Kent Lindquist White Paper

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Documentation for new AEIC Response Software

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AEIC Response Software Documentation

Introduction

The AEIC response software allows construction of all the information-release products for an alarm-release event at the Alaska Earthquake Information Center.

Synopsis

- Create or steal a location and magnitude for the event. Put it in a CSS database.
- Launch *dbe* on the database and highlight a field in the correct row of the origin table.
- Choose ***Edit->Respond*** from the dbe menubar.
- Hit green buttons to proceed. Hit red buttons only if you really mean it.
- Report problems in writing.

The Procedure

The first step is to locate the earthquake. This may be done with *Xpick*, with *dbloc2*, with another location program, or by stealing from appropriate sources such as the National Earthquake Information Center. Once the earthquake is located, the hypocentral coordinates must be put in a Datascope database. Usually this means you have to have a row in an origin table of a CSS database, although the related schemas of rt1.0, iceworm1.2, and iceworm1.3 should work as well. If you have located the earthquake with *dbloc2*, the hypocenter will already be in a database. Otherwise you may have to use a conversion program, for example *pick2db* for pickfiles, or at worst enter the hypocenter by hand with the spreadsheet program *dbe*.

Once you have a database containing the hypocenter, you need to launch the main response script. This is called *aeic_respond*. There are several ways to launch *aeic_respond* such that it knows both the database you're working from as well as which hypocenter in the database you want to release. If you are running *dbe* and your account is properly set up, you may pull up the origin table, highlight a field in the row of interest, and choose ***Edit->Respond*** from the menu bar. You can also pull up the event table and do the same, in which case the preferred origin for that event will be chosen. If you're running from the command line, you may type

aeic_respond dbname

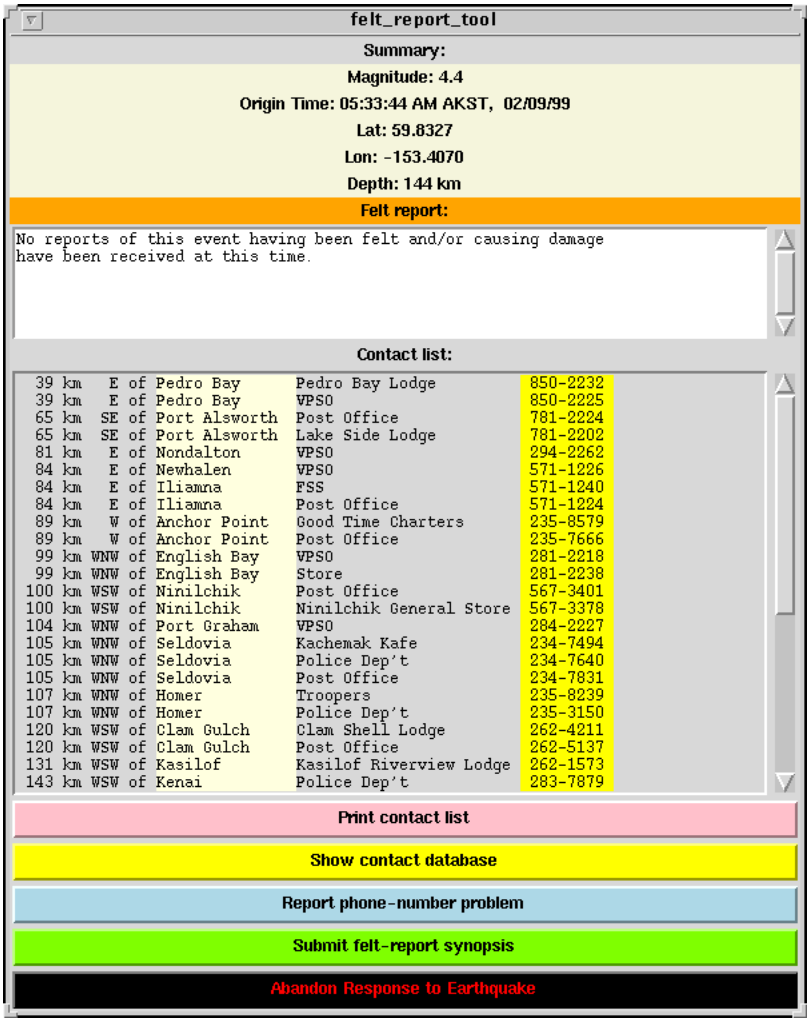
If there is only one event or one hypocenter in the database, *aeic_respond* will automatically know that you want to respond to that one. If there are multiple events or origins in the database, you should specify which one you want with *-o orid* or *-e evid*, where the orid and/or evid numbers for the hypocenter may be obtained from dbe.

For instructional and testing purposes, there is a *-n* "nofangs" option to the script:

aeic_respond -n dbname

With this option printouts will not be made, mail will not be sent, web releases will not be posted etc.

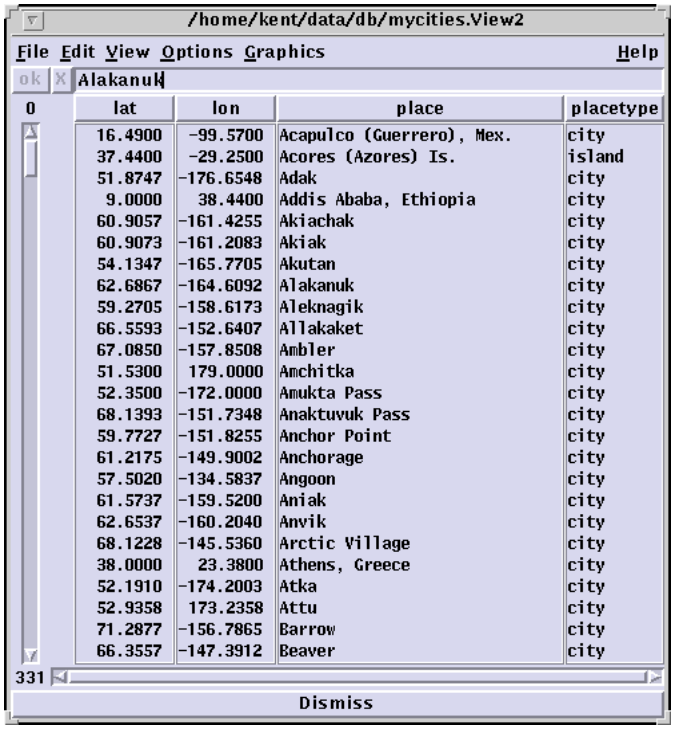
Once a hypocentral location is chosen, the response software will present the user with the *felt_report_tool*. On the screen, it looks like this:.



