AARCOVER

Keeping Austin Wireless
for Over 91 Years!

Bulletin of Austin Amateur Radio Clubs **ISSN 1067-0262**

September 2011 **Issue 9-2011**

HF RADIO STRATEGY FOR DEALING WITH SUDDEN IONOSPHERIC DISTURBANCES (SID)

Lewis Thompson, W5IFQ, AAA6TX

7 August 2011

Background:

A M6.0 flare occurred at 13:48Z (08:48 CDT) on 3 August, disrupting a Texas Army MARS net operating on 60m. State-wide propagation when from excellent to "weak-and-unreadable" within two minutes! Digital messaging using MT-63 mode was still barely possible between some stations. The next UTC day at 0357Z (22:57Z CDT), a much more intense M9.3 flare occurred at the same sun spot (11261) location. Had this been during a scheduled or an emergency net, even digital messaging would not have been possible.

With the significant increase in solar activity with Cycle 24, Texas Army MARS is developing standard procedures for dealing with the radio blackout phenomena associated with Sudden Ionospheric Disturbances. These same procedures are applicable to ARES/RACES HF emergency radio operations. Unfortunately, amateur radio voice nets cannot operate digital modes on the same frequency. Consideration should be given to having procedures in place for the voice net to re-open as a digital net in the allowed frequency segment of the same frequency band as the voice net. This will ensure similar propagation paths between net stations.

(Continued on page 4)

Periodic Events

Sun	7:30 p.m.	Travis ARES net	147.36 MHz + (131.8)
Sun	8:00 p.m.	Travis ARES Packet	145.73 MHz -
Sun	8:00 p.m.	Williamson ARES net	146.64 MHz - (162.2)
Sun	9:00 p.m.	ARO Swapnet	146.94 MHz -
Sun	(After Swapnet)	Newsline	146.94 MHz -
Mon.	7:30 p.m.	STX ARES Net	3.873 MHz
Tues.	7:30 p.m.	Hays ARES net	444.150 + (114.8)
Tues.	8:00 p.m.	Bastrop ARES Net	443.750 + (114.8)
Wed	11:30 a.m.	Ham Social Luncheon, Jim's	146.94 MHz -
Thu	9:00 p.m.	2m SSB Net	144.250 (USB)
Thu	11:00 a.m.	Lunch, Pokey Joe's 183&Great Hills	444.1 MHz+
Fri	8:00 p.m.	6m SSB Net	50.230(texasvhf.org/)
Sat	7:00 - 8:30a.m.	Breakfast @ Waterloo Ice House	444.1 MHz +
Sat	9:00 a.m.	Chapter 67 QCWA QSO Net.	3.920 MHz LSB
Daily	6:30 p.m.	Central Texas Traffic Net	147.14MHz+

In This Issue

Ham Radio Exams Results

The following are the results of the ARRL VE Test Session held on August 6th at the Austin Airport Marriott South (Austin Summerfest) :

Technician Class Licenses Processed

Bert A. Bronaugh, Jr. KF5MHZ
Alex J. Lee KF5MHW
Kevin R. Sisney KF5MHY
Terry L. Standefer KF5MHX
Peter A. Velasquez KF5MIB
Will A. Yokubaitis KF5MIA

General Class Licenses Processed

James W. Bentley KF5LZY
Logan R. Crownover KF5GYD
Lucas R. Crownover KF5GYE
Stephen A. Darsey N5PMB
Jorge Harada-Rodriguez KF5IED
Herbert L. Kellar WB5JJI
John M. Longoria KE5OGT
Carlos Santiago KF5LJM

Extra Class Licenses Processed

Frank R. Aguilar N5SSH
George S. Chapman N9ZRX
Richard Fourzan KR4ZAN
Timothy A. Goldenburg KD5JFY
Norman S. Pitou, Jr. KF5KOG
Mark R. Sequerth KF5KZL

Examiners Participating in this Test Session

Craig Bean AC5KW
Russ Cook KK5E
Tony Davee KM5JH
Larry Gunter WB5BEK
Gene Hinkle K5PA
Joe Jelinski KC2KG
Joe Makeever W5HS
Malcolm Robertson W5RME
Roy Walker WA5YZD
Jeff Whisnant AE5VA

Next ARRL VE Test Sessions

September 3rd - Bethany United Methodist Church, Disciple Bldg. Room 206
October 8th - Bethany United Methodist Church, Disciple Bldg. Room 206

