PiGate

WinLink2000 Emergency Email Gateway

Hello!

Ian Smith - VA7IAN

This is a
PROJECT IN PROGRESS

You can contact me at:

va7ian@gmail.com or
va7ian@winlink.org

What's Winlink
What software can you use
    Walkthrough of Winlink Express
Into to pigate
    Hardware
    Software
    Pactor Modem
How to install PiGate Software
How to configure it
How to send mail

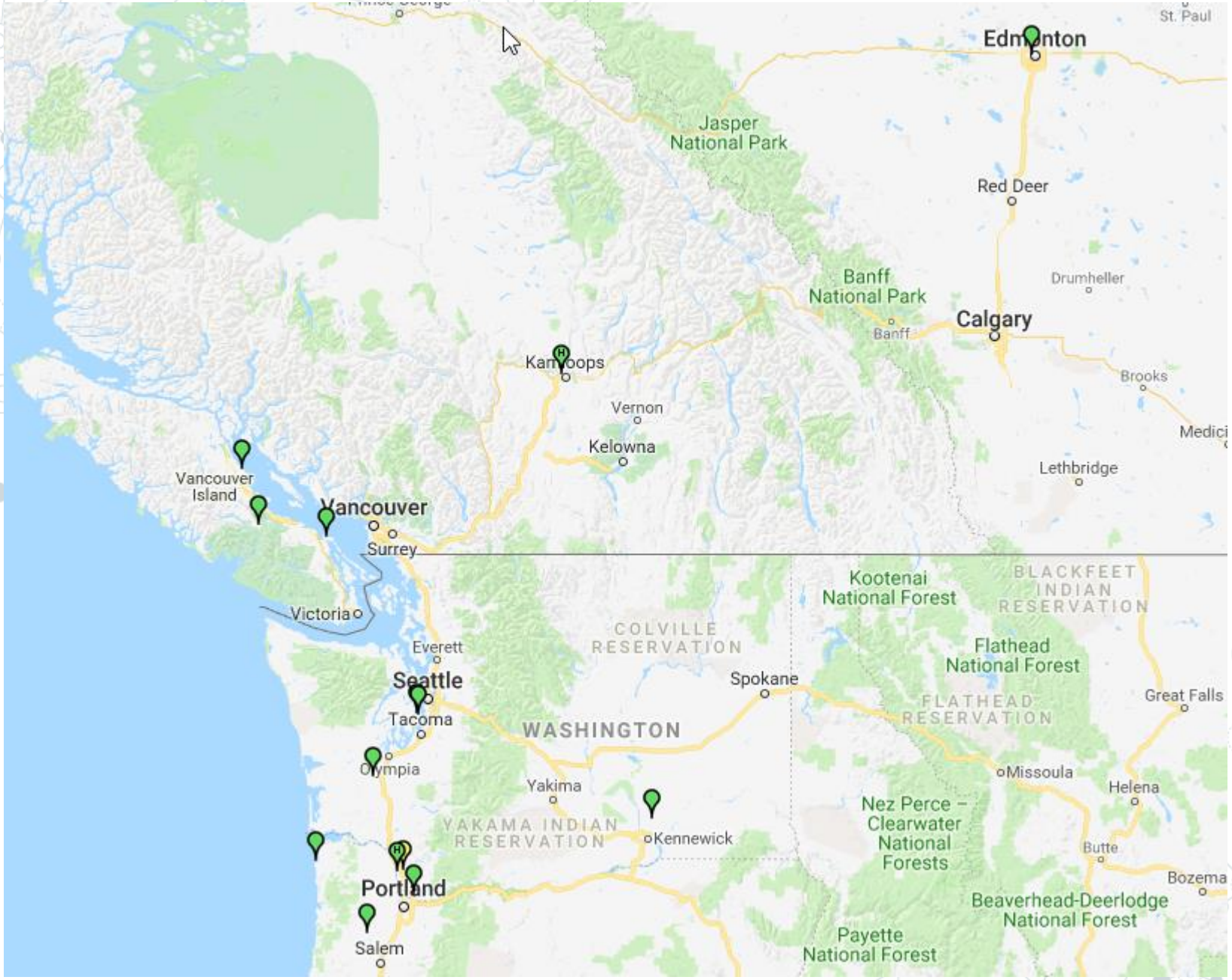
Why I'm working on a PiGate

NSEM plans to use winlink to send email via radio if the internet is not available

Some users find the software complicated and difficult

Winlink.org

Wordwide network of gateways

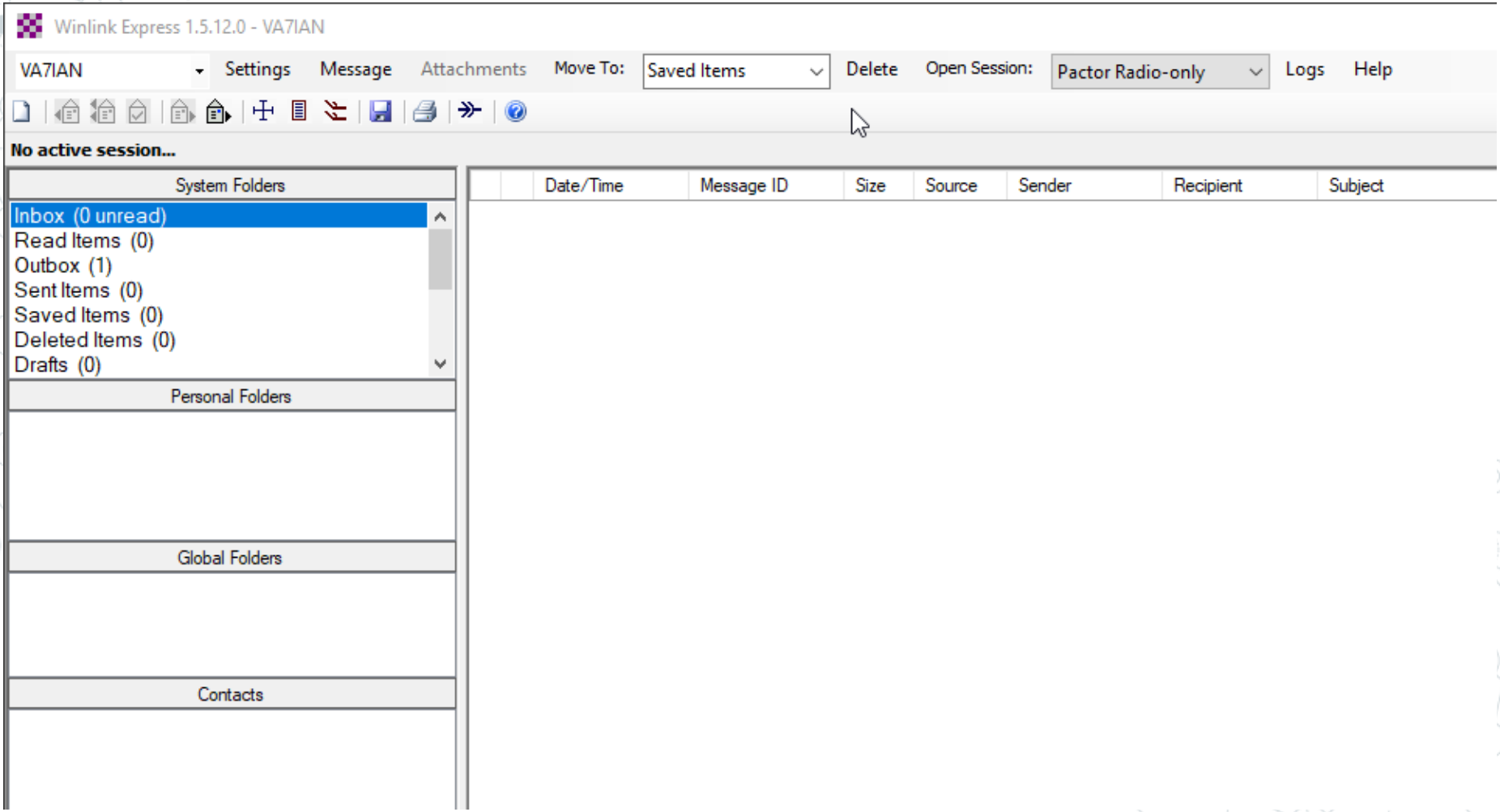

Edmonton
St. Paul
Jasper National Park
Red Deer
Banff National Park
Drumheller
Calgary
Banff
Kamloops
Brooks
Vernon
Kelowna
Medici
Lethbridge
Vancouver Island
Vancouver
Surrey
Victoria
Kootenai National Forest
BLACKFEET INDIAN RESERVATION
COLVILLE RESERVATION
Everett
Seattle
Spokane
Flathead National Forest
Great Falls
Tacoma
WASHINGTON
FLATHEAD RESERVATION
Olympia
Missoula
Yakima
Helena
Nez Perce – Clearwater National Forests
YAKAMA INDIAN RESERVATION
Kennewick
Butte
Portland
Bozema
Beaverhead-Deerlodge National Forest
Salem
Payette National Forest

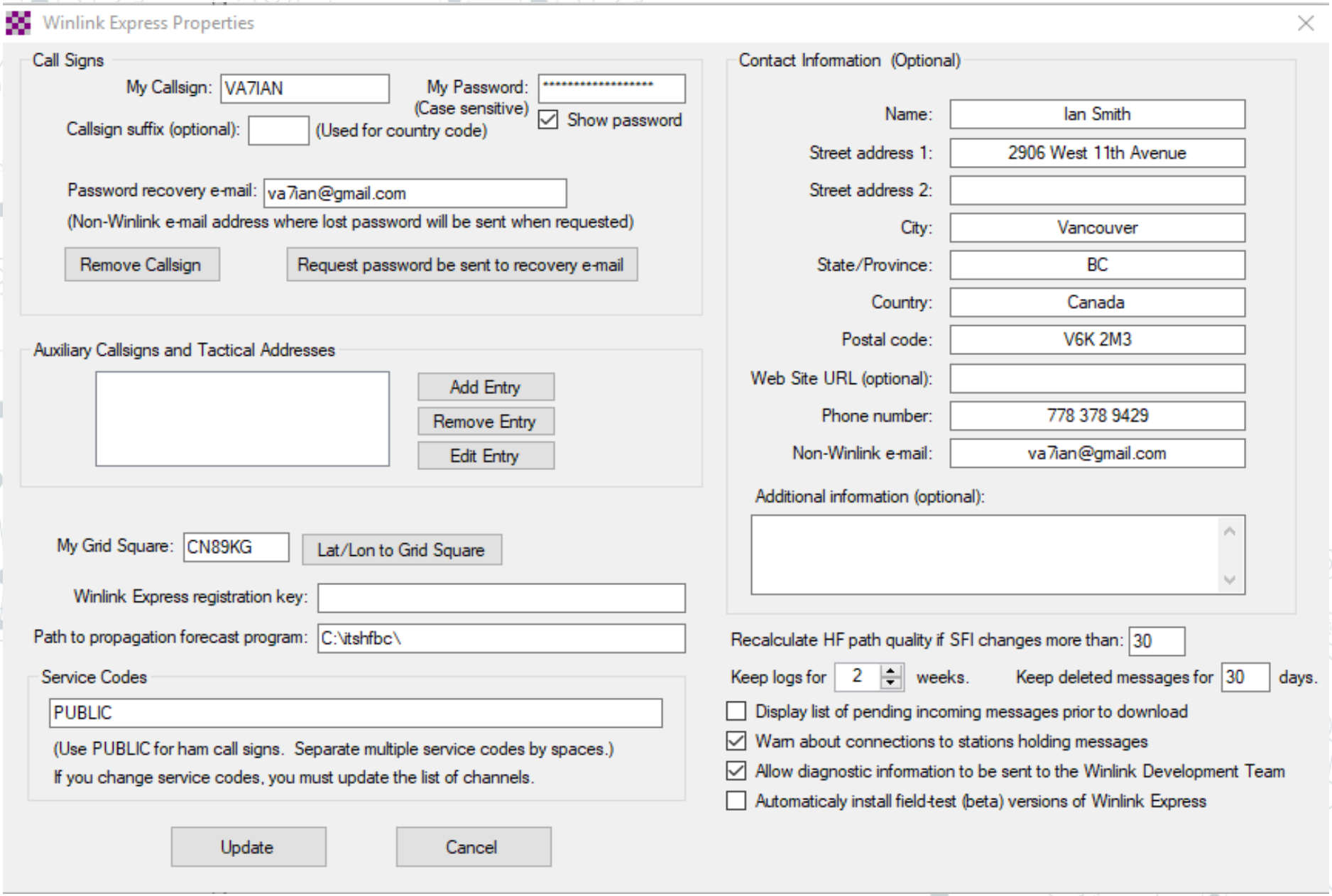
Software options

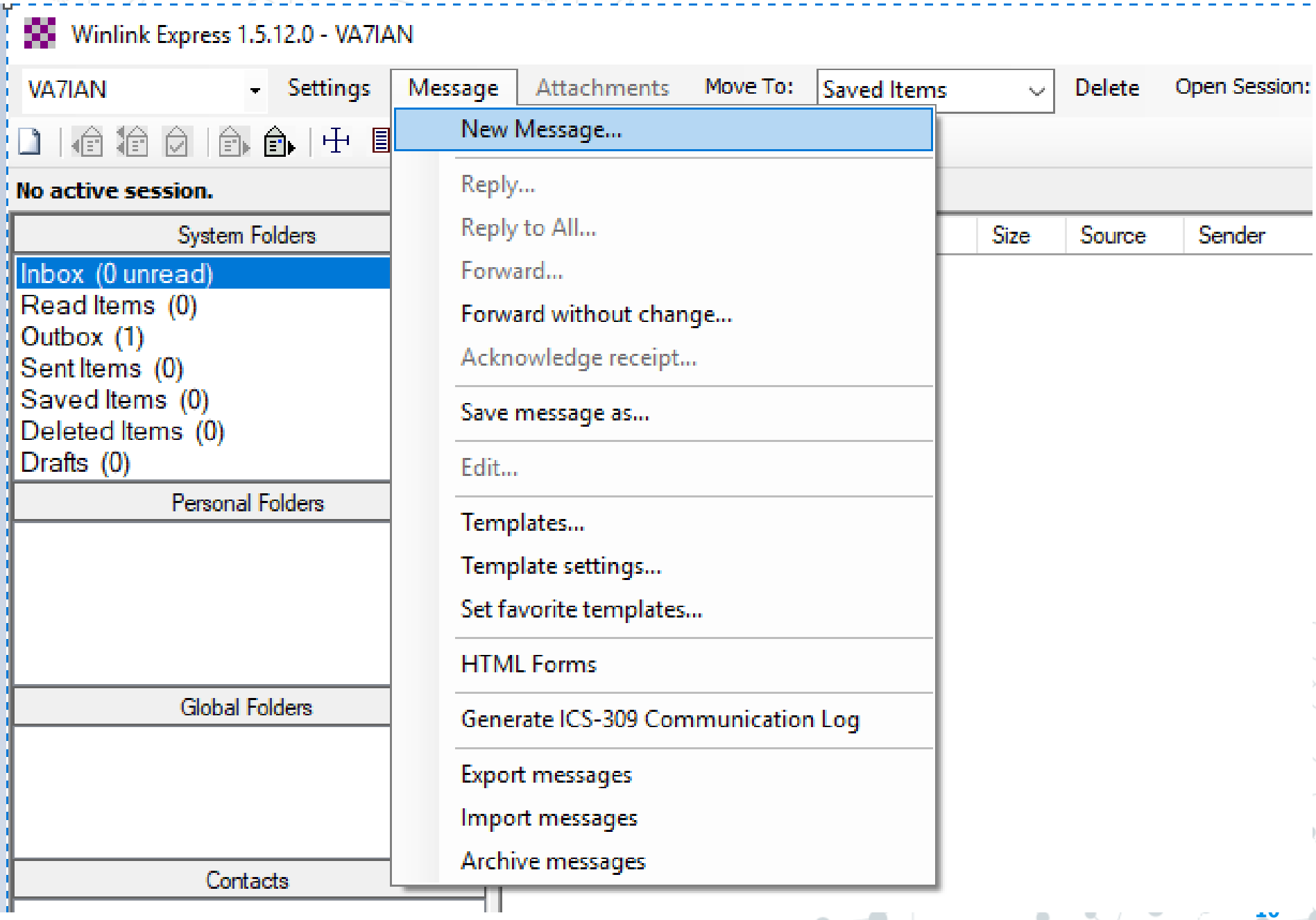
https://www.winlink.org/ClientSoftware

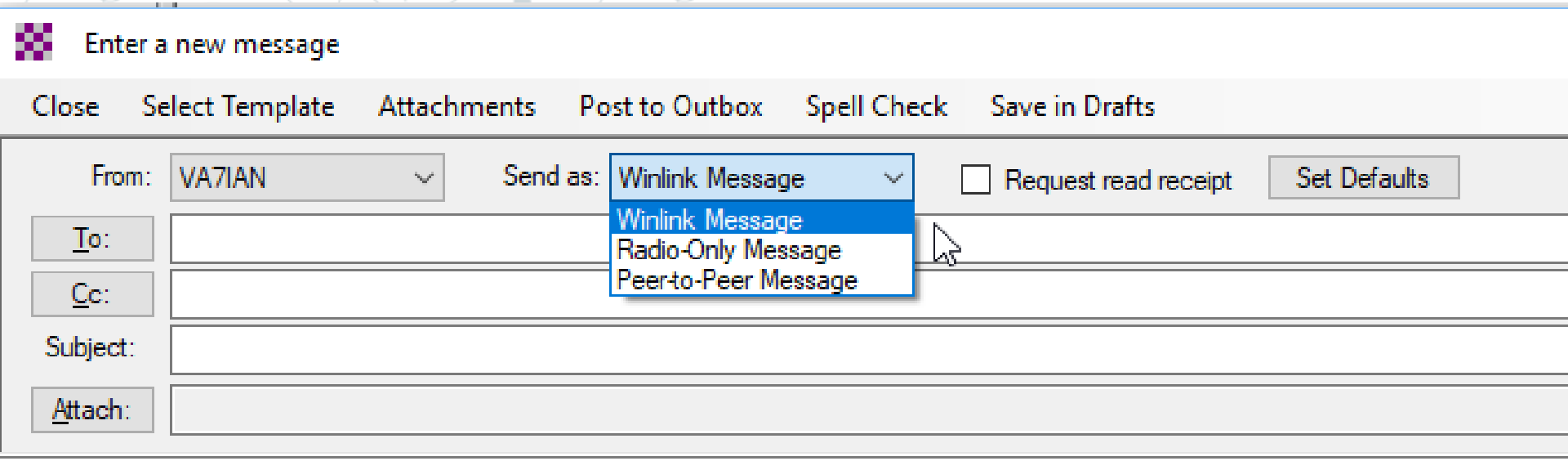
Winlink2000 (RMS Express)
Airmail – Good for debugging
Pactor
Outpost
Pat
Paclink-Unix

