

NWRWAVES

(NOAA Weather Radio With All-hazards VTEC Enhanced Software)

Software Design Document

OB7.2 (v2.62)

November, 2006

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1 Introduction

The decision was made in the fall of 2004 to implement the Graphic Hazard Generation (GHG) capabilities in AWIPS as a means to implement Valid Time Event Coding (VTEC) in watch, warning and advisory products. This decision was allowed to go forward on the condition that GHG would replace the AWIPS Watch Warning Advisory (WWA) program. The WWA program included NOAA Weather Radio (NWR) Console Replacement System (CRS) formatting capabilities. Therefore, offices using WWA for CRS product formatting will need to use an alternative program. The GHG implementation plan called for the use of CAFÉ scripts as an interim solution. CAFÉ is a collection of approximately 47 different formatters that were designed as a short term solution for CRS formatting needs in the late 1990s.

CAFÉ is limited in its capabilities and has many well known deficiencies. These include a lack of product tracking and replacement functionality that utilize the MRD capabilities of CRS. To replace WWA, CAFÉ formatters would need to be upgraded to provide as a minimum, the capabilities available in WWA. The Central Region volunteered to field a team to update CAFÉ to be once again another short term solution for a baseline universal formatter for CRS in AWIPS.

The Central Region CAFÉ Improvement team was formed and quickly determined that designing and coding a replacement system was a better approach than trying to update the legacy CAFÉ scripts. This decision was based on the desire to utilize the new VTEC coding in products, which allows for using specific CRS options based on the phenomena and action code found in VTEC (CAFÉ only relies on the product identifier), and the need to track and replace CRS products using the Message Reference Descriptor (MRD) capabilities in CRS. With 47 independent scripts, each having their own configuration files and directory structure, major new code components would be needed and accessed by each of these scripts.

The NWRWAVES application provides a streamlined capability for CRS formatting that makes full use of the CRS and VTEC format capabilities. It provides a replacement for CAFÉ that will be much easier to maintain. It is presented here as a working prototype to replace both WWA and CAFÉ and be the starting point for a baseline AWIPS CRS formatter system.

This document serves as the Software Design Document (SDD) for the NOAA Weather Radio, Console Replacement System (CRS) baseline formatter application – NWRWAVES (NOAA Weather Radio With All-hazards VTEC Enhanced Software). NWRWAVES is a tcl application designed to run on AWIPS baseline software.

The NWRWAVES application reformats NWS operational text products into CRS-ready text products. A CRS-ready product contains a CRS header line. Information contained in the CRS header tells CRS how to process the product. NWRWAVES uses a configuration file to properly define the CRS header – based on the product type and event type.

2 Requirements

Requirements for a new CRS formatting capability have not been fully fleshed out. However, requirements listed in the table in Appendix B were identified from three sources; WWA, UFOR White Paper and CAFÉ documentation. Below is a list of those requirements that is available in NWRWAVES.

2.1 WWA Requirements

First the requirement driving this work is to close the gap between WWA CRS processing capabilities and those available with CAFÉ formatters. These requirements are (in no particular order):

- Summary message by transmitter
- Utilize MRD capability (replace, follow)
- Tower specific products
- Use VTEC to convert hazards to EAS codes (SV.W vs SVR)

2.2 UFOR White Paper Requirements

The UFOR white paper suggested requirements for a baseline CRS formatting and monitoring capability. Some requirements referred to improvements in remotely monitoring and altering programming on CRS through an AWIPS GUI. These requirements would be appropriate for an updated NWRBrowser GUI and are not listed here (see Appendix B).

- Configurable by event type
- Create customized lead-ins and trailers
- Alert of formatter/software problems
- Run formatter on a per product basis
- Control tone and EAS alerting by time – blackout periods (per product)
- GUI-based interface to adjust product configurations
- Control destination of NWR message (pending vs. active) by product
- Ability to not tone/EAS for cancellation/continuation statements

2.3 CAFÉ Requirements

If NWRWAVES is to also replace CAFÉ, then requirements can be determined by examining the CAFÉ capabilities.

- Execute manually as well as by trigger or cron
- Check for hung processes
- Word replacement capability
- Utilize NWRBrowser system

VTEC code stripped from products
Program Documentation
One instance of the program runs at a time
WMO headers stripped from products
CRS header created properly
Use a configuration file to define CRS header by product
CRS header configuration on a by product basis
Error reporting about bad configuration setup
On/Off capability for product
Duplicate product checking
Replace PIL with CRS PIL
Tone on one transmitter and not on others
Define zones by transmitter
Intro (lead-in) capability
Use/don't use headlines option
Issued time lead-in option
Alarm code options in CRS string
Interrupt code option
Active code option
Periodicity option
Send to CRS or flat file modes
Dual time zones properly formatted
\$\$ cutoff to text
&& use/don't use option
Debug logs generated
Areas to LAC conversion
Web address handling
Proper handling of range of zones (>)
Multiple blanks removed
Word replace file – convert of use CAFÉ
County and zone files
Spanish Language (T_SPA)
Zone and county substitution
CRS Tower ids defines with area codes

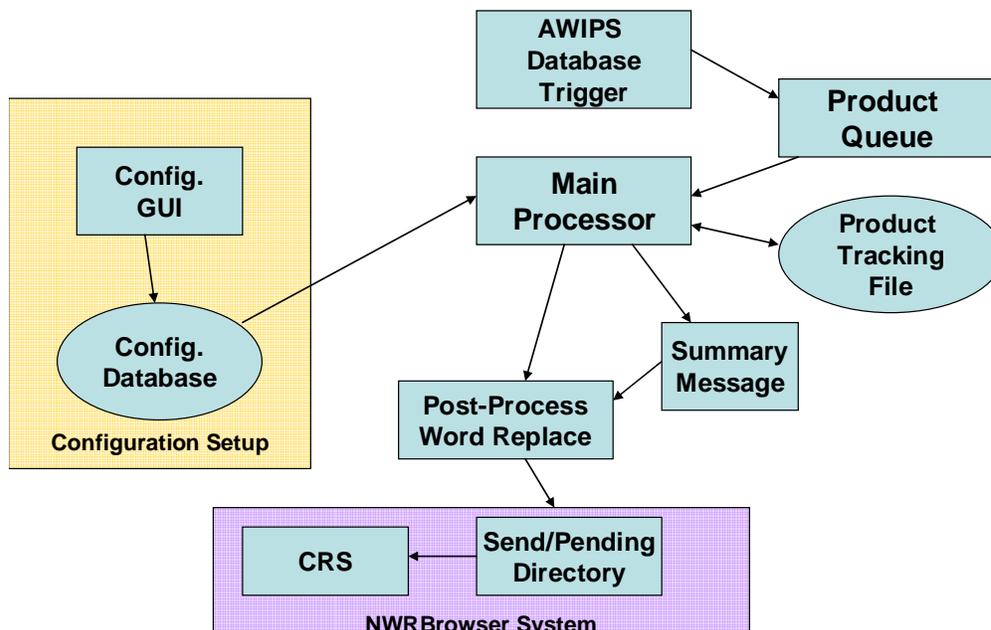
3 Design Documentation

3.1 Software Design

3.1.1 Process Flow

Here is an outline of the NWRWAVES program process.

Flow Diagram NWRWAVES CRS Formatter



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More specifically:

- AWIPS database trigger spawns *nwrwaves.csh* script
 - Copy output from /data/fxa/trigger to the /awips/adapt/NWRWAVES/QUEUE directory, giving the PIL an additional timestamp in the filename.
 - Source the AWIPS environment by processing the file /awips/fxa/readenv.csh
 - Check to see if the output from the trigger is a zero byte file,
 - If the file is zero bytes, then the file is re-requested from the text database via textdb
 - Check to see if another version of nwrwaves.csh is running by checking for the presence of the file /awips/adapt/NWRWAVES/lock.lock

- If the file /awips/adapt/NWRWAVES/lock.lock is present then wait five seconds and check again
 - If the script waits more than 60 seconds, then alert the users of a possible hung NWRWAVES process by sending an fxaAnnounce red banner message
 - Check to see nwrwaves.tcl is already running by launching the command: *ps -ef | grep -v grep | grep nwrwaves.tcl | awk '{print \$2}'*
 - If it is running, wait 20 seconds and check again
 - If still running, assume script is hung and terminate it with kill command
 - Check again after 2 seconds, if still running use kill -9.
 - Write the nwrwaves.tcl checksum to log file.
 - Spawn nwrwaves.tcl script
 - Check to see if nwrwaves.tcl exited cleanly
 - If not log the error to the /awips/adapt/NWRWAVES/ERROR directory
 - Send an fxaAnnounce red banner message to alert the operators of a program failure
 - Remove the /awips/adapt/NWRWAVES/lock.lock file
 - Program execution complete
- *nwrwaves.tcl* is run to process any queued data
 - Open time stamped debug and log files for output in /awips/adapt/NWRWAVES/DEBUG and /awips/adapt/NWRWAVES/LOGS directories
 - Check to see if we're in test mode (TEST argument passed to nwrwaves.tcl)
 - Read in the loccal WFO IDs from the environmental variable FXA_LOCAL_SITE
 - Read in the state node from the AWIPS flat file: /awips/fxa/data/localizationDataSets/CCC/AFOS_CCC_Name.txt
 - Read in /awips/adapt/NWRWAVES/transmitter.cfg.CCC
 - Read in /awips/adapt/NWRWAVES/summary.cfg.CCC
 - Copy the product from the /awips/adapt/NWRWAVES/QUEUE directory to the /awips/adapt/NWRWAVES/INPUT directory for archiving
 - Read in the product from the /awips/adapt/NWRWAVES/QUEUE directory, parse the product into individual components and store into arrays:
 - Header, overview, MND date/time group
 - For each segment -- UGC codes, UGC expiration, VTEC information, headlines, body text, supplemental data
 - Check to see if product is WOU/WCN
 - If "NEW" WOU, then process, otherwise ignore product
 - If "NEW" WCN, exit (we're using the WOU to tone).
 - Read in product configuration info for that specific product or VTEC phenomenon
 - Get the issuance time from the product.

- Used in an optional intro line and to determine whether alert tones should be silenced based on optional configuration blackout period
 - The blackout period is a user defined time range (eg 10:00 PM to 7:00 AM local time)
 - If a product that is normally tone alerted is received during this period and alarm blackout is enabled then no 1050 HZ tones will be sent
 - There is no attempt by NWRWAVES to tone alert the product once the blackout period has ended, so a re-issuance of the product is required to send warning alarm tones.
- Get the CRS Expiration time for the header
 - UGC purge time first, then use product default if none found
 - Also calculate this number in "clock seconds since 1970" so that we can determine an expiration time for any applicable summary messages
- For each VTEC line (if applicable), acquire a valid/unique MRD number based on VTEC ETN number and MRD numbers already in use in the /awips/adapt/NWRWAVES/VTEC_Summary.txt file. Filter out VTEC from marine products if configured to do so.
 - Used for MRD replace on CRS
 - Used to determine duplicate product storage
 - Create/modify/delete from /awips/adapt/NWRWAVES/VTEC_Summary.txt file as database for summary message generation and VTEC tracking information
- Check to see if product is already expired
 - If so, send an fxaAnnounce red banner message the user
- Otherwise, loop over each transmitter to see if we have any matching counties
 - If product is an upgrade/downgrade ("UPG" or "CAN" in 1st line of a multi-line VTEC segment), re-send upgraded or downgraded product to CRS with a 10 minute expiration time before processing the new event.
 - Create a LAClist for that transmitter based on UGC and transmitter matches.
 - If no UGC, assume message is intended for all transmitters and use the first UGC code for each transmitter to send the message
 - Generate English phraseology of all counties/zones/marine zones affected on that transmitter. Used in optional intro and repeat statement. This function is also used in the summary message generation.

- Uses UGCLookup.table files in the /bin directory
 - Based on product specific settings, combine requested elements into a message
 - Run message through post processor which includes word replacement file.
 - The word replacement file is /awips/adapt/NWRWAVES/bin/WordFile.txt
 - This file is manually edited via the command line by the site.
 - Add CRS message header/footer and copy to /data/fxa/workFiles/nwr/ready or /data/fxa/workFiles/nwr/pending directory depending on setting.
 - If product is WOU/WCN, create unique message, ignoring unreadable tabular data in product.
 - If test product (...TEST... or "T" VTEC), red banner message user and send to the directory /data/fxa/workFiles/nwr/pending
 - Copy output to the directory /awips/adapt/NWRWAVES/OUTPUT
- Check for summary message changes
- Close debug/log files.

There are no persistent processes associated with NWRWAVES. There are no modifications needed to existing persistent processes. See Appendix C for a detailed flowchart describing NWRWAVES module processes.

3.1.2 Flat File and Database Usage

NWRWAVES reads and processes text products from the Postgres database by utilizing AWIPS text triggers process. The program does not directly read or write any messages to the Postgres database.

NWRWAVES creates and maintains a flat file of the VTEC products which it has processed (VTEC_Summary.txt). This flat file is used to create summary messages which contain active watch, warning and advisory information, as well as for assigning unique MRD numbers for CRS message replacement. This flat file contains the VTEC phenomena, significance, action code, ETN, plus the CRS MRD, Listening Area Codes (LAC), effective time and expiration time for each VTEC event.

NWRWAVES was written to be fully compliant with the latest NWS Directives regarding VTEC. Additional information on VTEC types and codes can be found at:

<http://www.nws.noaa.gov/os/vtec/>

3.1.3 Program Language

NWRWAVES uses the baseline Tcl/Tk software on AWIPS. C-Shell scripts are also utilized to launch the nwrwaves.tcl script and to run nwrwaves.tcl in summary mode. Bourne shell scripts are provided for purging of expired products as well as file system purging.

3.1.4 COTS/Freeware Usage

NWRWAVES utilizes seven Tcl/Tk scripts that are not provided with the AWIPS baseline install of Tcl/Tk. These freeware scripts add additional capabilities for Tcl/Tk. The scripts are distributed with NWRWAVES and are stored in the NWRWAVES/bin directory. The seven scripts are:

```
/awips/adapt/NWRWAVES/bin/clocktime.tcl
/awips/adapt/NWRWAVES/bin/color_msgbox.tcl
/awips/adapt/NWRWAVES/bin/combobox.tcl
/awips/adapt/NWRWAVES/bin/dialog.tcl
/awips/adapt/NWRWAVES/bin/notebook.tcl
/awips/adapt/NWRWAVES/bin/pkgIndex.tcl
/awips/adapt/NWRWAVES/bin/UGC_VTEC_Decoder.tcl
```

There is no COTS software packages utilized in NWRWAVES.

3.1.5 AWIPS Service APIs Required

textdb - The textdb process is utilized within the Postgres text trigger process to obtain a copy of the product from the text database. NWRWAVES does not specifically make any calls to textdb. Also in the event a zero byte file is received by NWRWAVES, it will re-request the product from the text database by utilizing textdb.

fxaAnnounce – This routine is utilized to produce a banner message to alert AWIPS operators about formatter failure or miscoded products (including the processing of TEST messages).

nwrTrans.pl – NWRWAVES utilizes nwrTrans.pl by copying the CRS ready product to either the /data/fxa/workFiles/nwr/ready directory for products configured to automatically go to CRS. For products requiring user intervention, NWRWAVES copies the voice ready text file to /data/fxa/workFiles/nwr/pending.

3.1.6 System Services Utilized

AWIPS Text Triggers – New triggers will need to be added to support NRRWAVES. The number of new triggers will vary greatly among sites, but will generally be from 20 to 30 triggers. At many offices, these triggers will be a one-for-one replacement for those triggers previously established by the CAFÉ program.

There are no machine specific dependencies as NRRWAVES will run on both HP-UX and Linux.

3.1.7 WAN Usage

WAN is not utilized. NRRWAVES does not send data to the WAN.

3.2 Operability (User Interfaces)

NRRWAVES is designed to run without user interaction, since the program is spawned from the AWIPS text trigger process.

A graphical user interface is provided to create the setup files needed by NRRWAVES.

3.3 Installation

NRRWAVES is baseline software and all future releases will be installed as part of the AWIPS Build installation process. The installation of NRRWAVES is fully automatic and is designed to preserve any changes to site customizable files.

NRRWAVES makes no changes to any national metadata files. The site AWIPS text trigger file will need to be modified to replace appropriate CAFÉ triggers with NRRWAVES triggers. This will require a trigger localization to be run on the site's AWIPS system.

No changes will be made to any system runtime setup files. NRRWAVES installs four crons to the AWIPS system. The crons will handle time purging of NRRWAVES files, summary message updates and stale file notification. No changes will be made to any core system services. Seven new freeware Tcl/Tk libraries will be provided with the install and will reside within the NRRWAVES directory structure.

New directories will be installed. The location of the software is a directory to be created in the /awips/adapt directory called NRRWAVES. The following subdirectories will be created:

/awips/adapt/NWRWAVES	Main software applications
/awips/adapt/NWRWAVES/bin	Additional Tcl/Tk libraries Program resource files
/awips/adapt/NWRWAVES/LOGS	Contains NWRWAVES daily log files
/awips/adapt/NWRWAVES/QUEUE	Temporary storage of products to be processed
/awips/adapt/NWRWAVES/OUTPUT	Storage of CRS ready products produced by NWRWAVES
/awips/adapt/NWRWAVES/TEST	CRS output when program is run in test mode
/awips/adapt/NWRWAVES/DEBUG	Comprehensive program output for program debugging use
/awips/adapt/NWRWAVES/ERROR	Tcl error logs created when NWRWAVES terminates abnormally
/awips/adapt/NWRWAVES/INPUT	Storage of raw AWIPS products processed by NWRWAVES
/awips/adapt/NWRWAVES/browser	Software and configuration files for the NWRWAVES Browser
/awips/adapt/NWRWAVES/BACKUP	Saved off copies of the sites configuration files
/awips/adapt/NWRWAVES/SUMMARY	Temporary storage of summary message files

NWRWAVES will be provided with default product configuration file (Appendix E). Other configuration files needed by NWRWAVES will be created during the post install setup process by utilizing the NWRWAVES Setup GUI. A full listing of files for NWRWAVES can be found in Appendix A.

3.4 Performance

Testing has shown that minimal system load occurs when NWRWAVES is running. On average, the script takes less than five (5) seconds to run. The runtime is dependant on the number of segments within a product, the number of transmitters configured on CRS. Only one instance of the program is allowed to run at a time, and hung processes are detected and terminated by the next attempt to run the program.

NWRWAVES utilizes AWIPS text triggers. No other load is expected to be put on shared services. The AWIPS text triggers will be a one-for-one replacement of those triggers used by CAFÉ. Database loading is expected to decrease with NWRWAVES when compared to CAFÉ. CAFÉ made additional calls to the database using redundant textdb reads.

Disk I/O from NWRWAVES is mainly from writing to the log, debug and archive files during program execution and then writing the CRS products to the NWRBrowser directories. There is no use of remote shell, rcp or other remote system calls. NWRWAVES will purge files from the LOGS, INPUT, OUTPUT and DEBUG directories via the cron.

NWRWAVES will be most active during severe weather episodes when numerous products are processed for CRS broadcast.