At the top is a summary of the earthquake's vital statistics, for convenience in calling people. The next window is a small text editor for the felt-report sentence or sentences. The stock report is that "no reports of this event having been felt and/or causing damage have been received at this time." This text should be updated based on the calls made. The next lower section of the *felt_report_tool* is a list of the nearest contact phone numbers for the earthquake, along with direction and distance information. This list is generated from a database, which may have more

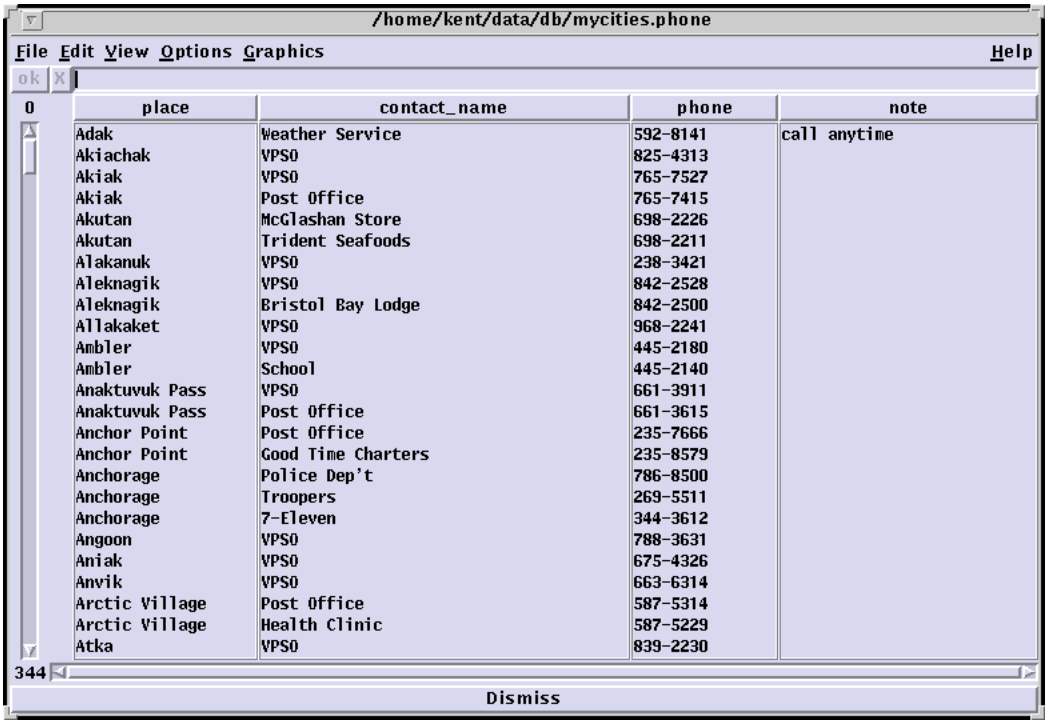
than one contact listed for each city. The responding seismologists should use their discretion about how many people to call. Below the contact list is a set of buttons. The first allows the list to be sent to the standard printer. The second allows a spreadsheet to be brought up of the full database of contact information, in case the seismologist wants to get a phone number that wasn't included on the quick-reference list. The spreadsheet is actually accomplished with the dbe program, for those familiar with it. The main window of dbe, which will appear if you hit the "Show contact database" button, looks like this:

Hitting the "places" button brings up a table of places in the database

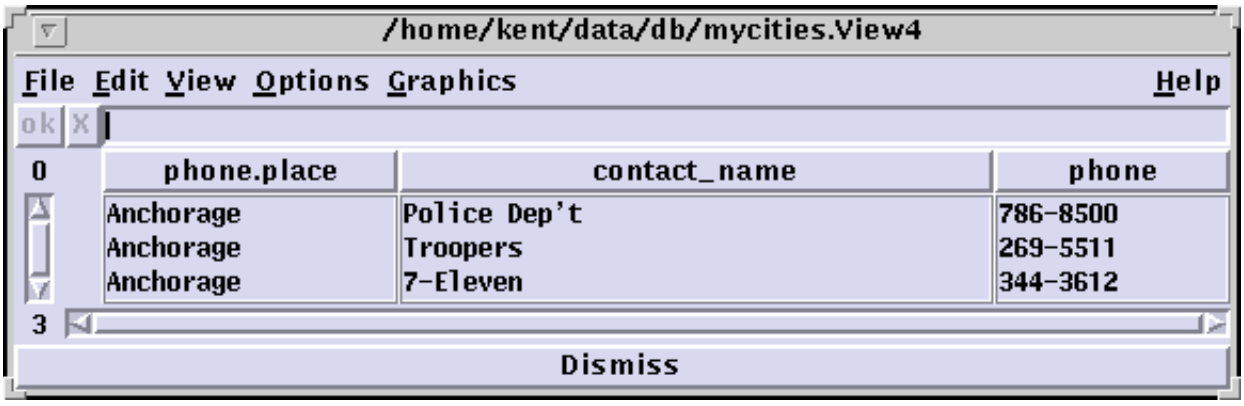


lat	lon	place	placetype
16.4900	-99.5700	Acapulco (Guerrero), Mex.	city
37.4400	-29.2500	Acores (Azores) Is.	island
51.8747	-176.6548	Adak	city
9.0000	38.4400	Addis Ababa, Ethiopia	city
60.9057	-161.4255	Akiachak	city
60.9073	-161.2083	Akiak	city
54.1347	-165.7705	Akutan	city
62.6867	-164.6092	Alakanuk	city
59.2705	-158.6173	Aleknagik	city
66.5593	-152.6407	Allakaket	city
67.0850	-157.8508	Ambler	city
51.5300	179.0000	Amchitka	city
52.3500	-172.0000	Amukta Pass	city
68.1393	-151.7348	Anaktuvuk Pass	city
59.7727	-151.8255	Anchor Point	city
61.2175	-149.9002	Anchorage	city
57.5020	-134.5837	Angoon	city
61.5737	-159.5200	Aniak	city
62.6537	-160.2040	Anvik	city
68.1228	-145.5360	Arctic Village	city
38.0000	23.3800	Athens, Greece	city
52.1910	-174.2003	Atka	city
52.9358	173.2358	Attu	city
71.2877	-156.7865	Barrow	city
66.3557	-147.3912	Beaver	city