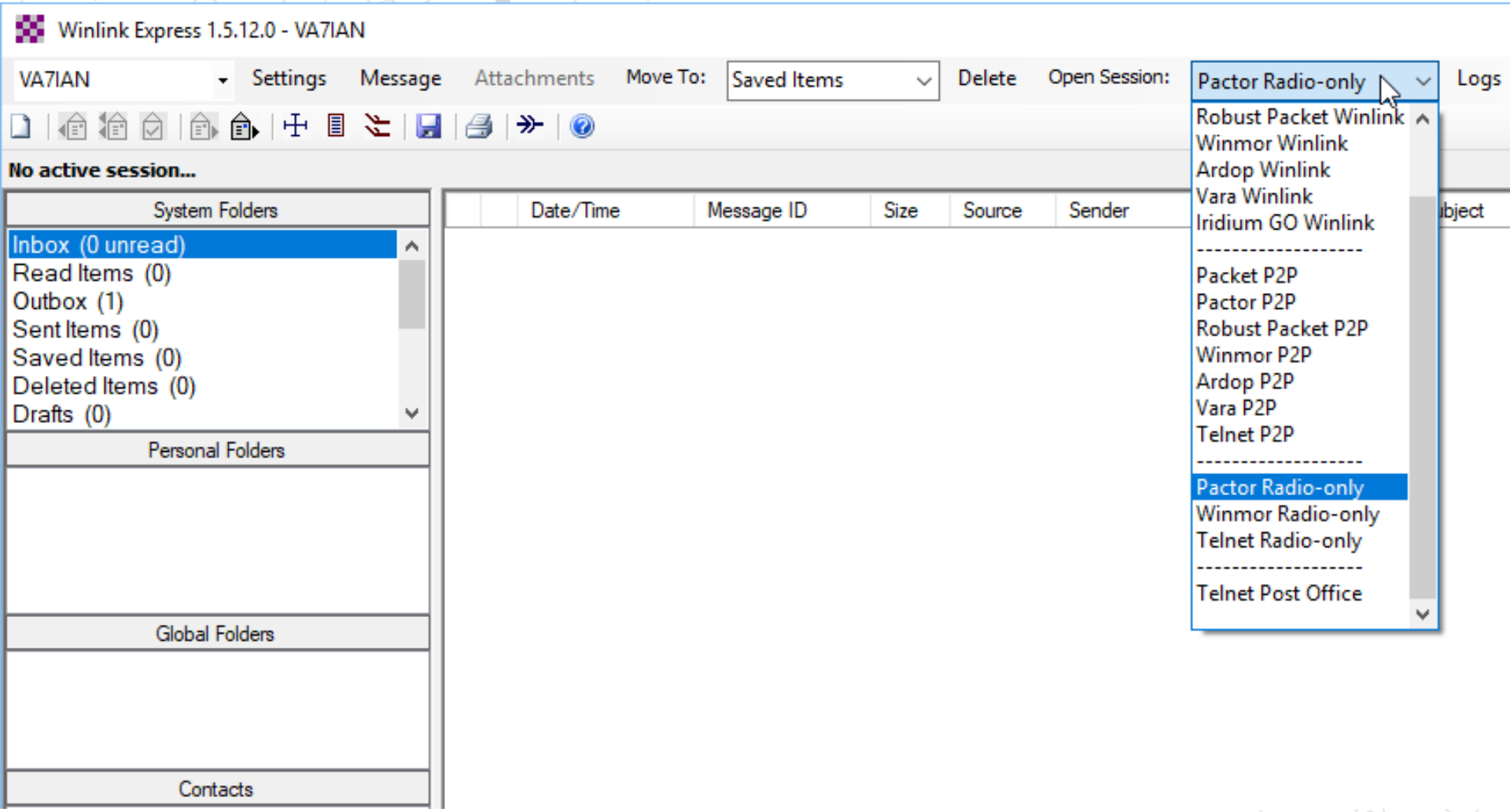
These screenshots have errors in the details.

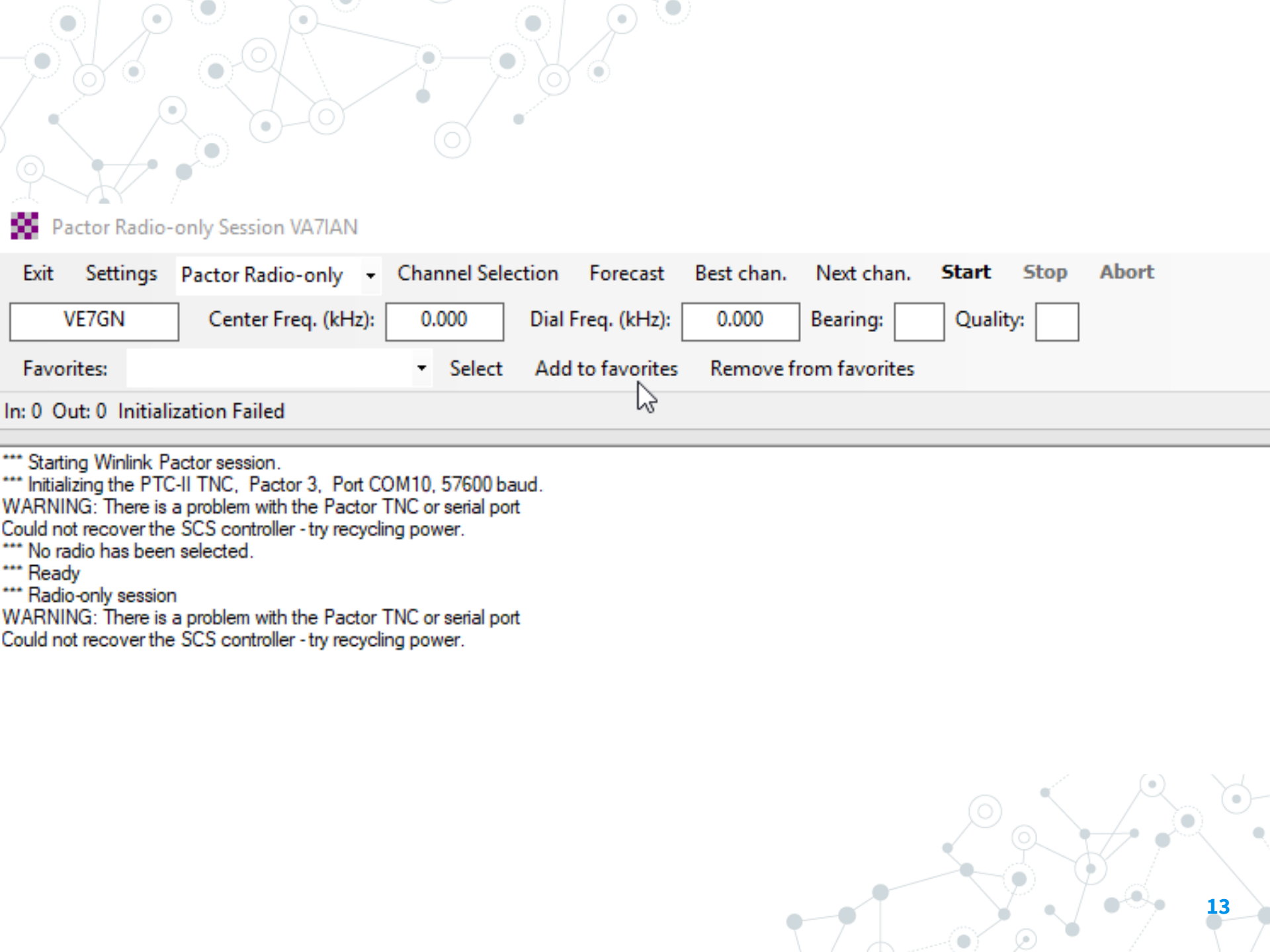


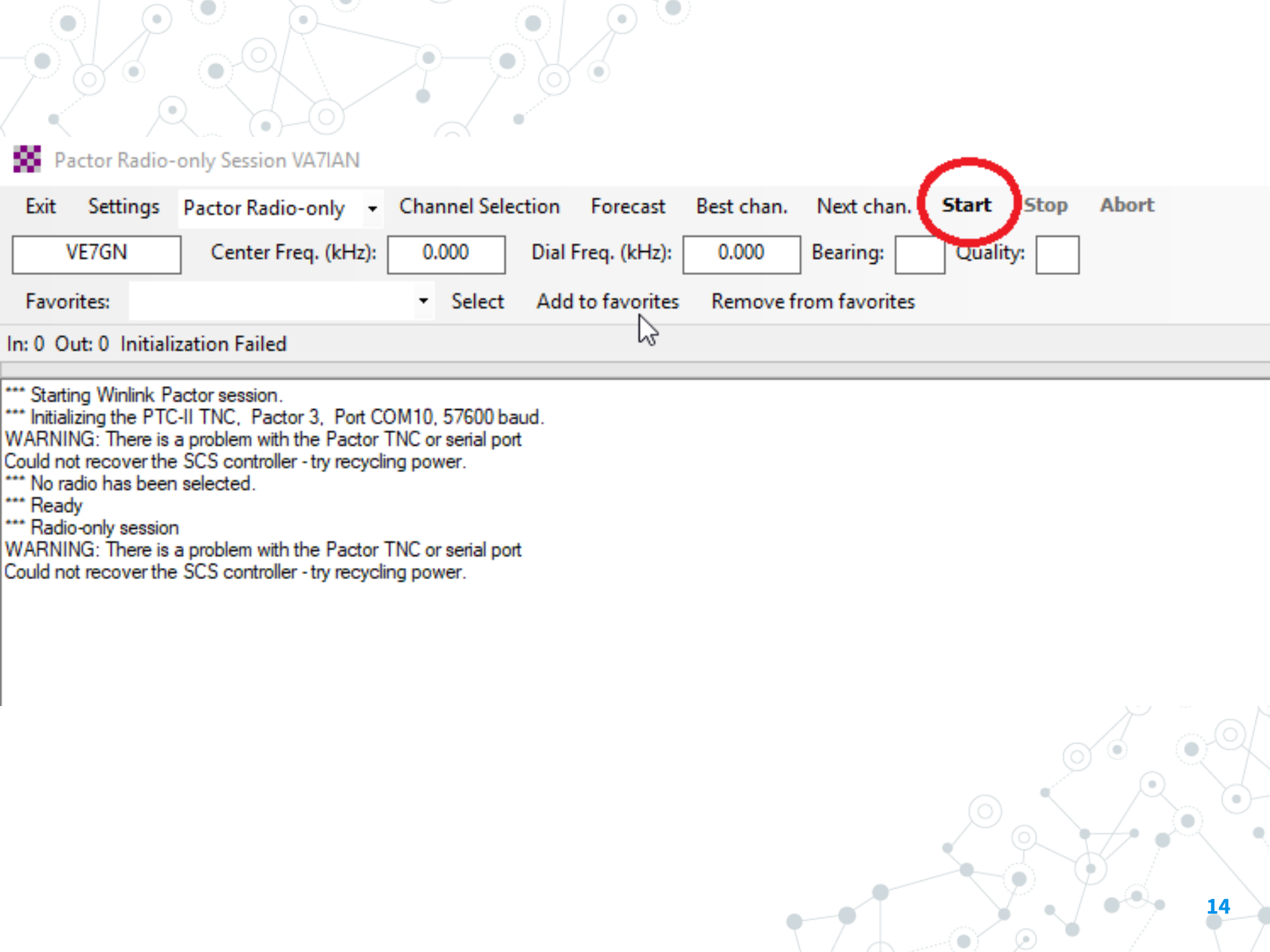

Winlink Express Properties
Call Signs
My Callsign: VA7IAN
My Password: (Case sensitive)
Show password
Callsign suffix (optional):
(Used for country code)
Password recovery e-mail: va7ian@gmail.com
(Non-Winlink e-mail address where lost password will be sent when requested)
Remove Callsign
Request password be sent to recovery e-mail
Auxiliary Callsigns and Tactical Addresses
Add Entry
Remove Entry
Edit Entry
My Grid Square: CN89KG
Lat/Lon to Grid Square
Winlink Express registration key:
Path to propagation forecast program: C:\itshfbc\
Service Codes
PUBLIC
(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.
Update
Cancel
Contact Information (Optional)
Name: Ian Smith
Street address 1: 2906 West 11th Avenue
Street address 2:
City: Vancouver
State/Province: BC
Country: Canada
Postal code: V6K 2M3
Web Site URL (optional):
Phone number: 778 378 9429
Non-Winlink e-mail: va7ian@gmail.com
Additional information (optional):
Recalculate HF path quality if SFI changes more than: 30
Keep logs for 2 weeks.
Keep deleted messages for 30 days.
Display list of pending incoming messages prior to download
Warn about connections to stations holding messages
Allow diagnostic information to be sent to the Winlink Development Team
Automaticaly install field-test (beta) versions of Winlink Express


Winlink Express 1.5.12.0 - VA7IAN
VA7IAN
Settings
Message
Attachments
Move To:
Saved Items
Delete
Open Session:
No active session.
System Folders
Inbox (0 unread)
Read Items (0)
Outbox (1)
Sent Items (0)
Saved Items (0)
Deleted Items (0)
Drafts (0)
Personal Folders
Global Folders
Contacts
Size
Source
Sender
New Message...
Reply...
Reply to All...
Forward...
Forward without change...
Acknowledge receipt...
Save message as...
Edit...
Templates...
Template settings...
Set favorite templates...
HTML Forms
Generate ICS-309 Communication Log
Export messages
Import messages
Archive messages


Enter a new message
Close
Select Template
Attachments
Post to Outbox
Spell Check
Save in Drafts
From:
VA7IAN
Send as:
Winlink Message
Request read receipt
Set Defaults
Winlink Message
Radio-Only Message
Peer-to-Peer Message
To:
Cc:
Subject:
Attach:


Winlink Express 1.5.12.0 - VA7IAN
VA7IAN
Settings
Message
Attachments
Move To:
Saved Items
Delete
Open Session:
Pactor Radio-only
Logs
No active session...
System Folders
Inbox (0 unread)
Read Items (0)
Outbox (1)
Sent Items (0)
Saved Items (0)
Deleted Items (0)
Drafts (0)
Personal Folders
Global Folders
Contacts
Date/Time
Message ID
Size
Source
Sender
Robust Packet Winlink
Winmor Winlink
Ardop Winlink
Vara Winlink
Iridium GO Winlink
Packet P2P
Pactor P2P
Robust Packet P2P
Winmor P2P
Ardop P2P
Vara P2P
Telnet P2P
Pactor Radio-only
Winmor Radio-only
Telnet Radio-only
Telnet Post Office


Pactor Radio-only Session VA7IAN
Exit
Settings
Pactor Radio-only
Channel Selection
Forecast
Best chan.
Next chan.
Start
Stop
Abort
VE7GN
Center Freq. (kHz):
0.000
Dial Freq. (kHz):
0.000
Bearing:
Quality:
Favorites:
Select
Add to favorites
Remove from favorites
In: 0 Out: 0 Initialization Failed
*** Starting Winlink Pactor session.
*** Initializing the PTC-II TNC, Pactor 3, Port COM10, 57600 baud.
WARNING: There is a problem with the Pactor TNC or serial port
Could not recover the SCS controller - try recycling power.
*** No radio has been selected.
*** Ready
*** Radio-only session
WARNING: There is a problem with the Pactor TNC or serial port
Could not recover the SCS controller - try recycling power.


Pactor Radio-only Session VA7IAN
Exit
Settings
Pactor Radio-only
Channel Selection
Forecast
Best chan.
Next chan.
Start
Stop
Abort
VE7GN
Center Freq. (kHz):
0.000
Dial Freq. (kHz):
0.000
Bearing:
Quality:
Favorites:
Select
Add to favorites
Remove from favorites
In: 0 Out: 0 Initialization Failed
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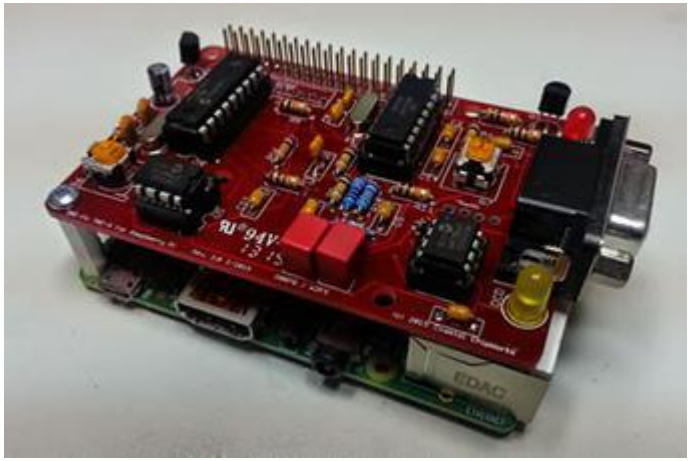
*** Initializing the PTC-II TNC, Pactor 3, Port COM10, 57600 baud.
WARNING: There is a problem with the Pactor TNC or serial port
Could not recover the SCS controller - try recycling power.
*** No radio has been selected.
*** Ready
*** Radio-only session
WARNING: There is a problem with the Pactor TNC or serial port
Could not recover the SCS controller - try recycling power.