3.5 Hardware/Resource Usage Design

NWRWAVES does not require any additional hardware. NWRWAVES is a software applications program which runs on the AWIPS baseline hardware.

All software will reside in the /awips/adapt/NWRWAVES directory. Since /awips/adapt is a NFS mount point, no additional links or mount points are needed. It is mounted from NAS1.

A clean install of NWRWAVES uses approximately 1 MB of disk space. An allotment of up to 40 MB is recommended to allow for adequate retention of log, debug, input and output files.

The software does not use the backup tape drives, WAN or SBN and does not require any special hardware resources.

3.6 External Interfaces

No external interfaces are included.

3.7 General Design Assessment

NWRWAVES is basically a local applications program that has been developed by a team for CR field offices. The program is being presented here as a prototype for what has been commonly referred to as UFOR (reference SREC OB7 task list).

Our opinion is that this prototype software will outperform the widely used CAFÉ suite of scripts for producing CRS ready products. The software is required to fully utilize VTEC and CRS capabilities and will replace WWA and most CAFÉ functionality. This software will serve as a first step toward a baseline CRS formatting capability in AWIPS. We clearly see that additional capability needs to be added to this prototype, and hope that this can be done incrementally. For example, a part of the CRS formatting capability is the AWIPS baseline NWRBrowser software. Improvements in the NWRBrowser

software can work with the CRS formatter software to provide a fully functional capability.

3.8 Configuration Management

Since NWRWVAES scripts are not compiled. Checksum will be utilized to identify unauthorized changes to NWRWAVES. A checksum value is written to the master log file each time the program is executed. **The baseline checksum value for NWRWAVES OB7.2 is 2926387361 169241.** Any deviation from this value represents local modification to baseline AWIPS software.

NWRWAVES code is under the source control of Raytheon and the Office of Operational Services.

The NWRWAVES setup GUI program assists with configuration management by limiting the options a site has in configuring the program. The GUI ensures that no errors result from manual editing of configuration files and provides on-line help for configuration options.

3.9 Assignment of Responsible Individuals

Primary development of NWRWAVES was authored by Evan Bookbinder, WFO Kansas City/Pleasant Hill, Missouri and Brian Walawender, Central Region Headquarters. Michael Hudson and Peter Browning, both with Central Region Headquarters, assisted Evan and Brian with identifying requirements, logistics and testing of the software.

3.10 Documentation Assessment

Documentation for the installation and use of NWRWAVES is available online at:

<http://www.weather.gov/ops2/crs/nwrwaves.htm>

The documentation shall be updated with each future release of NWRWAVES. The NWRWAVES development team is responsible for updates to the documentation.

3.11 Testing Assessment

3.11.1 Special Development Needs

Ideal testing of this software is to test it end-to-end setup the software on AWIPS and generate a high volume of data that is sent to a CRS system. This aspect of testing is important to see that CRS can indeed read the products without producing fatal results on CRS.

This environment was created at Central Region Headquarters. The BCQ AWIPS system has been configured to send products to a NWSTC CRS system which is used for training classes. This CRS does not have a transmitter attached to it, but is fully functional in processing CRS products. With the BCQ system configured in test mode, (which prevents the transmission of products from the system) a rapid production of warning products and statements are generated and sent to CRS. A speaker has been provided at the AWIPS workstation so the tester can hear the results.

Additionally, the software can be run in a “test” or flat file mode. This mode does not send any products to CRS, but instead places the output in the TEST directory of the NWRWAVES directory tree. Triggers have been established that run the program in test mode as real products are received. With this option, a site can test the NWRWAVES configuration prior to setting up operational triggers.

3.11.2 Tools for Testing NWRWAVES

The NWRWAVES development team has developed a full Development Test and Evaluation (DT&E) for NWRWAVES. This is a regression test and can be run multiple times to test NWRWAVES functionality and performance. A full suite of regression test scripts has been developed to simulation many common scenarios for NWRWAVES. While the DT&E is very thorough, it *does not* replace the need for ad hoc testing by Alpha and Beta sites.

3.11.3 Alpha/Beta Testing

The NWRWAVES software was setup on an NWSHQ AWIPS test platform in June, 2005. This provided an opportunity to monitor system resource utilization, performance and validate CRS product generation capabilities, when a rigorous formal DT&E test procedure was run to validate NWRWAVES requirements.

In addition to NWSHQ testing, beta testing of the software was conducted at select field offices from August to October, 2005. This allowed for improvements in the software documentation, and the testing identified some critical problems not accounted for in developmental testing. As of November 1, 2005, eight NWS field offices have installed and configured NWRWAVES, and were using the software exclusively for all NWR

formatting purposes (other than the formatting already provided by baseline hourly weather, climate and Riverpro applications).

A full DT&E for NWRWAVES v2.6 was performed in February and in March of 2006 at Central Region Headquarters. This same DT&E was also performed by Raytheon at NWSHQ in April of 2006. NWRWAVES was also beta tested at TOP, EAX and DMX during March and April of 2006.

NWRWAVES v2.61 (OB7.1) was released in late 2006. This release provided patches to several critical DR's discovered after the release of OB6.x (v2.6). Version 2.61 was tested similarly to v2.6, and in addition was released as an ATAN prior to OB7.1. OB7.2 NWRWAVES (v2.62) fixed two bugs and was also tested via ATAN.

3.12 Continuity of Operations

In the event of NWRWAVES failure, the Emergency Override and Backup Live functionality of CRS will be utilized to continue the flow of weather information to the NWR.

4 Sustainability Plan

NWRWAVES was developed by field office personnel in the NWS Central Region. Therefore, there is not an existing mechanism by which future enhancements, bug fixes or capabilities can be built into NWRWAVES for future AWIPS builds.

Therefore, the following is a proposed sustainability model for future versions of NWRWAVES. It relies on oversight from the HQ CRS Program Office but keeps the development and coding of NWRWAVES in the realm of field office personnel.

- CRS program office manages trouble ticket list provided by the NCF, for all NWRWAVES problems, proposed enhancements and other adjustments as needed.
- CRS program office develops and prioritizes a requirements list (for a newer version of NWRWAVES) based on regional focal point feedback and day-to-day field office feedback.
- When this requirements list is derived (at least once annually to capture new proposed capabilities):
 - CRS program office manager tasks a solicitation for a “tiger team” from all NWS regions through the regional CRS focal points.
 - Regional focal points solicit within their regions for any personnel interested in participating on the NWRWAVES Development Tiger Team. Regions then submit the names (within a month of the CRS Program Office solicitation) of no more than two (2) interested personnel from their WFO's. These personnel MUST have a strong background in tcl/tk code development.

- CRS program office manager makes a selection from these candidates, to form a development team that consists of the following:
 - One team leader (program manager) who will coordinate coding, testing, and documentation of NWRWAVES changes.
 - Two to three programmers who will work for the team leader to implement specific requirements given to the team from the list organized by the CRS program office.
- Development team reviews within a one-month period the NWRWAVES SDD and user documentation, and also reviews the existing code (with abundant comments) to familiarize themselves with software logic and program flow.
- Development team then works within a three-month window to develop new code for each item listed by the CRS Program Office.
- Once code is complete, team leader submits the updated code to the CRS program office.
- CRS Program Office performs rigorous ‘alpha’ testing of the new NWRWAVES version on the HQ test bed. Existing DT&E test procedures written during the development phase of NWRWAVES should be used and augmented as needed depending on what new capabilities are being added.
- Additional alpha testing may also occur at regional offices.
- Alpha testing phase will last around a month, depending on the number of problems encountered.
- Once alpha testing has been completed, CRS Program Office will coordinate with regional focal points, and deploy new beta version to a site in every NWS CONUS region. Further risk reduction takes place in the beta test, and any problems found are sent back to the Tiger Team for fixes.
- Once beta sites have successfully run NWRWAVES for a 30-day period, software is checked into the next version of AWIPS. Tiger team disbands.

Appendix A: NRRWAVES Files

This is a listing of the files that would be present in a typical install of NRRWAVES. Directory names are listed in bold typeface.

/awips/adapt/NRRWAVES

/awips/adapt/NRRWAVES/errorout.txt
/awips/adapt/NRRWAVES/Filename.last
/awips/adapt/NRRWAVES/NONVTECMRD.txt
/awips/adapt/NRRWAVES/NRRWAVESpurge.sh
/awips/adapt/NRRWAVES/removeExpiredNWR.sh
/awips/adapt/NRRWAVES/nrrwaves.csh
/awips/adapt/NRRWAVES/nrrwavestest.csh
/awips/adapt/NRRWAVES/nrrwaves_setup.tcl
/awips/adapt/NRRWAVES/nrrwaves.tcl
/awips/adapt/NRRWAVES/product.cfg
/awips/adapt/NRRWAVES/whatsnew.txt
/awips/adapt/NRRWAVES/VTEC_Summary.txt
/awips/adapt/NRRWAVES/NRRWAVES_RELEASE_ID
/awips/adapt/NRRWAVES/UGCLookup_changes.txt
/awips/adapt/NRRWAVES/updateSummary.csh
/awips/adapt/NRRWAVES/pendingDirCheck
/awips/adapt/NRRWAVES/purge.cfg
/awips/adapt/NRRWAVES/summary_cfg.CCC
/awips/adapt/NRRWAVES/transmitter_cfg.CCC
/awips/adapt/NRRWAVES/marine_cfg.CCC

/awips/adapt/NRRWAVES/bin

/awips/adapt/NRRWAVES/bin/clocktime.tcl
/awips/adapt/NRRWAVES/bin/color_msgbox.tcl
/awips/adapt/NRRWAVES/bin/combobox.tcl
/awips/adapt/NRRWAVES/bin/dialog.tcl
/awips/adapt/NRRWAVES/bin/notebook.tcl
/awips/adapt/NRRWAVES/bin/pkgIndex.tcl
/awips/adapt/NRRWAVES/bin/UGC_VTEC_Decoder.tcl
/awips/adapt/NRRWAVES/bin/UGCLookup.table
/awips/adapt/NRRWAVES/bin/WordFile.txt
/awips/adapt/NRRWAVES/bin/WordFile_SPN.txt
/awips/adapt/NRRWAVES/bin/VTECrank.ini
/awips/adapt/NRRWAVES/bin/relinkNRRWAVESBrowser.sh

/awips/adapt/NRRWAVES/browser

/awips/adapt/NRRWAVES/browser/admin.list
/awips/adapt/NRRWAVES/browser/browser.cfg
/awips/adapt/NRRWAVES/browser/browser.ini

/awips/adapt/NWRWAVES/browser/browser.tcl
/awips/adapt/NWRWAVES/browser/pils.list
/awips/adapt/NWRWAVES/browser/update.tcl

Once the program starts running, files will be generated in the start showing up in the following directories with the format indicated.

/awips/adapt/NWRWAVES/DEBUG

/awips/adapt/NWRWAVES/DEBUG/YMMDDHHMMSSdebug.txt

The DEBUG directory contains the detailed debug log files from the formatter output.

/awips/adapt/NWRWAVES/LOGS

/awips/adapt/NWRWAVES/LOGS/nwrwaves.MMDDYY.log

The LOGS directory will contain the daily log files. This log includes timestamps, products processed and checksums.

/awips/adapt/NWRWAVES/OUTPUT

/awips/adapt/NWRWAVES/OUTPUT/CCCNXXX.DDHHMMSS
/awips/adapt/NWRWAVES/OUTPUT/CCCNXXX.V###

The OUTPUT directory will contain the Voice Ready files that were sent to CRS. The general naming convention is CCCNXXX.DDHHMMSS where XXX is the transmitter ID assigned by the setup program. VTEC products will have the naming convention of CCCNXXX.V### where ### is MRD derived from the ETN.

/awips/adapt/NWRWAVES/QUEUE

/awips/adapt/NWRWAVES/QUEUE/CCCNXXX.YMMDDHHMMSS.txt

The QUEUE directory will briefly have files in it with the naming convention CCCNXXX.YMMDDHHMMSS.txt. These are files received from the /data/fxa/trigger directory. They are deleted by NWRWAVES as soon as they are processed.

/awips/adapt/NWRWAVES/INPUT

/awips/adapt/NWRWAVES/INPUT/CCCNXXX.YMMDDHHMMSS.txt

The INPUT directory will contain the raw AWIPS products that were sent to NWRWAVES for processing. The general naming convention is CCCNXXX.YMMDDHHMMSS.txt.

/awips/adapt/NWRWAVES/ERROR

/awips/adapt/NWRWAVES/ERROR/fatalerror_YMMDDHHMMSS.txt
/awips/adapt/NWRWAVES/ERROR/CCCNXXX.YMMDDHHMMSS.txt

The ERROR directory will contain program stack trace dumps captured when NWRWAVES terminates abnormally. Also (if known) the product that caused NWRWAVES to crash will be moved into the ERROR directory for additional troubleshooting assistance.

/awips/adapt/NWRWAVES/SUMMARY

/awips/adapt/NWRWAVES/SUMMARY/CCCNXX

The SUMMARY directory will contain warning summary message output. The naming convention is CCCNXX where XXX is the transmitter ID assigned by the setup program.

/awips/adapt/NWRWAVES/TEST

/awips/adapt/NWRWAVES/TEST/CCCNXX.DDHHMMSS

/awips/adapt/NWRWAVES/TEST/CCCNXX.V###

/awips/adapt/NWRWAVES/BACKUP

The BACKUP directory contains saved off versions of the sites configuration (cfg) files. This allows a site to revert back to a previous know working state.

```
SV.W,NEW,0250,250,KSC087,1128248100,1128244200,1128248100,Y,A
```

Sample VTEC_Summary.txt file

```

Oct 12 00:25:28 GMT -- Current Checksum 2641289004 123870 nwrwaves.tcl
Oct 12 00:25:28 GMT -- Processing OMANOWOAX...
Oct 12 00:25:28 GMT -- ** OMANOWOAX Detected in NONVTECMRD.txt -- MRD Usage = NO
**
Oct 12 00:25:28 GMT -- ERROR: No UGC matches found on any transmitter. Exiting.
Oct 12 00:25:29 GMT -- Create Summary Message: No active summary message table
found.
Oct 12 00:25:29 GMT -- NWRWAVES terminated successfully.
Oct 12 00:30:57 GMT -- Current Checksum 2641289004 123870 nwrwaves.tcl
Oct 12 00:30:57 GMT -- Processing TOPZFPNWR...
Oct 12 00:30:59 GMT -- ./OUTPUT/TOPZFPCK.1_12003059 successfully sent to pending
directory.
Oct 12 00:31:02 GMT -- ./OUTPUT/TOPZFPBLR.2_12003102 successfully sent to pending
directory.
Oct 12 00:31:06 GMT -- ./OUTPUT/TOPZFPABI.3_12003106 successfully sent to pending
directory.
Oct 12 00:31:08 GMT -- ./OUTPUT/TOPZFPPTOP.4_12003108 successfully sent to pending
directory.
Oct 12 00:31:10 GMT -- ./OUTPUT/TOPZFPHLS.5_12003110 successfully sent to pending
directory.
Oct 12 00:31:10 GMT -- Create Summary Message: No active summary message table
found.
Oct 12 00:31:10 GMT -- NWRWAVES terminated successfully.
Oct 12 00:34:56 GMT -- Current Checksum 2641289004 123870 nwrwaves.tcl
Oct 12 00:34:56 GMT -- Processing TOPHWOTOP...
Oct 12 00:34:56 GMT -- SETTING: Using default duration of 360 minutes in lieu of
UGC expiration time.
Oct 12 00:34:56 GMT -- ** TOPHWOTOP Detected in NONVTECMRD.txt -- MRD Usage = NO
**
Oct 12 00:34:59 GMT -- ./OUTPUT/TOPHWOCNK.1_12003458 successfully sent to CRS.
Oct 12 00:35:08 GMT -- ./OUTPUT/TOPHWOTOP.1_12003508 successfully sent to CRS.
Oct 12 00:35:11 GMT -- ./OUTPUT/TOPHWOABI.1_12003511 successfully sent to CRS.
Oct 12 00:35:15 GMT -- ./OUTPUT/TOPHWOBLR.1_12003515 successfully sent to CRS.
Oct 12 00:35:18 GMT -- ./OUTPUT/TOPHWOHL.1_12003518 successfully sent to CRS.
Oct 12 00:35:18 GMT -- Create Summary Message: No active summary message table
found.
Oct 12 00:35:18 GMT -- NWRWAVES terminated successfully.
Oct 12 00:51:11 GMT -- Current Checksum 2641289004 123870 nwrwaves.tcl
Oct 12 00:51:12 GMT -- Processing OMANOWGID...
Oct 12 00:51:12 GMT -- ** OMANOWGID Detected in NONVTECMRD.txt -- MRD Usage = NO
**
Oct 12 00:51:14 GMT -- ./OUTPUT/TOPNOWCNK.1_12005113 successfully sent to CRS.
Oct 12 00:51:14 GMT -- Create Summary Message: No active summary message table
found.
Oct 12 00:51:14 GMT -- NWRWAVES terminated successfully.
Oct 12 00:51:21 GMT -- Another NWRWAVES process is running...waiting 5 sec
Oct 12 00:51:29 GMT -- Current Checksum 2641289004 123870 nwrwaves.tcl
Oct 12 00:51:29 GMT -- Processing OMANOWGID...
Oct 12 00:51:29 GMT -- ** OMANOWGID Detected in NONVTECMRD.txt -- MRD Usage = NO
**
Oct 12 00:51:31 GMT -- ./OUTPUT/TOPNOWCNK.1_12005131 successfully sent to CRS.
Oct 12 00:51:31 GMT -- Create Summary Message: No active summary message table
found.
Oct 12 00:51:31 GMT -- NWRWAVES terminated successfully.
...

```

Sample nwrwaves.MDDYY.log file

Sample YYMMDDHHMMSSdebug.txt File

Product Header:

KSC087-021015-
/O.NEW.KTOP.SV.W.0250.051002T0910Z-051002T1015Z/

BULLETIN - EAS ACTIVATION REQUESTED
SEVERE THUNDERSTORM WARNING
NATIONAL WEATHER SERVICE TOPEKA KS
410 AM CDT SUN OCT 2 2005

Section 1 expiration: 021015
Section 1 UGC string: KSC087
Section 1: VTEC line 1
VTEC STATUS: O
VTEC Action: NEW
VTEC WFO: KTOP
VTEC Phenom: SV
VTEC Significance: W
VTEC ETN: 0250
VTEC Begin Time/Date: 0510020910
VTEC Begin Time/Date - Clock Seconds: 1128244200
VTEC End Time/Date: 0510021015
VTEC End Time/Date - Clock Seconds: 1128248100
Segment Text:

THE NATIONAL WEATHER SERVICE IN TOPEKA HAS ISSUED A

* SEVERE THUNDERSTORM WARNING FOR...
JEFFERSON COUNTY IN NORTHEAST KANSAS

* UNTIL 515 AM CDT

* AT 406 AM CDT...NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATED A
SEVERE THUNDERSTORM CAPABLE OF PRODUCING NICKEL SIZE HAIL...AND
DAMAGING WINDS IN EXCESS OF 60 MPH. THIS STORM WAS LOCATED 8 MILES
WEST OF OZAWKIE...OR ABOUT 11 MILES NORTHEAST OF TOPEKA...MOVING
EAST AT 25 MPH.

