

# SHORTWAVE BULLETIN

Issue no. 1695 June 13, 2010.

Deadline e-mail next issue: 0900 SNT, June 27, 2010.

Sommaren dröjer och det regnar och är kallt. Häromdagen skulle jag rensa takrännorna där en massa skit samlas. Rätt som det var började regnet ösa ner och det sprutade som en fontän uppåt vid den ena stuprännan.

Så det blir att plocka fram spaden och gräva. Av någon anledning sattes inga brunnar i hörnen så man lätt kommer åt att rensa dagvatten- och dräneringsledningarna.

Några stycken MV fantomer har upptäckts att ett och annat även hörs på KV. En del intressanta bidrag och kommentarer har letat sig hit.

Har också fått min antennenpark med två reverserbara Flag-antennerna klara. En liten byggbeskrivning finns i slutet av detta nummer. Kanske någon kan hitta nåt som kan inspirera till ytterligare antenntester.

Såg på NORDX att det hörs en del på FM och även TV-DX.

Keep on ....

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## SWB-info

SWB online på HCDX: <http://www.hard-core-dx.com/swb>  
SWB member information: <http://www.hard-core-dx.com/swb/member.htm>  
SWB anniversary issue: [http://www.hard-core-dx.com/swb/SWB\\_history.pdf](http://www.hard-core-dx.com/swb/SWB_history.pdf)  
Dateline Bogotá 1993-1998: <http://www.hard-core-dx.com/swb/Dateline.htm>  
SWB latest issue: <http://hem.ektv.nu/~ekt035221/password.htm>  
Solar cycle progression: <http://www.swpc.noaa.gov/SolarCycle/>

## QSL, kommentarer, mm.

**Ullmar Qvick:** Hej Thomas och tack för den som vanligt intressanta SWB. Det var också trevligt att träffa dig på konventet, fastän det blev kort.

Vanlig DX-ing på KV sysslar jag lite med, nu tog jag ett par timmar i anspråk igår kväll, och det blir nog bäst att jag rapporterar nu, annars riskerar det att bli bortglömt.

RX: Sangean ATS 909. Ant: Kombinerad inverted v/windom 27+15 m. Det var det hela. Om jag får fram mera före deadline skriver jag på nytt! Ha det så bra i värmen!

**Lars Skoglund:** Följande kortvågs-QSL har kommit sedan sist: **Radio Damascus/Adra 9330** kort, dekal, schema, bokmärke och pappflagga. **Radio Kuwait/Kabd 11990** QSL-certifikat, brev, kort, schema och CD-skiva.

**Anders Hultqvist:** Jag spelade in 60+49 mb i natt. ELCOR hördes väldigt bra med sign on 23.59 och hela timmen. Men inget snack öht. Jag har aldrig hört något id. Någon annan som har det? Stationen driver från start på ca 5954,2 till 5454,15 under sändningen. Därför får vi olika frekvensangivelser beroende på när man lyssnar.

**Robert Wilkner:** Hello Thomas, Wish everyone of our friends an enjoyable mid summer day. Some improvement in conditions here.

**Arne Nilsson:** Sitter här natten mot dead-line och väntar på att (om) konditionerna ska komma. Det ser inte så ljusst ut just nu. Ja, ute är det ljusst men that's it. Jag har under dagen fått ut alla kablar och boxar och kan nu ändra riktningen på båda Flaggorna, fast än så länge manuellt, med ett 12V aggregat och sladdar, kontrollboxen återstår att göra. Det ska bli riktigt spännande att se vad resultatet blir! Jag kan i alla fall nu se och höra att bl.a. Em Pio XII, Marfil Estereo och R Victoria, samtliga på 49m bandet, börjar dyka upp, om än svagt, nu vid 01.00 SNT. Vi får väl se vad natten ger.....

### PERSEUS CONTROL SOFTWARE V3.0beta1

The new V3.0beta1 software version features an improved graphics and digital signal processing. It also fixes the bugs detected in the v3.0 beta and includes the most recent Perseus control DLL (v3.5)\*.

Unlike the the previous software versions, both the application software and the control DLL are now compiled with the Microsoft VC2008 C++ compiler and have been optimized for an even better performance.

Please note that, as many details have been changed passing from the previous compiler to the new one, this software is distributed as a "beta" version. A definitive 3.0 software version will be distributed as soon as any eventual error introduced in this release will be fixed.