TNX ES 73 DE W5HS
Joe

8-13-2011

The South Austin W5YI VE team heartily congratulates all of the following people who earned new or upgraded amateur radio licenses at our August 13th session:

Extra Class – (none)

General Class –

Patrick A. Rueckert, KF5MBT
Sunday M. Yokubaitis –new-

Technician Class - (new)

Our administering volunteer examiners were:

Craig Bean, AC5KW
Wally Marusa, K5WLY
Jim Greenwood, AB5EK
Gary Popp, AE5JR

Our next two amateur radio exam sessions will start at
2 PM on September 17th and October 15th in
room 118 of Fleck Hall on the campus of St. Edward's University.
All sessions are walk-in and the exam fee is $14 .
For additional information regarding our amateur radio examination sessions,
please contact Jim, AB5EK at (512) 327-6184 or by e-mail to
hamradioexams@hotmail.com or visit our web page at
hamradioexams@hotmail.com or visit our web page at http://texashams.org/w5yi-austin/

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Treasurer	Jay Hoffman	KA5OST	388-4404	treasurer@austinhams.org
Secretary	Alan Russell	KE5DTR	851-1806	secretary @ austinhams.org
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ARRL Travis Co. Emer. Coord.	Glen Reid	K5FX	263-5700	k5fx @ arrl.net
TC ARES PIO	Steven Polunsky	W5SMP		tcares-pio@ gmail.net

Please contact a club officer, attend a meeting, mail us to join the organization, you can also join or renew online.
The Austin Amateur Radio Club, Inc. (AARC) has annual membership dues of $20.00 per person or $30.00 per family. AARC maintains the following repeaters:

FREQUENCY	AUTOPATCH	USE
146.780	No	
146.880	Yes	General
146.940 107.2 PL Tone	No	Most popular, WX, Swapnet & Newsline
224.800	No	
444.100	No	
444.650 +5	No	70cm D-Star Repeater [W5KA]
146.480/+1.0	No	2m D-Star Repeater [W5KA C]
1293.200/-20	No	23cm D-Star Repeater[W5KA A]
1248.200	No	23cm D-Star DD (data, simplex/reversible) [W5KA A]

Persons using the repeaters are asked to join the club to help support these valuable resources. To use the autopatch, announce your call sign, press * and dial the phone number then release the PTT. When finished, press # to hang up the phone. Dial 911 (no * needed) for emergency services.

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For Changes in your ADDRESS, PHONE NUMBER or CALL SIGN:
See Jay Hoffman, KA5OST (512) 388-4404 ka5ost@arrl.net
Jay handles all changes for membership information .

Over the WWWaves…

A Collection of Various Websites sent in your friendly neighborhood hams…

Here is an educational film put out by the U. S. Navy on the proper use of the Morse key, and the basics of sending.
Do you know the elements of the code and their relationship to each other?
Do you know how many parts of the body are used to send Morse Code?
Do you know how to grip a Morse key?
Do you know the bad habits of sending to avoid?
Can you pass the "Quarter Test" with your sending?
This 9 minute film will get you on top of Morse Code sending techniques.

http://www.archive.org/details/gov.dod.dimoc.23735

Sent by Stuart Rohre,K5KVH

(Continued from page 1)

Solar Physics:

A large M or X class solar flare will generate high levels of x-rays that will increase the D-layer absorption, producing a radio blackout called a Sudden Ionospheric Disturbance (SID). A picture of a large Solar Flare can be seen in Figure 1.