* LOCATIONS IMPACTED INCLUDE...

PERRY LAKE...
OZAWKIE...
VALLEY FALLS...
OSKALOOSA...
WINCHESTER...
MCLOUTH...

LARGE HAIL...VERY HEAVY RAIN AND DAMAGING WINDS ARE LIKELY WITH THIS
STORM. FOR YOUR SAFETY...TAKE COVER INSIDE A BUILDING.

SEVERE THUNDERSTORMS PRODUCE DAMAGING WINDS IN EXCESS OF 60 MPH...
DESTRUCTIVE HAIL...DEADLY LIGHTNING AND VERY HEAVY RAIN. FOR YOUR
SAFETY MOVE TO AN INTERIOR ROOM ON THE LOWEST FLOOR OR A BASEMENT AND
AVOID WINDOWS.

STAY TUNED TO WEATHER RADIO OR LOCAL MEDIA OUTLETS FOR THE LATEST
SEVERE WEATHER INFORMATION.

NUMBER OF SEGMENTS: 1

***** SEGMENT 1 *****

Issue time: ISSUED AT 04:11 AM CDT Sunday.
CRS Header Expiration from segment[0510021015]

Sample Product Output

_aT_ENGTOPSVRTOP05100209110510020911 250CD IAKSC087c0510021015

THE NATIONAL WEATHER SERVICE IN TOPEKA HAS ISSUED A

SEVERE THUNDERSTORM WARNING FOR,
JEFFERSON COUNTY,

UNTIL 5:15 AM, AT 4:06 AM, NATIONAL WEATHER SERVICE DOPPLER RADAR, INDICATED A SEVERE THUNDERSTORM CAPABLE OF PRODUCING NICKEL SIZE HAIL, AND DAMAGING WINDS IN EXCESS OF 60 MILES PER HOUR. THIS STORM WAS LOCATED 8 MILES WEST OF OZAWKIE, OR ABOUT 11 MILES NORTHEAST OF TOPEKA, MOVING EAST AT 25 MILES PER HOUR.

LOCATIONS IMPACTED INCLUDE,
PERRY LAKE,
OZAWKIE,
VALLEY FALLS,
OSKALOOSA,
WINCHESTER,
MCLOUTH,

LARGE HAIL, VERY HEAVY RAIN AND DAMAGING WINDS ARE LIKELY WITH THIS STORM. FOR YOUR SAFETY, TAKE COVER INSIDE A BUILDING.

SEVERE THUNDERSTORMS PRODUCE DAMAGING WINDS IN EXCESS OF 60 MILES PER HOUR, DESTRUCTIVE HAIL, DEADLY LIGHTNING AND VERY HEAVY RAIN. FOR YOUR SAFETY MOVE TO AN INTERIOR ROOM ON THE LOWEST FLOOR OR A BASEMENT AND AVOID WINDOWS.

STAY TUNED TO WEATHER RADIO OR LOCAL MEDIA OUTLETS FOR THE LATEST SEVERE WEATHER INFORMATION.

_b

Appendix B: Requirements to replace WWA NWR and CAFÉ applications

Several documents were reviewed to see a candidate list of requirements for a baseline CRS product formatter. This has been referred to as UFOR in the SREC process for AWIPS. Also, a review of CAFÉ scripts was provided by OOS. Requirements were pulled from this documentation. OOS also provided additional needs that this software should provide.

Below is a table that summarizes what can be drawn from these documents as potential requirements. WWA CRS capabilities are not specifically listed, but are included in either the UFOR, CAFÉ or both sections. The Yes/No column indicates whether the prototype software (NWRWAVES) meets the indicated need. Comments provide additional information.

This listing is by no means a complete analysis of CRS formatting requirements. Our task was to provide an update to CAFÉ scripts to account for WWA capabilities. This document can serve as a starting point for discussion.

UFOR Document Requirements	Yes/No	Comments
Configurable by event type – use VTEC when available	Yes	
Configurable lead-in by event type	Yes	
Configurable trailer by event type	Yes	Ability to repeat what, who, where (headline type message)
Tower specific broadcast products	Yes	
Alert the forecaster when a formatter has failed in real time.	Yes	Red Banner Message generated
Ability to recreate or re-run a formatter via a GUI	Yes	
Ability to manually run formatter for certain issuances of a product	No	
Blackout periods when product will not be toned/EAS-ed	Yes	
Tone alert product automatically at the end of the black out period	No	
Ability to not tone/EAS for cancellation and/or continuation statements	Yes	Uses VTEC code
Create summary messages when the number of messages of the same type exceeds the summary threshold	Yes	
Automatically expire the original messages and replace it with a summary message	No	NWRBrowser/CRS requirement. Original products contain additional detail/CTAs/etc...
Create MRD numbers and tracking system for the CRS products	Yes	
Option to automatically send a product to the CRS without user intervention	Yes	
Remove/expire a product from the CRS database via a GUI directly on AWIPS	No	CRS requirement
Alert the forecaster to error messages appearing on the CRS console and recommend ways of solving.	No	CRS requirement
WBC Processing	Yes	

CAFÉ Document Requirements

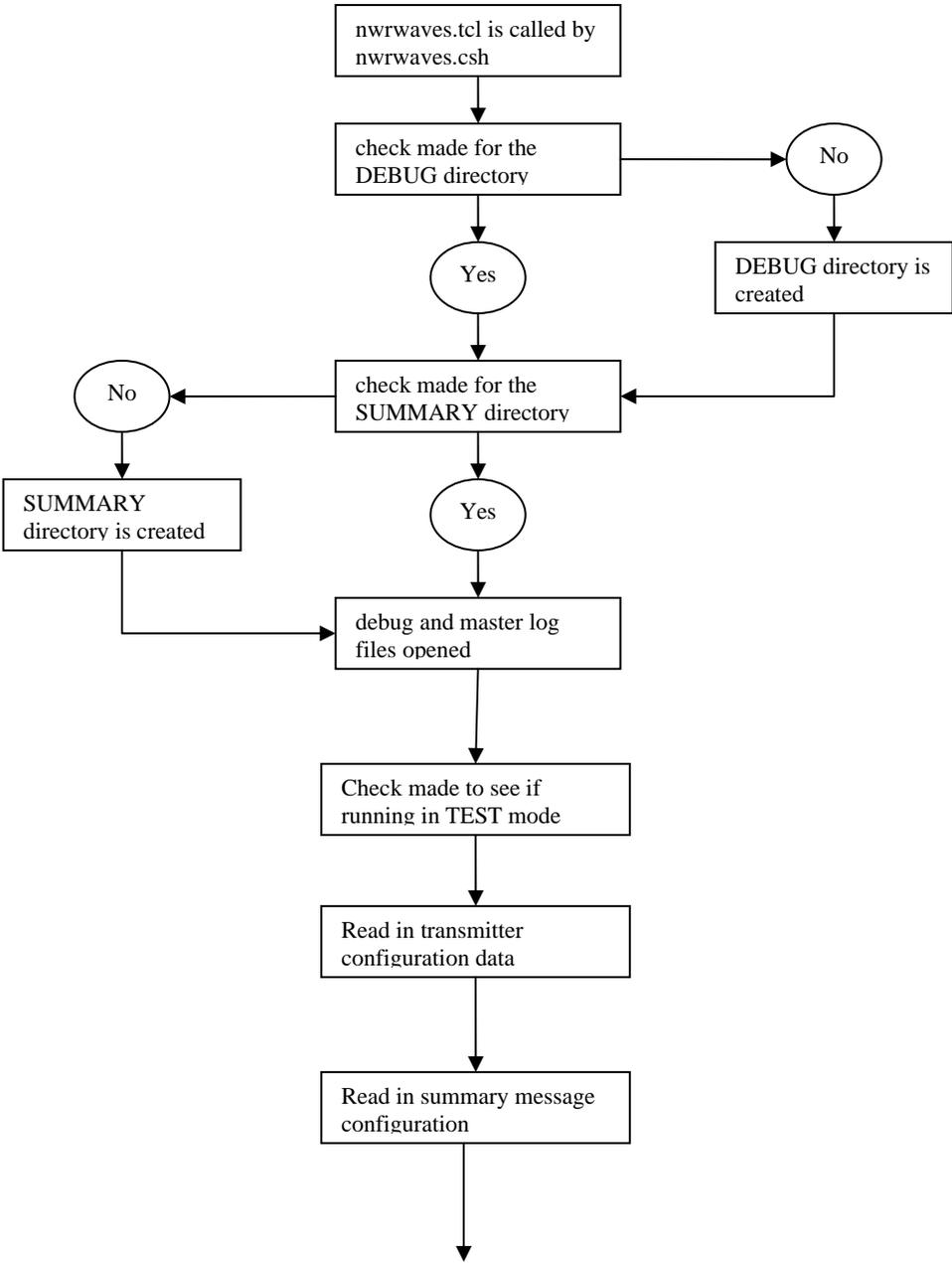
Specific tcl/tk version needed?	No	
Special library files needed?	Yes	Extra library files provided
Compatible with baseline COTs software?	Yes	
Execute manually (or via GUI) as well as by trigger or cron	Yes	Designed to use triggers but can be manually executed
Check for hung processes	Yes	
Word replacement capability	Yes	Uses unique “WordFile.txt” in /bin directory
Utilize NWRBrowser capabilities	Yes	
Create transmitter specific products	Yes	CRS PILs utilize configurable transmitter labels
VTEC code not included in product (stripped)	Yes	
Program documentation	Yes	
One instance of program runs at a time	Yes	
WMO headers stripped	Yes	
CRS header created	Yes	
Use a configuration file to define CRS header by product	Yes	
Configure on per product basis	Yes	Configured by product and VTEC phenomena code
Error reporting about bad configuration setup	Yes	Setup done by GUI – does not allow error inputs
On/Off capability for product	Yes	
Duplicate product checking	Yes	
Help available in setup process	Yes	On-line in Setup GUI
Replace PIL with CRS PIL	Yes	
Expiration override can be specified	Yes	.
Tone on one transmitter and not on others	Yes	Can be handled by CRS configuration since transmitter specific products
Define zones by transmitter	Yes	
Intro (lead-in) capability option	Yes	
Use/don’t use headlines option	Yes	
Issued time lead-in option	Yes	
Alarm code options in CRS string (A, N or blank)	Yes	
Interrupt code option	Yes	
Active code option (I, X, A, C)	Yes	
Periodicity option	Yes	
Send to CRS or flat file modes	Yes	Test mode send output to TEST directory
Dual time zones properly formatted	Yes	Still Needs testing
\$\$ cutoff of text	Yes	
&& use/don’t use option	Yes	
Debug logs	Yes	
Areas to LAC conversion	Yes	
Web address handling	Yes	See examples in WordFile.txt in /bin directory
Proper handling of range of zones (use of >)	Yes	
Multiple blanks removed	Yes	Formatter removed extraneous blanks and adds word wrap to improve browser readability
Word replace file – convert or use CAFÉ file	Yes	New “WordFile.txt” file

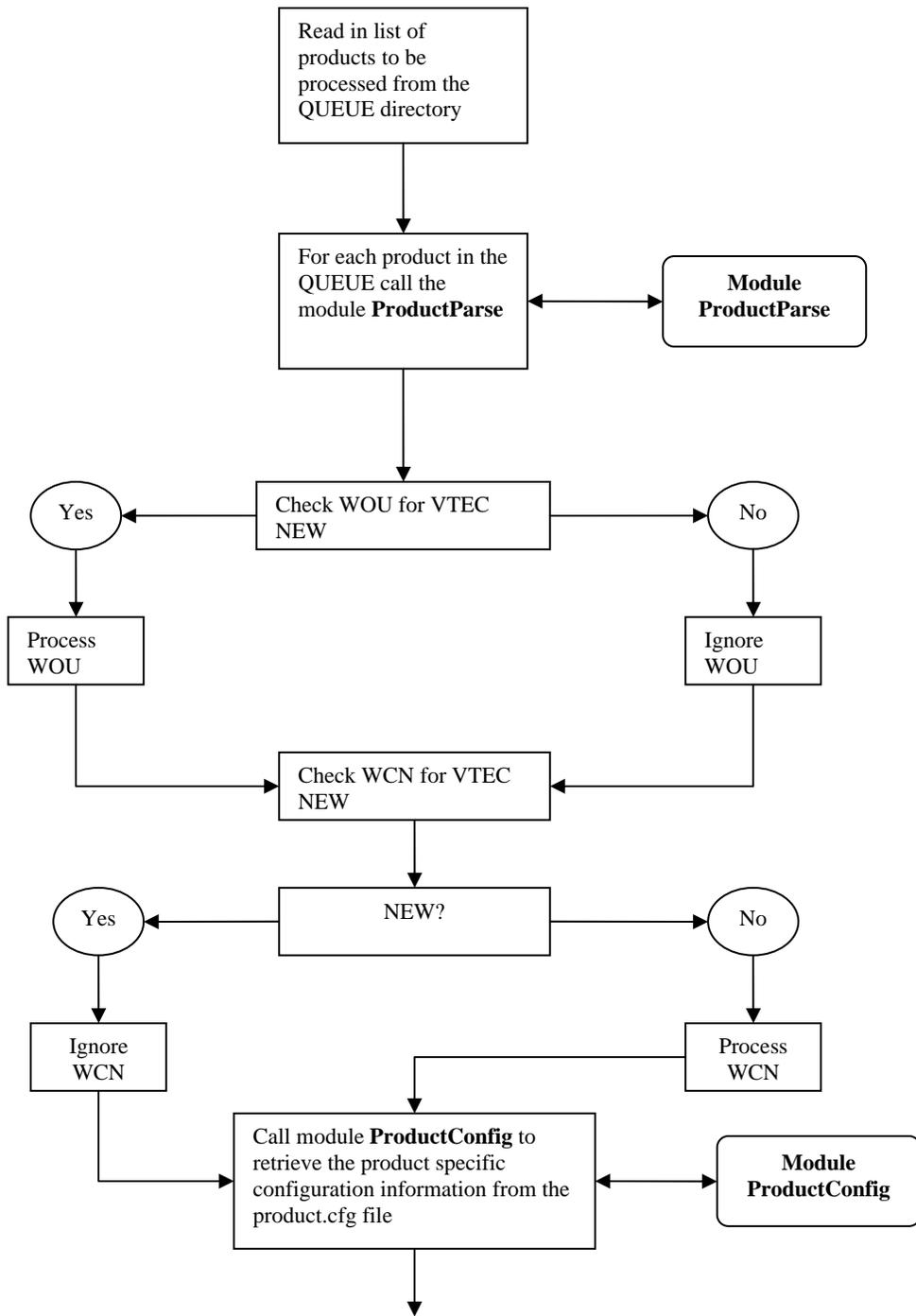
FIPS63.in and ZONE.in used	Yes	Updated files provided (counties.ini and zones.ini)
No UGC – specify transmitter to play on option	No	Defaults to all transmitters
Spanish language (T_SPA) in CRS heading capability	Yes	
Flash flood watch – alarm based on text option	No	Uses VTEC Action Code “NEW”
Zone and county substitution	Yes	
GLF – synopsis and sections selection option	Yes	
HLS – sub-headline option (looks for word surrounded by ... (...TIDES...))	Yes	
Manual product capability – pops a tcl window for CRS processing choices	No	
CRS tower ids defined with area codes (UGC/UGZ)	Yes	
Format tabular data	No	For what products?
TCP – lat/lon defined tone box option	Yes	
Travelers forecast capability (uses CCF)	No	See TVL program by Mike Hudson/Evan Bookbinder