### Bugs fixed from the previous software version:

- Inconsistent GUI setting at software startup leaves vectored Noise Blanker enabled causing distortion.
- Double mouse clicks on record/playback bar cause playback odd behaviour.
- Memories at more than 400 kHz from center frequency can't be selected in playback/rec (wav file) mode.

- Non existent wav file selection in the playback file selection dialog causes software exception and abnormal termination.
  - Hardware IDchanges prevent licensed software options to be properly detected.
- (from <http://www.microtelecom.it/perseus/software.html> )

This means that the annoying audio squeal now is gone when using the playback bar.

More comments can be found at <http://fivebelow.squarespace.com/>

(Thomas)

## Loggen

(UTC)

3309,992	3.6	2240	<b>R Mosoj Chaski</b> often heard. TN
3940	7.6	2040	<b>Laser Hot Hits</b> with good strength giving addresses in between. TN
4024.985	2.6	2108*	<b>tent Star Radio</b> , Liberia with cd after english news and informationn (ads?) 2-3 but as usual disturbed by Utility on LSB. Too much disturbances to get an ID. Also heard June 12 but very weak. TN
4774,954	5.6	2305	<b>R Tarma</b> with snx and decent signal. Another weak signal on 4775.002 TN
4899.990	3.6	2139	<b>Familia FM</b> audible with sort of Highlife mx. French ann. At 2200. Seems to distribute another program than their FM transmitter on 105.3. They are not parallel with <a href="http://familiafm.streamon.fm/">http://familiafm.streamon.fm/</a> . Familia SW uses what is called a Low Power Short Wave 1000 watt transmitter built by HCJB Radio in the US. TN
4914.96	11.6	2305	<b>Tent R Dif de Macapá</b> weak on low side of R Daqui. TN
4914.997	11.6	2305	<b>R Daqui</b> with several ID:s and only minor disturbances from Macapá. TN
4954.977	5.6	2250	<b>R Cultural Amauta</b> with strong signal. TN
5580	13.6	0110	<b>R San José</b> , BOL, was weak this night. QRM from utility stn. (AN)
5910.017	12.6	2310	<b>R Marfil Estereo</b> quite weak at this time. One hour later usually good strength. TN
5910,02v	13.6	0109	<b>Radio Marfil Estereo</b> med TC. AHK
5921.23	5.6	2313	<b>tent R. Bethel</b> , Arequipa with religious programming. QSA 1-2 TN
			Carlos Goncalves in Portugal kindly sends his Bandscans also to SWB and this week there was an item from Karel Honzik suggesting that this station might be a reactivation of Radiodifusora Minería in Oruro. Wednesday evening we received the following info from him with some interesting comments from Henrik Klemetz:
			<i>Dear friends, I have already abandoned my initial tip on BOL after I heard from Henrik that BOL miners do not like Christian programming at their stations. Then Henrik wrote that the station was IDed in Scandinavia as Bethel Radio (ex5949 kHz). In this sense I sent my contribution to the HCDX maillist and also to Wolfgang on June 5:</i>
			<b>PERU 5921.23 R. Bethel</b> , Arequipa with religious programming every night in May + early June around 0000-0100 UTC (except of Sat/Sun night of 30/31 May). Ex 5949. Thanks to Henrik Klemetz who pointed out the frequency change. Heard already on 5 May at 0025 UTC. (Karel Honzik, CZE)
			<i>Although I have been monitoring this frequency almost every night in May and June, the best signal was on May 5 during a geomagnetic storm when I heard it for the first time. Otherwise there was very weak signal, mostly unusable in this middle part of Europe. I was wondering why American DXers have not come yet to bring more light into this case, at least in a form of a good quality recording. (Karel Honzik, CZE)</i>
5921,27v	13.6	0005	<b>Radio Bethel (tent)</b> svajar mellan ,267 och , 280. AHK
5939,97	12.6	0000	<b>Radio Paz no Valle / Voz Missionaria</b> , Camboriú, Santa Catarina, Brazil AHK
5952,47	12.6	0100	<b>Radio Pio XII</b> Kollade Pio XII vid 01.30 och då fick jag en fint id. AHK
5954,3	13.6	0000	<b>ELCOR, CTR</b> , with good signal strength. Music progr. (AN)
6090	13.6	0100	<b>Caribbean Beacon</b> . AHK
6134,82	12.6	0000	<b>Radio Santa Cruz</b> , La Paz med fint anrop och bra hörbarhet. Här är en inspelning: <a href="http://www.box.net/shared/4rnubob6vf/1/25230074/449269774">http://www.box.net/shared/4rnubob6vf/1/25230074/449269774</a> AHK
6135,04	12.6	0000	<b>Rádio Aparecida</b> AHK
6159,97	13.6	0100	<b>CKZN</b> AHK
6160,003	13.6	0100	<b>OID</b> med ryska. AHK
6173,9	13.6	0050	<b>R Tawantinsuyo</b> , PRU kept on talking. Weak. (AN)
15370	4.6	2105	<b>RHC Havana</b> good signals with nx in SS. UQ
17550	4.6	2115	<b>Radio Kuwait</b> very strong in AA with frequent IDs. Also hrd signing off on 15540 kHz at 2100 in EE, good signals too. UQ
17680	4.6	2130	<b>La Voz Cristiana/CVC</b> Santiago fair signals in SS with a very mixed pgm directed to Argentina first of all, judging from contents. UQ