PiGate

Raspberry Pi mini-computer

Designed by
Mark Griffith, KD0QYN
Union, Missouri USA
(South of St. Louis)

www.pigate.net



Coastal Chipworks TNC-Pi add-on board

Pi 3 Model B+

$60 Canadian

Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
1GB LPDDR2 SDRAM
2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
Gigabit Ethernet over USB 2.0 (maximum throughput 300 Mbps)
Extended 40-pin GPIO header
Full-size HDMI
4 USB 2.0 ports
CSI camera port for connecting a Raspberry Pi camera
DSI display port for connecting a Raspberry Pi touchscreen display
4-pole stereo output and composite video port
Micro SD port for loading your operating system and storing data
5V/2.5A DC power input

Micro SD memory

8Gb is plenty, have multiple.
Card can be corrupted is you lose power while writing.
Easy to swap and be up and running.

Projects for Pi

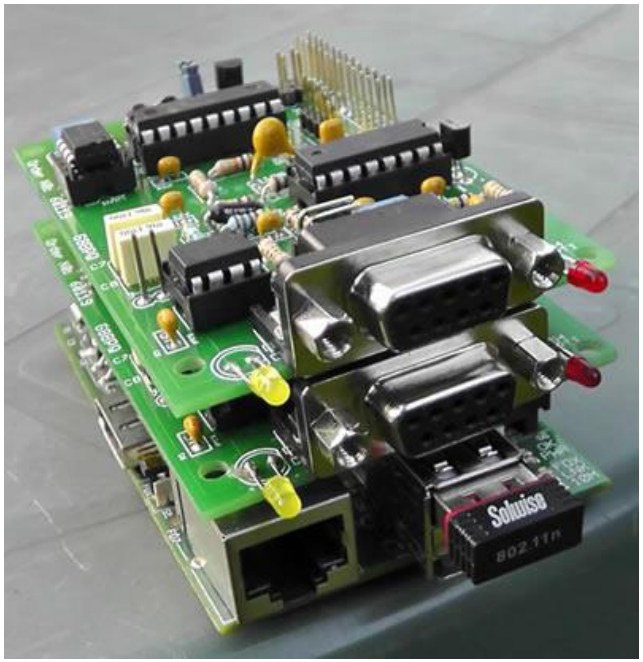
Linux desktop
Kodi / OSMC
Gaming
Drone controls

TNC-Pi TNC-X for Raspberry Pi

- http://tnc-x.com/TNCPi.htm

- $40 USD Kit form
- $65 USD Built and tested

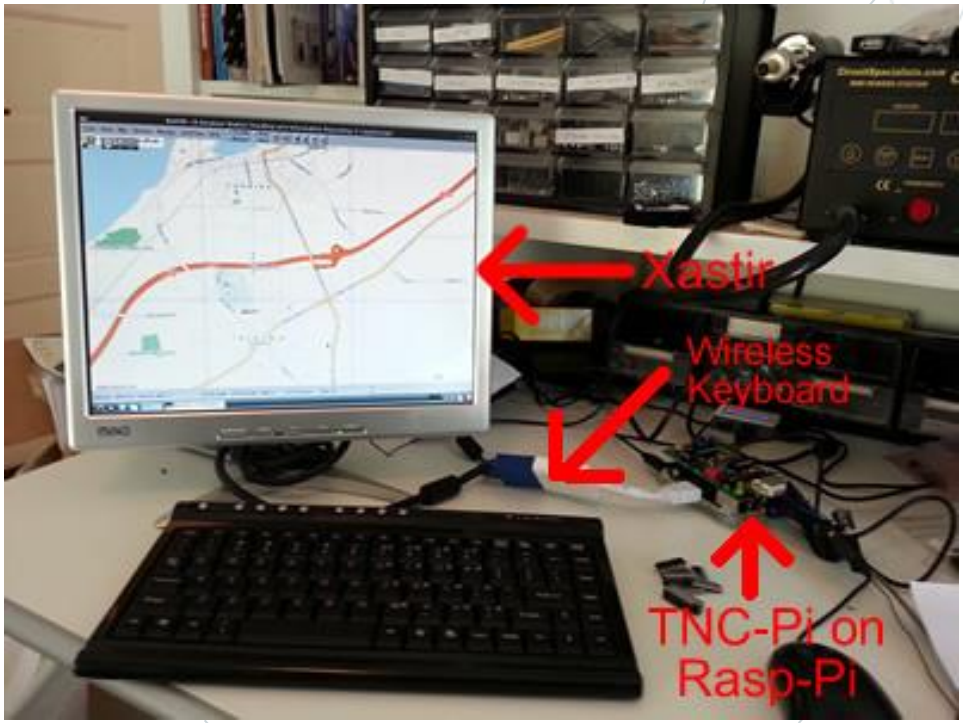
Imagine running a pair of TNC-Pi's with a single Raspberry Pi to create a dual frequency digipeater. G8BPQ has created a new version of his venerable BPQ multi-port packet program that will support this



TNC-Pi

APRS program Xastir running on Pi driving a TNC-Pi via serial connection.

Most features of D700/AVMAP for ¼ $$



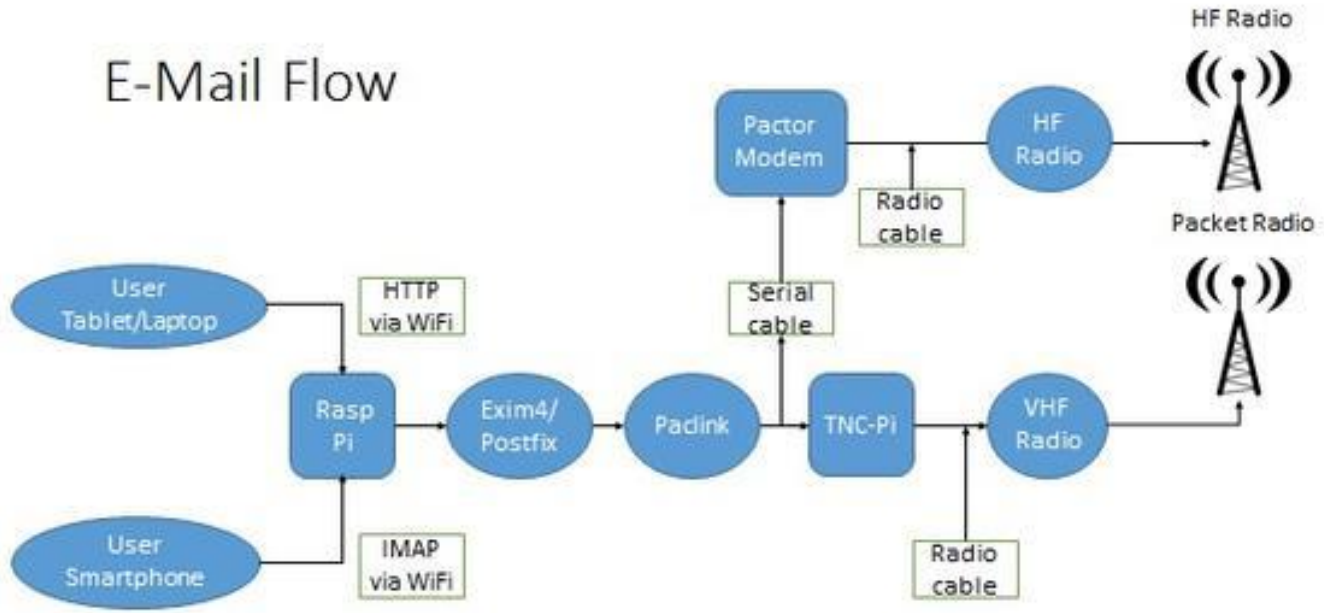
PiGate

Design Goals

Portable
Low Power Requirement
Easy Setup
Easy to replicate
Intuitive interface
Existing Equipment
Reliable
Cheap

PiGate

Email Flow



Attach a GPS for location and Clock

Two connection options

Pactor Modem

USB or serial connection between PiGate and HF radio.

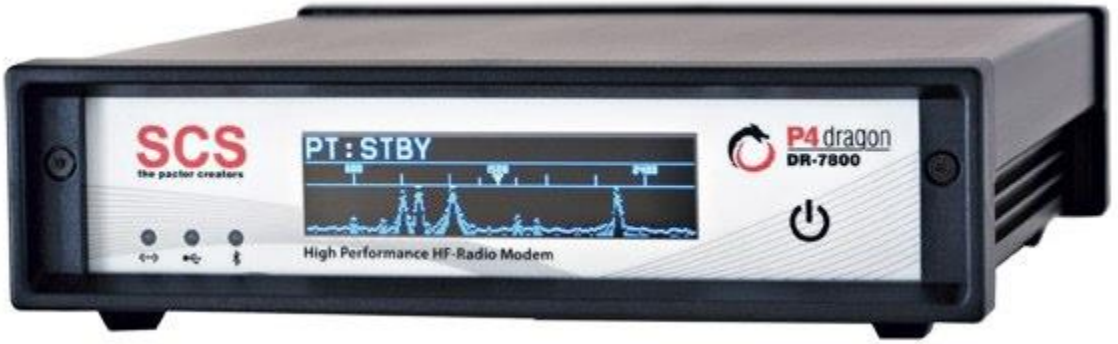
TNC-PI

Serial cable to VHF Radio
Packet Radio

The Pigate Software

- Exim4 – Linux Message Transfer Agent
  University of Cambridge
- Postfix – Alternative to Sendmail
  Wietse Venema
- Paclink – Streamlined Radio Email Client
  B2F message transfer protocol

The SCS Pactor Modem



- Expensive
- Efficient – Takes processing load from PC
- Pactor 2, 3, 4 Proprietary protocols
  P2-1200bps, P3-5200bps
  P4 – 10,500/5500bps (PMC/uncompressed)
  2400 Hz bandwidth

Packet RMS over VHF

The PiGate RMS device uses the same hardware platform as the PiGate, except a display is necessary to connect to a WiFi
hot spot for Internet access.

The major difference is in the software which uses John Wisemann's excellent BPQ32 software that has been in use for many years by hams all over the world.

Baofeng HT cable designs on site
Hack a hand mic

Setting up a PiGate

- Read the documentation
- Gather the hardware
- Assemble any kits
- Purchase or build the cables
- Install the PiGate disk image
- Downloads from PiGate.net

Choose the correct image for your Pi

Return here often to check for patches
and new software versions.

Download the PiGate PowerPoint presentation

Download the PiGate documentation

Download the nifty case for the PiGate

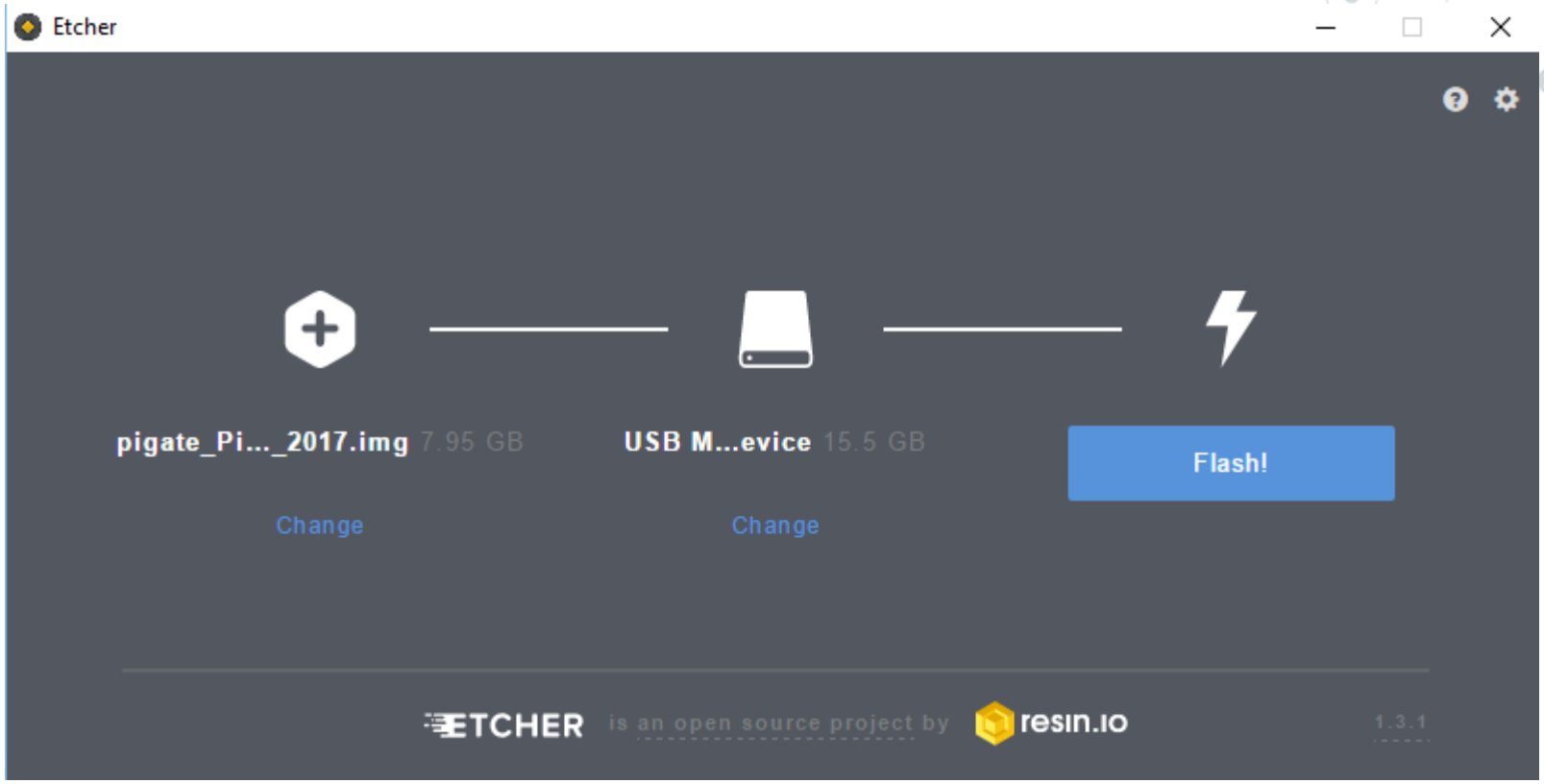
Download the PiGate Pi 3 software image V1.4

Download the PiGate Pi B+ and 2 image V1.4

Download the Version 1.4 Release Notes

Version 1.4 latest release.
NOTE: These images WILL NOT work on
a Raspberry Pi3 B+ Stay tuned.

Etcher or Win32DiskImager

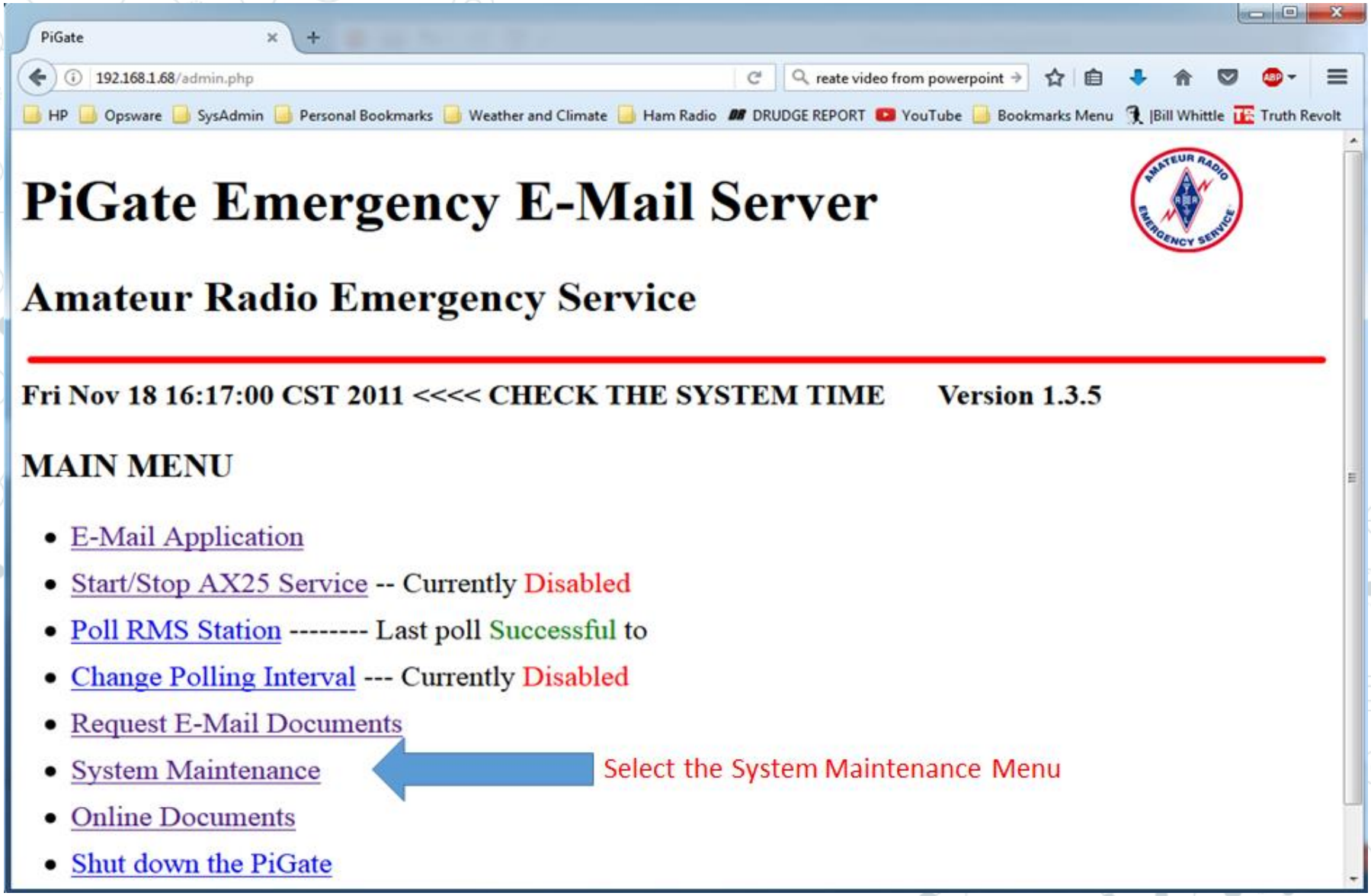


If you mess up, Start over.

