are 330 feet long by 410 feet wide. It is supported by a single aluminum tower 149 feet high. The frequency coverage is 3 to 30 MHz, horizontally polarized, nominal 12 dBi gain, 13 dB F/B ratio. The take-off angle varies from 20 degrees at 30 MHz to 37 degrees at 3 MHz. A beamwidth of 55 degrees, at a bearing of 278 degrees provides coverage from 251 to 306 degrees; this includes Japan, Indonesia, Western Australia, Hawaii, and the Western Pacific Ocean.

**"SW Sector"** is a [TCI 532 Medium Range Log Periodic Antenna](#) (Model 532-4-02). Its dimensions are 330 feet long by 410 feet wide. It is supported by a single aluminum tower 149 feet high. The frequency coverage is 3 to 30 MHz, horizontally polarized, nominal 12 dBi gain, 11 dB F/B ratio. The take-off angle varies from 20 degrees at 30 MHz to 37 degrees at 3 MHz. A beamwidth of 55 degrees at a bearing of 222 degrees provides coverage from 195 to 250 degrees; this includes Hawaii, Eastern Australia, New Zealand, and the South Pacific Ocean.

**"SE Sector"** is a [TCI 527B Super High Gain Log-Periodic Antenna](#) (Model 527B-8-02). Its dimensions are 357 feet long by 450 feet wide. Two aluminum towers, each 151 feet high spaced 150 feet apart support this antenna. The frequency coverage is 6.2 to 30 MHz, horizontally polarized, nominal 15 dBi gain, 13 dB F/B ratio. The take-off angle varies from 13 degrees at 30 MHz to 20 degrees at 6.2 MHz. The beamwidth of 64 degrees at a bearing of 135 degrees provides coverage from 103 to 167 degrees; this includes the Southwest USA, Western Caribbean, Mexico, Central and South America and the Eastern Pacific Ocean.

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This WebSDR system is provided as a community service by the KFS Radio Club. Your contribution will help offset our operational costs.

Any and all support is appreciated. Thanks & 73, Craig, W6DRZ

Donate



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## History of KFS:

The KFS story begins with the Beach Station (Ocean Beach), which was put into operation in July 1910 by the Poulsen Wireless Telephone and Telegraph Company. The Beach Station was located just north of the San Francisco zoo at 48th Avenue and

Noriega Street.

The Dollar Steamship company formed DOLLARADIO in 1929 (in 1930 becoming **Globe Wireless**) to handle their ship-to-shore communications. Dollar's first shore station was constructed at Mussel Rock about 15 miles south of San Francisco near the north end of of Pacifica. Eventually, Globe opened their facilities to the public and to communicate with ships of any line.

The 200 acre Half Moon Bay facility on the coast near Lobitos Creek, "**LO**", was constucted in 1932 by the Mackay Radio and Telegraph Co. as the receive site for maritime radio station KFS and point-to-point station KTK. (The transmit site for KFS and KTK, "**MX**", was established in the Palo Alto bayland marsh.) Operations from Ocean Beach and Mussell Rock were all moved to the new facilities. The International Telephone and Telegraph Company (ITT) subsequently purchased the stations and operated them for many years. Eventually, in the early 1990s, ITT sold KFS (KTK had ceased operations) to a group of local investors. These investors also obtained, from the Tropical Radio and Telegraph company (TRT), station WNU near Slidell, Louisiana and, from the United States government, the former Voice of America sites near Dixon, California. This was the beginning of a modernized HF network, reusing the name **Globe Wireless**.

The last commercial radiotelegraph transmission in North America was keyed from **LO** and transmitted from **MX** at 2359 UTC on July 12, 1999. The final words transmitted by KFS? *"What hath God wrought"*. By the turn of the century, the Half Moon Bay facility had become the central control, database server farm, and west coast receive site for the Globe Wireless HF data and email network providing **GlobeEmail** and **GlobeData** services to 40,000 commercial shipping vessels from stations at 23 worldwide sites. When Inmarsat purchased Globe Wireless in December 2013, the HF portion of the operation was retained as Globe Wireless Radio Services.

Craig, W6DRZ, a former Globe Wireless executive installed a WebSDR system at the KFS LO site in February 2016, initially named *LO WebSDR* and renamed to *KFS WebSDR* in January 2017. The system is on its second set of computer and receiver hardware and enjoys support from the HF listening community. Currently, the KFS site is also in use by radio providers serving the aeronautical, cellphone, emergency response, Internet data and military communities.

The February 2018 edition of [Electric Radio](#) magazine published an article entitled *The KFS Story* on page 2 with a nice [cover picture](#) of the building. It was authored by Gary, K6GLH, with help from Craig, W6DRZ, and adds more detail and pictures to the above brief account.