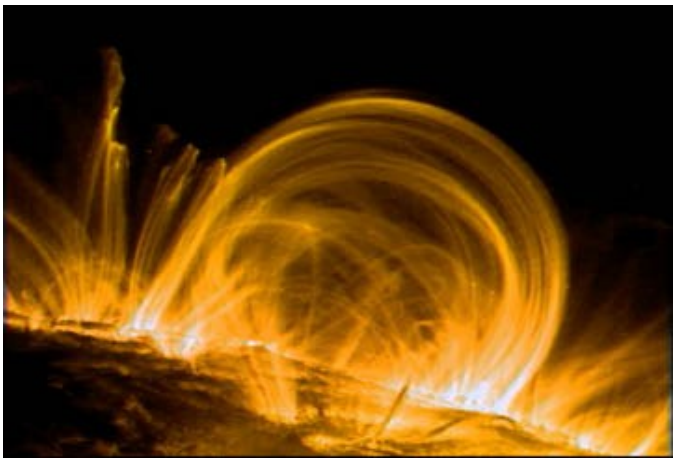


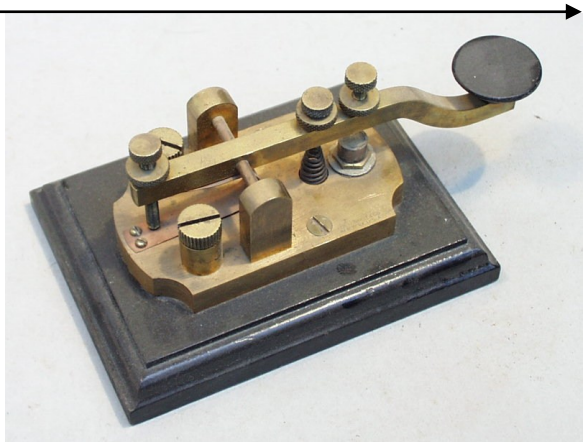
Figure 1: Solar Flare

Since this radiation travels at the speed of light, there is no warning. This is a daylight effect and the D-layer will quickly return to normal as soon the flare ends or our Texas location rotates away from the sun.
The intensity of the solar flare will determine the amount of attenuation or radio wave absorption in the D-layer as our radio wave travel to and are reflected from the higher altitude F-layer. Within several minutes of the arrival of an x-ray burst, the NOAA GOES satellites will measure, process and transmit the data for internet distribution. An x-ray flux plot of these two events from http://www.swpc.noaa.gov/today.html can be seen in Figure 2.

(Continued on page 5)

Silent Key

Forwarded by Stuart Rohre, K5KVH



I'm very sad to report that I just got my Sept QST and in the Silent Keys list see Jim Mayer, W5XF (who lived in Austin for many years and was well-liked by many). I know that Rick was looking for connecting to Jim in Miami and then Ohio a couple of years ago. Although he is listed in QST as in Miami, FL, he was recently living in the Athens Ohio area, and must have passed away earlier this year (before mid-May). See this item in the Athens County Amateur Radio Association Newsletter (report from May club meeting):
Jim Mayer, W5XF, SK
The club noted the passing of Jim Mayer, W5XF. A card and donation to the USO was made in memory of Jim in behalf of ACARA by Jim Crouse, KC8OVB .
Drew McDaniel, W8MHV, was contacted by Jim's son, Bob Mayer, KD8DKN, about Jim's estate. Bob explained that, per Jim's instructions, all the gear will be given to the ACARA for the members' use. Discussion followed and it was tentatively decided that members will get the opportunity to look through the equipment, after which time the remaining equipment will be donated to the Museum of Radio & Technology to be auctioned with half the proceeds to be returned to the ACARA.

(Continued from page 4)