### Being heard by several dxers in Florida

- 3290 **GBC** 0940 to 1000, 11 June [XM-Cedar Key] [Wilkner]  
3310.05 **Radio Mosoj Chaski**, Cochabamba 0000 om and y1 alternating, ID by om, cut to music, "la esperanse de ...?"  
Varies from 3309.98 to 3310.05 [Wilkner]  
3325 **Radio Buka**, Kuba 1030, 11 June [XM-Cedar Key] [Wilkner]  
3329.53 **Ondas del Huallaga**, Huánuco 0003 om fair signal, 1030 fading out 11 June [Wilkner]  
3390.056 **Radio Emisoras Camargo**, Camargo [Wilkner]  
4410 **Radio Eco**, Reyes, 0034 11 June [XM-Cedar Key] [Wilkner]  
4451 **Radio Santa Ana**, Santa Ana de Yacuma 0035 ,11 June [XM-Cedar Key] [Wilkner]  
4700 **Radio San Miguel**, Riberalta 1030 strong on 2nd frequency 11 June [Wilkner]  
4716.19 **Radio Yura**, Yura [Wilkner]  
4774.9 **Radio Tarma**. Tarma [Wilkner]  
4780 **Guatemala [??]**, Om en espanol just fading out as I tuned in at 1135 gone by 1140, only other 60 meter band  
signals were 4789.89 and 5019.904. 12 June [Wilkner]  
4787.671 **Radioemisora Ballivian**, San Borja, Beni 0000 to 0020 en espanol 7 June. [Muito obrigado a Rogildo  
Fontenelle Aragão por sua ajuda neste emissões de rádio] [Wilkner]  
4824.49 **La Voz de la Selva**, Iquitos [Wilkner]  
4835.10 **[t.] Radio Maraño** Jaen [Wilkner]  
4875.48 **R dif Roraima**, Boa Vista RR 0945 with exceptionally strong signal 7 June [Wilkner]  
5485.45 **Peru station** [Wilkner]  
5580.2 **Radio San José**, San José de Chiquitos [Wilkner]  
5952 **Em Pio XII**, Siglo Veinte [Wilkner]  
6019.65 **Radio Victoria** Lima [Wilkner]  
6134.77 **Radio Santa Cruz** [Wilkner]

73s, Bob Wilkner

## Stationsnyheter

**BRAZIL. 2379.95, R. Educadora** - Limeira, 1015, tentative; just above threshold with Portuguese man and Brazilian-sounding music. No ID heard, even though I stayed with it 'till 1100. June 9 (David Sharp, NSW Australia, dxldyg via DX LISTENING DIGEST)

**BRAZIL: 11829.96 R. Daquí**, Goiania GO. This frequency was not in use for a longer time, then on 17 May I heard what probably was a TX test because they switched it off at 5:13pm local time. From 2 June, so already for 3 days in a row, there is a regular transmission which ends at 6pm local time (2100 UTC). They always play musica sertaneja with a lot of IDs after each song.