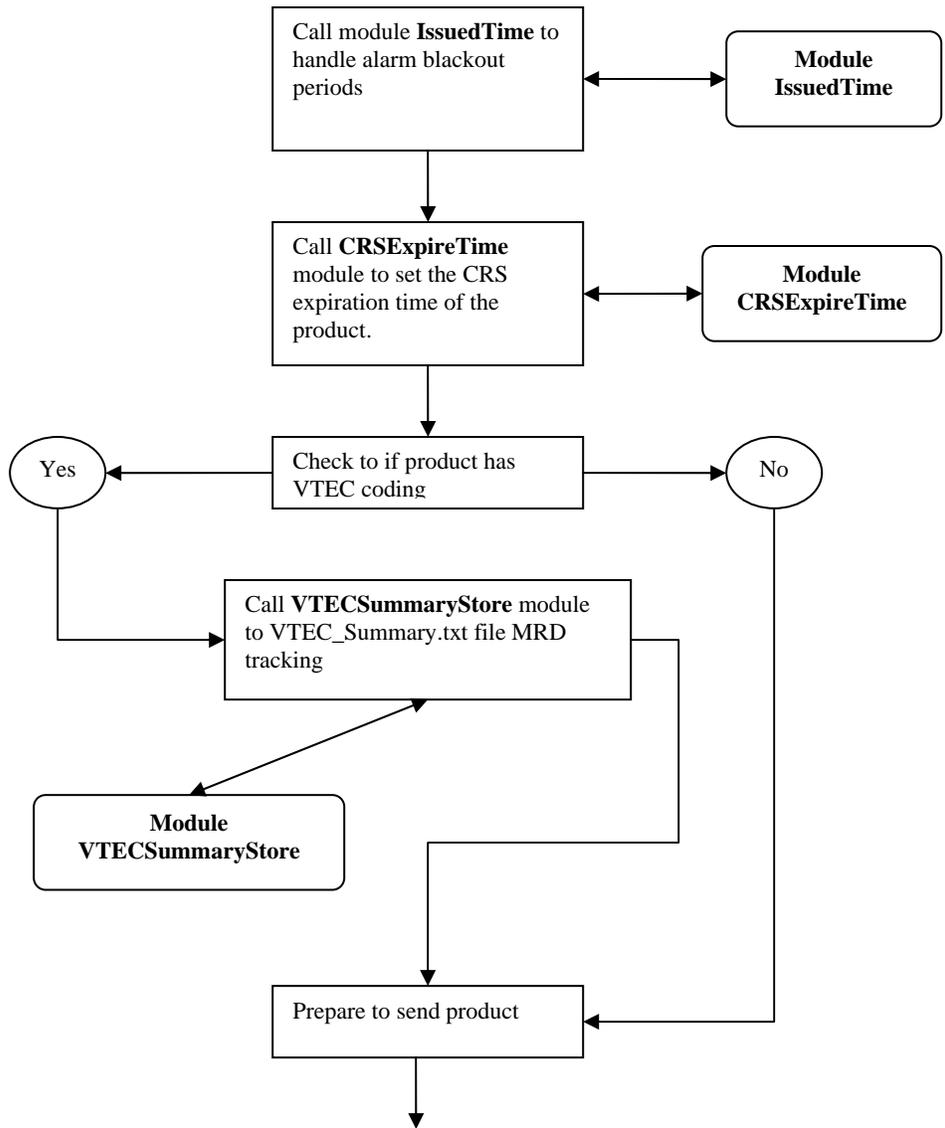
Additional Items

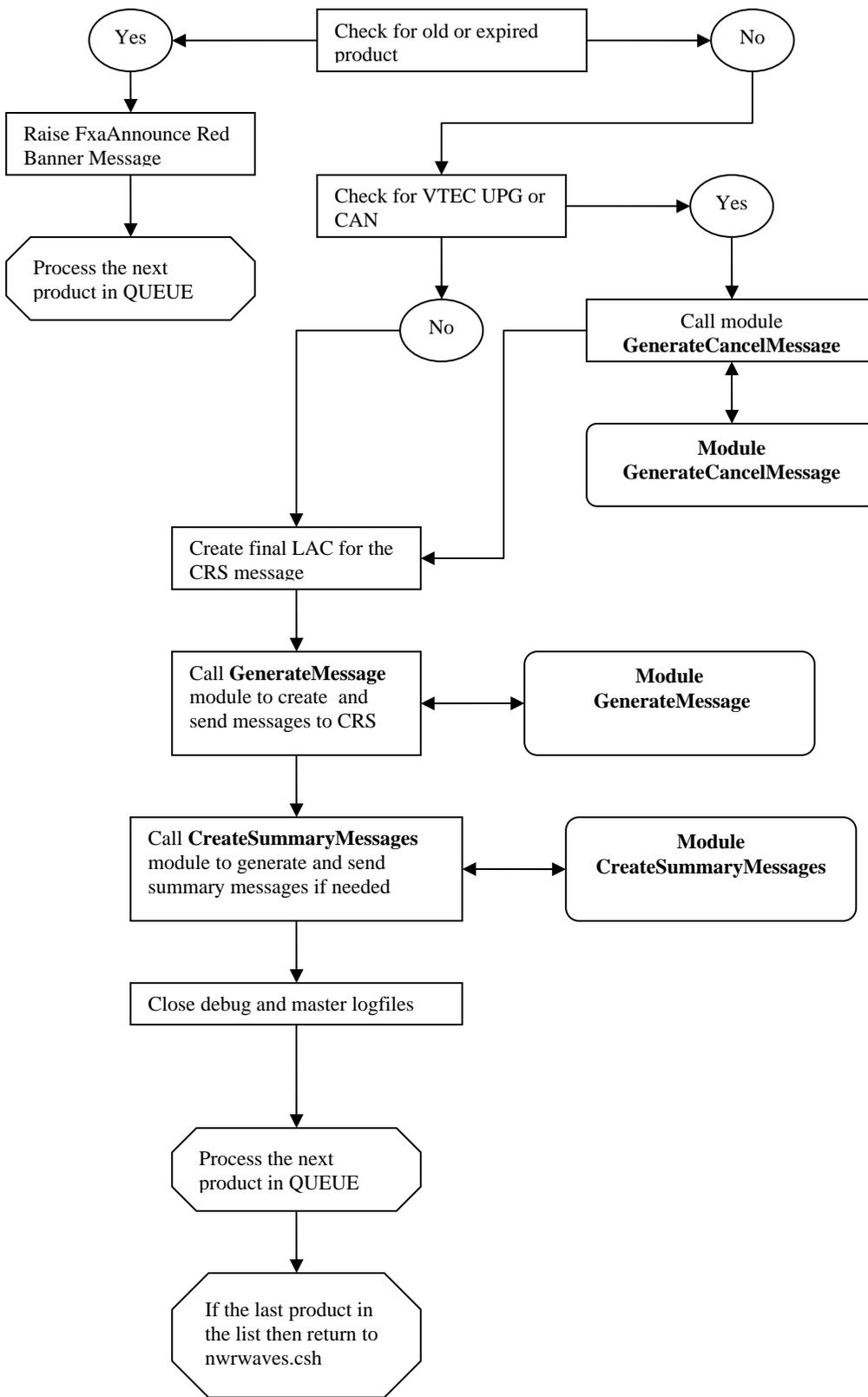
Checksumming – logged once on beginning processing	Yes	
Debug file tracing major processing points	Yes	
Retain full copy of resulting product	Yes	
On-line documentation to assist installation – Detailed “How To” Guide	Yes	
Logging – GMT stamped to the second line for each in//out/ erred, etc. product – min of one month storage	Yes	
Never send VTEC data to CRS – use for MRD generation, and identifying test products	Yes	
Blackout Period – time restrict SAME option	Yes	
Short “Getting Started” guide on how to set up NPG.	Yes	
Converting of CAFÉ config files or examples	No	Setup GUI program provides reasonable defaults that are easily customizable.
Use the native word replacement file used by CAFÉ (WordFile.txt) – or conversion utility	Yes	
Alarming capabilities configurable across all products with specialized interrupt/alarm formatting for products such as Non Weather Emergency Message, TCP and FFA.	Yes	No specialized capabilities at this time
Tabular data – handle both horizontal and vertical tables	No	
Automatic test time – need ability to automate testing by providing configurable time return – configure to actual GMT time return in the field and test a configurable time return	No	Need more specifics concerning how this should work.