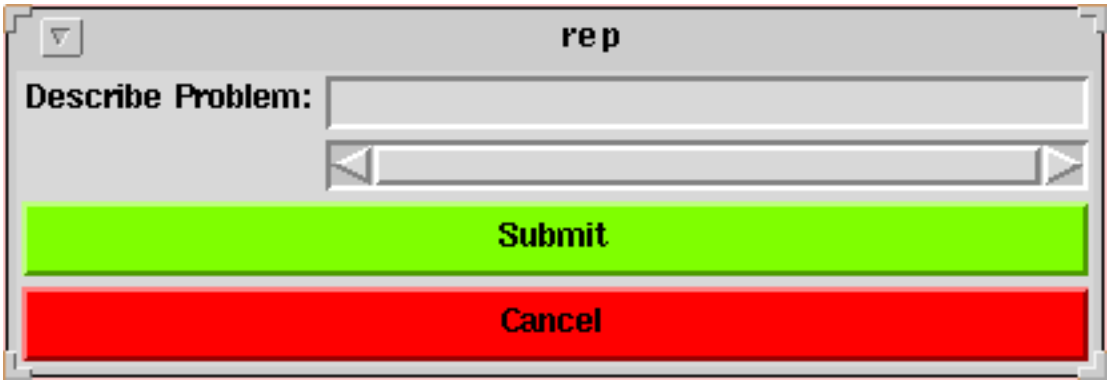
Similarly, hitting the "phone" button will bring up a table of phone-number contacts:



Standard database subsetting and joining operations, explained in the documentation for dbe, may be used to generate appropriate subsets of the information:

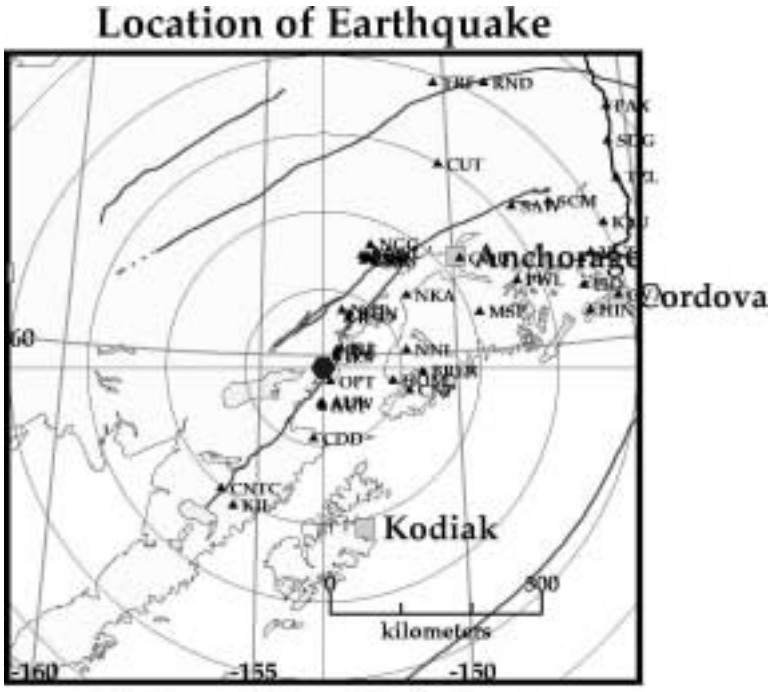


The next button in the *felt_report_tool* allows users to report problems with phone numbers to the person responsible for maintaining the database. This is critical if we are to have a useful database of contact information. Hitting this button brings up a problem-submission window with a one-line text-entry field:

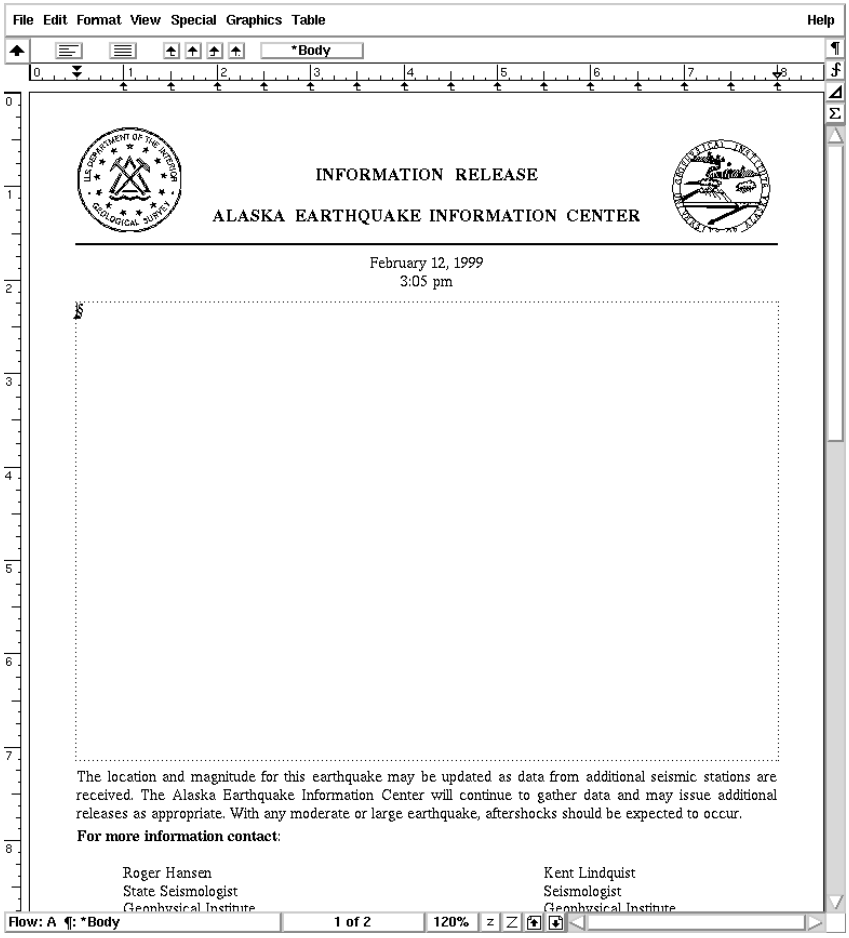


Finally, the “Submit felt report synopsis” button on the *felt_report_tool* commits the seismologist to the edited felt report. When this button is hit, the *felt_report_tool* will disappear, allowing the response process to continue to the next step. The last button on the *felt_report_tool* allows the seismologist to abandon the response process. The button appears on the *felt_report_tool* rather than elsewhere since this tool is the first in the sequence of response scripts.