(Karel Honzik, CZE via HCDX)

**CHINA. 6185, China Huayi BC**, ex: 5050, 1213, June 1. Nice to find they have returned again to their former frequency, which is now clear. Usual format of talk till BoH; then non-stop pop songs till 1300 pips and off (no sign-off announcement) (Ron Howard, Asilomar Beach, CA, Etón E1, dxldyg via DXLD)

Hi Glenn, Sei-ichi Hasegawa has confirmed CHBC is on 6185 kHz. Was heard in Japan at 1100 on June 2, but covered at 1125 by NHK in Russian. Thanks to Sei-ichi for his affirmation (Ron Howard, Asilomar Beach, CA, June 2, dxldyg via DXLD)

**GUINEA. R. Familia** is a new Christian station operating from Timbi-Madina on 4900 kHz with 1 kW between 0600-2400v in French, Pular and Maninka. Web: <http://www.familiafm.com> (WRTH Domestic Update 4 June via WORLD OF RADIO 1516, DXLD) There we have the location (gh, DXLD)

**LIBERIA: Liberia's Star Radio reactivates its shortwave service**  
23rd, 2010

The Management of Liberian station **Star Radio** has announced the re-activation of its shortwave service in the Country. Station Manager James Morlu says the station has begun test transmissions on 4025 kHz. Mr Morlu he believes that, as the country strives towards its recovery process, it's prudent to have a viable information dissemination channel like shortwave.



May

said

The Star Radio Station Manager was speaking as the UN Refugee Agency UNCHR symbolically transferred assets to several of its partners in Liberia including Star Radio. Mr Morlu hopes the three motorcycles provided to Star Radio will help enhance the work of some of its correspondents, but said more was needed.

(Source: Star Radio)

(Andy Sennitt via Media Network)

**LIBERIA: 4025, Star Radio.** June, 04 0713-0740 two male in English discussion outside (heard some reverb) "community...development...Liberia...human rights", 0732 music as a bridge, studio male "Star Radio broadcast"; degrading, 25432. June, 05 0705-0720 studio male "Liberia", outside English discussion by male and female, studio female "joining party...organization of development...Star Radio...Monrovia...Liberia". Some storm static, 25333 (lob-B via DXLD)

**MADAGASCAR 6134.935 Radio Malagasy,** 1448, fair, with presumed World Cup coverage. Warbly transmitter, drifting above and below measured frequency, but otherwise strong S9+30. Parallel 7105.007 (weaker) running carrier+USB. 11 June. (David Sharp, NSW Australia via DXLD)

**MALAYSIA/SARAWAK. 7270.47, Wai FM** via RTM, 1351, June 9. In vernacular; 1400-1405: news which started and ended with the usual "Limbang" jingle; followed by DJ with pop songs. Has been over a year since this was last off frequency and it certainly helps getting away from PBS Nei Menggu on 7270.0 (Ron Howard, Asilomar Beach, CA, Etón E1, dxldyg via DX LISTENING DIGEST)

**PERU: 4940, R San Antonio,** Villa Atalaya. June, 11 2205-2215 Spanish romantic selections, male and female announcements in Spanish in every music break "musical". Poor, 24432 (lob-Brazil, DXLD via Robert Wilkner).

## Övriga radionyheter

### WR-G31DDC 'EXCALIBUR'

Latest info found on Groove website saying **ETD early to mid-July at a price of \$849.95**

From <http://www.grove-ent.com/excalibur.html>

**World's biggest radiotelescope launched,** Posted 3 hours 2 minutes ago

**Scientists in the Netherlands have unveiled the largest radiotelescope** in the world, saying it was capable of detecting faint signals from almost as far back as the Big Bang.

The LOFAR (LOw Frequency ARray) consists of 25,000 small antennas measuring between 50 centimetres and two metres across, instead of a traditional large dish, said Femke Boekhorst of the Netherlands Radioastronomy Institute.

It is based near the northeastern Dutch town of Assen, but the antennas are spread out across the rest of the Netherlands and also in Germany, Sweden, France and Britain.

"Today we have launched the biggest radiotelescope in the world. When you combine all the antennas you get a giant telescope with a diameter of about 1,000 kilometres," said Ms Boekhorst.

"The observations that we will be able to make will allow us to learn more about the origin of the universe, back to the moment right after the Big Bang."

The data gathered by the telescope will be dealt with by a supercomputer at the University of Groningen and then transmitted to the institute.

(AFP via <http://www.abc.net.au/news/stories/2010/06/13/2925839.htm> )

**Cybercrime culprits indicted - one's a Swede!** (<http://www.nordstjernan.com/news/nordic/2319/> )

**FBI hot on the trail of trio who made \$100 million** installing pesky, phony software to cure their own virus infection.

Cybercrime culprits indicted - one's a Swede!

Some call it "malware," others call it "scareware," but whoever has been unlucky enough to get a virus infection on their computer that pops up repeatedly on the screen and persistently refuses to go away unless money is sent to buy the "cure" will be pleased to know that three men have been indicted by the FBI in Chicago for pulling off such a cybercrime scheme that is estimated to have bagged them at least \$100 million.