Appendix C: NWRWAVES Module Flow Diagram

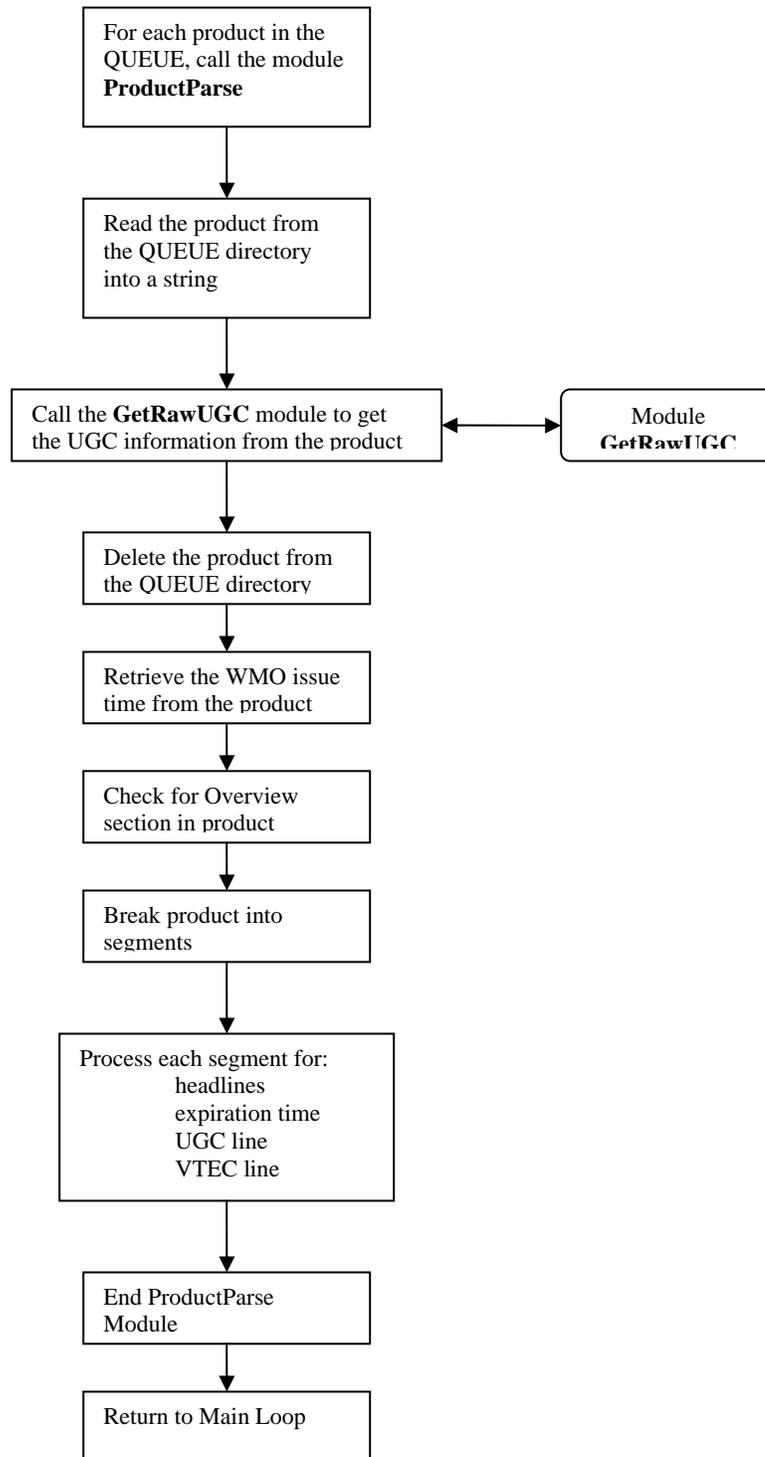




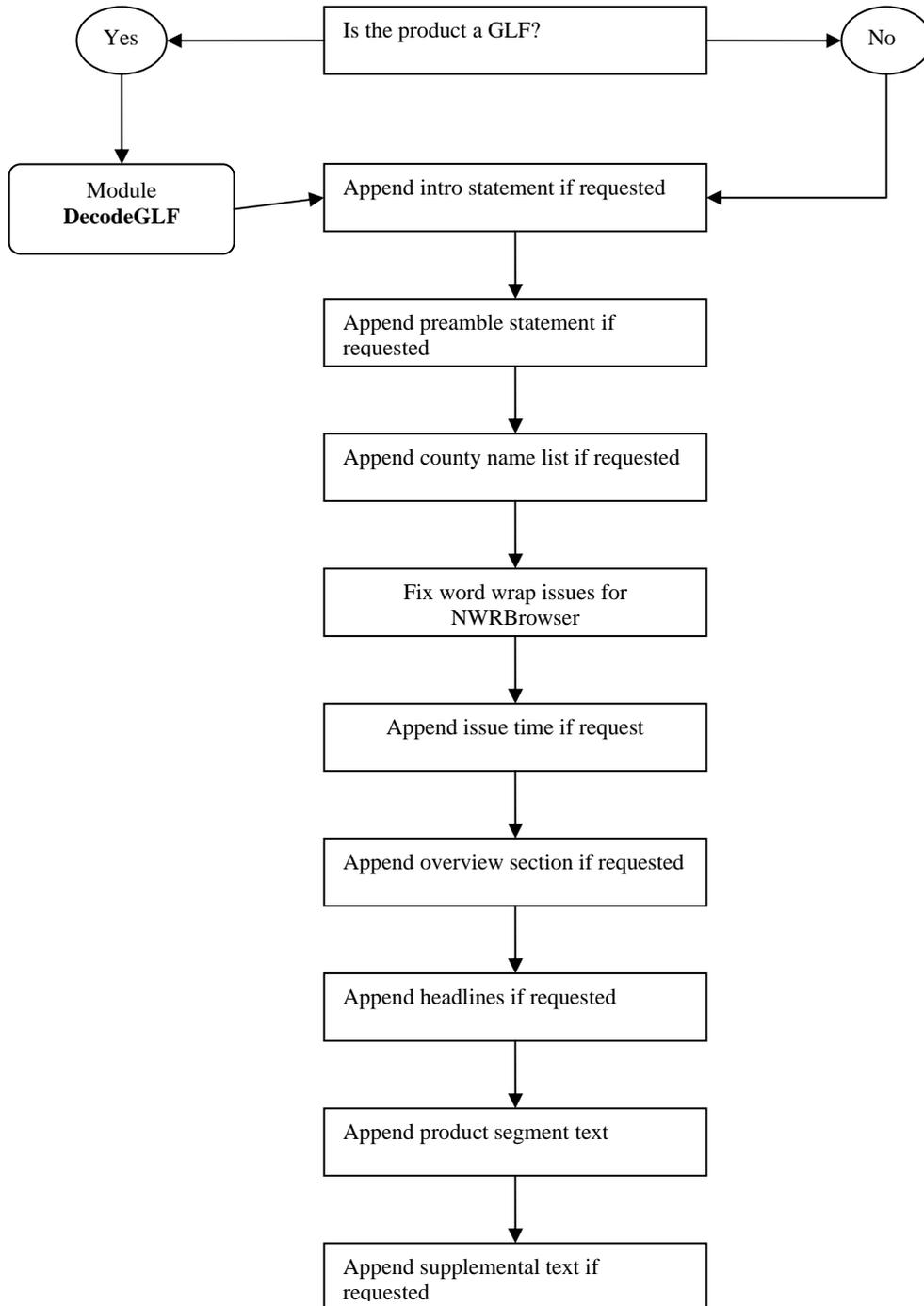


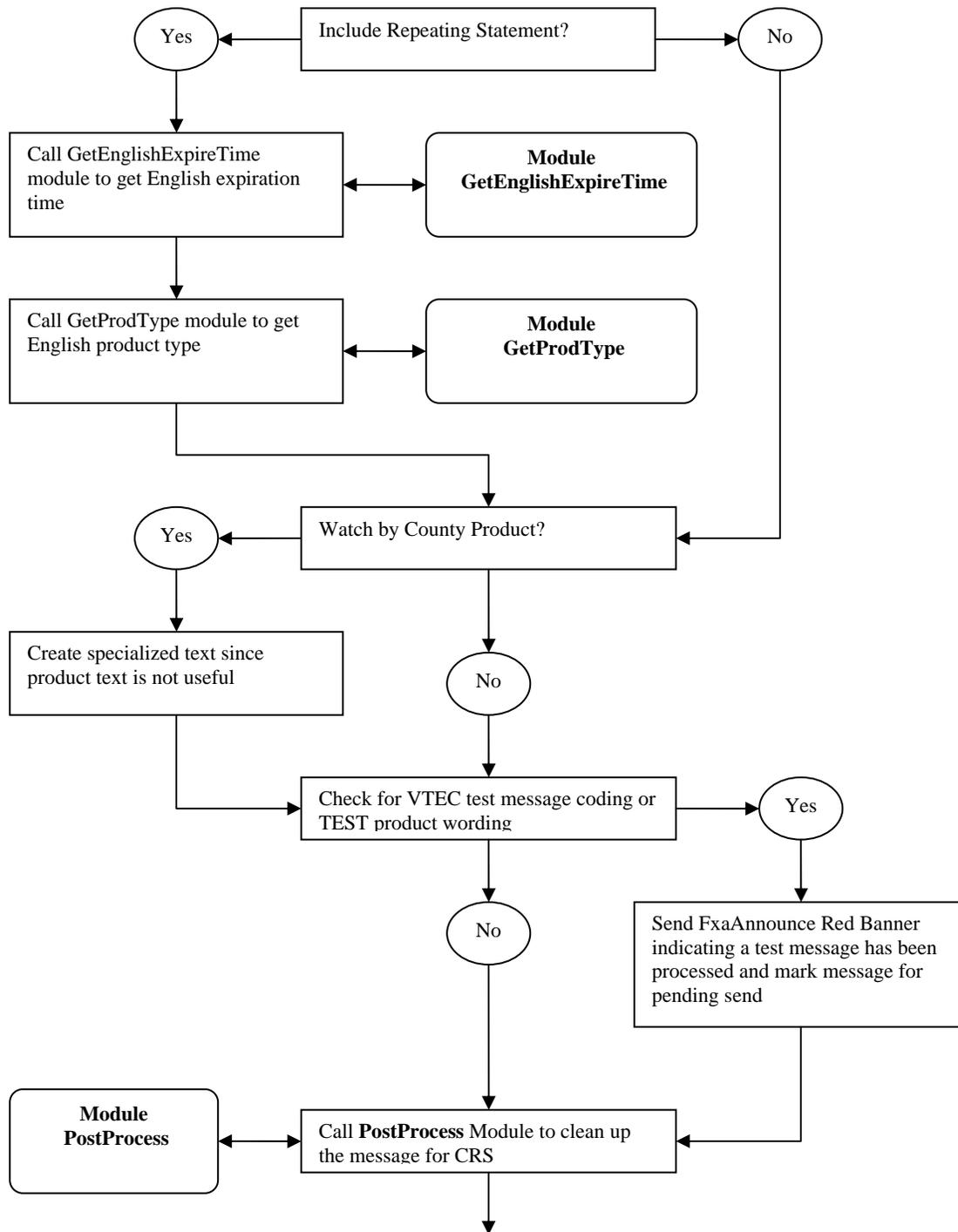


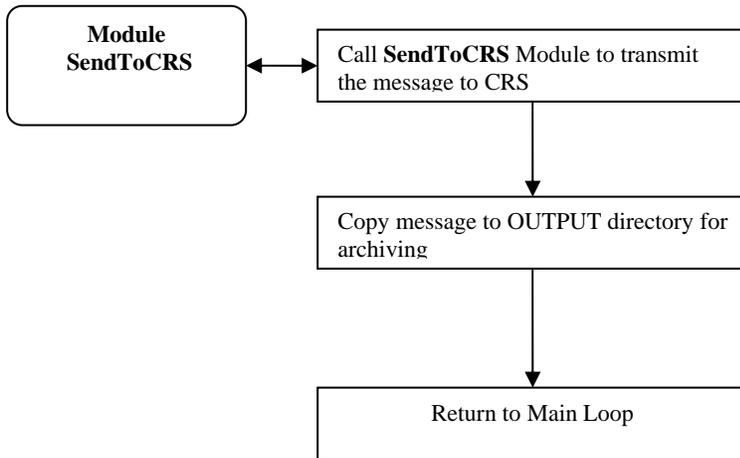
Flow Diagram for Module Product Parse



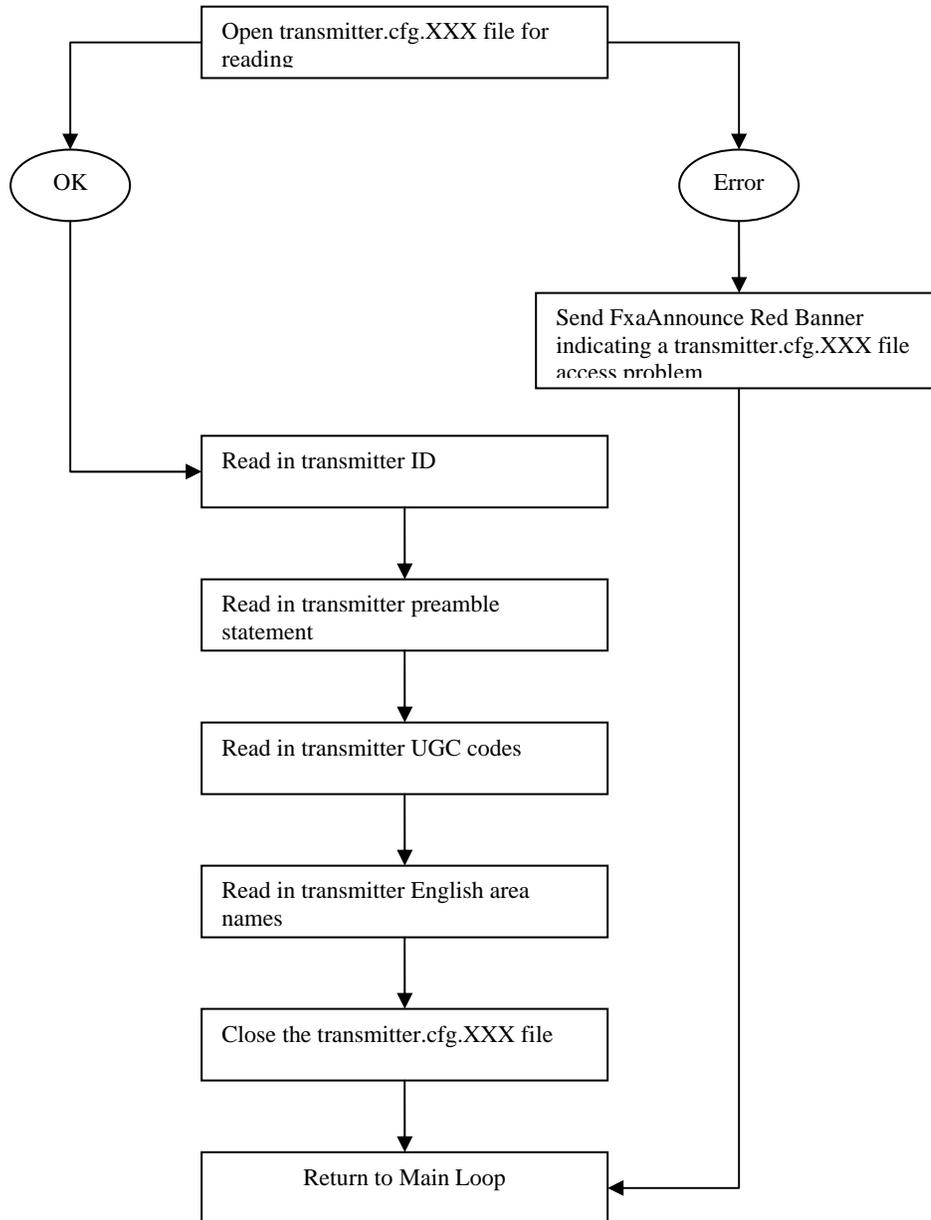
Flow Diagram for Module GenerateMessage



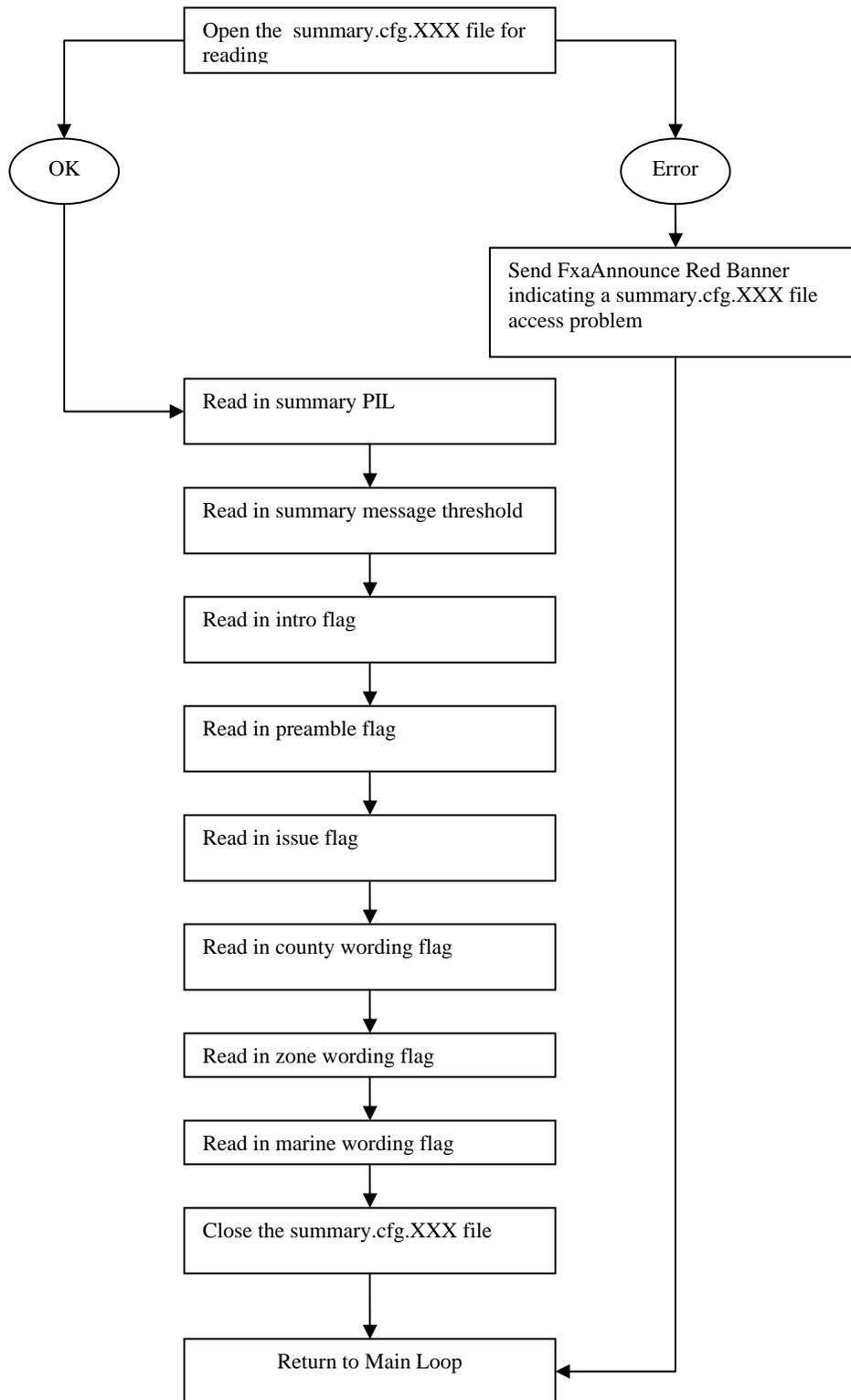




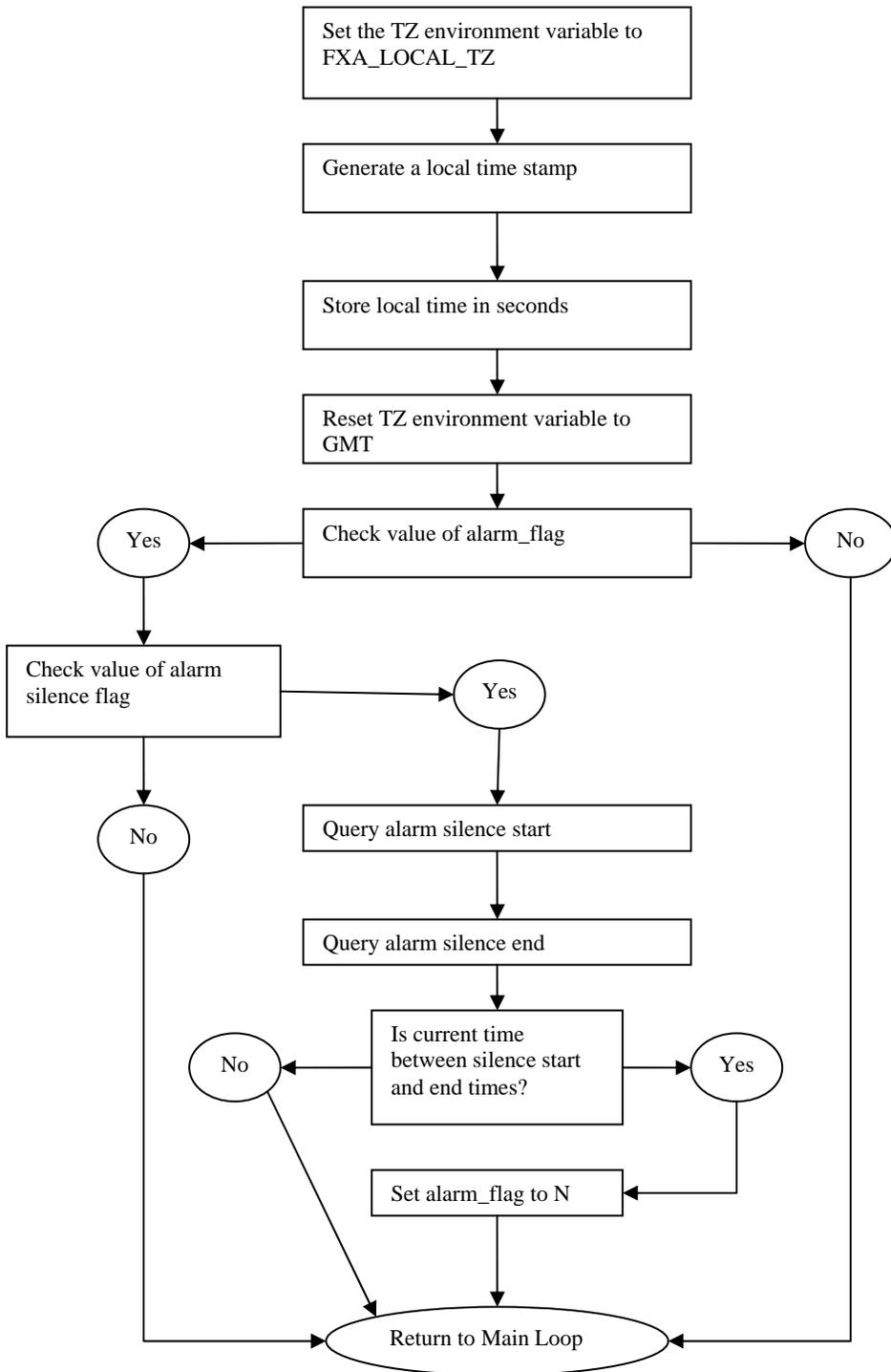
Flow Diagram for Module TransmitterConfig