- Power up the Pi.
- Give it 30 seconds to boot
- Connect to WiFi network “PIGATE”

http://10.10.10.10/login.php

PiGate
192.168.1.68/admin.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
Fri Nov 18 16:17:00 CST 2011 <<<< CHECK THE SYSTEM TIME
Version 1.3.5
MAIN MENU
E-Mail Application
Start/Stop AX25 Service -- Currently Disabled
Poll RMS Station -------- Last poll Successful to
Change Polling Interval --- Currently Disabled
Request E-Mail Documents
System Maintenance
Online Documents
Shut down the PiGate
This is the initial menu. Notice nothing is enabled
No polling station is selected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Start/Stop AX25 Service -- Currently Disabled
Poll RMS Station -------- Last poll Successful to
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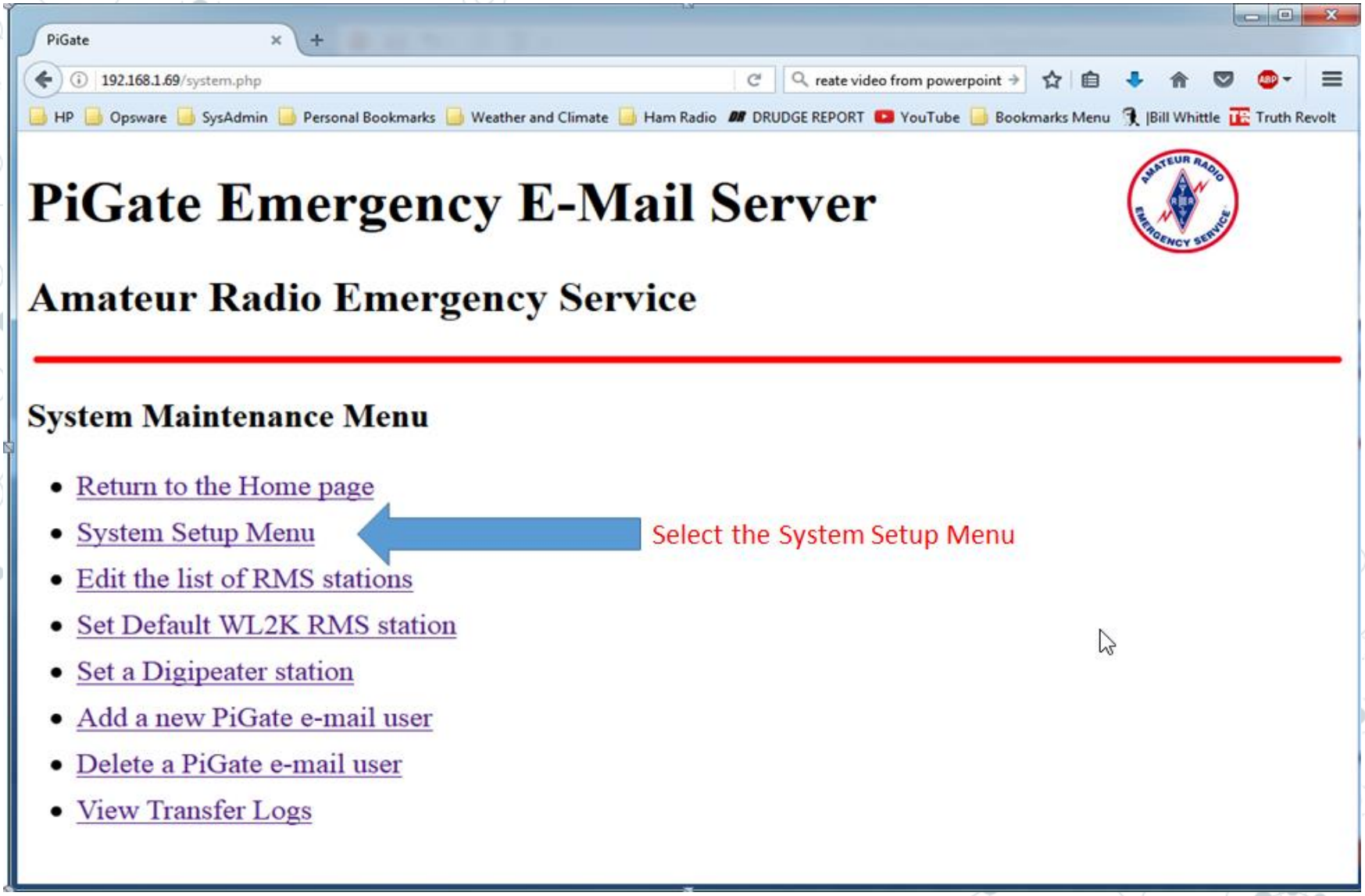
Request E-Mail Documents
System Maintenance
Select the System Maintenance Menu
Online Documents
Shut down the PiGate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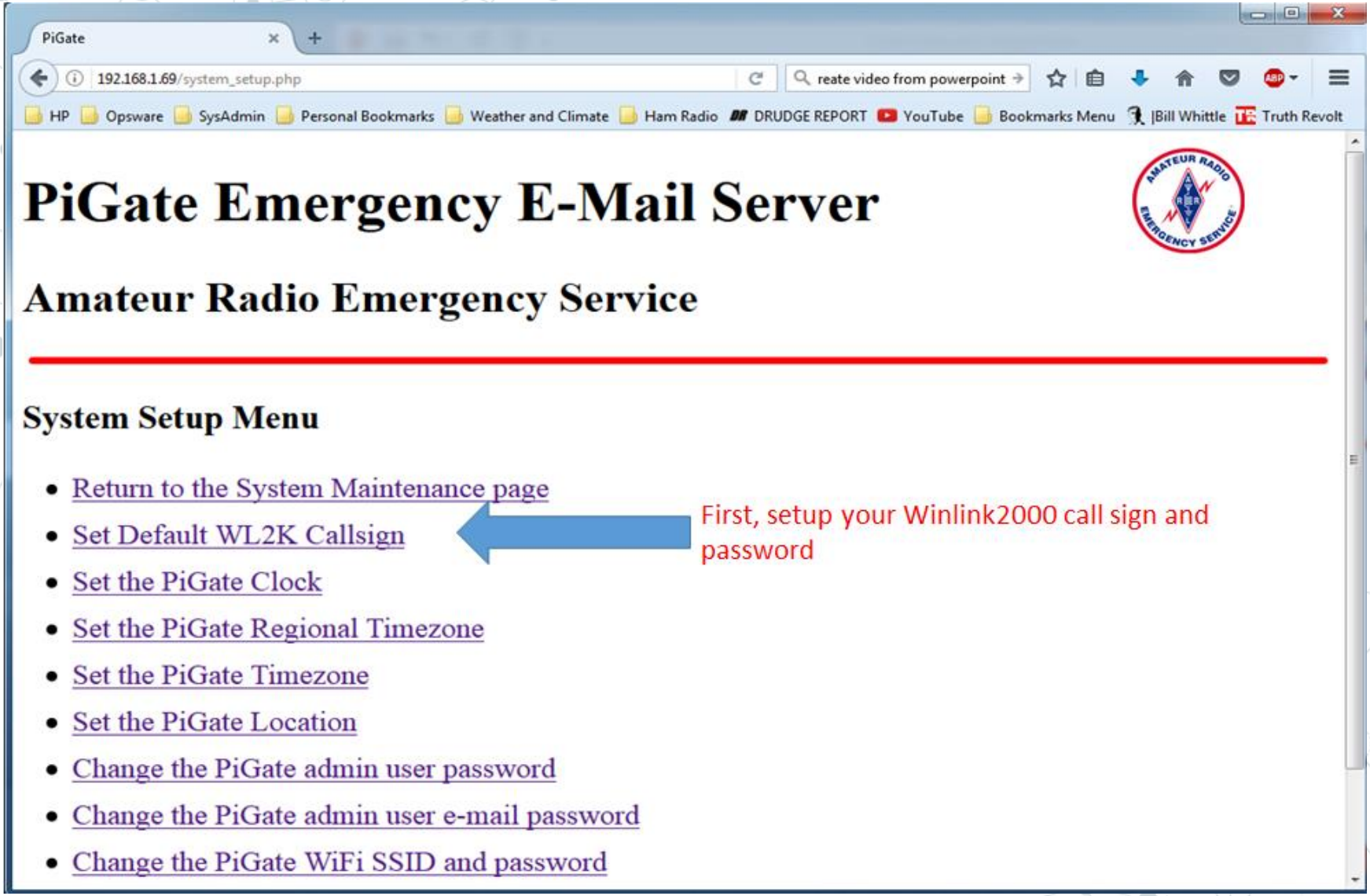
System Maintenance Menu
Return to the Home page
System Setup Menu
Edit the list of RMS stations
Set Default WL2K RMS station
Set a Digipeater station
Add a new PiGate e-mail user
Delete a PiGate e-mail user
View Transfer Logs
Select the System Setup Menu


PiGate
192.168.1.69/system_setup.php
reate video from powerpoint
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Personal Bookmarks
Weather and Climate
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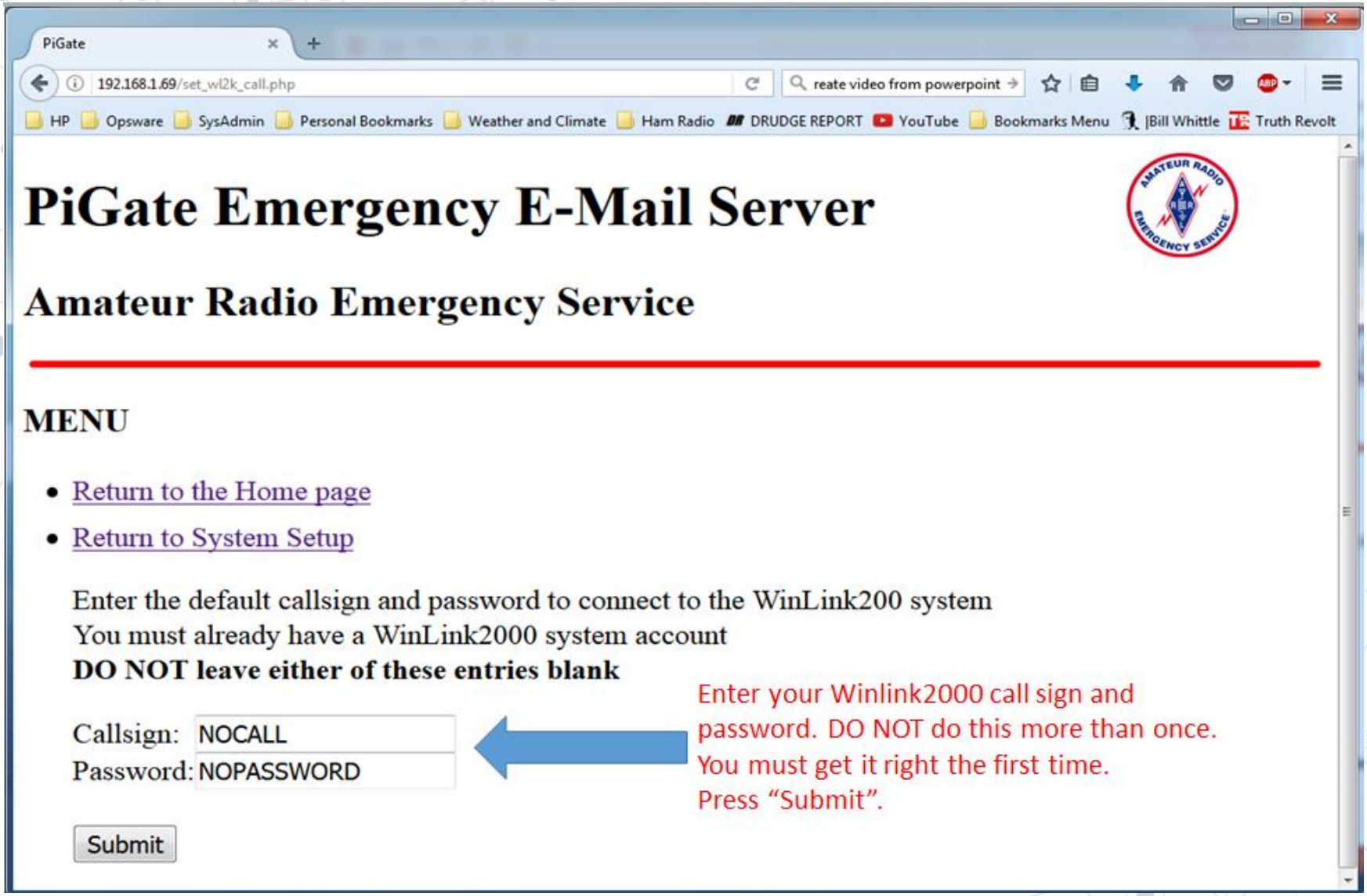
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
System Setup Menu
Return to the System Maintenance page
Set Default WL2K Callsign
Set the PiGate Clock
Set the PiGate Regional Timezone
Set the PiGate Timezone
Set the PiGate Location
Change the PiGate admin user password
Change the PiGate admin user e-mail password
Change the PiGate WiFi SSID and password
First, setup your Winlink2000 call sign and password


PiGate
192.168.1.69/set_wl2k_call.php
reate video from powerpoint
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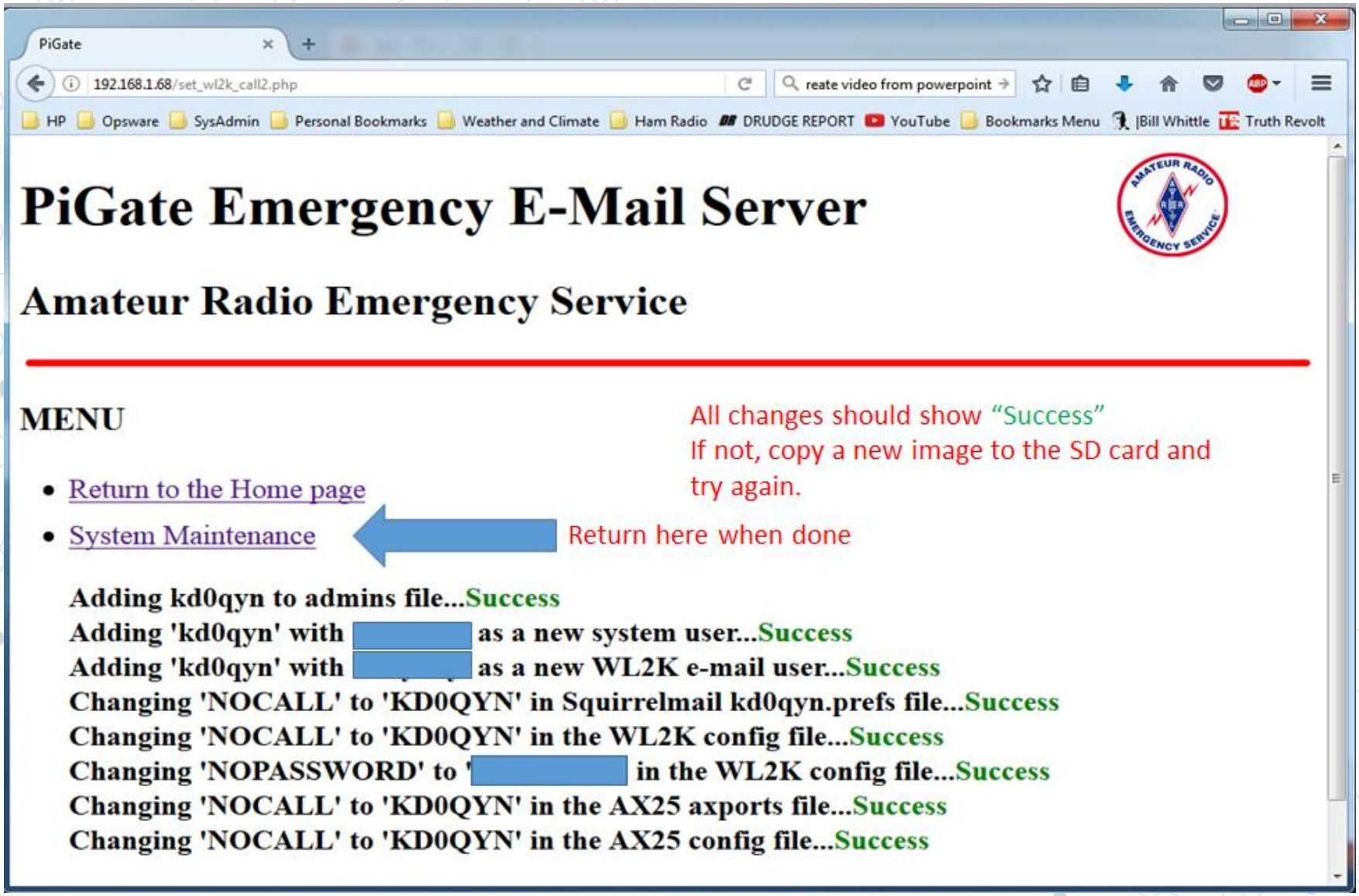
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
MENU
Return to the Home page
Return to System Setup
Enter the default callsign and password to connect to the WinLink200 system
You must already have a WinLink2000 system account
DO NOT leave either of these entries blank
Callsign: NOCALL
Password: NOPASSWORD
Submit
Enter your Winlink2000 call sign and password. DO NOT do this more than once. You must get it right the first time. Press "Submit".