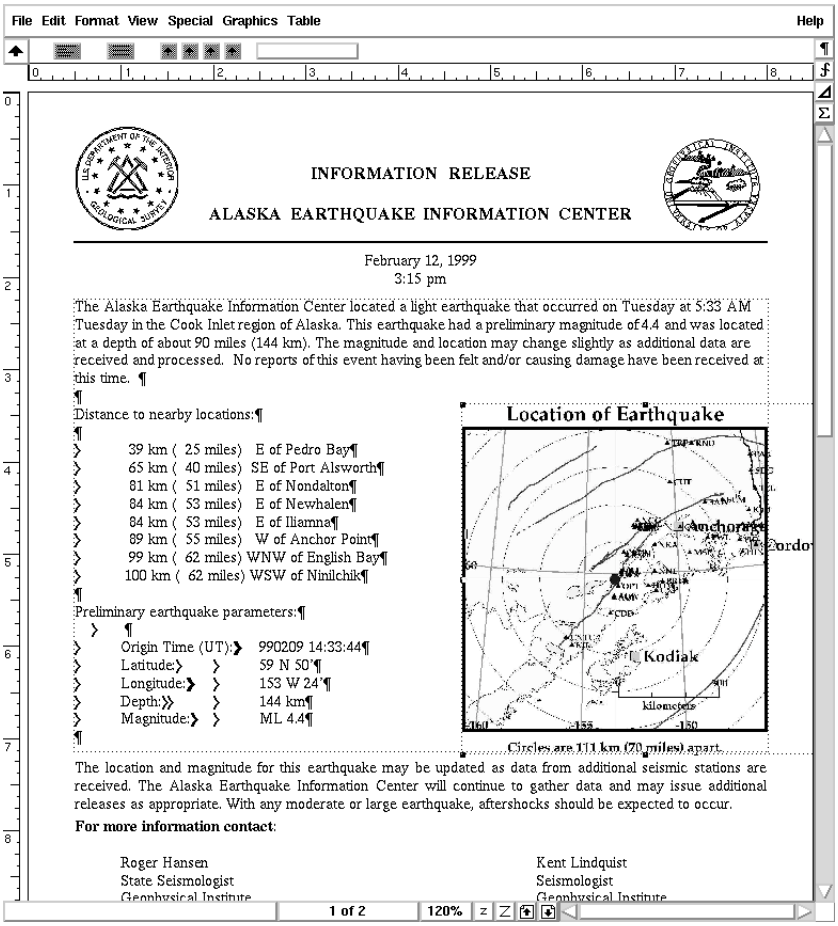
The next steps of the response process are all automatic. The scripts will generate a map for inclusion in the fax release. This map will pop up on the users window but does not need to be modified or bothered:



After generating this map, and converting it quietly to other formats, the response scripts will launch framemaker. When Framemaker comes up, it will have a pre-loaded template for the information release:



Now, with the cursor in the large blank box as shown, Hit “Cntl-1” to trigger the construction of the specific release information for this earthquake. That’s “Control-one”. The macro is finished working when the map is in the correct place. It should look approximately like this:

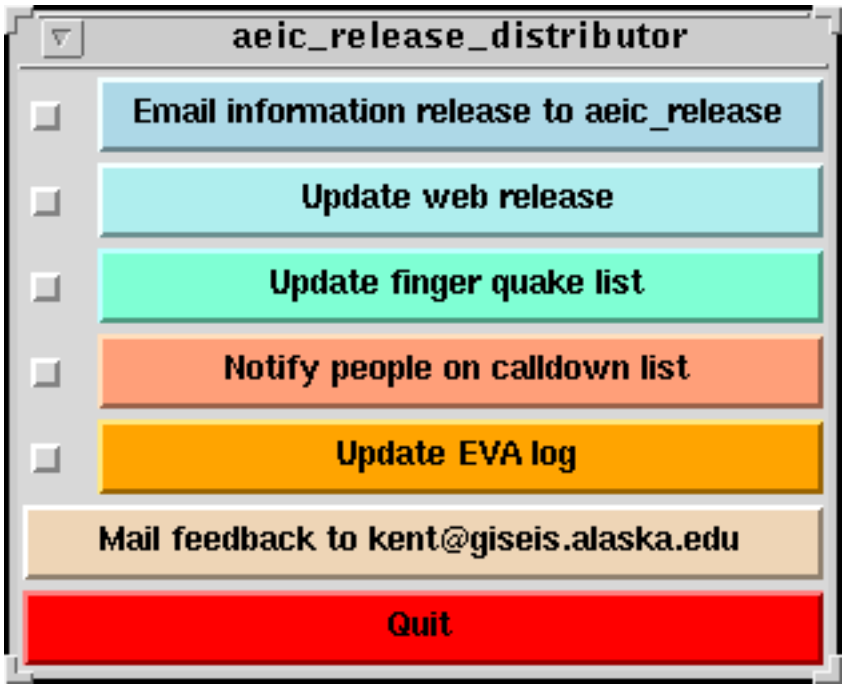


Review the document. Edit if necessary (and report it to me--editing should not be necessary). Then hit “Cntl-3” to commit to the completed FAX response. This will print out the release [unless you’re running in *-n* mode] to the printer specified in the aeic_release.pf parameter file, currently the color printer called “ec”. Then it will create the PDF file for the web release. Also, Framemaker will exit at this time. After the Framemaker editing window disappears, there will be a pause for some quiet file-conversion operations. The Framemaker master window

will disappear after all the file conversions are done. If the script has difficulty killing Framemaker, it will print a message asking you to exit Framemaker. The script should not have problems, though. Also, if anything goes wrong with the PDF file conversion, Framemaker will not