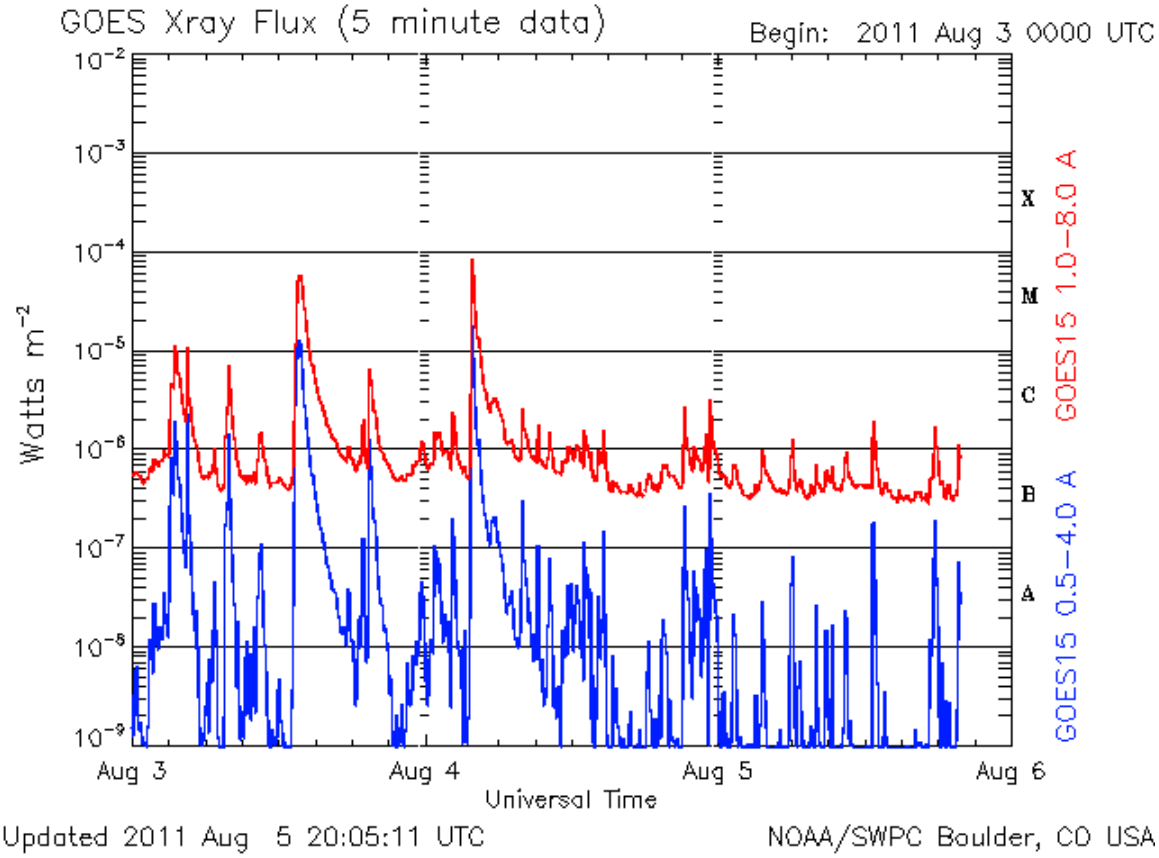


Figure 2: X-ray Flux of M6.0 and M9.3 Events

Another useful site is the NOAA D Region Absorption Predictions (D-RAP) found at: http://www.swpc.noaa.gov/drap/index.html. A plot of the maximum absorption directly under the sun's location (*Amax)* for the M6.0 flare event can be seen in Figure 3. A bar graph on the right-hand side of the graphic displays the expected attenuation in decibels as a function of frequency for vertical radio wave propagation at the point of maximum absorption (*Amax)*. This graph is only valid at this point, although users can re-create it for any location using the tabular data. The displayed values can also be scaled to approximately account for oblique radio wave propagation using the 1/sin(α) dependence, where α is the elevation angle of the propagation path. Central Texas geographic position experienced 1 dB of absorption at 18.9 MHz (from web site tabulated results). The maximum absorption at 18.9 MHz on the bar graft was approximately 3 dB, so subtract 2 dB from all bar graph numbers to scale the attenuation in central Texas. Using this approximation, the maximum absorption at the net frequency (5 MHz) was 18 dB. Absorption will be slightly greater for stations in north Texas (1.8 dB increase between Austin and Plainview for example). A station radiating 100 watts was reduced in power to approximately 3 watts! The real-time plot at the D-RAP site has a frequency tab for 5 MHz, so the attenuation value can be read directly. The archived data, shown in Figure 3, does not have this convenience feature.

During this event, some stations were able to maintain some level of contact across the state using MT-63 and most felt that Olivia would have been successful. Therefore a solar flare event that produces approximately 18 dB of attenuation is probably the highest attenuation that would allow a net to continue on the MARS 60m frequency in a digital mode. This maximum level of x-ray radiation could be experienced from a smaller solar flare directly over central Texas, or a larger flare with its *Amax* farther from central Texas.

The blue box in Figure 3 displays an estimated recovery time of 45 minutes. The x-ray radiation needs to drop down to C1 to not contribute any additional ionization to the D-layer. Actual recovery of communications should happen more quickly depending on the mode and transmit power of the stations in the net. Actual observed recovery was approximately 10 to 15 minutes for stations to return to "weak-and-readable" on voice.