"These defendants allegedly preyed on innocent computer users, exploiting their fraudulently induced fears for personal gain," stated Robert D. Grant, the special agent in charge of the FBI's Chicago office, in a news release.

Swedes might not be so proud to know that one of the three culprits - all of whom are still on the run from the international lawmen - was a 31 year old man from Ängelholm, Sweden, Björn Daniel Alexander Sundin, born on Aug. 7, 1978. Another of the trio is a 40-year-old naturalized American, Shaileshkumar P. Jain, originally believed to be from India. The third and youngest is an American, 26-year-old James Reno from Amelia, Ohio.

The enormous Internet swindle that they masterminded bilked as many as a million computer users in sixty nations by installing software which told users that their computer was infected with a virus, Trojan horse or other serious computer error that could only be fixed by using their credit card to buy software that cost from \$30 to \$70 from their firm.

The three operated from December 2006 through October 2008 using a Ukraine based company that was incorporated in Belize, Innovative Marketing Inc., and selling computer security products such as Win Fixer, Win Antivirus, Drive Cleaner, Error Safe, and XP Antivirus, etc., to allegedly solve the problems... and cease the endless appearance of their advertising on users' display screens.

Although their company was closed down last year after the Federal Trade Commission first filed a complaint against these scam artists in Maryland on Dec. 2, 2008, it was not until Wednesday, May 26, that a federal grand jury in Chicago indicted them.

The indictment charges Sundin and Jain each with 24 counts of wire fraud, and Reno with 12 counts of wire fraud. Each individual count of fraud carries a potential prison term 20 years, a \$250,000 fine, plus restitution of all funds that they gathered. Each was also charged with one count of computer fraud and conspiracy to commit computer fraud.

The indictment also seeks the forfeiture of about \$100 million and all money held in an account at Swedbank located in Kiev, Ukraine. According to the indictment, money was first deposited in bank accounts around the world that the culprits controlled, and then later transferred to Swedbank, which is a subsidiary of the international bank that has its headquarters in Sweden.

Sundin and Jain also allegedly created at least seven fictitious advertising agencies that contacted website media companies pretending to act as advertising brokers on behalf of well known legitimate firms. The unauthorized Internet ads defrauded the victimized firms of at least \$85,000 in unpaid fees.

Even worse, the phony Internet ads that were placed on the websites contained invisible computer programming that "hijacked" the Internet browsers of visiting victims and then redirected these users' computers automatically into websites controlled by Sundin and Jain and from which the "scareware" was installed to demand payments. The fictitious ad agencies included "BurnAds," "UniqAds," "Infyte," "NetMediaGroup," and "ForceUp," according to the indictment. Sundin - the company's chief technology officer and chief operating officer - is believed to reside in Sweden, and the firm's chief executive officer, Jain, who authorities believe is in the Ukraine, were reported by the FBI as being behind the sales. Reno was also accused of running call centers for the scheme under the name of Byte Hosting Internet Services. According to the FBI, Reno is expected to surrender soon, although none of the three are in custody at this time.

Sources: [www.thenewstribune.com](http://www.thenewstribune.com) <http://politisktinkorrekt.info> <http://business.rediff.com>

Svenska medier följer hans identitet. Men inte detta "svenskättade" organ:  
<http://www.nordstjernan.com/news/nordic/2319/>

Jag minns viruset errorsafe för egen del; det drabbade mig för en del år sen.

/HK

En liten kommentar: Svenska medier är nästan ensamma i världen om att tycka att brottsförövarnas identitet ska skyddas. Dock inte om de redan är kända av en bred allmänhet!!

Henrik

(The reason this item was published in SWB was the connection to Ängelholm. HK asked me if I know this "Ängelholm man", which I don't. Thomas)

**New PAL Radio Guides** now available online Mediumwave and Shortwave

**New versions of both the PAL Radio Guides** covering all AM [mediumwave] and SW [shortwave] radio stations across the region are now available from the Radio Heritage Foundation website [www.radioheritage.net](http://www.radioheritage.net).

The Pacific Asian Log [PAL] Radio guides list all known AM and SW radio stations operating in the region with detailed information about operating times, languages, location, and much more...across many thousands of individual stations.

Information in the new Pacific Asian Log Radio Guides is also useful for travellers, travel agents, corporates and others who need to keep clients and staff informed.

The PAL Radio Guides are compiled in Seattle [USA] by our editor-in-chief Bruce Portzer from monitoring reports, official sources and feedback from listeners across the region.