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### Operating Tips for the KFS WebSDR:

- Accoridng to Dr. Pieter-Tjerk de Boer, PA3FWM, the author of WebSDR:  
*"Since version 71, Chrome does not allow every website to start playing audio, in order to stop annoying advertisements. Chrome tries to guess whether you want audio or not, but doesn't always get it right. On some WebSDR sites, you'll get an "audio start" button, on some you don't.*  
*If you don't get audio, try the following:*

- At the top right, click the 4 vertical dots, and then Settings.
- At the bottom, click Advanced.
- Under "Privacy and security," click Site settings.
- Select "Sound" >br>- Select "Add" and enter "http://\*" (thanks to K9GL for these instructions)

Note that the above effectively disables Chrome's "autoplay" policy for all http sites. Although stopping automatic sound from advertisements is a noble idea, I think Chrome's autoplay policy is fundamentally wrong. Instead of trying to guess what the user wants, the browser should simply ask the user whether he/she wants to allow the page to play sound (and remember that for later visits, of course)."

- Newer browsers with HTML5 support like Chrome(?), Edge, Firefox, and Opera will work best. Older browsers, including Internet Explorer, need both *Java* and *JavaScript* enabled for WebSDR to work properly. For details, click [here](#).

- Audio drop-outs are not uncommon if you have multiple browser tabs open - including the WebSDR page - and you have changed to another browser tab or window. Navigating away from the browser window with WebSDR tends to lower the priority of that non-active window which means that real-time audio processing can suffer - even if you are using a very fast machine!

- The waterfall may stop updating when you switch/minimize the browser window such that it is no longer visible on-screen, causing signals to appear/disappear when you switch back to the WebSDR and the waterfall resumes updating. This is not a bug but rather a means of reducing bandwidth/load on the server.

- You can specify the startup frequency and mode in the URL when linking to the KFS WebSDR. Use the *?tune=* parameter, for instance *http://69.27.184.62:8901/?tune=7293am* to listen to 7293 kHz in AM (40M AM window).

- Please enter your call sign or name in the box near the top; do not add additional comments. The user display will be much more informative.

- The orange labels under the waterfall are changed twice a day, and are different on weekends, to keep them timely. Suggestions for additions and changes are welcome.

- In addition to the above, you can save your frequency, mode, and bandwidth settings with custom memory labels (green); set them up in the **Memories:** box.

- Click on any label to tune to that frequency and mode, or just click on the frequency scale under the waterfall. You can drag the waterfall to the left and right with your mouse; the mouse wheel zooms in and out.

- Note that the waterfall view also offers a spectrum (panadapter) display, select it in the *View:* dropdown, in the **Waterfall view:** box.

- Are the waterfall labels missing, or wrong? An easy fix is to click on the very right end of the active waterfall. Clicking on *max out* in the **Waterfall view:** box also resets the labels.

- West coast users may want to try either the [W7RNA KiwiSDR](#) in Sedona, Arizona or

the [Northern Utah WebSDR](#) systems near Corinne, Utah as alternates for certain signals.

- If the page appears to freeze, I may have had to restart the WebSDR server. Just hit *refresh* on your browser to resume.
- There is an idle timeout set to sixty minutes. If you don't use the system for that long you will be disconnected.
- To conserve our shared internet bandwidth, one connection per user, please. When you are finished using the system, please disconnect by closing your browser. Thank you.

### Propagation Observations using the KFS WebSDR:

I have always preferred to *observe* propagation, rather than to *predict* it. With that in mind, here are some ideas using the KFS WebSDR:

**80 Meters:** In the evening, to see if the band is open from California to the US east coast monitor *Gander Radio VOLMET* (VFG) on 3485usb at 20 and 50 minutes past each hour. Note that *New York Radio VOLMET* (WSY-70) is also supposed to be on this channel, but is reported off-the-air until June, but has not yet been heard by me.

**80 Meters:** In the morning, to see if the band is open from California to Asia monitor *Beijing VOLMET* (BSQ) on 3458usb at 15 and 45 minutes past each hour. *Guangzho VOLMET* (3UW-33) is assigned the other time slot on this channel. Also, *Goyang NIS* broadcasting from North Korea on 3480am is usually available.

**40 Meters:** In the morning, to see if the band is open from California to Asia try the Russian Navy Beacons from Petropavlovsk Kamchatskiy. The **K** beacon is most often reported - on 7039.5cw - however can be hard to hear with interference from US hams.

**20 Meters:** Monitor 14100cw for the Northern California DX Foundation worldwide beacon network, available 24-hours per day. Details are at [NCDXF beacons](#).

**Other?:** If you know of any other 24-hour stations that can be received by the KFS WebSDR Please [email Craig](#).