Note that the attenuation on the bar graph follows a $1/f^2$ pattern, so moving up in frequency is one strategy to

(Continued on page 8)

AARC Meeting Minutes: August 2, 2011

Meeting called to order: 7:03pm by President Mitch London, KD5HCV.
Meeting started with a welcome to all.
We had 50 in attendance, 1 visitor, and no new members. One upgrade was reported.
Minutes: July's minutes approved as written in AARCOVER.
No past events were discussed.
Upcoming Events/Announcements: Austin Summerfest needs volunteers for the club's info table, talk-in, and to sell the trailer full of equipment. SoTx SET (11/5). Gainsville Hamfest (8/27). Mamma Jamma Ride (10/1) are looking for radio volunteers to help along the various routes and in SAG Wagons. The Boy Scouts JOTA event later this year needs a ham. "Like" us on our Facebook page. Our Tech classes need volunteers. The tower move will take place around end of year. The QRP group meets 2nd Saturdays; and there will be a QRP session at Summerfest. The QCWA group meets 3rd Saturdays. These items, other upcoming events, and scheduled presentations are listed in the AARC Swapnet newsletter, at www.austinhams.org, and on the Yahoo user group.
REPORTS
President/Vice-President: no reports; but a report about Lori: she threw her back out.
Treasurer: Bixler Estate (trailer full of equipment) to be sold at Summerfest, profits split 50/50; totals for club's & ARES's bank accounts; renew membership if has lapsed; and a request has been made for the club to have a directory again. We will only supply name and callsign unless members allow their email and address to be included.
Editor: newsletter is out; send articles/photos/something/anything; and CB is alive & well in Poland (as found out during recent family trip).
Tech Committee: so far, no reports of problems.
(late announcement) The club has not done a T-Shirt for some time. Please send in ideas and comments and suggestions to Mitch.
SIG/Other: HSMM-MESH/Digital groups meet at Red Cross on 4th Wednesday, and it includes packet tune-ups.
Space Wx: The Solar Flux Index has been coming up last several days. 3 great sunspots are currently on the face of the sun (Zurich Classification discussed). We had a long duration M-Flare event (M1.4) with a Solar Proton Event. The STEREO satellites got some great photos. Geomagnetic disturbance is okay, so far; but wait till the M-Flare hits. Solar winds have slowed down. Forecast is okay with more M-Flares expected. A great sunspot website is http://sidc.oma.be/educational/classification.php.
Old Business: The .94 repeater tower is coming down in November or December, so we need to move by then. The original cost was ~$15K ($5K labor, $7K for 1.25" feedline, $3K for other expenses), but now $8800 (<$2K labor, $4.50/ft. for 1-5/8" feedline around 650 feet total). We have the insurance coverage we need. The new location is ~100 feet away from current location. Outages due to the move will vary but be minimal. A motion was made and passed for the club to spend the money and move the 146.94 repeater.
New Business: none discussed this time.
Ham of the Month: Jay Hoffman, KA5OST.
Door Prizes: James W. Robbins, N5OUJ – Ear Light; F. Brunell, KD5DKB – Ham Radio for Dummies Book; Norm Sprott, KE5DTP – RR Express Bat & Ball.
Meeting Adjourned: 8:11pm.
Presentation: "Field Day 2011 Recap" by Stuart Rohre, K5KVH & Jeff Schmidt, N5MNW.

Officer Meeting Recap

Old Business: The Red Cross Radio clean up was discussed, as was trying to find a time to install new rotor on top of red cross. Our table at Summerfest netted us just over $1000. A club roster was mentioned, and it was said people should be asked wether they want their info published to members. It was put on hold for more into.

New Business: The Christmas party looks like it will be at Cannoli Joe's again as they have good food and plenty of room.
The purchase of a new club antenna analyzer is being looked into. Ham Classes were mentioned that they will start in October. The club was approached about having volunteers for an event in Cedar Creek Texas which could make the club some money. Info will be brought before club at next meeting. The club is looking into getting some more club shirts made since it has been a while. Both t-shirts and polo style shirts are being looked at. The website has been slowly being cleared out of outdated information. It is also wanted that a club equipment list be made available on the website so that members know what is available to them. Not all the officers will be running for re-election next year so at next meeting candidates will be sought out to fill various positions.

Vanity Call Sign Fee to Go Up in September

QST de W1AW
ARRL Bulletin 19 ARLB019
From ARRL Headquarters
Newington CT August 11, 2011
To all radio amateurs

On August 10, the FCC announced via a Final Rule in the Federal Register that the cost of an Amateur Radio vanity call sign will increase 90 cents, from $13.30 to $14.20. The new fees take effect 30 days after publication, making September 9, 2011, the first day the new fee is in effect. Earlier this year, the FCC released a Notice of Proposed Rulemaking and Order (NPRM), seeking to raise the fee for Amateur Radio vanity call signs.