Search the two new guides online now by options such as location and frequency or download copies for your own personal use from [www.radioheritage.net](http://www.radioheritage.net).

You can also search our other frequently updated online guides to Australian narrowcast AM radio [Australia 1611-1701 AM] and the New Zealand Low Power FM Radio dial [NZLPMF Radio]

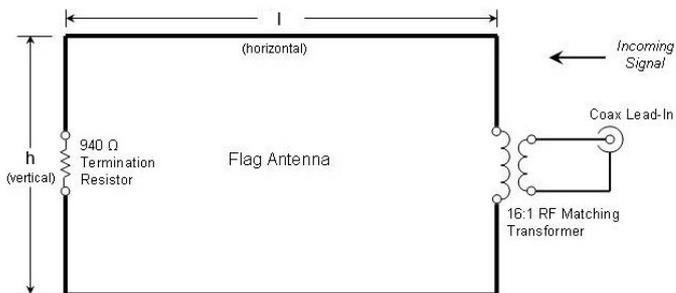
Feedback, corrections and updates from users are always welcome and will be incorporated in future versions. Simply email us with your comments to [info@radioheritage.net](mailto:info@radioheritage.net)  
(via HCDX)

## Schematic and parts used for reversing direction of a Flag-antenna.

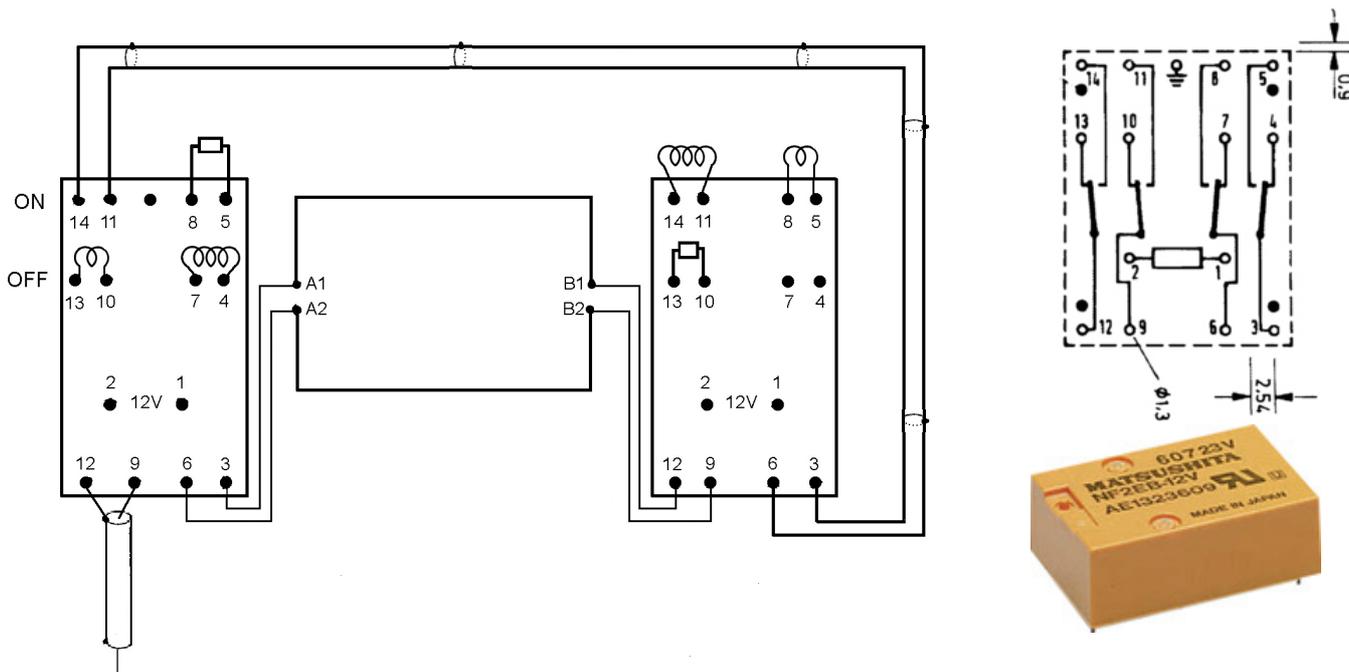
During several months I have planned to erect a second Flag antenna perpendicular to the first one and also rebuild the existing antenna with high quality relays instead of the very cheap relays used. The intention was also to bury 20 mm flexible tubes in the ground for housing the coaxial and 12 V DC supply cables. Digging, pulling the cables into the plastic tubes and soldering the parts for the two Flag antennas took a lot more hours than expected to complete.