PiGate
192.168.1.68/set_wl2k_call2.php
reate video from powerpoint
HP
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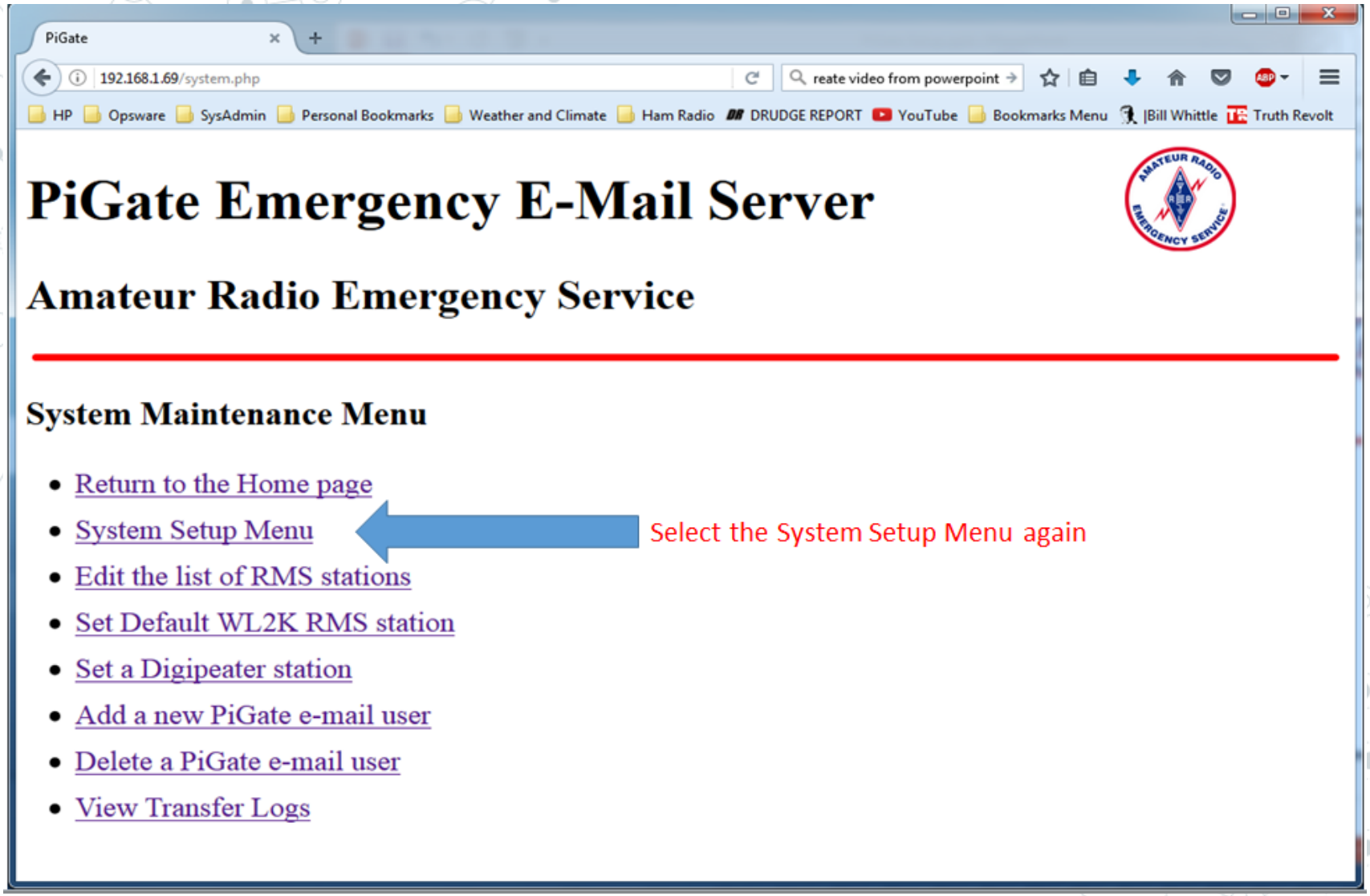
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
MENU
All changes should show "Success"
If not, copy a new image to the SD card and try again.
Return to the Home page
System Maintenance
Return here when done
Adding kd0qyn to admins file...Success
Adding 'kd0qyn' with as a new system user...Success
Adding 'kd0qyn' with as a new WL2K e-mail user...Success
Changing 'NOCALL' to 'KD0QYN' in Squirrelmail kd0qyn.prefs file...Success
Changing 'NOCALL' to 'KD0QYN' in the WL2K config file...Success
Changing 'NOPASSWORD' to ' in the WL2K config file...Success
Changing 'NOCALL' to 'KD0QYN' in the AX25 axports file...Success
Changing 'NOCALL' to 'KD0QYN' in the AX25 config file...Success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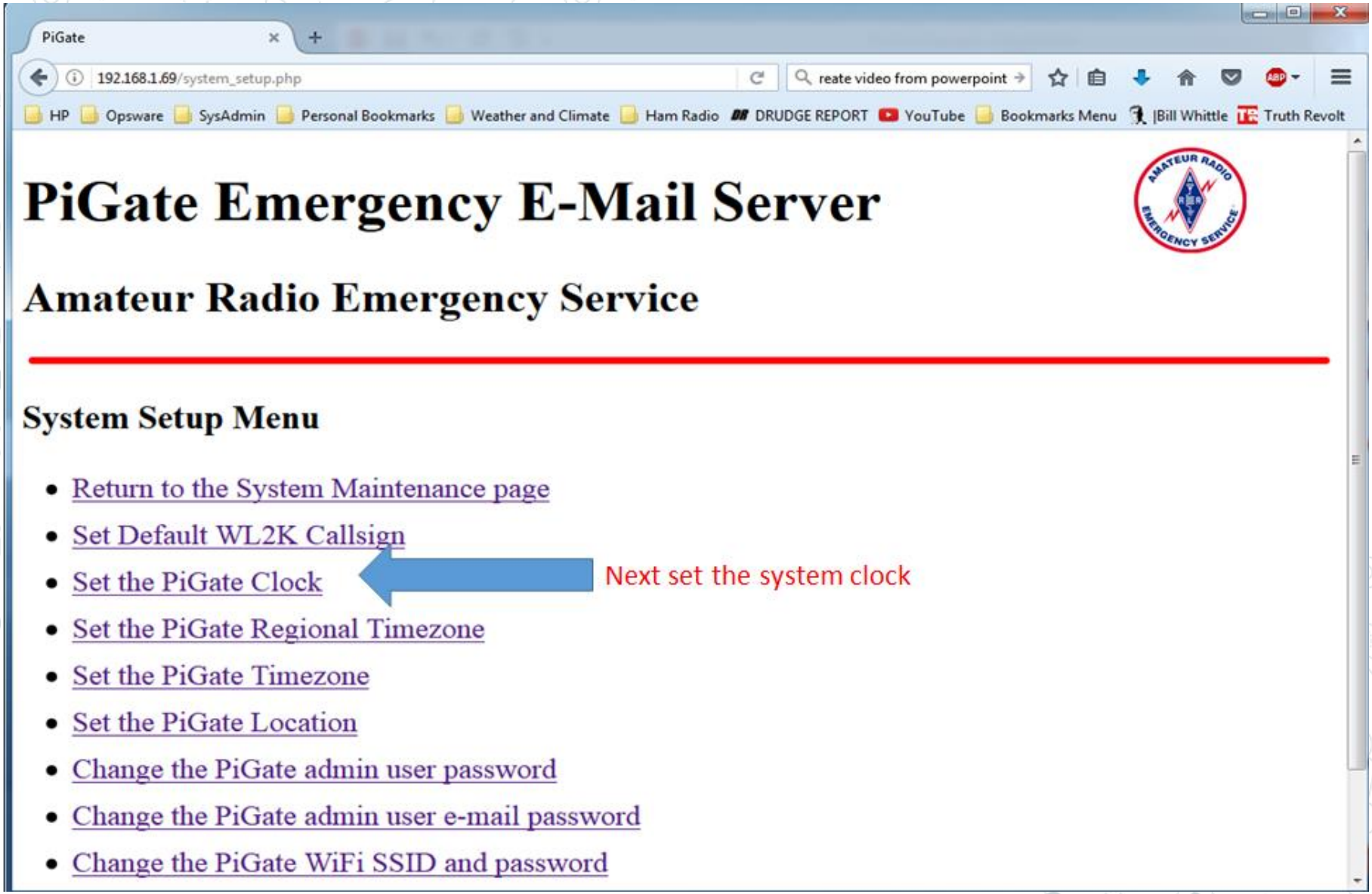
View Transfer Logs
Select the System Setup Menu again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Return to the System Maintenance page
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Next set the system clock
Set the PiGate Regional Timezone
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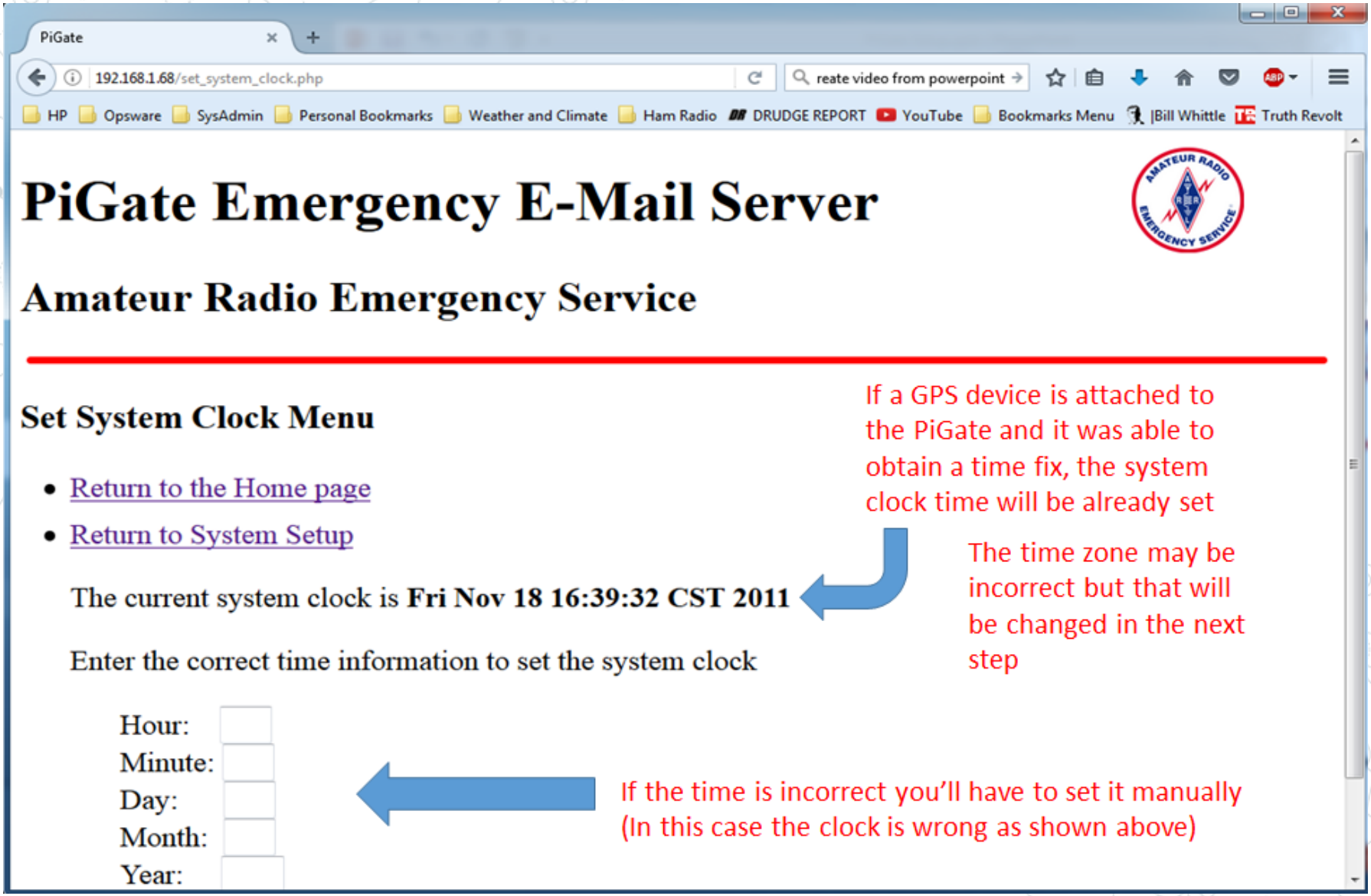
Set the PiGate Location
Change the PiGate admin user password
Change the PiGate admin user e-mail password
Change the PiGate WiFi SSID and password