"The Commission tries to keep the regulatory fee for Vanity call signs as minimal as possible," explained the FCC in its Final Rule.
"Between FY 2007 and FY 2010, the regulatory fee for Vanity call signs increased from $1.17 per year to $1.33 per year, an increase of $0.16 per year or $1.60 over a ten-year license period. We do not believe this increase is inequitable, and the Commission will continue its efforts to keep this fee as minimal as possible. The fees that are collected from Vanity call signs are used to offset the cost of monitoring and researching new call sign requests to prevent the issuance of duplicate call signs."

The vanity call sign fee has fluctuated over the 14 years of the current program -- from a low of $11.70 in 2007 to a high of $70 as first proposed in the FCC's 1994 Report and Order. In FY 2011, the FCC expects to grant 14,600 vanity call signs, bringing in $207,320 from the vanity call sign program, and looks to recover a total of $336,599,048 in fees from all the Services that it regulates.

The vanity call sign regulatory fee is payable not only when applying for a new vanity call sign, but also upon renewing a vanity call sign for a new term. The first vanity call sign licenses issued under the current Amateur Radio vanity call sign program that began in 1996 came up for renewal five years ago. The FCC is authorized by the Communications Act of 1934, As Amended, to collect vanity call sign fees to recover the costs associated with that program.

NØUJR and His Friends By Greg Trook, NØUJR

"Well sir, I haven't spoken to the technician just yet, but I would say by the looks of things, it could be a serious problem."

(Continued from page 5)
reduce the effects of the increased D-layer attenuation. Care must be taken to not move beyond the MUF (Maximum Useable Frequency) between net members. For in-state NVIS tactical nets this MUF will be the local Critical Frequency. Other strategies include using a very distant relay station or distant Winlink RMS station.

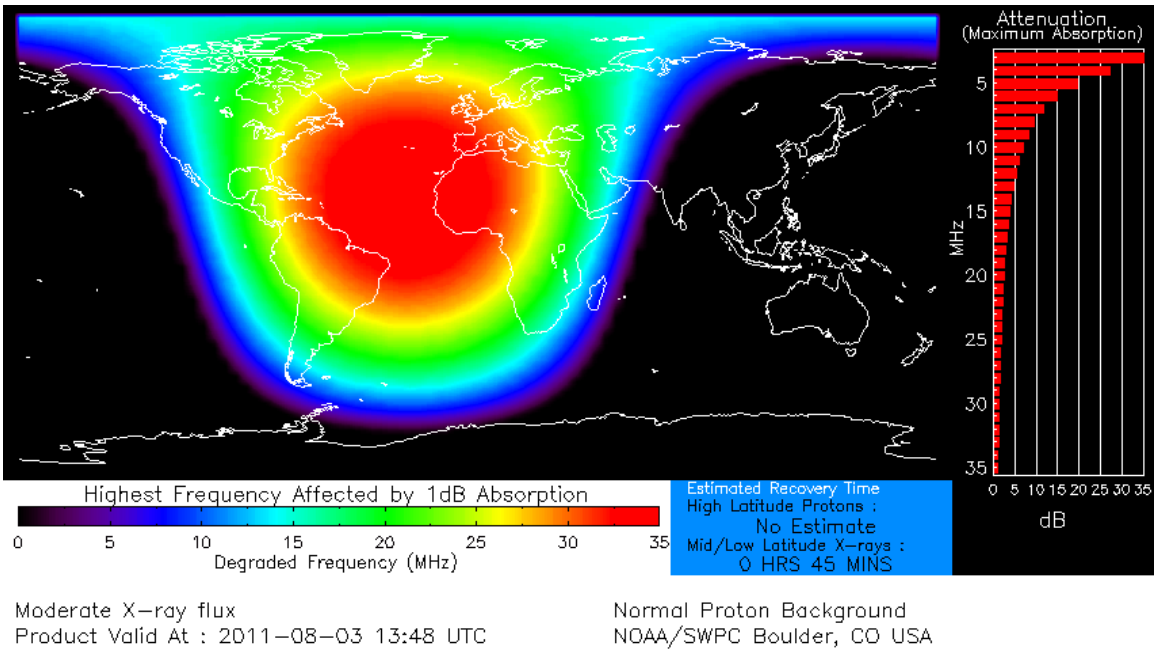


Figure 3: D-Layer Absorption for M6.0 Event at 13:48Z

Strategy:
Expectation:

The forecast for solar flare activity can be found at: http://www.solen.info/solar/

An example of the forecast for last week, just before the SID event, is shown in Figure 4.