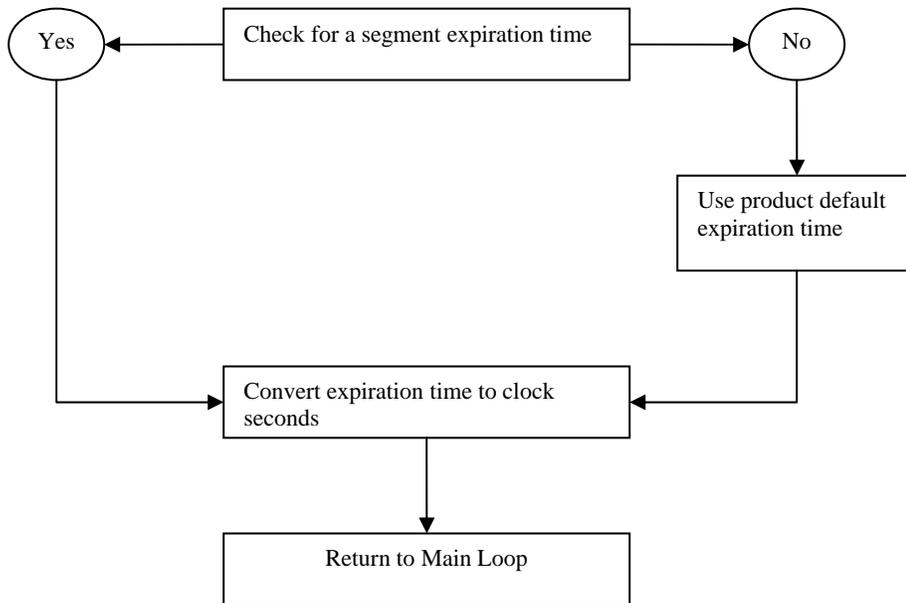
Flow Diagram for Module SummaryConfig



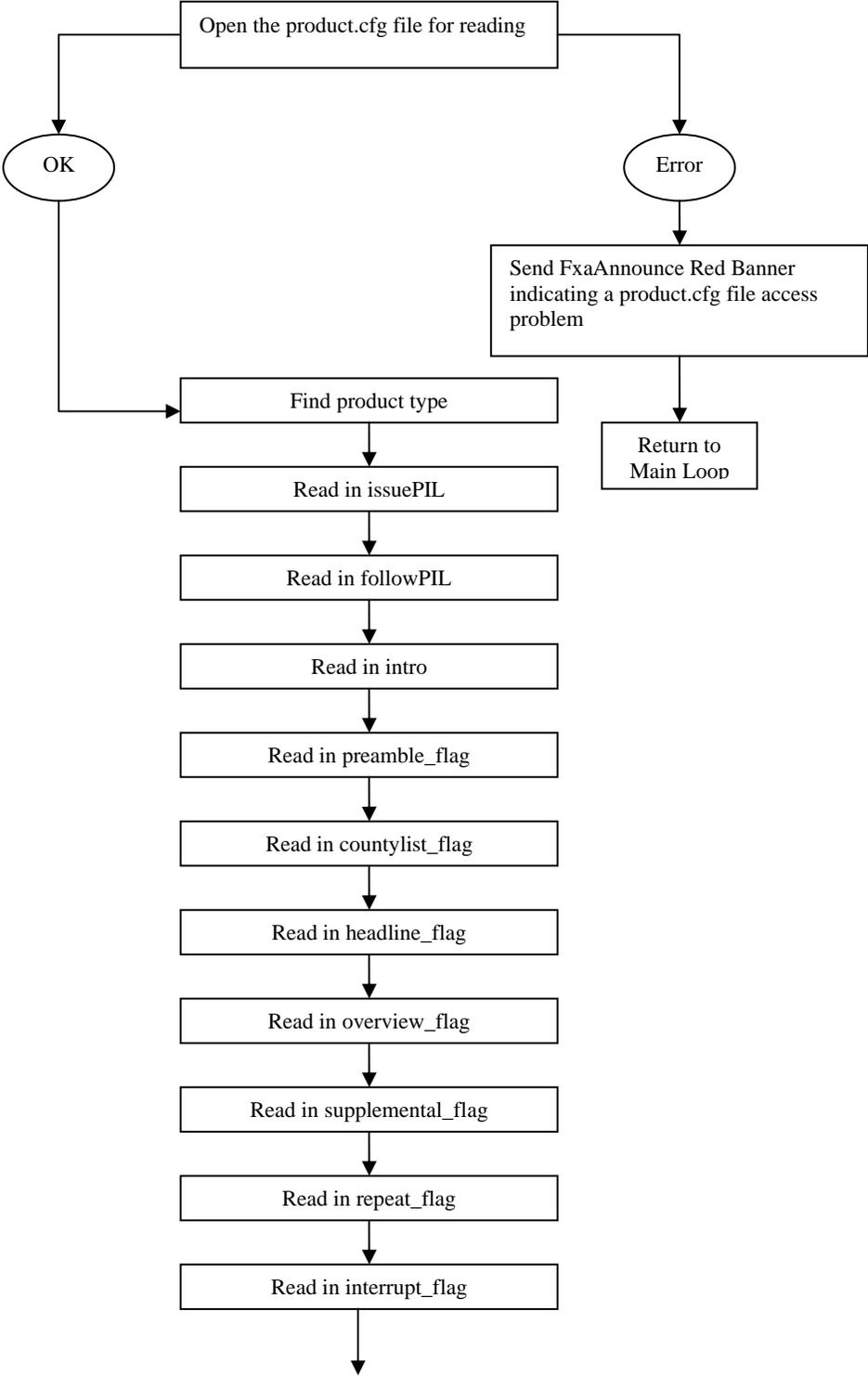
Flow Diagram for Module IssuedTime

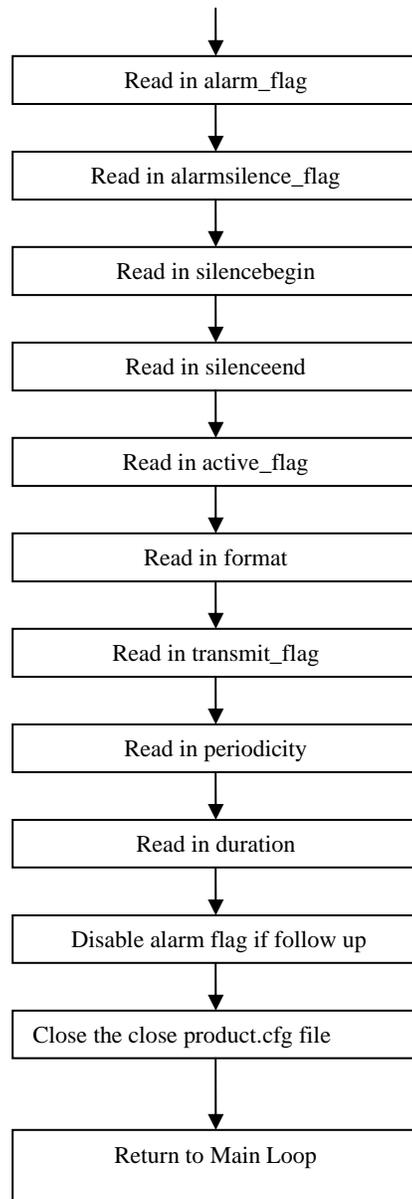


Flow Diagram for Module CRSExpireTime

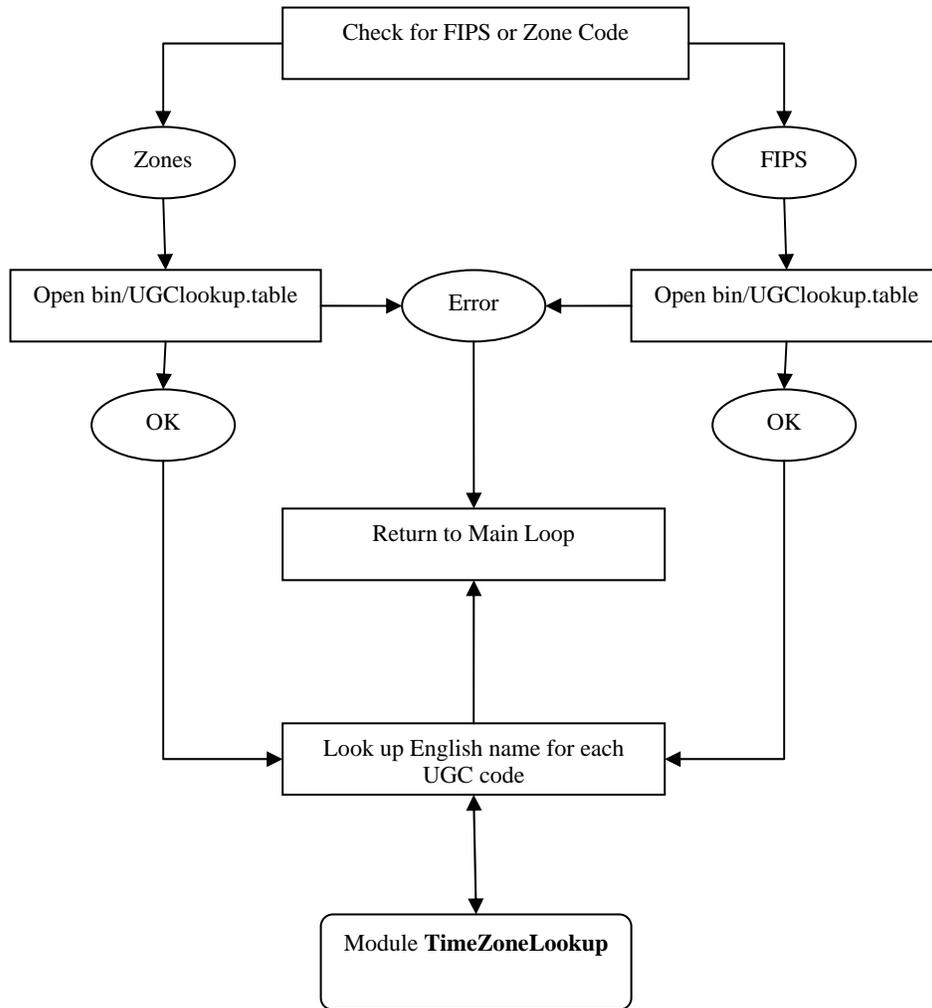


Flow Diagram for Module ProductConfig

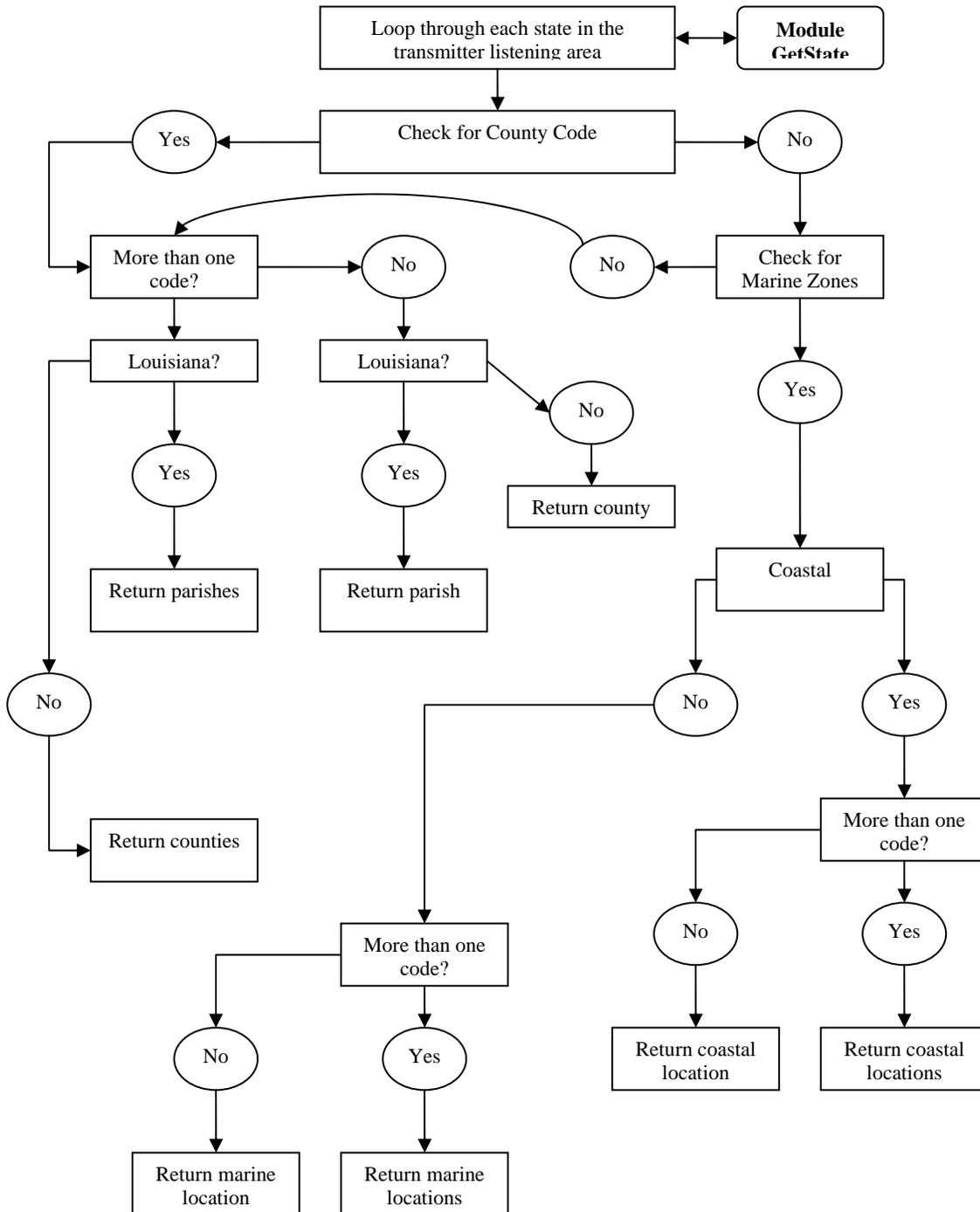




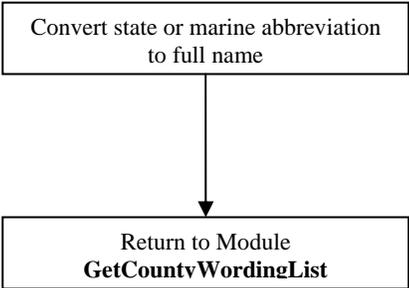
Flow Diagram for Module GetCountyZoneList



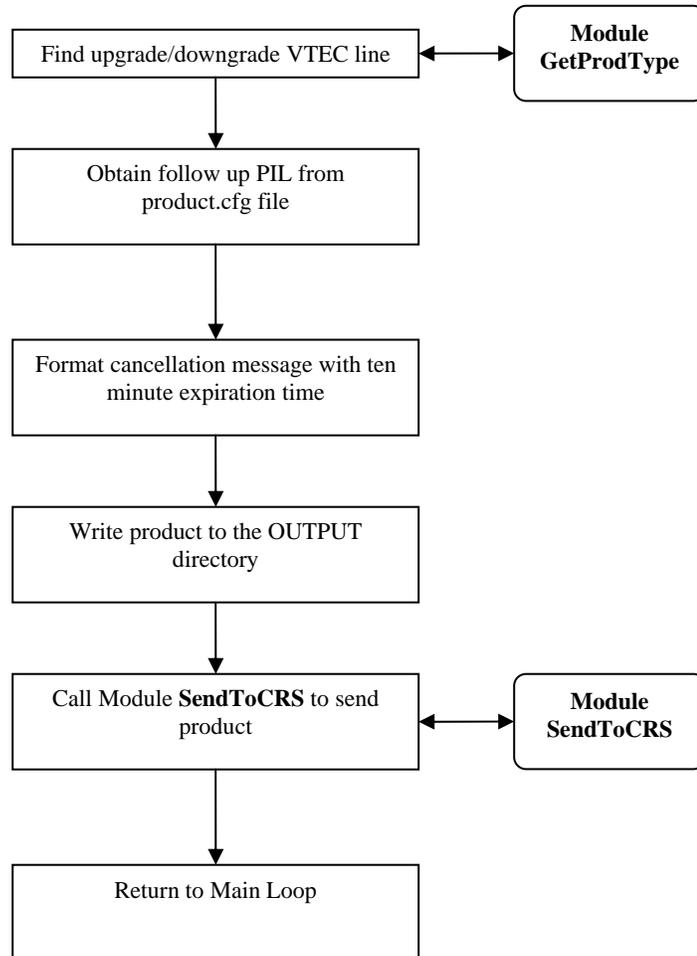
Flow Diagram for Module GetCountyListWording



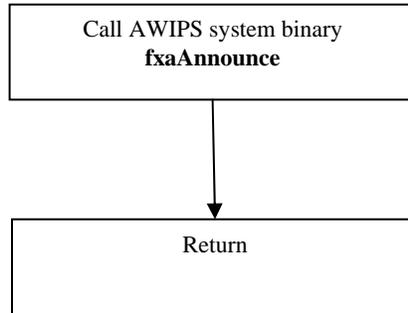
Flow Diagram for Module GetState



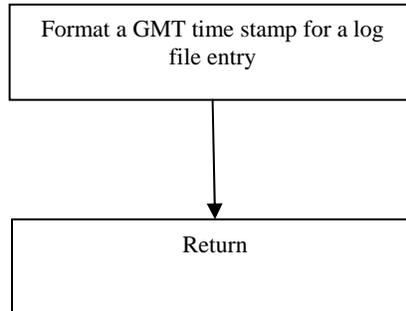
Flow Diagram for Module GenerateCancelMessage



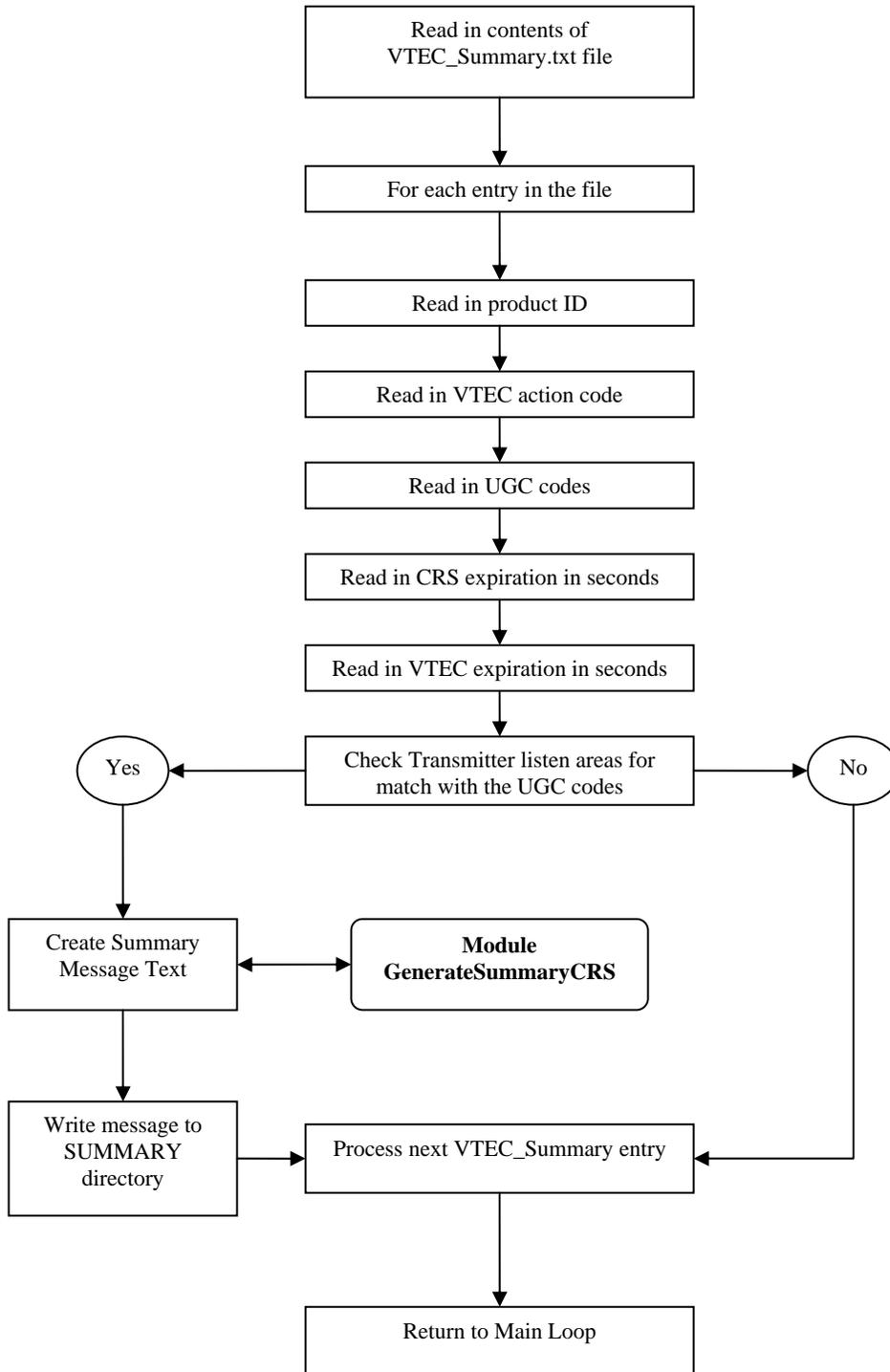
Flow Diagram for Module FxaAnnounce



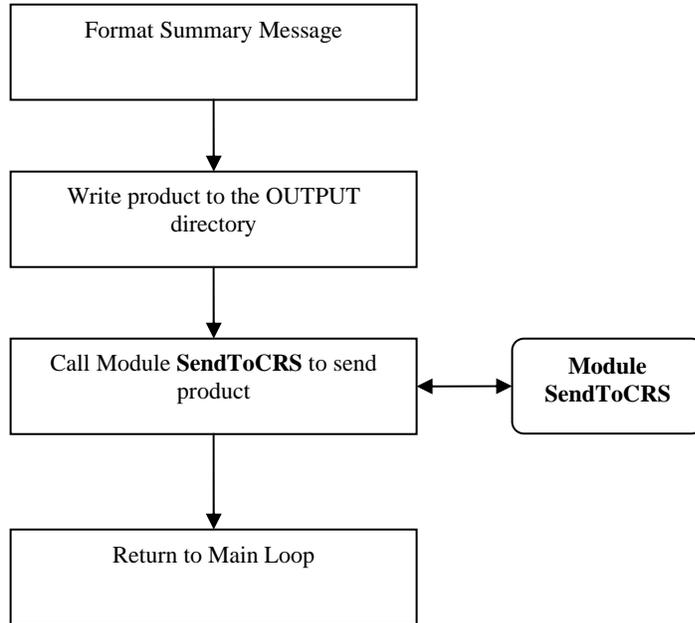
Flow Diagram for Module ClockTime



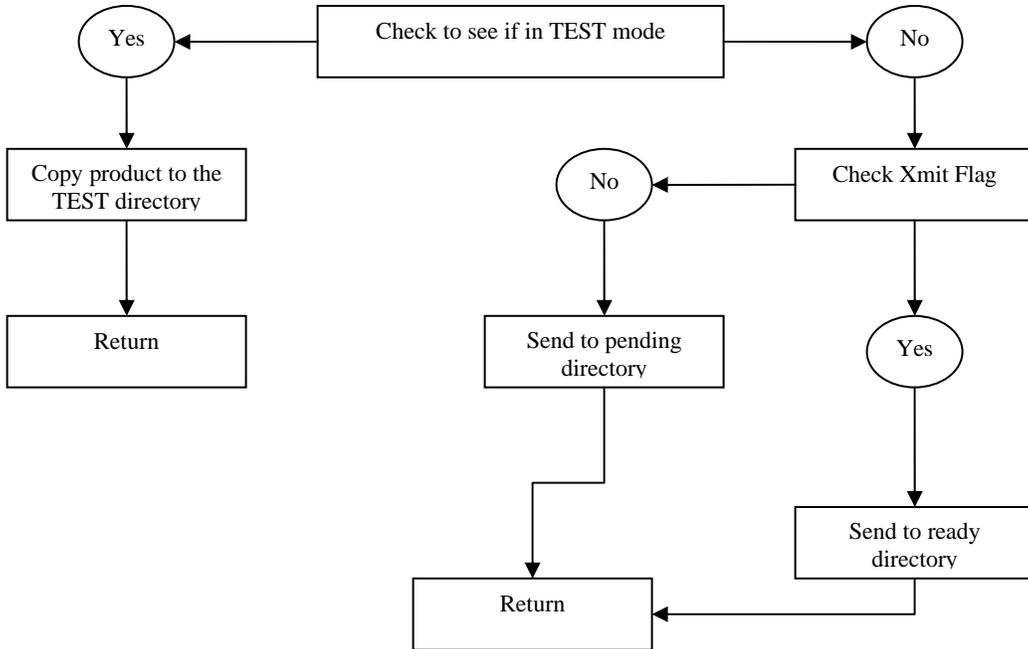
Flow Diagram for Module CreateSummaryMessage



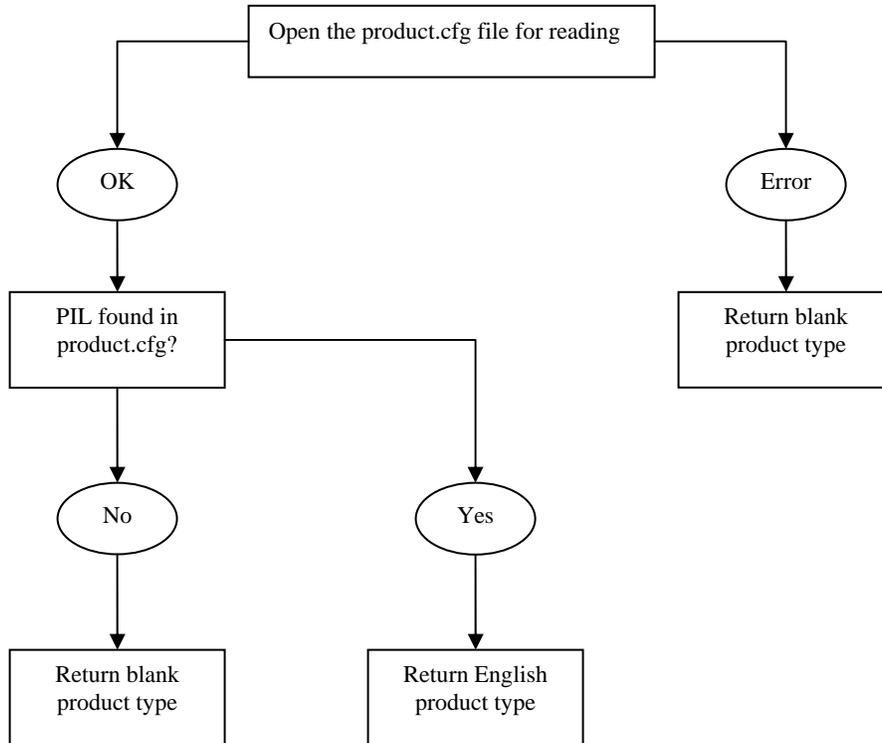
Flow Diagram for Module **GenerateSummaryCRS**