PiGate
192.168.1.68/set_system_clock.php
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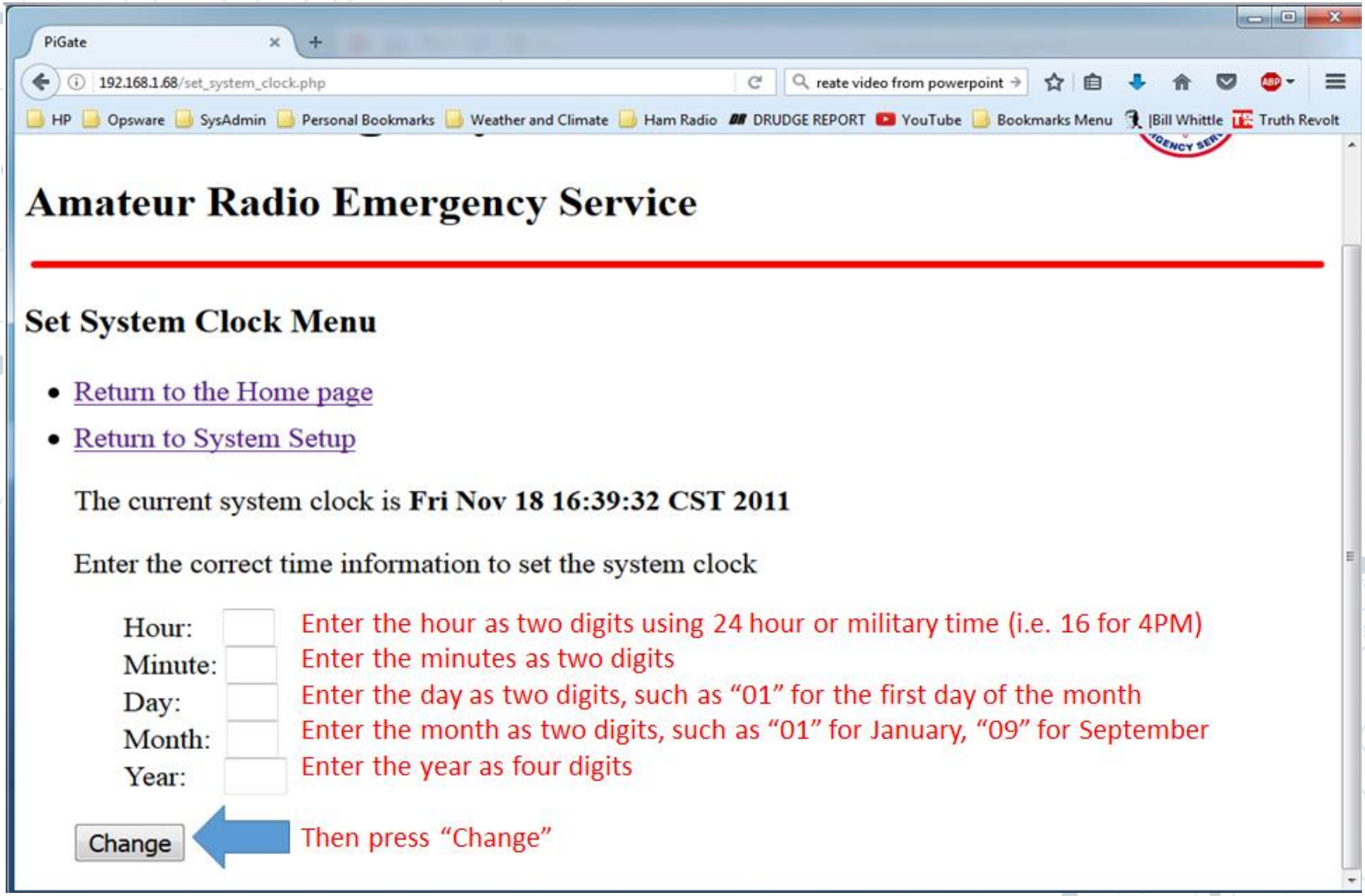
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
Set System Clock Menu
Return to the Home page
Return to System Setup
The current system clock is Fri Nov 18 16:39:32 CST 2011
Enter the correct time information to set the system clock
Hour:
Minute:
Day:
Month:
Year:
If a GPS device is attached to the PiGate and it was able to obtain a time fix, the system clock time will be already set
The time zone may be incorrect but that will be changed in the next step
If the time is incorrect you'll have to set it manually
(In this case the clock is wrong as shown above)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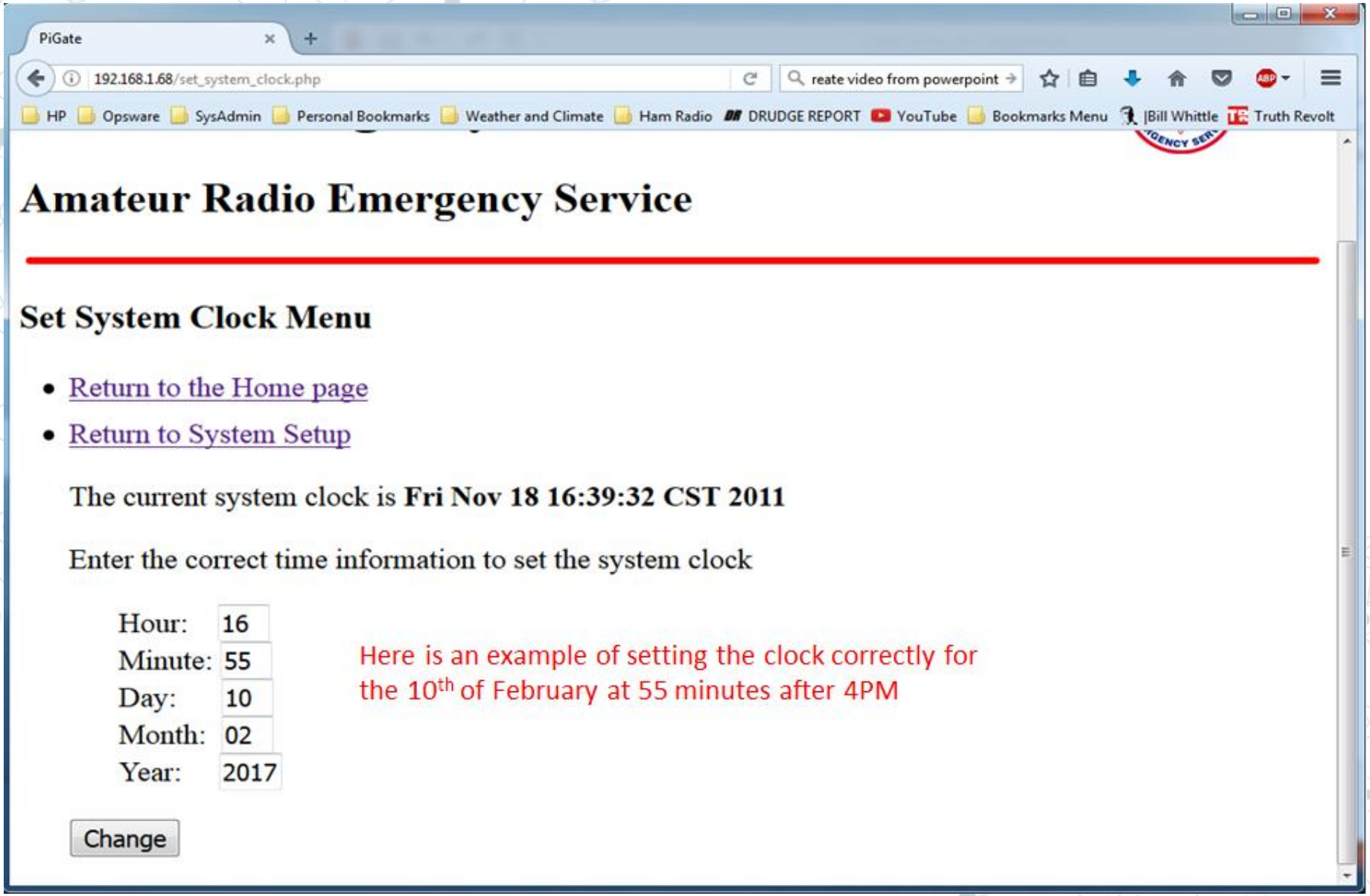
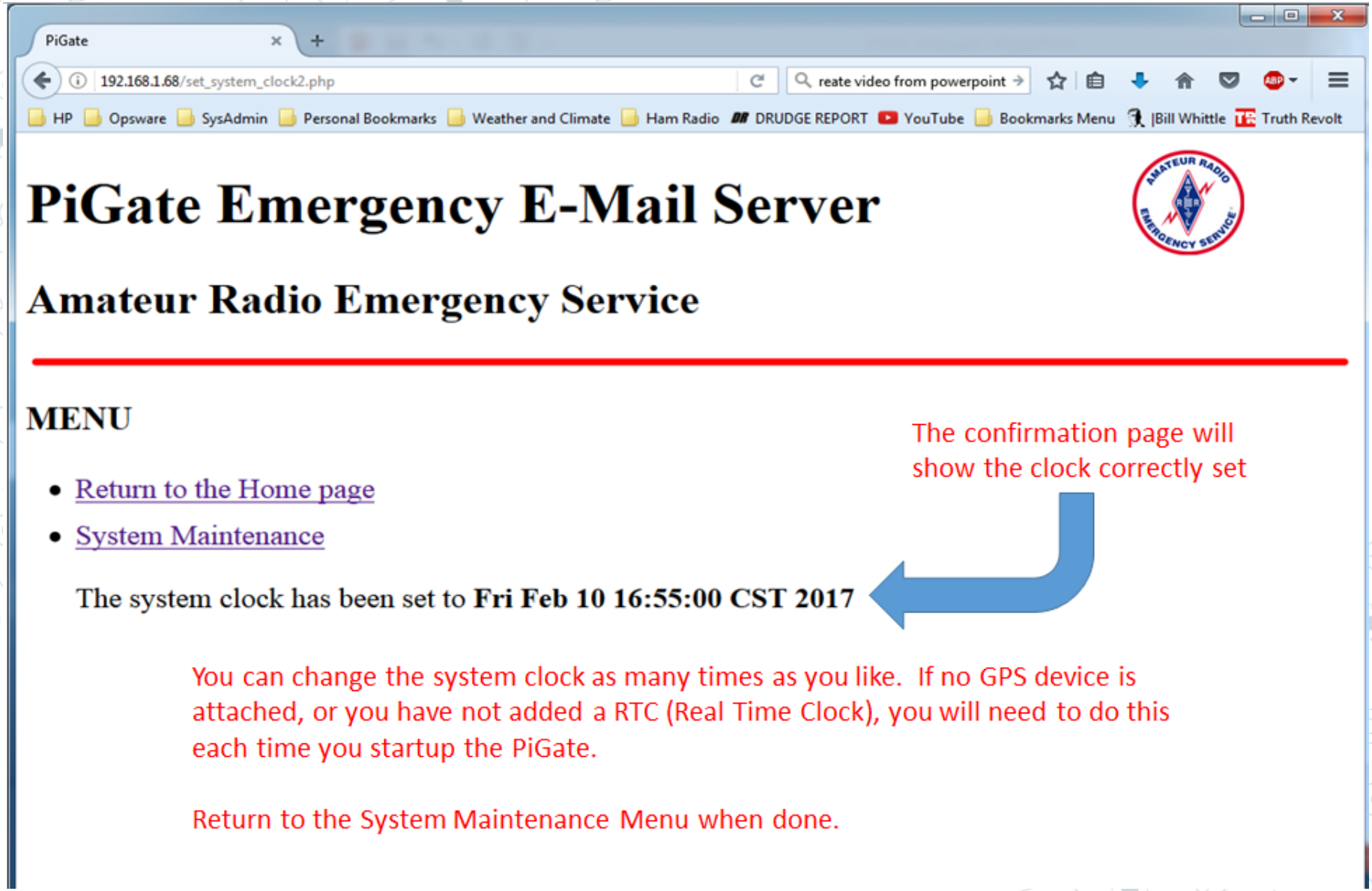
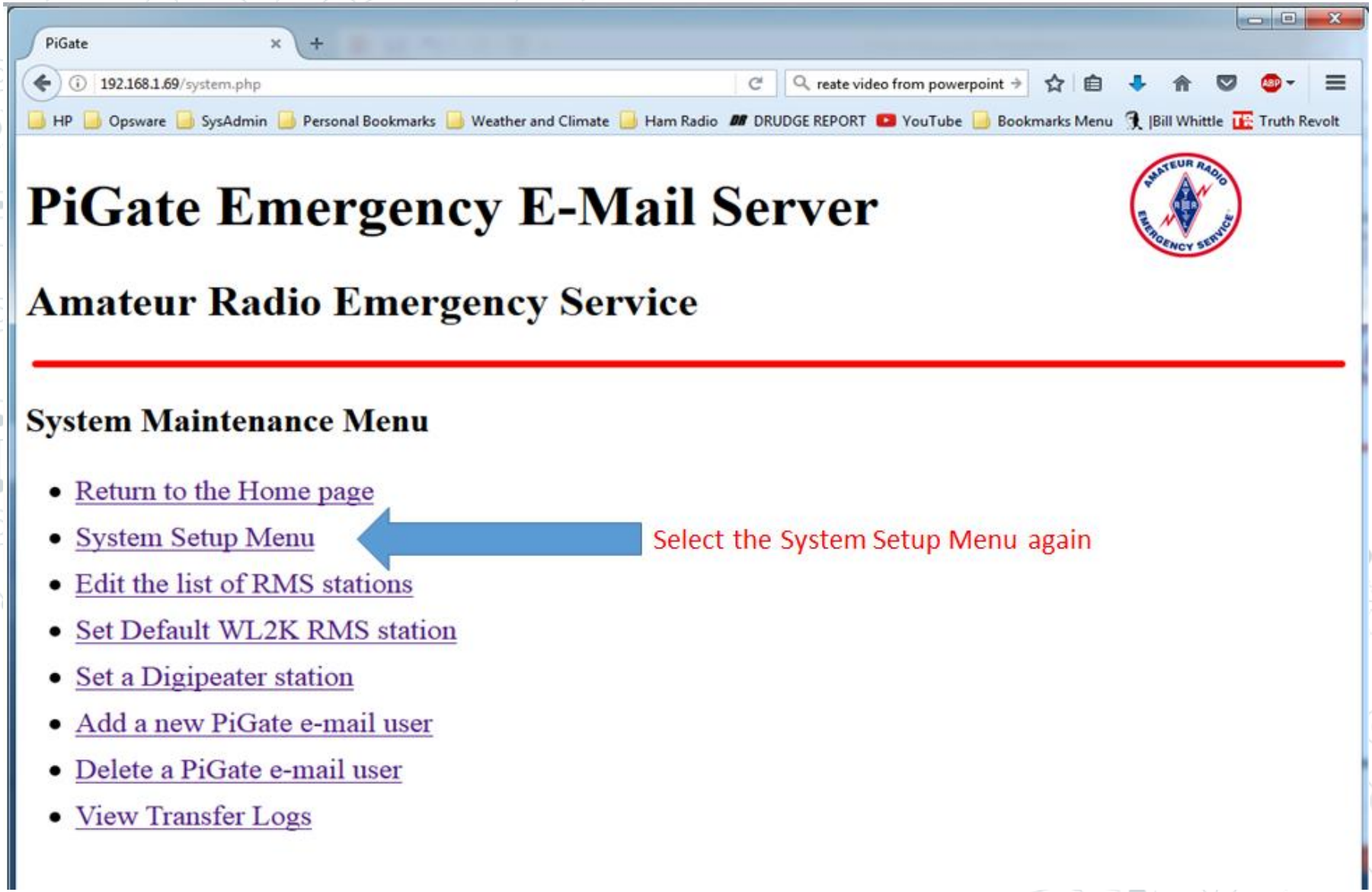
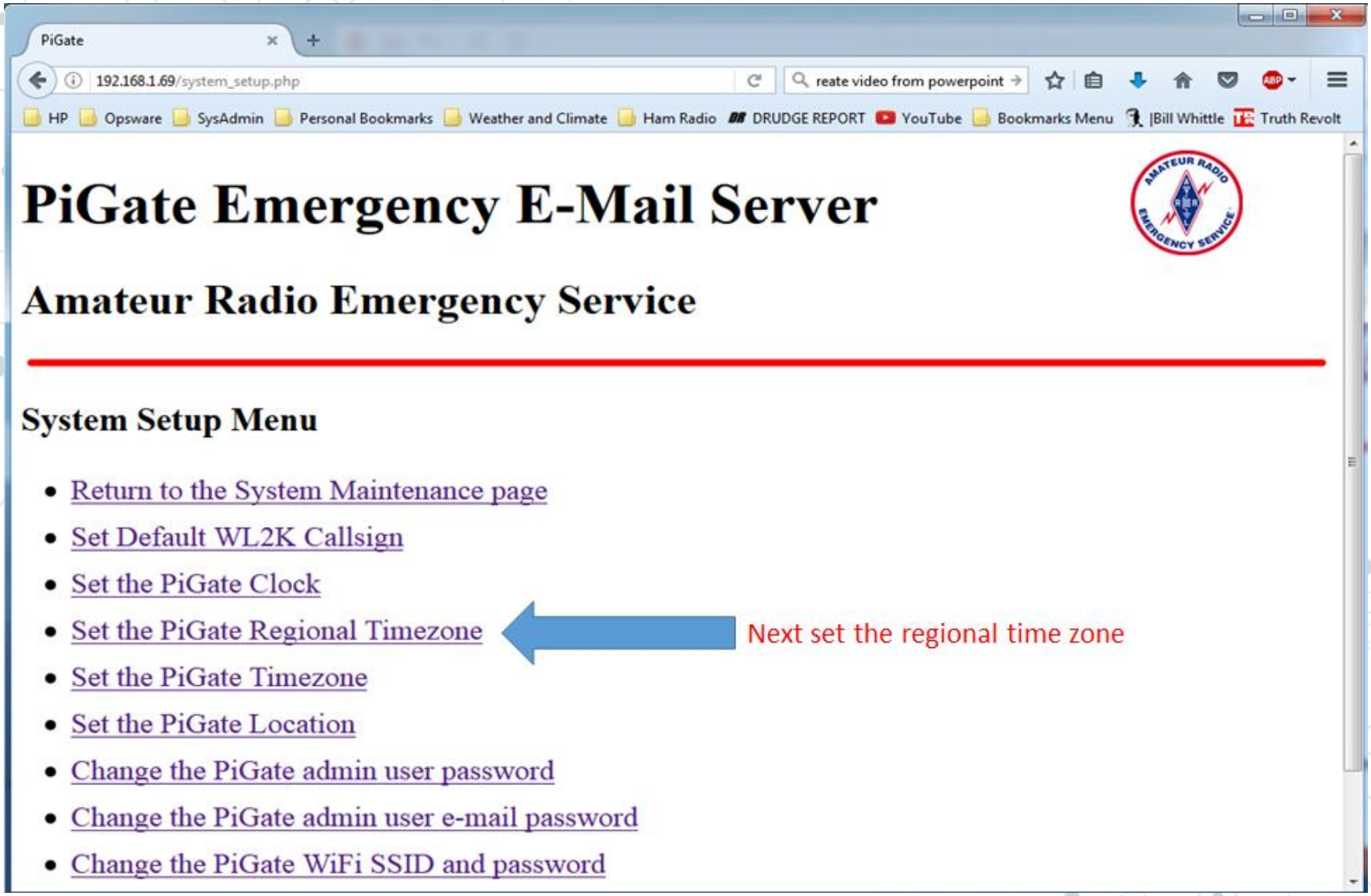
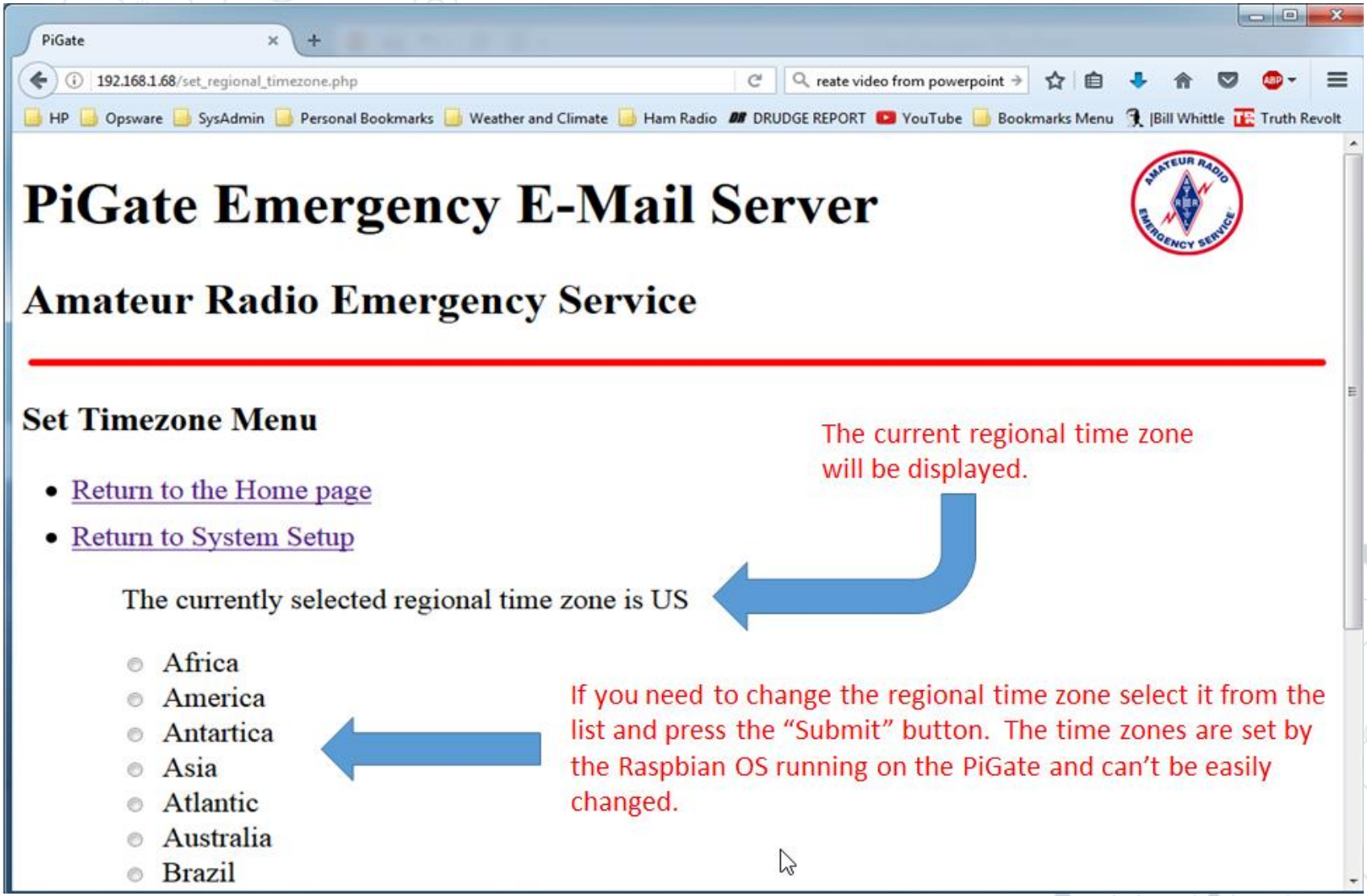
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
Amateur Radio Emergency Service
Set System Clock Menu
Return to the Home page
Return to System Setup
The current system clock is Fri Nov 18 16:39:32 CST 2011
Enter the correct time information to set the system clock
Hour:
Minute:
Day:
Month:
Year:
Enter the hour as two digits using 24 hour or military time (i.e. 16 for 4PM)
Enter the minutes as two digits
Enter the day as two digits, such as "01" for the first day of the month
Enter the month as two digits, such as "01" for January, "09" for September
Enter the year as four digits
Change
Then press "Change"