The final design is presented below with the schematic for control of the relays and also some photos showing the parts in the plastic boxes each side of the antennas.

According to Mark Connelly at [http://www.qsl.net/wa1ion/flag/flag\\_antenna.htm](http://www.qsl.net/wa1ion/flag/flag_antenna.htm) the K6SE article on Pennants and Flags suggests a horizontal dimension of 8.84 m / 29 ft. and a vertical (side) dimension of 4.27 m / 14 ft. The VE6WZ web site has data suggesting that, as long as the horizontal-to-vertical (H/V) ratio is kept the same, performance in nulling will be comparable with antennas of different sizes. Signal capture, of course, is greater as the area enclosed by the antenna is increased. The K6SE ratio of 29/14 or 2.07 was arrived-at by EZNEC analysis. Ken Alexander had good results with a Pennant measuring 16.45 m horizontally by 5 m vertically for a ratio of 3.29. It would seem that there's a certain amount of "budge room" in the H/V ratio.



In one of the garden borders, between two trees separated by 12 m, I erected the first Flag-antenna two years ago. The second was erected a few months ago in the garden border hedge at right angle to the other. The same size, 2 x 4 m, were used for both antennas. It seems that this size, although not optimal, seems to give decent nulling of the backlobes. At least there is a big difference in reception when switching between the four antenna directions.

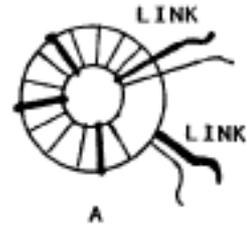


**Flag antenna:**  $l \times h = 12 \times 4$  m, lowest horizontal wire 0,5 m above ground

<b>Relay 4-pole:</b>	Matsushita NF4EB-12V DC	Elfa part no 37-052-66
<b>Toroid:</b>	Epcos E30 36x23x15 mm	Elfa part no 58-614-14
<b>Resistor:</b>	940 ohm ½ W (2x470 ohm in series)	
<b>Coaxial cable:</b>	RG58/U, 50 ohm	Elfa part no 55-904-01
<b>12 V feed cable:</b>	LIYY 4x0,14 mm <sup>2</sup>	Elfa part no 55-721-28
<b>Cable for toroid windings:</b>	6 x 10 m EKUX	Elfa part no 55-288-07
<b>Experimental board 100x160</b>	2,54 mm spacing	Elfa part no48-202-70
<b>Printed circuit screw termination blocks:</b>	8-pol. 2,54 mm spacing	Elfa part no48-354-68
<b>Plastic box:</b>	10x10x5 cm	Bauhaus
<b>Wooden impregnated pole:</b>	50 mm dia, $l = 1,8$ m	Bauhaus
<b>Fir rod:</b>	27 mm dia, $l = 3,4$ m	Bauhaus
<b>Flexible tube:</b>	20 mm black PVC, 25 m per reel	Jula

The toroid is wound with 35 turns for the 900 ohm winding and 8 turns for the 50 ohm winding. Note that both windings must be wound in the same direction. The primary winding must be carefully spread around the entire toroid and then the much smaller secondary winding must be carefully wound atop the primary winding and equally spaced around the toroid.

The Epcos E30 toroid has a  $A_L$  value of 5600 and with the above number of windings reception will be almost flat from 0,1 to at least 15 mHz.



Picture showing the two plastic boxes (10x10 cm) with relay and toroid attached to a small plywood board.



Interior view of the 10x10 cm boxes on the right antenna side. The left box contain the relay and termination blocks on the circuit board, the right box contain the balun.



Picture showing the 1,8 m impregnated pole with a 3,4 m fir rod (27 mm) attached with long, wooden screws in the top. In the middle the 20x10 cm plywood board with the two boxes attached with wooden screws. At the bottom the two 20 mm plastic tubes with coaxial and 12 V supply cable come up from the ground and are secured to the pole with plastic strips. All cables are buried in the ground in blackflexible plastic tubes.