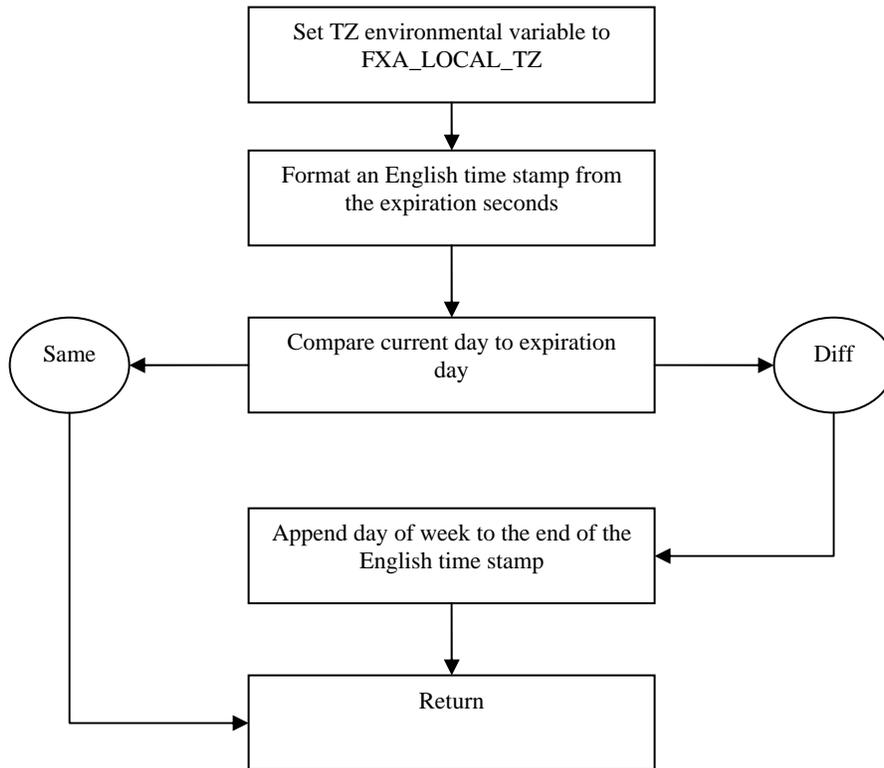
Flow Diagram for Module SendToCRS



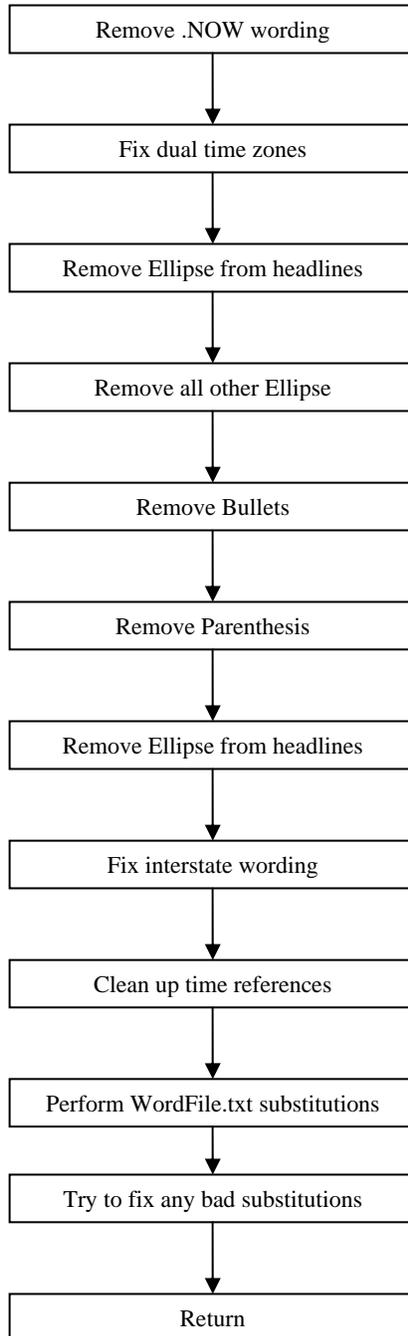
Flow Diagram for Module GetProdType



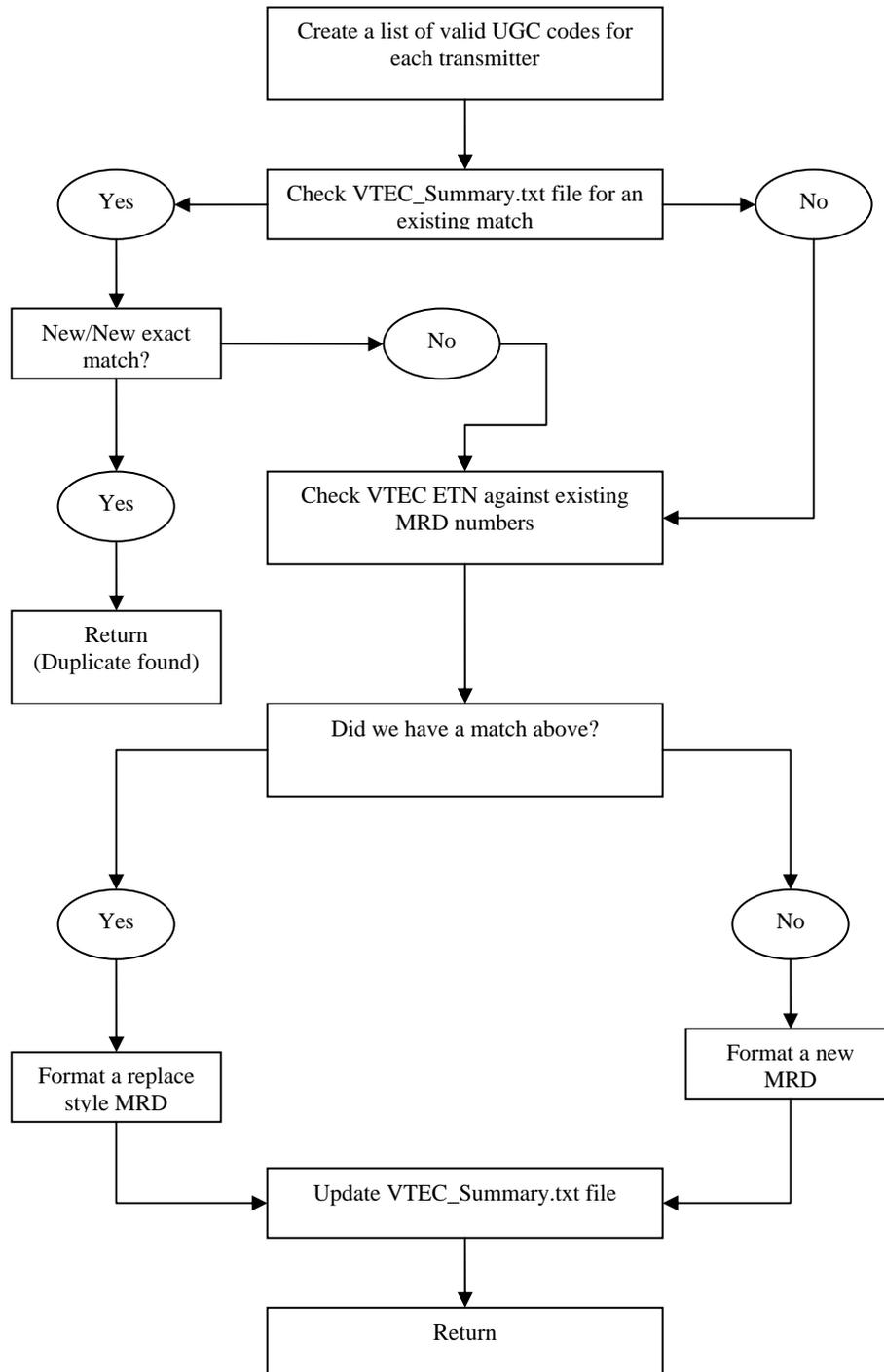
Flow Diagram for Module GetEnglishExpireTime



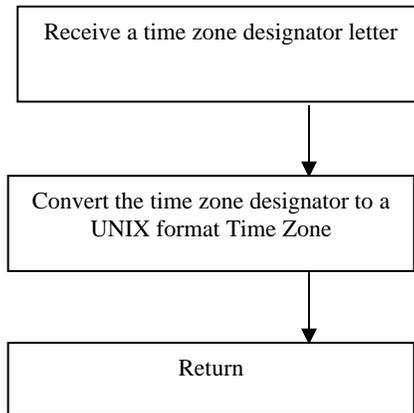
Flow Diagram for Module PostProcess



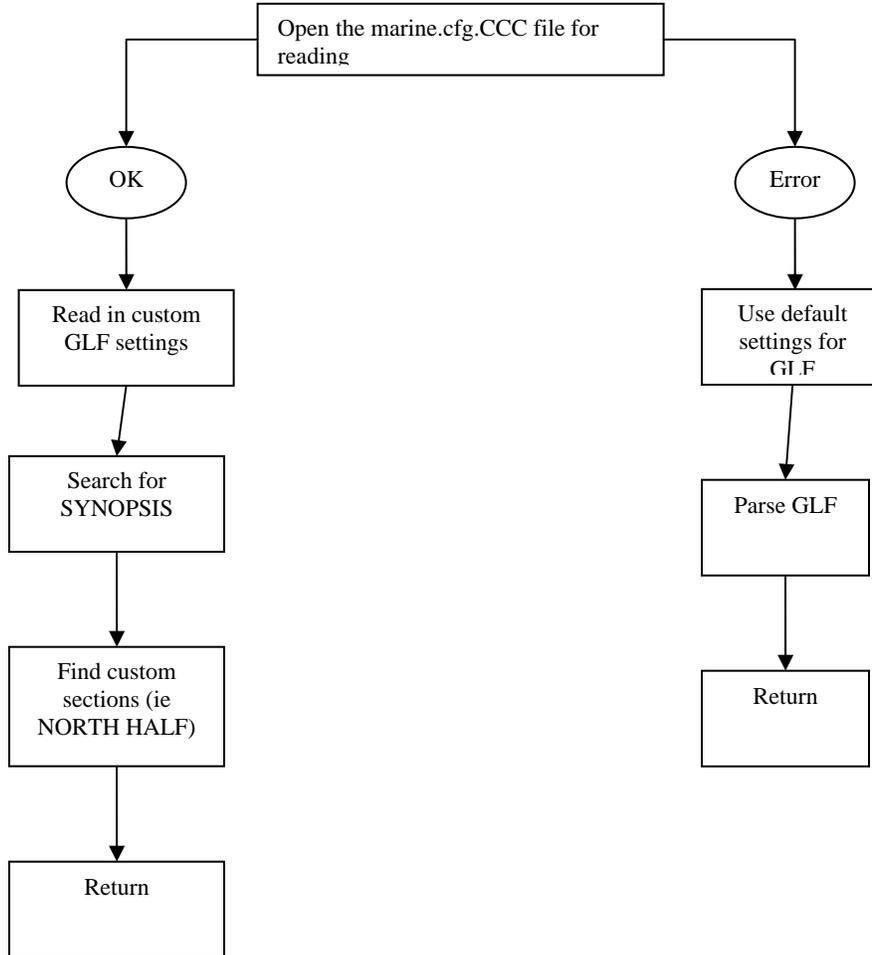
Flow Diagram for Module VTECSummaryStore



Flow Diagram for Module TimeZoneLookup



Flow Diagram for Module DecodeGLF



Appendix D: NWRWAVES Install Script

```
#!/bin/sh

# Script written to install NWRWAVES to a
# baseline location

# Script last modified 03/21/2006

RELEASE_ID=2.6
installDir="/awips/adapt/NWRWAVES"
installScriptDir=`pwd`

#
# Check to make sure the root user is running this script
#
USER=`whoami`
if [ "$USER" != "root" ]
then
    echo "This script can only be run as root."
    echo "Please change to the root user and re-run this script."
    exit
fi

echo ""
echo "`date` - Beginning NWRWAVES Install"
echo ""

#
# Check to make sure that installer is on DX1
#
DEVICE=`hostname`
SITE=`hostname | cut -d "-" -f2`

if [ "$DEVICE" != "dx1-${SITE}" ]
then
    echo "This script must be run from dx1-${SITE}."
    echo "This device is: ${DEVICE}"
    exit
fi

if [ "$SITE_TYPE" != "wfo" ]
then
    echo "You can only run this script at a WFO"
    exit
fi

#
# Check to make sure we are not upgrading a new version
#
if [ -f $installDir/NWRWAVES_RELEASE_ID ]
then
    CURRENT_RELEASE=`cat $installDir/NWRWAVES_RELEASE_ID`
    CHECK_VERSION=`expr $CURRENT_RELEASE \>= $RELEASE_ID`
```

```

    if [ $CHECK_VERSION -eq 1 ]
    then
        echo ""
        echo "The version of NWRWAVES you have (v $CURRENT_RELEASE) is the
same or more"
        echo "recent than the version (v $RELEASE_ID) so the install is
cancelled."
        echo ""
        echo "*** No change has been made to the site. ***"
        echo ""
        exit
    fi
fi

# Check to see if NWRWAVES is installed.
# If it is already installed, then offer
# either exit or move the current installation
# to a safe location:
#
# /awips/adapt/NWRWAVES-SAVED/NWRWAVES-MMDDYY-HHSS

timeStamp=`date +%m%d%Y-%H%M`
saveOffRoot="/awips/adapt/NWRWAVES-SAVED"
saveOffDir="$saveOffRoot/NWRWAVES-$timeStamp"

if [ -d $installDir ]
then
    echo "NWRWAVES is currently installed. If you choose to continue"
    echo "with the installation, your $installDir directory"
    echo "will be saved off to directory:"
    echo ""
    echo "    $saveOffDir"
    echo ""
    echo -n "Continue with the installation? (y/n) "
    read REPLY
    REPLY=`echo "$REPLY" | tr '[A-Z]' '[a-z]' | cut -c1`
    if [ "$REPLY" != y ]
    then
        echo ""
        echo "*** Installation has been ABORTED. No change has been made to
the site. ***"
        exit
    fi

    # Create saveOffRoot if it does not exist
    if [ ! -d $saveOffRoot ]
    then
        mkdir $saveOffRoot
        chown -R fxa:fxalpha $saveOffRoot
        chmod 775 $saveOffRoot
    fi
    # move current NWRWAVES to a safe location
    echo ""
    echo "Moving NWRWAVES to $saveOffDir...this may take a few minutes"
    mv $installDir $saveOffDir
    chown -R fxa:fxalpha $saveOffDir
fi

```

```

# Make the directory
echo ""
echo "Creating directory $installDir"
mkdir $installDir
echo ""

# Copy and extract the source files

echo "Installing NWRWAVES files"
echo ""
echo "extracting "
cp nwrwaves.tar.gz $installDir
cd $installDir
gunzip -c nwrwaves.tar.gz | tar xvf -
echo ""
echo "nwrwaves.tar.gz has been extracted"

# Set ownership and permissions

echo ""
echo "Setting file permissions"
chown -R fxa:fxalpha $installDir
chmod 775 $installDir
chmod -R o+w,o+r,g+w,g+r *
chmod 775 *.tcl
chmod 775 *.csh
cd $installDir/bin
chmod 775 *.tcl
cd $installDir/browser
chmod 775 *.tcl
chmod 644 admin.list
echo ""

# Delete the gzipped tar file
echo "removing nwrwaves.tar.gz source file"
cd $installDir
rm nwrwaves.tar.gz
echo ""

# Create Symlink to NWRWAVESBrowser

echo "Creating symlinks pointing NWRBrowser to the NWRWAVES Browser"

machines="$LX_WORKSTATIONS $XT_WORKSTATIONS $DX_SERVERS $PX_SERVERS"
for i in $machines
do
    echo "checking the NWRBrowser on $i"
    ssh $i "test -L /awips/fxa/bin/NWRBrowser"
    if [ $? -eq 1 ]
    then
        echo "Creating a link to the NWRWAVES browser on $i"
        ssh $i "mv /awips/fxa/bin/NWRBrowser /awips/fxa/bin/NWRBrowser.save"
        ssh $i "ln -s $installDir/browser/browser.tcl
/awips/fxa/bin/NWRBrowser"
    else
        echo "NWRWAVES Browser has already been installed...skipping"
    fi
done

```

```

        fi
done

# Restore previous configuration files if present

SITE_ID=`echo $SITE | tr "[:lower:]" "[:upper:]"`

if [ -d $saveOffDir ]
then
    echo ""
    echo "Restoring site configuration files"
    cd $saveOffDir
    if [ -f transmitter_cfg.$SITE_ID ]
    then
        cp -p transmitter_cfg.$SITE_ID $installDir
        echo "transmitter_cfg.$SITE_ID copied to $installDir"
    else
        echo "could not copy transmitter_cfg.$SITE_ID"
    fi
    if [ -f summary_cfg.$SITE_ID ]
    then
        cp -p summary_cfg.$SITE_ID $installDir
        echo "summary_cfg.$SITE_ID copied to $installDir"
    else
        echo "could not copy summary_cfg.$SITE_ID"
    fi
    if [ -f marine_cfg.$SITE_ID ]
    then
        cp -p marine_cfg.$SITE_ID $installDir
        echo "marine_cfg.$SITE_ID copied to $installDir"
    else
        echo "could not copy marine_cfg.$SITE_ID"
    fi
    if [ -f product.cfg ]
    then
        cp -p product.cfg $installDir
        echo "product.cfg copied to $installDir"
    else
        echo "could not copy product.cfg"
    fi
    cd $saveOffDir/browser
    if [ -f admin.list ]
    then
        cp -p admin.list $installDir/browser
        echo "admin.list copied to $installDir/browser"
    else
        echo "could not copy admin.list"
    fi
    if [ -f pils.list ]
    then
        cp -p pils.list $installDir/browser
        echo "pils.list copied to $installDir/browser"
    else
        echo "could not copy pils.list"
    fi
    cd $saveOffDir/bin
    if [ -f WordFile.txt ]

```

```

then
    cp -p WordFile.txt $installDir/bin
    echo "WordFile.txt copied to $installDir/bin"
else
    echo "could not copy WordFile.txt"
fi
if [ -f WordFile_SPN.txt ]
then
    cp -p WordFile_SPN.txt $installDir/bin
    echo "WordFile_SPN.txt copied to $installDir/bin"
else
    echo "could not copy WordFile_SPN.txt"
fi
if [ -f localUGCllookup.table ]
then
    cp -p localUGCllookup.table $installDir/bin
    echo "localUGCllookup.table copied to $installDir/bin"
else
    echo "no localUGCllookup.table to copy"
fi

# Move back LOGS, INPUT, OUTPUT, DEBUG
# from the SaveOff directory back into the
# install directory

cd $saveOffDir
if [ -d LOGS ]
then
    rm -rf $installDir/LOGS
    mv -f LOGS $installDir
    echo "LOGS directory moved to $installDir"
else
    echo "could not move LOGS directory"
fi
if [ -d INPUT ]
then
    rm -rf $installDir/INPUT
    mv -f INPUT $installDir
    echo "INPUT directory moved to $installDir"
else
    echo "could not move INPUT directory"
fi
if [ -d OUTPUT ]
then
    rm -rf $installDir/OUTPUT
    mv -f OUTPUT $installDir
    echo "OUTPUT directory moved to $installDir"
else
    echo "could not move OUTPUT directory"
fi
if [ -d DEBUG ]
then
    rm -rf $installDir/DEBUG
    mv -f DEBUG $installDir
    echo "DEBUG directory moved to $installDir"
else
    echo "could not move DEBUG directory"