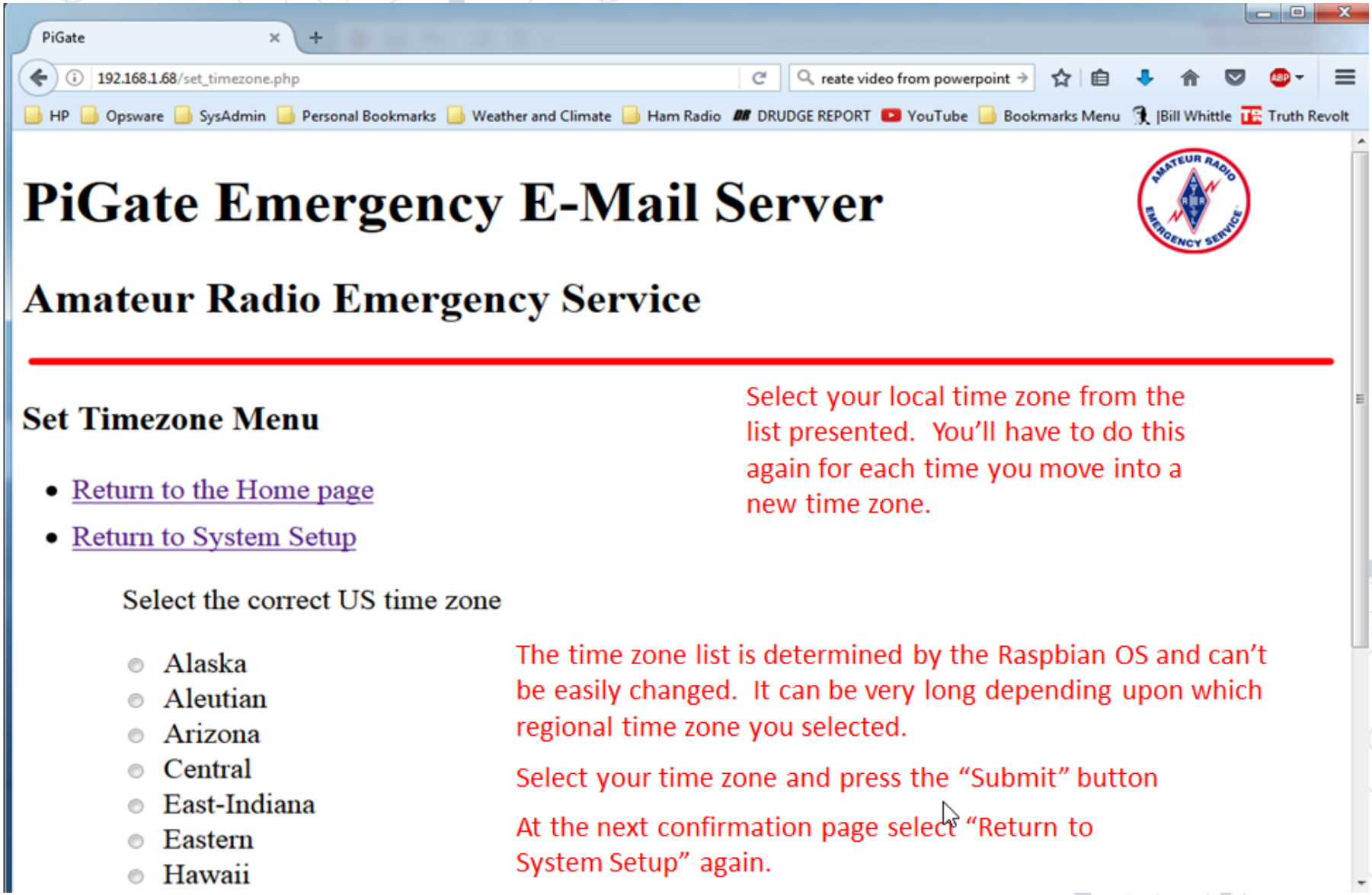

PiGate
192.168.1.68/set_system_clock.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
Amateur Radio Emergency Service
Set System Clock Menu
Return to the Home page
Return to System Setup
The current system clock is Fri Nov 18 16:39:32 CST 2011
Enter the correct time information to set the system clock
Hour: 16
Minute: 55
Day: 10
Month: 02
Year: 2017
Change
Here is an example of setting the clock correctly for the 10th of February at 55 minutes after 4PM

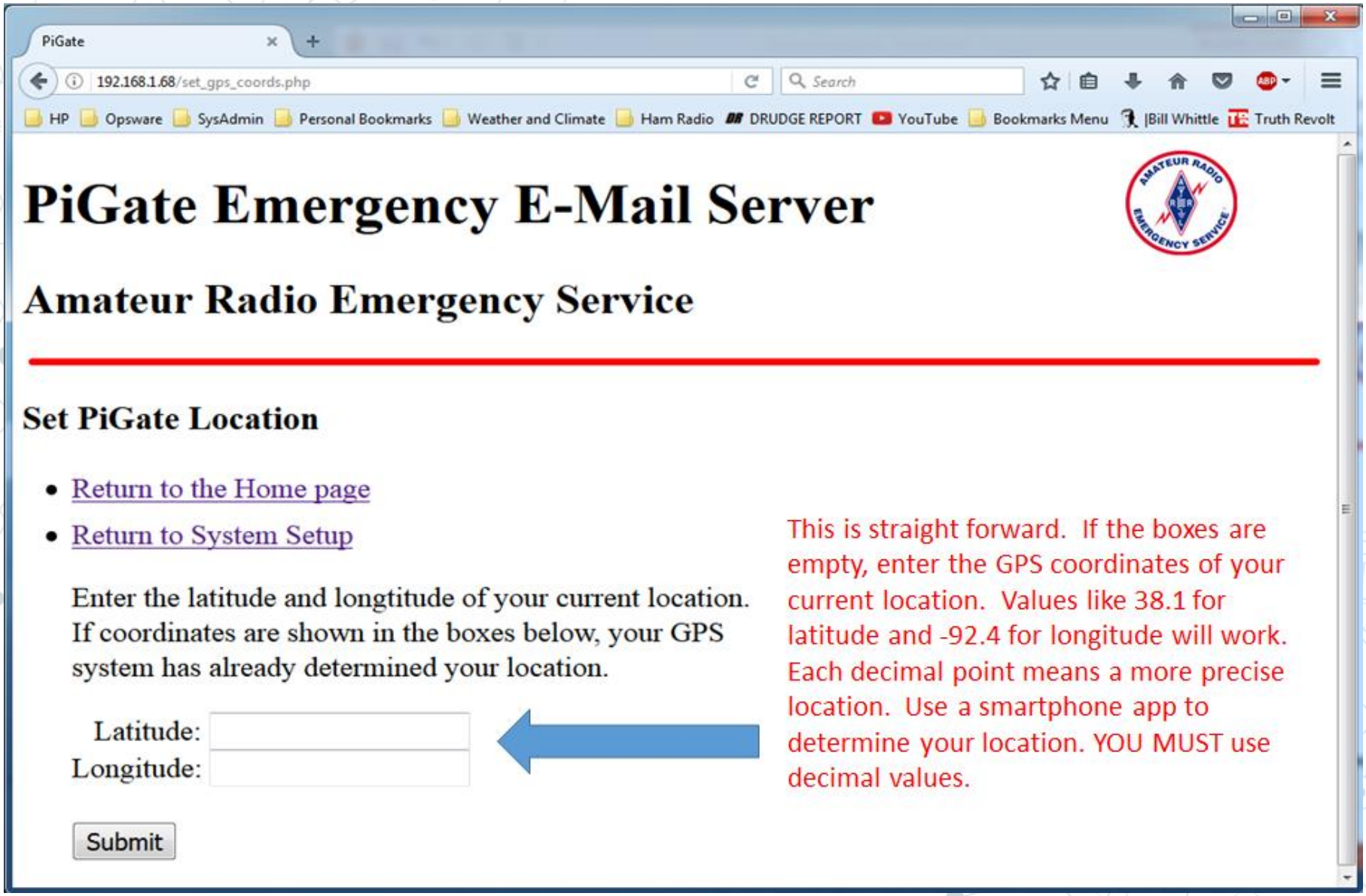

PiGate
192.168.1.68/set_system_clock2.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
MENU
Return to the Home page
System Maintenance
The system clock has been set to Fri Feb 10 16:55:00 CST 2017
The confirmation page will show the clock correctly set
You can change the system clock as many times as you like. If no GPS device is attached, or you have not added a RTC (Real Time Clock), you will need to do this each time you startup the PiGate.
Return to the System Maintenance Menu when done.

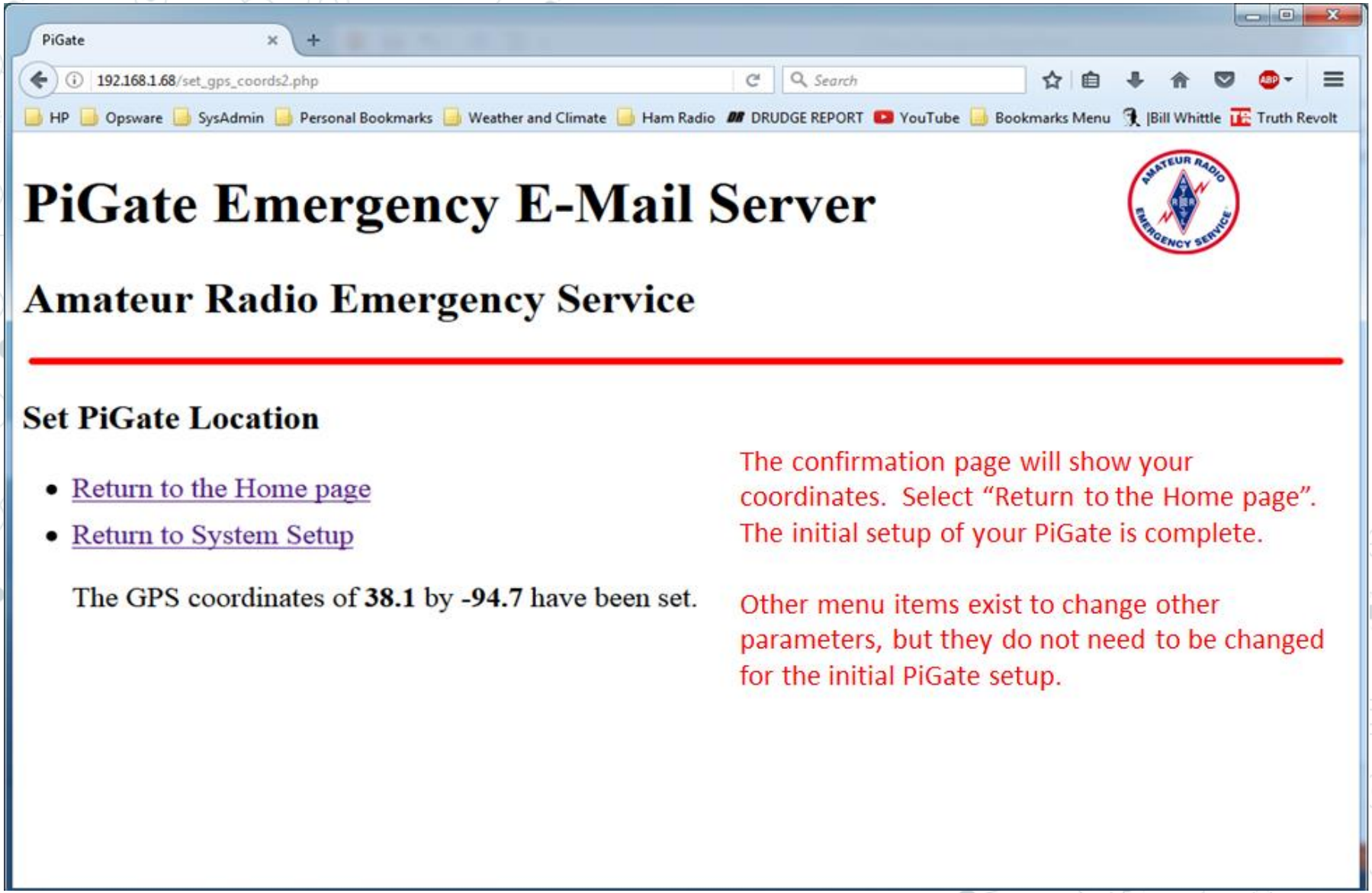

PiGate
192.168.1.69/system.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
System Maintenance Menu
Return to the Home page
System Setup Menu
Edit the list of RMS stations
Set Default WL2K RMS station
Set a Digipeater station
Add a new PiGate e-mail user
Delete a PiGate e-mail user
View Transfer Logs
Select the System Setup Menu again


PiGate
192.168.1.69/system_setup.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
System Setup Menu
Return to the System Maintenance page
Set Default WL2K Callsign
Set the PiGate Clock
Set the PiGate Regional Timezone
Next set the regional time zone
Set the PiGate Timezone
Set the PiGate Location
Change the PiGate admin user password
Change the PiGate admin user e-mail password
Change the PiGate WiFi SSID and password


PiGate
192.168.1.68/set_regional_timezone.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
Set Timezone Menu
Return to the Home page
Return to System Setup
The currently selected regional time zone is US
Africa
America
Antartica
Asia
Atlantic
Australia
Brazil
The current regional time zone will be displayed.
If you need to change the regional time zone select it from the list and press the "Submit" button. The time zones are set by the Raspbian OS running on the PiGate and can't be easily changed.

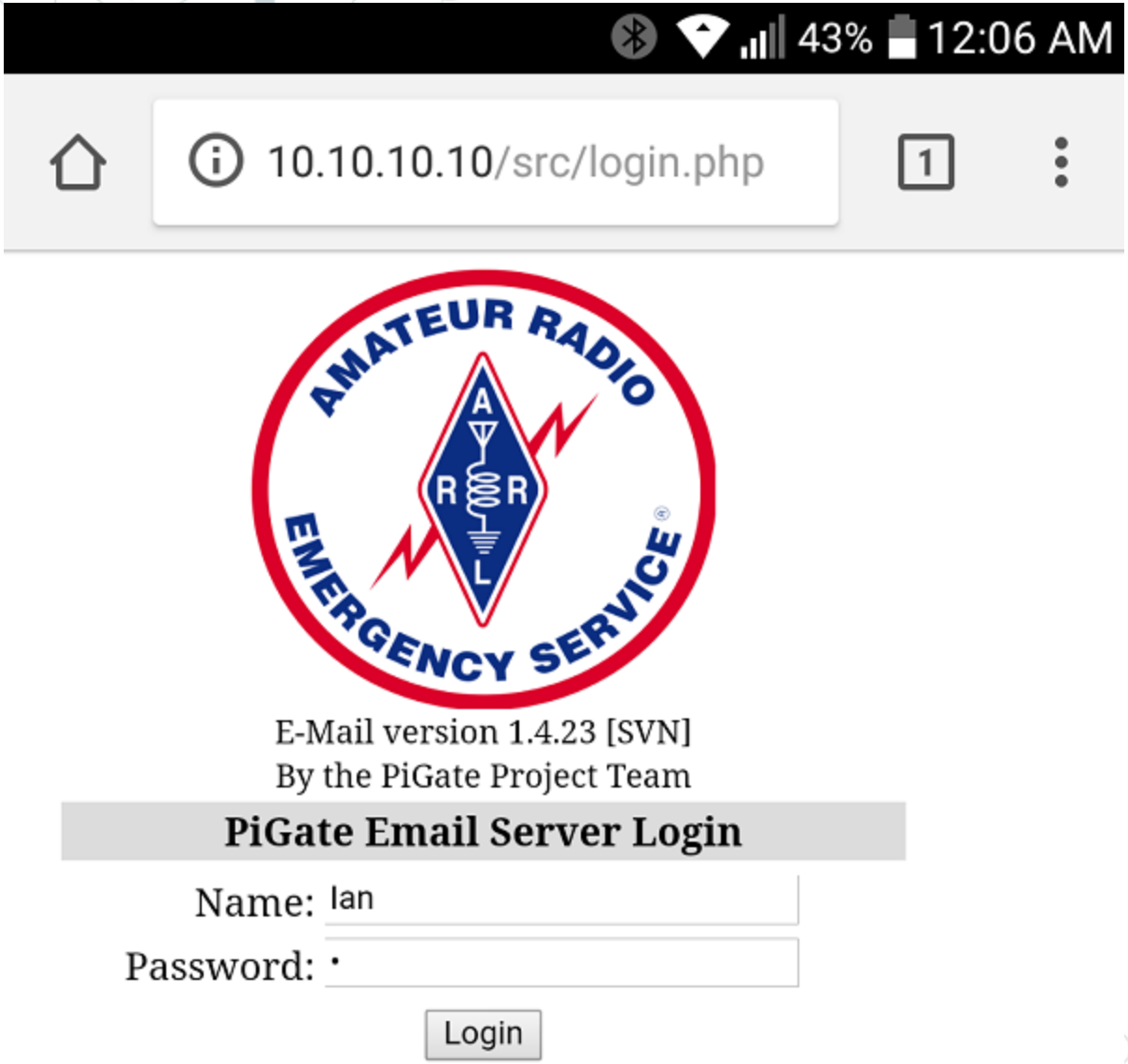

PiGate
192.168.1.68/set_timezone.php
reate video from powerpoint
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
Set Timezone Menu
Return to the Home page
Return to System Setup
Select the correct US time zone
Alaska
Aleutian
Arizona
Central
East-Indiana
Eastern
Hawaii
Select your local time zone from the list presented. You'll have to do this again for each time you move into a new time zone.
The time zone list is determined by the Raspbian OS and can't be easily changed. It can be very long depending upon which regional time zone you selected.
Select your time zone and press the "Submit" button
At the next confirmation page select "Return to System Setup" again.