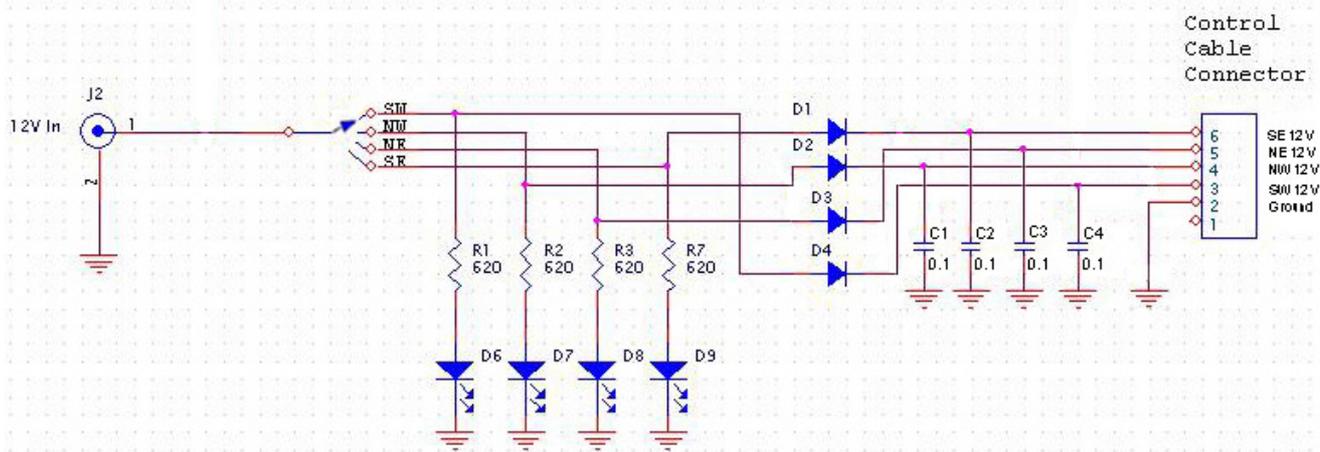
The bottom horizontal antenna wire is about 50 cm above ground.

Don't try to use 16 mm flexible tube. It's almost impossible to pull the coaxial cable through this small diameter. Use 20 mm flexible tube instead for both coaxial and 12 V supply cable.

The 12 V control unit for the two Flag antenna relays is quite straightforward consisting of a power switch, a switch for choosing between two receivers and a 3 pole 4 position rotary switch. LED indicators show Power on and the actual Flag antenna direction.



The schematic below shows a principal layout which can be used to control four separate relays. Of course you also have to switch the two antenna inputs accordingly. In my case only SW & SE are connected to 12 V to activate the relays. For NW & NE directions no supply voltage is applied because the relays are inactivated in those positions.



Three recordings with 20 seconds in each direction can be found at my web-site <http://homepage.sverige.net/~a-0901/>.

- Flag Ant reversal 1566 kHz, 2010-06-09, direction 210/300/30/120
- Flag Ant reversal 1566 kHz, 2010-06-08, direction 300/120
- Flag Ant reversal 1566 kHz, 2008-09-18, direction 30/210

**Some hints found on Array Solutions website regarding K9AY antennas also equally valid for Flag-antennas.**

***Can I make the loop larger, smaller or a different shape?***

*The short answer is yes — many hams have limited space or want to use existing supports such as trees. Here are the general rules about loop size and shape:*

*1) The current in the loop (and thus, signal voltage across the feedpoint terminals) is proportional to the area enclosed by the loop. — A smaller loop will capture less signal, which will require more preamplifier gain to give the receiver a proper signal level. The loop is too small when the quiet band signal level falls below the noise floor of the receiving system (preamp/feedline/receiver).*

*A larger loop will capture more signal, but at some point its mode of operation changes. A loop is too large when it starts to act like a "delta loop" or "quad loop" instead of a "small loop." A loop is too large when the overall wire length is about 0.3 wavelength; approx. 0.1 wavelength across the diameter or longest diagonal dimension. The published dimensions (25 ft. height, +/- 15 ft. across) are right at the upper limit for operation in the 80 meter band. Also, as the size approaches the upper limit, the optimum terminating impedance will change, and the maximum front-to-back will start to degrade.*

*2) The shape of the loop determines the vertical angle of the null. — The semi-delta loop shape was chosen for two reasons -- it is practical for a single tall support, and it places the null at an elevation of 35-45 degrees above the horizon, which is ideal for rejecting the strong signals coming from one-hop skip distance.*

*A square or rectangular shape with vertical ends will place the null at a lower angle, which may be better for local noise rejection. A diamond or a tall rectangle that is higher than its width will place the null at a higher angle, which may be useful for rejection of very short skip (NVIS) signals.*

(From <http://www.arrayolutions.com/Products/lowbandFAQ.htm> )