```

```

fi
if [ -d BACKUP ]
then
    rm -rf $installDir/BACKUP
    mv -f BACKUP $installDir
    echo "BACKUP directory moved to $installDir"
else
    echo "could not move BACKUP directory"
fi
if [ -d SUMMARY ]
then
    rm -rf $installDir/SUMMARY
    mv -f SUMMARY $installDir
    echo "SUMMARY directory moved to $installDir"
else
    echo "could not move SUMMARY directory"
fi

chown -R fxa:fxalpha $installDir
echo "Removing saved of TEST directory $saveOffDir/TEST"
rm -rf $saveOffDir/TEST

# Leave behind the ERROR QUEUE directories

fi

# Create a known directory in event the installation needs to be
# removed and the previous version needs to be restored

if [ -d $saveOffRoot ]
then
    deinstallRoot="/awips/adapt/NWRWAVES-v24"
    echo "Creating de-install directory for NWRWAVES...this may take a few
minutes"
    cp -R $saveOffDir $deinstallRoot
    chown -R fxa:fxalpha $deinstallRoot
fi

# Run the script to upgrade the product.cfg file from
# v2.4 format to v2.5 format
if [ -f $installScriptDir/updateProductCFG ]
then
    echo ""
    echo "Starting sub script $installScriptDir/updateProductCFG"
    echo "for product.cfg conversion"
    chmod 755 $installScriptDir/updateProductCFG
    $installScriptDir/updateProductCFG
    chmod 664 $installDir/product.cfg
    chmod 664 $installDir/product.cfg.V2.4
    chown fxa:fxalpha $installDir/product.cfg
    chown fxa:fxalpha $installDir/product.cfg.V2.4
    echo ""
    echo "Sub script $installScriptDir/updateProductCFG complete"
    echo ""
else
    echo ""
    echo "Could not locate updaeProductCFG script"

```

```
        echo "Contact the NWRWAVES Support Team"
        echo ""
fi

echo "Setting NWRWAVES_RELEASE_ID"
echo $RELEASE_ID > $installDir/NWRWAVES_RELEASE_ID
chmod 664 $installDir/NWRWAVES_RELEASE_ID
chown fxa:fxalpha $installDir/NWRWAVES_RELEASE_ID

echo ""
echo "`date`"
echo "*** Installation of NWRWAVES is Complete ***"
echo ""
echo ""

exit
```

Appendix E: Default product.cfg Configuration file

```
# PRODUCT CONFIGURATION FILE FOR NWRWAVES. DO NOT HAND EDIT THIS FILE OR YOU WILL BE TERMINATED
AF.Y - Ashfall Advisory,AFY,AFY,,N,N,N,Y,Y,Y,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
AS.Y - Air Stagnation Advisory,NPW,NPW,,N,N,N,Y,Y,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
AVA - Avalanche Watch,AVA,AVA,,N,N,N,Y,Y,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
AVW - Avalanche Warning,AVW,AVW,,N,N,N,Y,Y,N,N,N, ,NNNNNNNNN,I,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
BS.Y - Blowing Snow Advisory,WSY,WSY,THE FOLLOWING IS A BLOWING SNOW ADVISORY,N,Y,N,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
BW.Y - Brisk Wind Advisory,BWY,BWY,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
BZ.A - Blizzard Watch,BZA,BZA,THE FOLLOWING IS A BLIZZARD WATCH,N,Y,N,N,N,N,Y,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,15,480,M,Y,N,,N
BZ.W - Blizzard Warning,BZW,BZW,THE FOLLOWING IS A BLIZZARD WARNING,N,Y,N,N,N,N,Y,Y,I,ANNANANAN,I,ANNANANAN,N,, ,C,Y,,360,M,Y,N,,N
CAE - Child Abduction Emergency,CAE,CAE,,N,N,Y,Y,N,N,N,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
CDW - Civil Danger Warning,CEM,CEM,,N,N,Y,Y,N,N,N,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
CEM - Civil Emergency Message,CEM,CEM,,N,N,Y,Y,N,N,N,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
CF.A - Coastal Flood Watch,CFA,CFA,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
CF.S - Coastal Flood Statement,CFS,CFS,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
CF.W - Coastal Flood Warning,CFW,CFW,,N,N,N,Y,N,N,N,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
CF.Y - Coastal Flood Advisory,CFY,CFY,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
CWF - Coastal Waters Forecast,CWF,CWF,Your NOAA National Weather Service Forecast,N,N,N,Y,N,N,N,N, ,NNNNNNNNN,
,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
DS.W - Dust Storm Warning,NPW,NPW,,N,N,N,Y,Y,N,Y,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,Y,,360,M,Y,N,,N
DU.Y - Blowing Dust Advisory,NPW,NPW,,N,N,N,Y,Y,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
EC.A - Extreme Cold Watch,NPW,NPW,,N,N,N,Y,Y,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
EC.W - Extreme Cold Warning,NPW,NPW,,N,N,N,N,N,N,N,N,I,NNNNNNNNN,I,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
EH.A - Excessive Heat Watch,NPW,NPW,THE FOLLOWING IS A HEAT WATCH,N,Y,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
EH.W - Excessive Heat Warning,NPW,NPW,THE FOLLOWING IS AN EXCESSIVE HEAT WARNING,N,Y,N,N,N,N,N,N,I,NNNNNNNNN,I,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
EQW - Earthquake Warning,CEM,CEM,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
EVI - Evacuation Immediate,CEM,CEM,,N,N,Y,Y,N,N,N,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,360,M,Y,N,,N
FA.A - Flood Watch,FFA,FFA,,N,N,N,Y,N,N,Y,N, ,NNNNNNNNN, ,NNNNNNNNN,N,12:00 AM,06:00 AM,C,Y,15,360,M,Y,N,,N
FA.W - Areal Flood Warning,FLW,FLW,,N,N,N,Y,N,N,Y,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,Y,,360,M,Y,N,,N
FA.Y - Flood Advisory,FLS,FLS,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FF.A - Flash Flood Watch,FFA,FFA,,N,N,N,Y,N,N,Y,N, ,NNNNNNNNN, ,NNNNNNNNN,N,12:00 AM,06:00 AM,C,Y,15,360,M,Y,N,,N
FF.W - Flash Flood Warning,FFW,FFS,,N,N,N,Y,N,N,Y,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,Y,,30,M,Y,N,,N
FFA - Flood Watch,FFA,FFA,,N,N,N,Y,Y,N,Y,N, ,NNNNNNANAN, ,ANNANANAN,N,12:00 AM,06:00 AM,C,Y,,360,M,Y,N,,N
FFS - Flash Flood Statement,FFS,FFS,,N,N,N,Y,N,N,Y,N,I,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,10,120,M,Y,N,,N
FFW - Flash Flood Warning,FFW,FFS,,N,N,N,Y,N,N,Y,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,Y,,180,M,Y,N,,N
FG.Y - Dense Fog Advisory,NPW,NPW,THE FOLLOWING IS A DENSE FOG ADVISORY,N,Y,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FL.A - River Flood Watch,FFA,FFA,,N,N,N,Y,N,N,Y,N, ,NNNNNNNNN, ,NNNNNNNNN,N,12:00 AM,06:00 AM,C,Y,15,360,M,Y,N,,N
FL.W - River Flood Warning,FLW,FLW,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,30,A,Y,N,,N
FL.Y - River Flood Advisory,FLS,FLS,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,12:00 AM,C,N,,30,A,N,N,,N
FLS - Flood Statement,FLS,FLS,,N,N,N,Y,Y,N,N,N, ,NNNNANANAN, ,NNNNANANAN,N,12:00 AM,06:00 AM,C,N,,360,M,Y,N,,N
FLW - Flood Warning,FLW,FLS,,N,N,N,Y,N,N,N,N, ,NNNNANANAN, ,NNNNANANAN,N,12:00 AM,06:00 AM,C,N,,360,M,Y,N,,N
FR.Y - Frost Advisory,NPW,NPW,THE FOLLOWING IS A FROST ADVISORY,N,Y,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FRW - Fire Warning,FRW,FRW,,N,N,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FW.A - Fire Weather Watch,FWA,FWA,,N,N,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FW.W - Red Flag Warning,FWW,FWW,,N,N,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FZ.A - Freeze Watch,NPW,NPW,THE FOLLOWING IS A FREEZE WATCH,N,Y,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
FZ.W - Freeze Warning,NPW,NPW,THE FOLLOWING IS A FREEZE WARNING,N,Y,N,N,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,Y,,360,M,Y,N,,N
GL.F - Great Lakes Forecast,GLF,GLF,Your NOAA National Weather Service Forecast,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
GL.W - Gale Warning,GLW,GLW,,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
GLF - Great Lakes Forecast,GLF,GLF,Your NOAA National Weather Service Forecast,N,N,N,Y,N,N,N,N, ,NNNNNNNNN, ,NNNNNNNNN,N,, ,C,N,,360,M,Y,N,,N
HF.W - Hurricane Force Wind Warning,HUW,HUW,,N,N,N,Y,Y,N,Y,N,I,ANNANANAN,I,ANNANANAN,N,, ,C,N,,480,M,Y,N,,N
```

HI.A - Inland Hurricane Watch,HUA,HUA,,N,N,N,Y,Y,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HI.W - Inland Hurricane Warning,HUW,HUW,,N,N,N,Y,Y,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HLS - Hurricane Local Statement,HLS,HLS,,N,N,N,Y,Y,N,N,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HMW - Hazardous Materials Warning,CEM,CEM,,N,N,N,Y,Y,N,N,N,I,ANNNNNNNN,I,ANNNNNNNN,N,,C,N,,360,M,Y,N,,N
 HS.W - Heavy Snow Warning,WSW,WSW,,N,Y,N,Y,Y,N,N,N,I,NNNNNNNNN,,NNNNNNNNN,Y,10:00 PM,07:00 AM,C,Y,,360,M,Y,N,,N
 HT.Y - Heat Advisory,NPW,NPW,,N,Y,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 HU.A - Hurricane Watch,HUA,HUA,,N,N,N,Y,Y,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HU.S - Hurricane Local Statement,HLS,HLS,,N,N,N,Y,Y,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HU.W - Hurricane Warning,HUW,HUW,,N,N,N,Y,Y,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,N,,480,M,Y,N,,N
 HW.A - High Wind Watch,NPW,NPW,THE FOLLOWING IS A HIGH WIND WATCH,N,Y,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 HW.W - High Wind Warning,HWW,HWW,THE FOLLOWING IS A HIGH WIND WARNING,N,Y,N,N,N,N,Y,N,I,ANNNNANAN,I,ANNNNANAN,N,,C,Y,,360,M,Y,N,,N
 HWO - Hazardous Weather Outlook,HWO,HWO,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,15,240,A,Y,N,,N
 HY.S - Hydrologic Statement,ESF,ESF,,N,N,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 HZ.W - Hard Freeze Warning,NPW,NPW,,N,Y,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 IP.W - Sleet Warning,WSW,WSW,,N,Y,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,12:00 AM,06:00 AM,C,Y,,360,M,Y,N,,N
 IP.Y - Sleet Advisory,IPY,IPY,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 IS.W - Ice Storm Warning,WSW,WSW,THE FOLLOWING IS AN ICE STORM WARNING,N,Y,N,N,N,N,Y,N,I,NNNNNNNNN,I,NNNNNNNNN,Y,10:00 PM,07:00 AM,C,Y,,360,M,Y,N,,N
 LAE - Local Area Emergency,CEM,CEM,,N,N,N,Y,Y,N,N,N,I,ANNNNNNNN,I,ANNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LB.Y - Lake Effect Snow and Blowing Snow Advisory,LBY,LBY,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LE.A - Lake Effect Snow Watch,LEA,LEA,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LE.W - Lake Effect Snow Warning,LEW,LEW,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LE.Y - Lake Effect Snow Advisory,LEY,LEY,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LEW - Law Enforcement Warning,CEM,CEM,,N,N,N,Y,Y,N,N,N,I,ANNNNNNNN,I,ANNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LKE - Lake Stages,LKE,LKE,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,10,120,M,Y,N,,N
 LO.Y - Low Water Advisory,LOW,LOW,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LS.A - Lakeshore Flood Watch,LSA,LSA,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LS.S - Lakeshore Flood Watch,LSS,LSS,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LS.W - Lakeshore Flood Warning,LSW,LSW,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LS.Y - Lakeshore Flood Advisory,LSY,LSY,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 LW.Y - Lake Wind Advisory,LWY,LWY,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 MA.F - Marine Forecast,MAF,MAF,Now here is your NOAA National Weather Service Forecast,N,N,N,N,N,N,N,N,,NNNNNNNNN,
 ,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 MA.S - Marine Weather Statement,MAS,MAS,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 MA.W - Special Marine Warning,SMW,MWS,,N,N,N,N,N,N,N,N,I,ANNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 MWS - Marine Weather Statement,MWS,MWS,,N,N,N,N,N,N,N,N,I,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 NOW - Nowcast,NOW,NOW,NOW HERE IS THE SHORT TERM FORECAST,N,Y,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,60,M,Y,N,,N
 NPW - Non Precipitation Statement,NPW,NPW,,N,N,N,Y,Y,Y,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 NSH - Nearshore Marine Statement,NSH,NSH,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 NUW - Nuclear Power Plant Warning,CEM,CEM,,N,N,N,Y,Y,N,N,N,I,ANNNNNNNN,I,ANNNNNNNN,N,,C,N,,360,M,Y,N,,N
 OFF - Offshore Forecast,OFF,OFF,Now here is your NOAA National Weather Service Forecast,N,N,N,Y,N,N,N,N,,NNNNNNNNN,
 ,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 PNS - Public Information Statement,PNS,PNS,,N,N,N,Y,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,120,M,Y,N,,N
 REC - Recreational Forecast,REC,REC,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 RER - Record Report,RER,RER,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 RFW - Red Flag Warning,RFW,RFW,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 RHW - Radiological Hazard Warning,CEM,CEM,,N,N,N,Y,Y,N,N,N,I,ANNNNNNNN,I,ANNNNNNNN,N,,C,N,,360,M,Y,N,,N
 RVS - River Statement,RVS,RVS,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N
 RWS - Regional Weather Summary,RWS,RWS,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 SB.Y - Snow and Blowing Snow Advisory,WSY,WSY,THE FOLLOWING IS A SNOW AND BLOWING SNOW ADVISORY,N,Y,N,N,N,N,N,N,,NNNNNNNNN,
 ,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 SC.Y - Small Craft Advisory,SCY,SCY,,N,Y,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,N,,N
 SM.Y - Dense Smoke Advisory,NPW,NPW,,N,Y,N,Y,Y,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,Y,,360,M,Y,N,,N
 SMF - Smoke Management Forecast,SMF,SMF,,N,N,N,N,N,N,N,N,,NNNNNNNNN,,NNNNNNNNN,N,,C,N,,360,M,Y,N,,N

SMW - Special Marine Warning,SMW,MWS,,N,N,N,Y,Y,N,Y,Y,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 SN.Y - Snow Advisory,WSY,WSY,THE FOLLOWING IS A SNOW ADVISORY,N,Y,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 SPS - Special Weather Statement,SPS,SPS,,N,Y,N,Y,N,Y,N,N,,N,NNNNNNN,N,,C,Y,,120,M,Y,N,,N
 SPW - Shelter in Place Warning,CEM,CEM,,N,N,N,Y,N,N,N,N,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 SR.W - Storm Warning,SRW,SRW,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 SRF - Surf Zone Forecast,SRF,SRF,,N,N,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 SU.W - High Surf Warning,SUW,SUW,,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 SU.Y - High Surf Advisory,SUY,SUY,,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 SV.A - Severe Thunderstorm Watch,SVA,SVA,,N,N,N,Y,N,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,Y,,360,M,Y,N,,N
 SV.W - Severe Thunderstorm Warning,SVR,SVS,,N,N,N,Y,N,N,Y,Y,I,ANNANAN,I,ANNANAN,N,,C,Y,,60,M,Y,N,,N
 SVR - Severe Thunderstorm Warning,SVR,SVS,,N,N,N,Y,N,Y,Y,Y,I,ANNANAN,I,ANNANAN,N,,C,N,,30,M,Y,N,,N
 SVS - Severe Weather Statement,SVS,SVS,,N,N,N,Y,N,Y,N,Y,I,NNANAN,I,ANNANAN,N,,C,N,,30,M,Y,N,,N
 SW.Y - Small Craft Advisory for Hazardous Seas,SWY,SWY,,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 TCP - Tropical Cyclone Product,TCP,TCP,,N,N,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 TI.A - Inland Tropical Storm Watch,TRA,TRA,,N,N,N,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 TI.W - Inland Tropical Storm Warning,TRW,TRW,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 TO.A - Tornado Watch,TOA,TOA,,N,N,N,Y,N,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,Y,,360,M,Y,N,,N
 TO.W - Tornado Warning,TOR,SVS,,N,N,N,Y,N,N,Y,Y,I,ANNANAN,I,ANNANAN,N,,C,Y,,60,M,Y,N,,N
 TOE - 911 Telephone Outage Emergency,CEM,CEM,,N,N,N,Y,N,N,N,N,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 TOR - Tornado Warning,TOR,SVS,,N,N,N,Y,N,N,Y,Y,I,ANNANAN,I,ANNANAN,N,,C,N,,30,M,Y,N,,N
 TR.A - Tropical Storm Watch,TRA,TRA,,N,N,N,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 TR.W - Tropical Storm Warning,TRW,TRW,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 TS.A - Tsunami Watch,TSA,TSA,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 TS.W - Tsunami Warning,TSW,TSW,,N,N,N,Y,N,Y,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,360,M,Y,N,,N
 TY.A - Typhoon Watch,TRA,TRA,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 TY.W - Typhoon Warning,TRW,TRW,,N,N,N,Y,Y,N,Y,N,I,ANNANAN,I,ANNANAN,N,,C,N,,480,M,Y,N,,N
 UP.W - Heavy Freezing Spray Warning,UPW,UPW,,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 UP.Y - Freezing Spray Advisory,UPY,UPY,,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 VOW - Volcano Warning,VOW,VOW,,N,N,N,N,N,N,N,N,I,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 WC.A - Wind Chill Watch,WSA,WSA,,N,Y,N,N,N,N,Y,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 WC.W - Wind Chill Warning,WSW,WSW,,N,Y,N,Y,Y,N,Y,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 WC.Y - Wind Chill Advisory,WSY,WSY,,N,Y,N,N,N,N,Y,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 WI.Y - Wind Advisory,NPW,NPW,THE FOLLOWING IS A WIND ADVISORY,N,Y,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 WS.A - Winter Storm Watch,WSA,WSA,THE FOLLOWING IS A WINTER STORM WATCH,N,Y,N,N,N,N,Y,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 WS.W - Winter Storm Warning,WSW,WSW,THE FOLLOWING IS A WINTER STORM WARNING,N,Y,N,N,N,N,Y,N,I,NNNNNNN,I,NNNNNNN,Y,10:00 PM,07:00 AM,C,Y,,360,M,Y,N,,N
 WSW - Winter Weather Bulletin,WSW,WSW,,N,N,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 WW.Y - Winter Weather Advisory,WSY,WSY,THE FOLLOWING IS A WINTER WEATHER ADVISORY,N,Y,N,N,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 ZF.Y - Freezing Fog Advisory,NPW,NPW,,N,Y,N,Y,Y,Y,N,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N
 ZFP - Zone Forecast,ZFP,ZFP,Now here is your NOAA National Weather Service Forecast,N,N,N,Y,N,N,N,N,,NNNNNNN,NNNNNNN,N,,C,N,,360,M,Y,N,,N
 ZR.Y - Freezing Rain Advisory,WSY,WSY,,N,Y,N,Y,Y,N,N,N,,NNNNNNN,NNNNNNN,N,,C,Y,,360,M,Y,N,,N