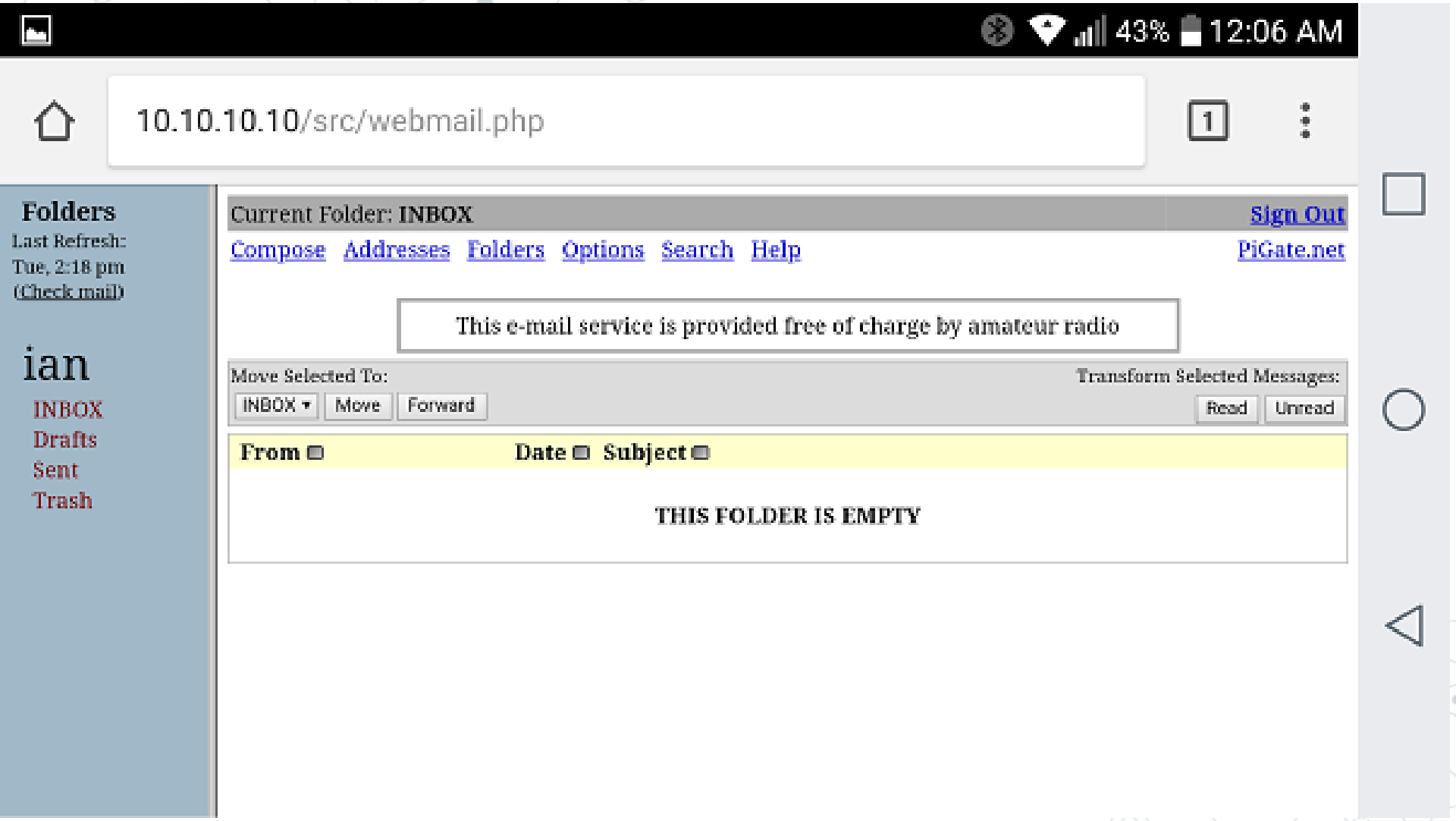

PiGate
192.168.1.68/set_gps_coords.php
Search
HP
Opsware
SysAdmin
Personal Bookmarks
Weather and Climate
Ham Radio
DRUDGE REPORT
YouTube
Bookmarks Menu
Bill Whittle
Truth Revolt
PiGate Emergency E-Mail Server
Amateur Radio Emergency Service
Set PiGate Location
Return to the Home page
Return to System Setup
Enter the latitude and longtitude of your current location. If coordinates are shown in the boxes below, your GPS system has already determined your location.
Latitude:
Longitude:
Submit
This is straight forward. If the boxes are empty, enter the GPS coordinates of your current location. Values like 38.1 for latitude and -92.4 for longitude will work. Each decimal point means a more precise location. Use a smartphone app to determine your location. YOU MUST use decimal values.

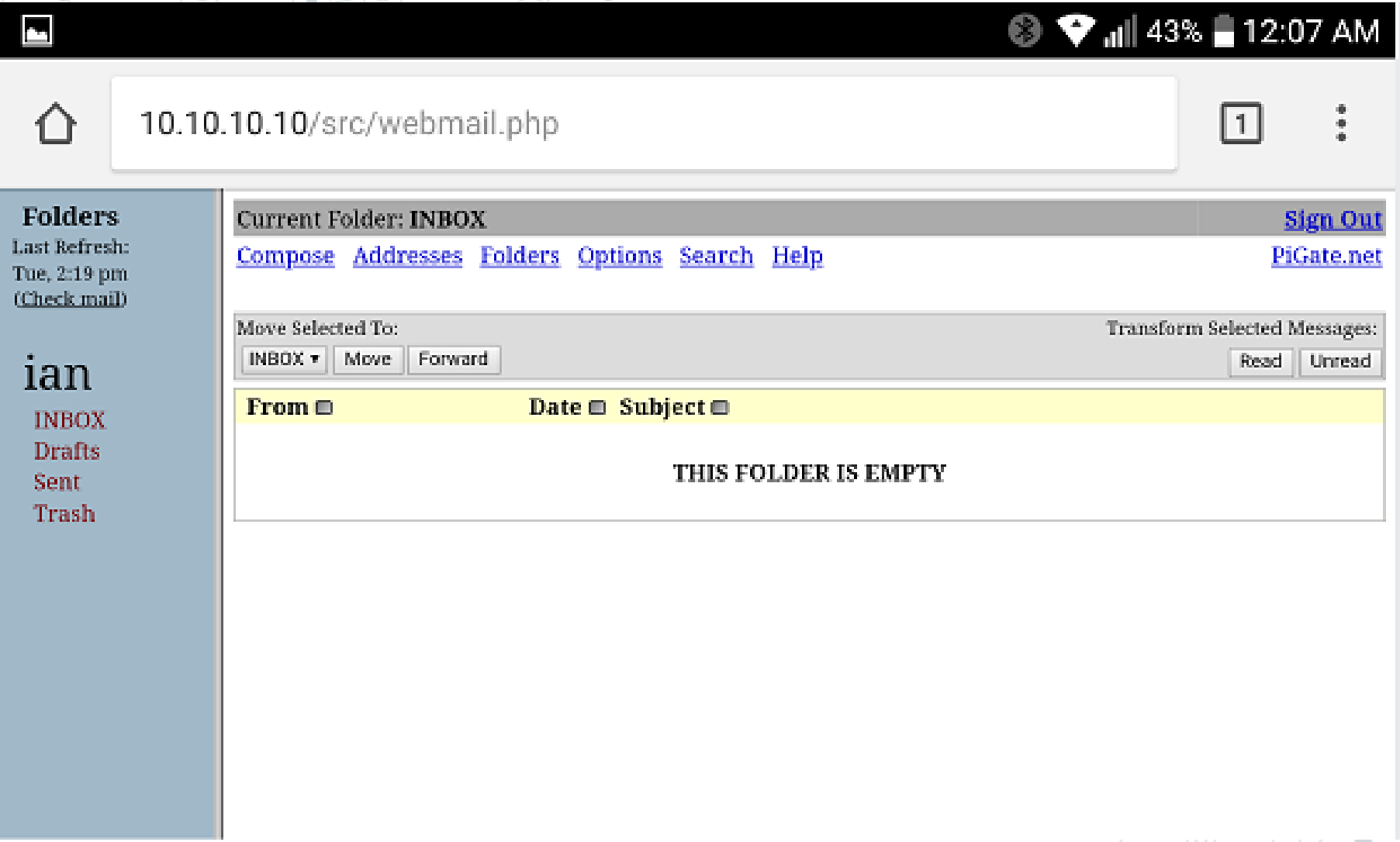


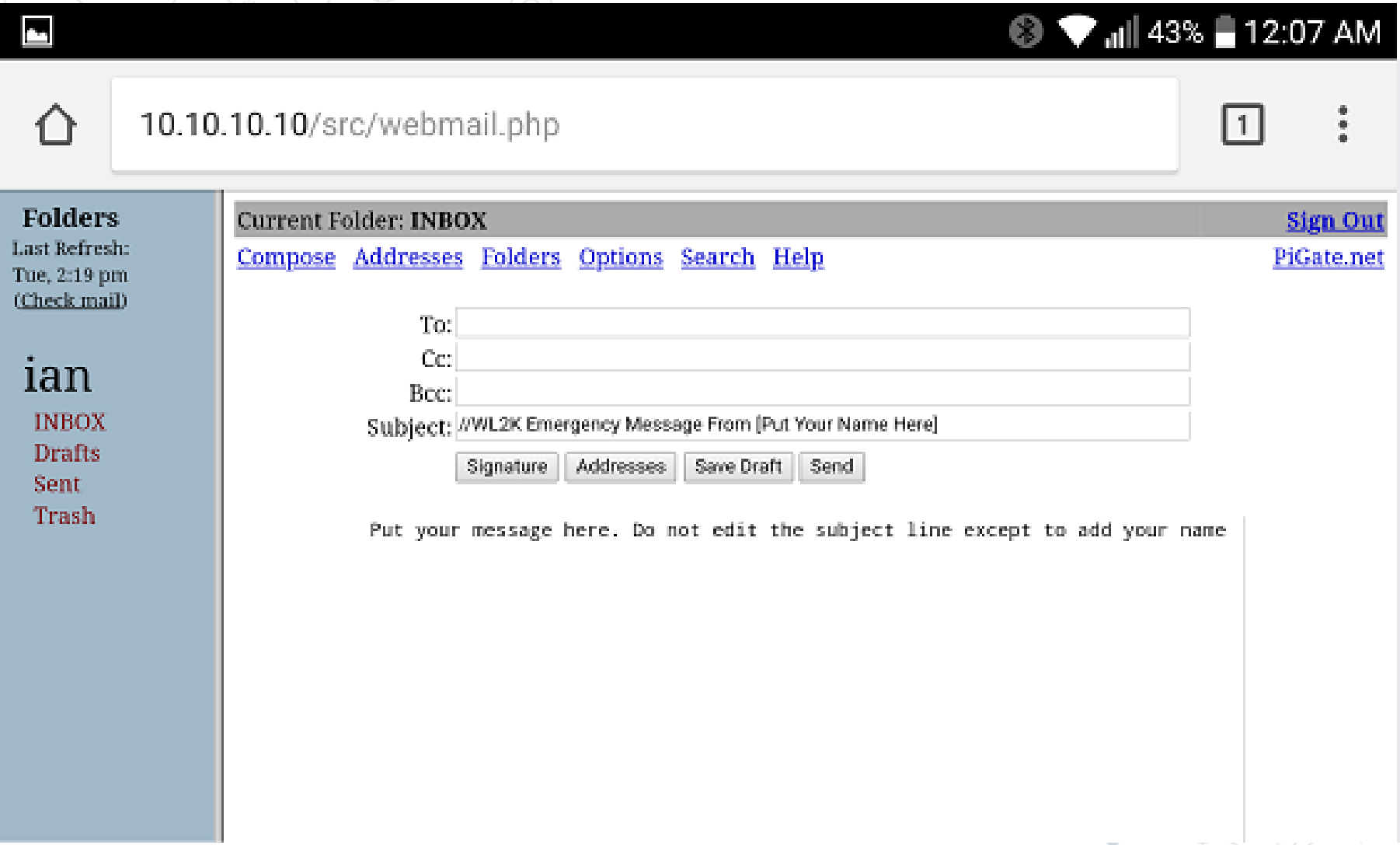
The confirmation page will show your coordinates. Select "Return to the Home page". The initial setup of your PiGate is complete.

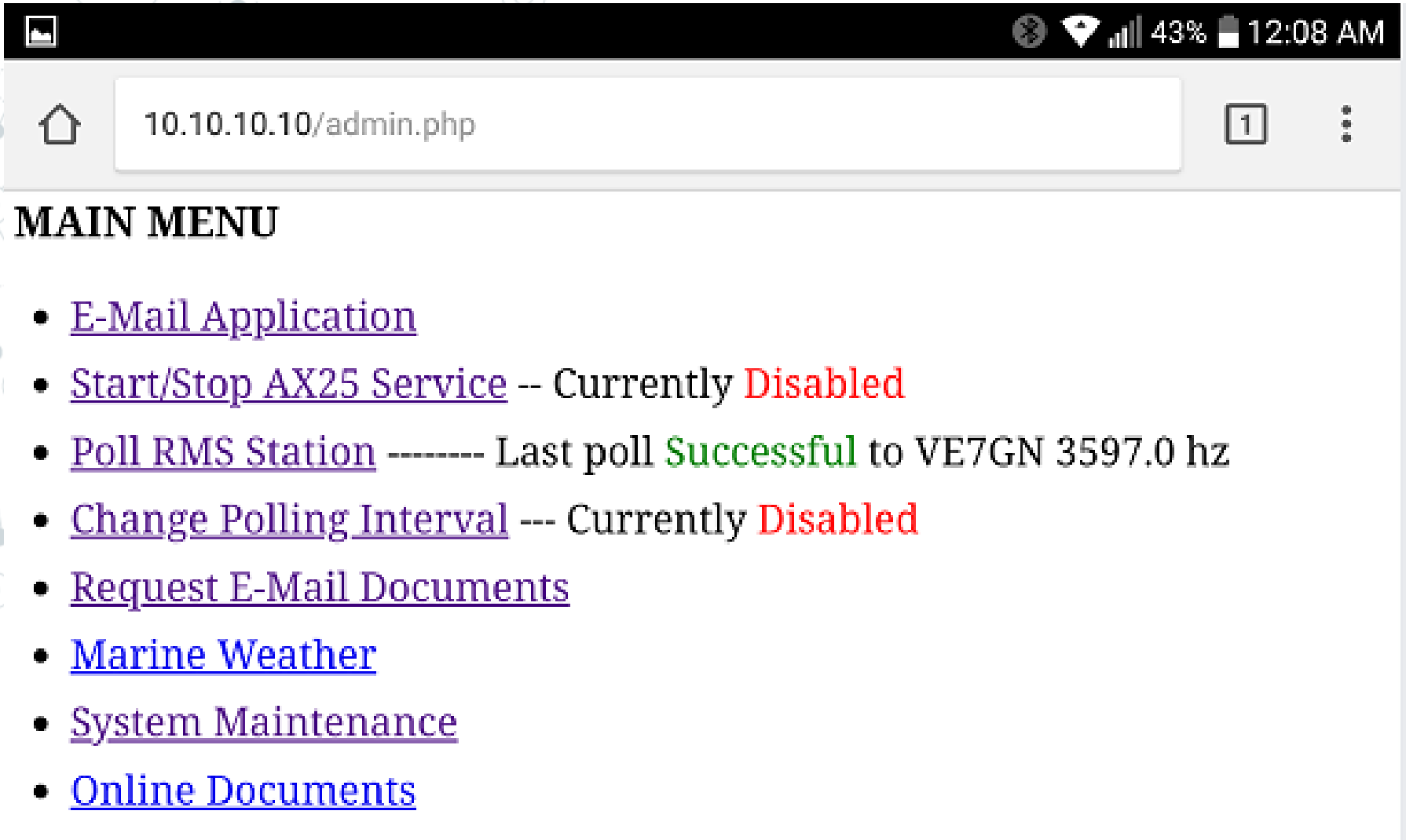
Other menu items exist to change other parameters, but they do not need to be changed for the initial PiGate setup.


43% 12:06 AM
10.10.10.10/src/login.php
1
AMATEUR RADIO
EMERGENCY SERVICE
E-Mail version 1.4.23 [SVN]
By the PiGate Project Team
PiGate Email Server Login
Name: Ian
Password:
Login


43% 12:06 AM
10.10.10.10/src/webmail.php
1
Folders
Last Refresh:
Tue, 2:18 pm
(Check mail)
ian
INBOX
Drafts
Sent
Trash
Current Folder: INBOX
Sign Out
Compose Addresses Folders Options Search Help
PiGate.net
This e-mail service is provided free of charge by amateur radio
Move Selected To:
INBOX
Move
Forward
Transform Selected Messages:
Read
Unread
From
Date
Subject
THIS FOLDER IS EMPTY


43% 12:07 AM
10.10.10.10/src/webmail.php
1
Folders
Last Refresh:
Tue, 2:19 pm
(Check mail)
ian
INBOX
Drafts
Sent
Trash
Current Folder: INBOX
Sign Out
Compose Addresses Folders Options Search Help
PiGate.net
Move Selected To:
Transform Selected Messages:
INBOX
Move
Forward
Read
Unread
From
Date
Subject
THIS FOLDER IS EMPTY


43% 12:07 AM
10.10.10.10/src/webmail.php
1
Folders
Last Refresh:
Tue, 2:19 pm
(Check mail)
ian
INBOX
Drafts
Sent
Trash
Current Folder: INBOX
Sign Out
Compose Addresses Folders Options Search Help
PiGate.net
To:
Cc:
Bcc:
Subject: //WL2K Emergency Message From [Put Your Name Here]
Signature Addresses Save Draft Send
Put your message here. Do not edit the subject line except to add your name


43% 12:08 AM
10.10.10.10/admin.php
1
MAIN MENU
E-Mail Application
Start/Stop AX25 Service -- Currently Disabled
Poll RMS Station -------- Last poll Successful to VE7GN 3597.0 hz
Change Polling Interval --- Currently Disabled
Request E-Mail Documents
Marine Weather
System Maintenance
Online Documents

Thanks for listening.

I hope you found something of value that might start you on a new project.