All operators should check this site before any net to be aware of the possibility of a SID event during the net. Many of the net members, on the 3 Aug. 1301Z (08:01 CDT) net, immediately when to the solar x-ray flux site and confirmed a SID event since they knew that there had been a 60% - 100% forecasted probability of a M or X solar flare.

Forecast

The geomagnetic field is expected to be mostly quiet on August 2-3. On August 4 a CME impact is likely and could cause active to major storm conditions.

Coronal holes (1)	Coronal mass ejections (2)	M and X class flares (3)

1) Effects from a coronal hole could reach Earth within the next 5 days. When the high speed stream has arrived the color changes to green.
2) Effects from a CME are likely to be observed at Earth within 96 hours.
3) There is a possibility of either M or X class flares within the next 48 hours.

Green: 0-20% probability, Yellow: 20-60% probability, Red: 60-100% probability.

Figure 4: Solar Weather Forecast

(Continued from page 8)

Recognition:

A typical SID will result in a dramatic drop in signal level from all stations within several minutes. Most HF operators, when experiencing their first SID, will first consider equipment or antenna failure. This drop will be much faster and more extreme than is typically seen with D-layer absorption increase during the 1301Z (0801 CDT) Texas Army MARS nets.

Confirmation: The solar x-ray flux plot, shown in Figure 5, will show a very fast rise in x-ray flux at the event time. Again, this site is at: http://www.swpc.noaa.gov/today.html Also check: http://www.swpc.noaa.gov/drap/index.html as shown in Figure 3 above.

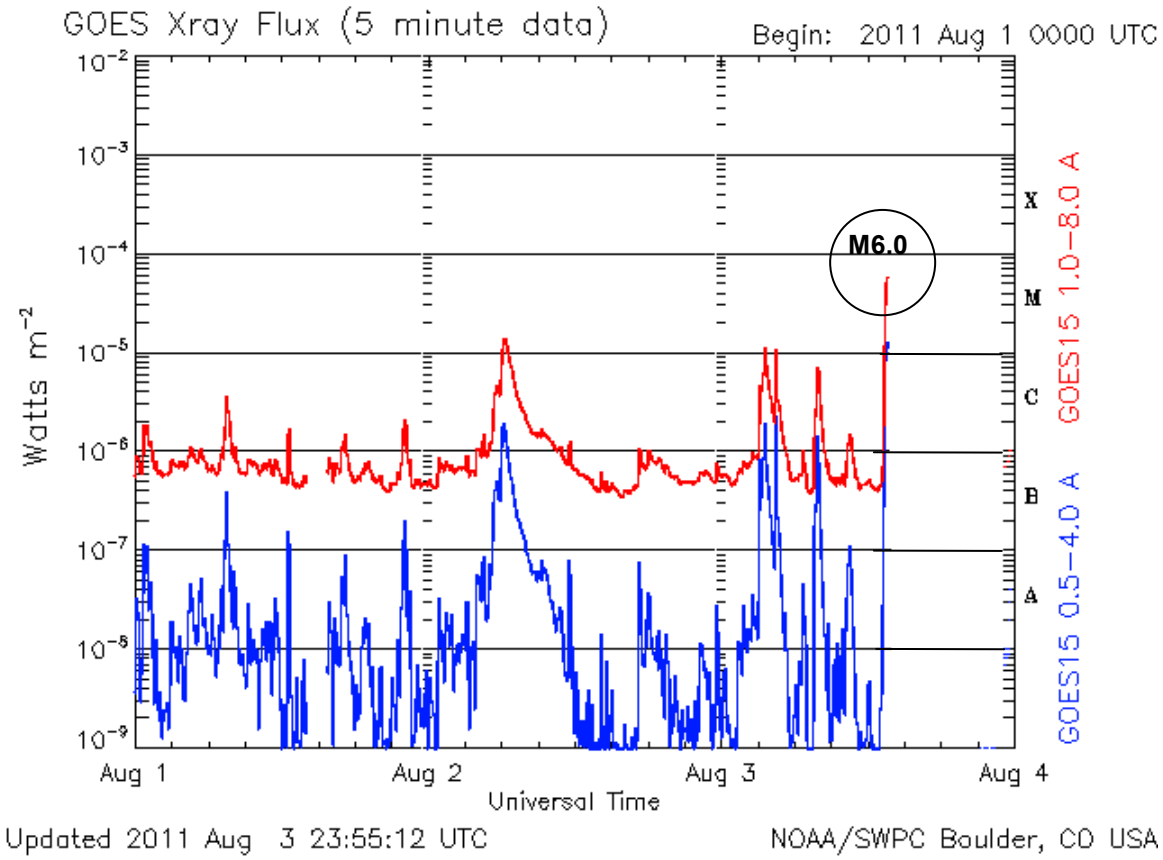


Figure 5: X-ray Flux at SID Impact

D. **Action (Texas Army MARS):**

a. Events with less than 18 dB of attenuation – Attempt to maintain net using Olivia. If net is not operating at the Critical Frequency, move two stations up to the closest regional net frequency just below the Critical Frequency for a radio check. If better performance is found, move net to the new frequency.

Large EventsInternet available – Notify net members by MARS Winlink Telnet that a SID has taken place and for all stations to remain on the net frequency. NCS should makes periodic net calls in the Olivia digital mode until net communications is restored.

No Local Internet – ANCS (alternate NCS) remains on frequency. NCS moves to a much higher HF frequency and sends a MARS Winlink message to all net members using a MARS HF RMS station in another state on frequencies in the vicinity of 20 MHz. He then returns to net frequency and makes periodic net calls on Olivia until communications is restored.

Readers are invited to visit the Texas Army MARS web site - Consolidated Solar Weather found at: https://www.txarmymars.org/resources/solarweather.php ■

AARC Meeting Info.

Waterloo Icehouse

8600 Burnet Rd. South of 183

(Come early and have dinner!)

Business Meeting 7pm

September 6th—Woodworking Art Presentation by Jim W5CHF and Solar WX summary by Lew W5IFQ

Officers Meeting 5:30 pm

September 20th—Come see the officers at work!

2011 Upcoming Amateur Exams

ARRL VEC– Sept. 3rd & October 8th9a.m. at Bethany United Methodist Church. Contact Joe Makeever, W5HS (345-0800) or Joe Thiel, N5SMN (832-0450) for info. $15 fee.

W5YI VEC- Sept.17th & Oct. 15th 2p.m. in room 106, Fleck Hall, St. Edwards University. Contact Jim Greenwood, AB5EK @arrl.net, (327-6184) for more info.
http://texasparadise.com/w5yi-austin

2011Calendar of Events

September 16-18
31st annual Plano Balloon Festival & Special Event Station K5B
Plano Amateur Radio Klub (PARK) QRV as K5B freqs +/- QRM: 7.255, 14.255, 21.355 and on WD5ERD- 147.180 (+)PL107.2 Echolink at K5PRK. QSL with SASE to K5PRK

October 1
Belton Hamfest
Admission $5 (Includes a $2 Raffle Ticket)
Talk-in 146.82(-)PL 123.0
www.tarc.org/hamexpo/
www.beltonhamexpo.org/

October 15-16
Scouting Jamboree On The Air (JOTA) Frank Fickett Scout Training and Service Center- Tim Molepske tim.molepske@scouting.org

October 21
Texoma Hamarama - West Gulf Division Convention Ardmore, OK
www.texomahamarama.org

Upcoming Meetings...

Sept	Austin Meetings/Happenings	Time	Address
6	4 AARC Meeting Waterloo Ice House*	7:00 p.m.	8600 Burnet Rd.
10	8 Austin QRP, Alvin's Sandwich Shop	11:00 a.m.	12200 Research Blvd.
20	18 ATV Club Meeting Mangia's Pizza	7:00 p.m.	12001 Burnet Rd.
17	15 QCWA IHOP 183 Near Duval	1:30 p.m.	11654 Research Blvd.
28	26 Digital Wednesday at Red Cross	7:00 p.m.	2218 Pershing
26	24 Travis Co. REACT Jim's 183 & Burnet	7:30 p.m.	9091 Research Blvd.
27	25 Travis County A.R.E.S., ARL Auditorium	7:00 p.m.	10000 Burnet Rd.
22	27 CERT Meeting CTECC	6:30 p.m.	5010 Old Manor Rd.

****AARC Business Meeting is at Waterloo Ice House Come early and grab dinner before the meeting.***