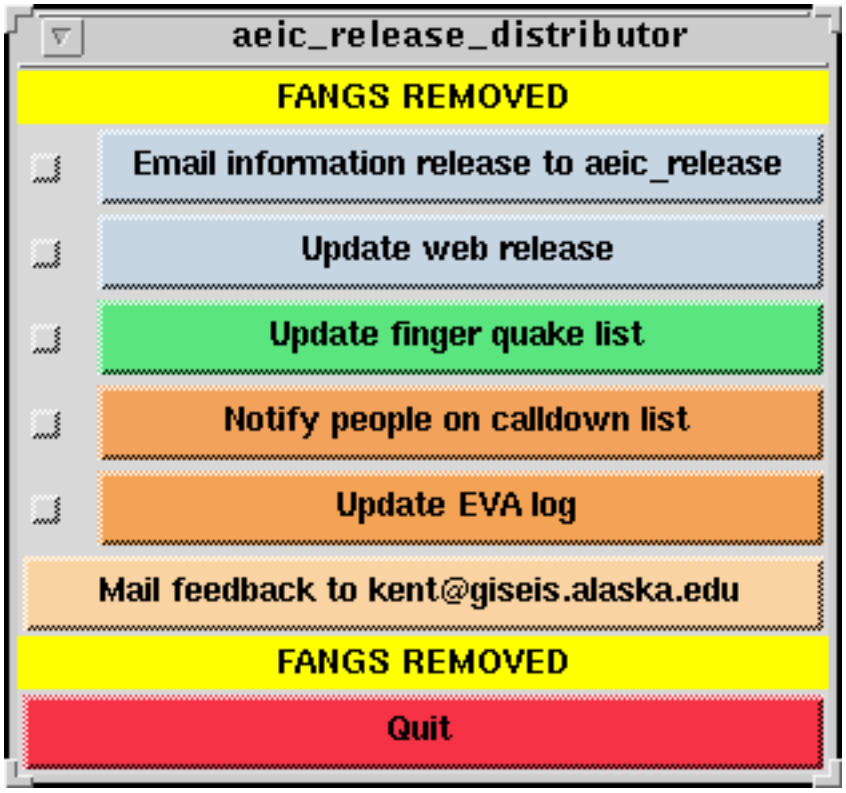
exit and the *aeic_respond* script will not proceed. This is because the *aeic_respond* script looks for the new PDF file to decide that Framemaker's work is done.

The final stage of the response process is to distribute information to appropriate locations. A helper application called *aeic_release_distributor* is responsible for all distribution tasks:



Each button triggers one of the distribution steps. The buttons are the broad colored bars. The checkboxes at left are intended for notetaking by the seismologist. If a button is pressed, the corresponding checkbox will turn red to indicate that the task has been completed. Also, the button will be deactivated. To intentionally skip a task, one can check the checkbox red and the task will be marked as completed without being done. If you need to repeat one of the tasks and the button has been disabled, un-clicking the red check box will reactivate the button.

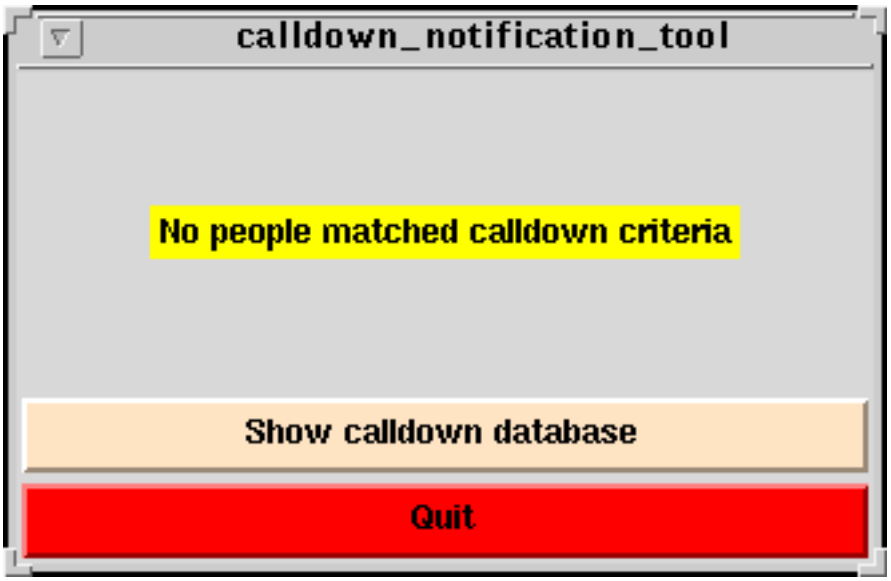
If you are running the script in "nofangs" mode, the aeic_release_distributor will look like this:



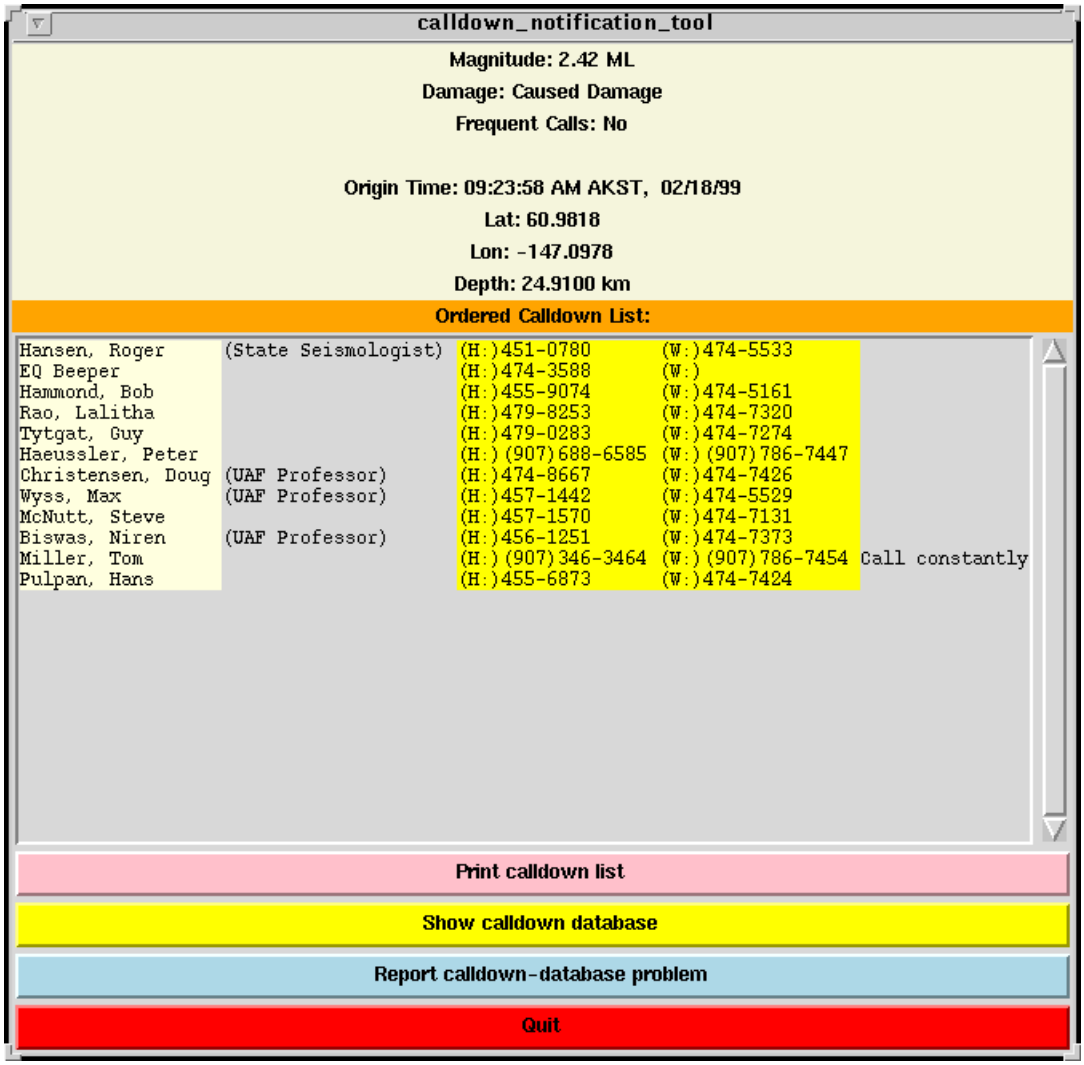
The buttons “Update web release” and “Update finger quake list” perform their actions silently.

The button “Notify people on calldown list” brings up the *calldown_notification_tool*. The first screen of this tool is a short survey, which looks like this:

Fill out the two-question survey, then hit “Commit.” If no entries in the database meet the threshold for notification, the following screen will appear:

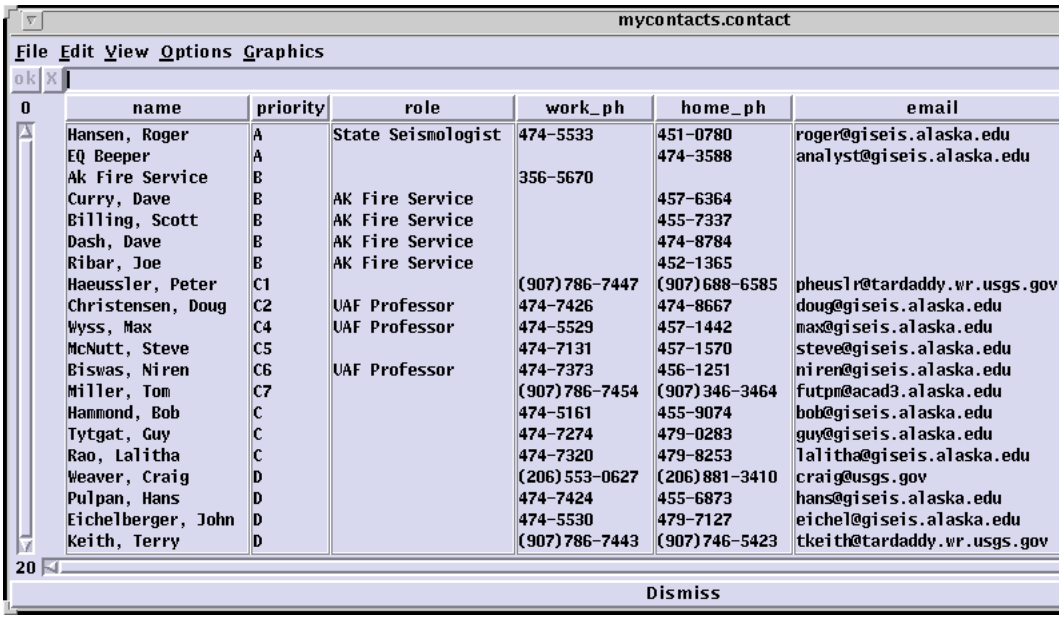


On the other hand, if there are people to call, they will appear in a list:

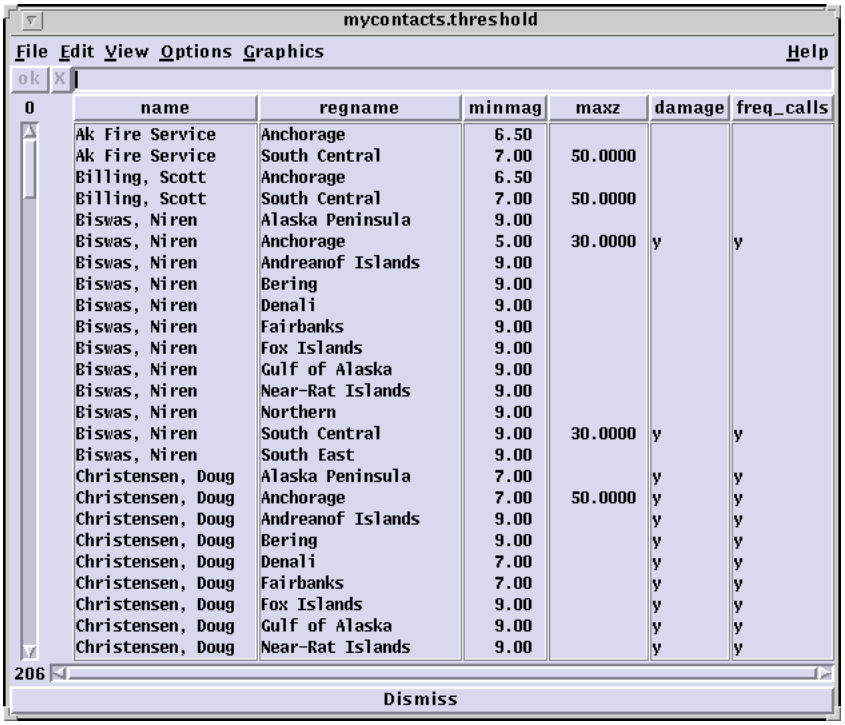


The buttons here are similar to those in the *felt_report_tool*, though the calldown database looks a bit different:

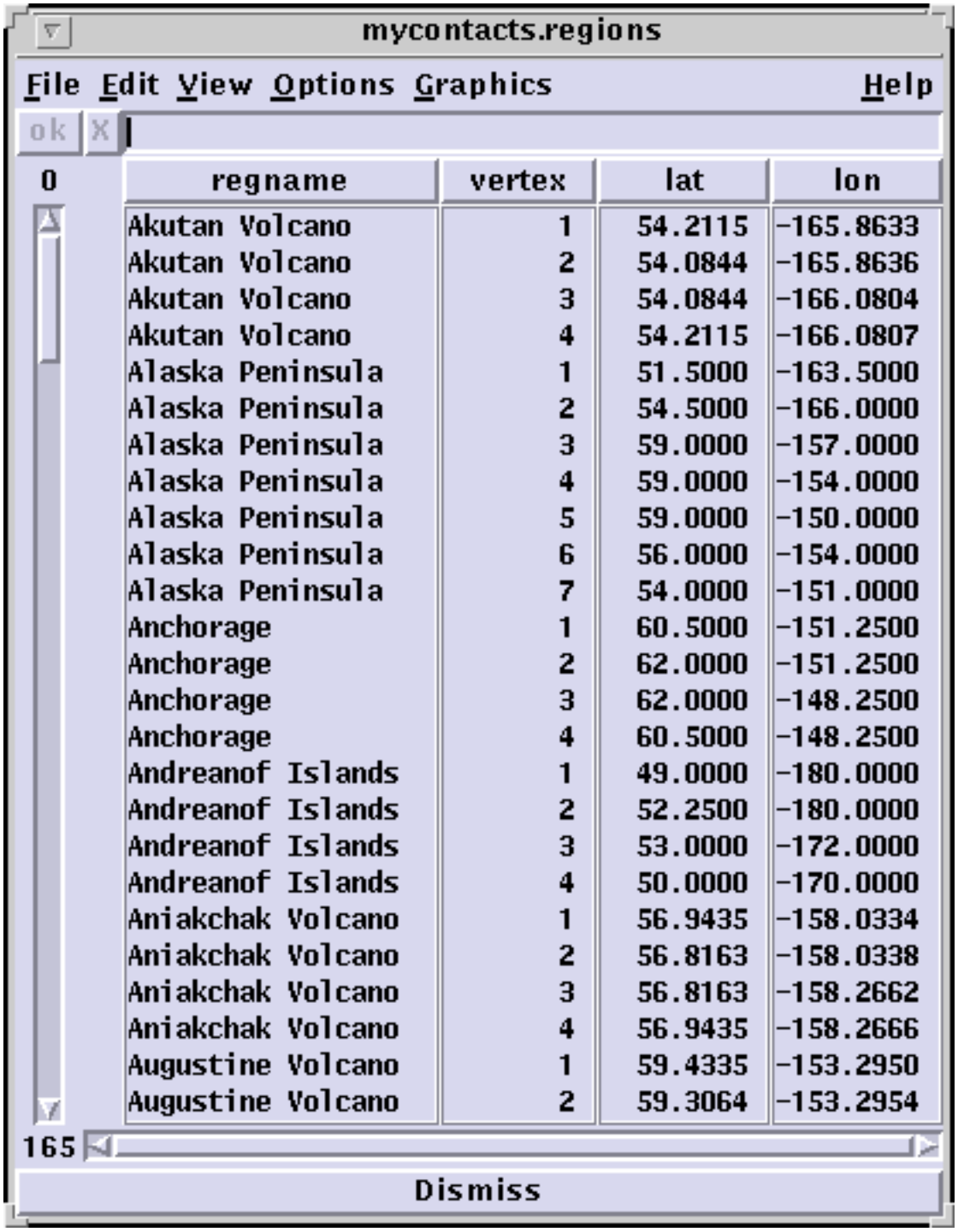
The “contact” table shows the names of people who may want to be contacted:



The “threshold” table tells when to contact these people for each different region of interest:

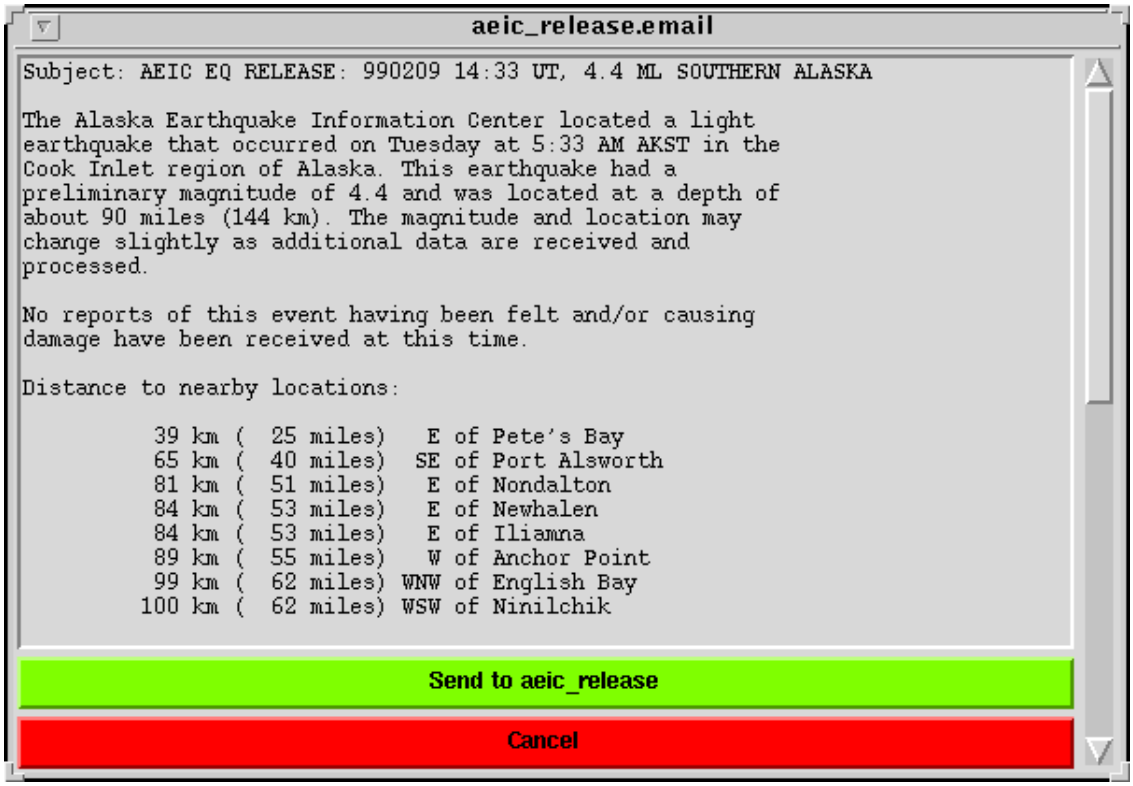


Finally, each region is defined by the vertices of a polygon. The “regions” table gives the ordered set of vertices defining each region:

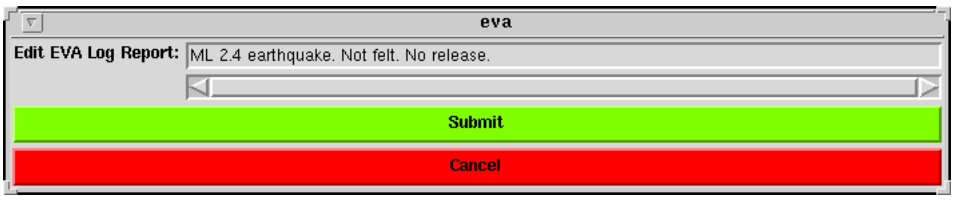


regname	vertex	lat	lon
Akutan Volcano	1	54.2115	-165.8633
Akutan Volcano	2	54.0844	-165.8636
Akutan Volcano	3	54.0844	-166.0804
Akutan Volcano	4	54.2115	-166.0807
Alaska Peninsula	1	51.5000	-163.5000
Alaska Peninsula	2	54.5000	-166.0000
Alaska Peninsula	3	59.0000	-157.0000
Alaska Peninsula	4	59.0000	-154.0000
Alaska Peninsula	5	59.0000	-150.0000
Alaska Peninsula	6	56.0000	-154.0000
Alaska Peninsula	7	54.0000	-151.0000
Anchorage	1	60.5000	-151.2500
Anchorage	2	62.0000	-151.2500
Anchorage	3	62.0000	-148.2500
Anchorage	4	60.5000	-148.2500
Andreanof Islands	1	49.0000	-180.0000
Andreanof Islands	2	52.2500	-180.0000
Andreanof Islands	3	53.0000	-172.0000
Andreanof Islands	4	50.0000	-170.0000
Aniakchak Volcano	1	56.9435	-158.0334
Aniakchak Volcano	2	56.8163	-158.0338
Aniakchak Volcano	3	56.8163	-158.2662
Aniakchak Volcano	4	56.9435	-158.2666
Augustine Volcano	1	59.4335	-153.2950
Augustine Volcano	2	59.3064	-153.2954

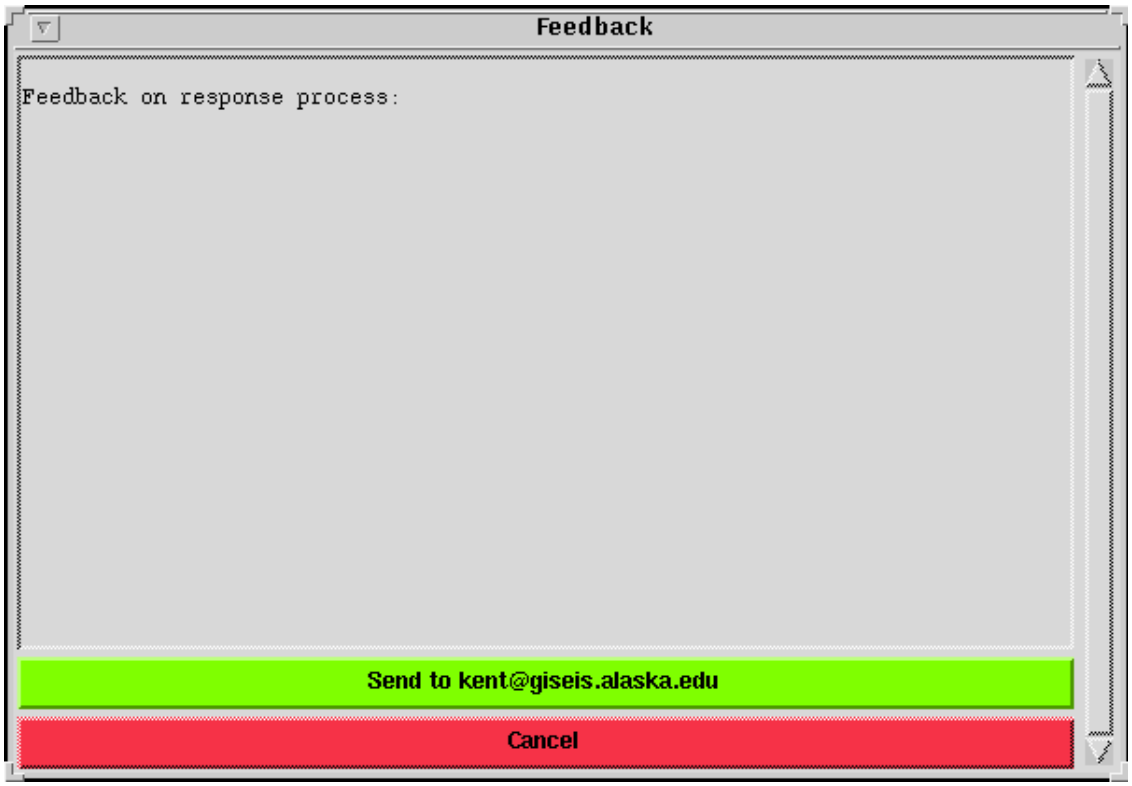
The “Email information release” button of the *aeic_release_distributor* brings up an editor with which you can review, and if necessary modify the email information release. The window looks like this:



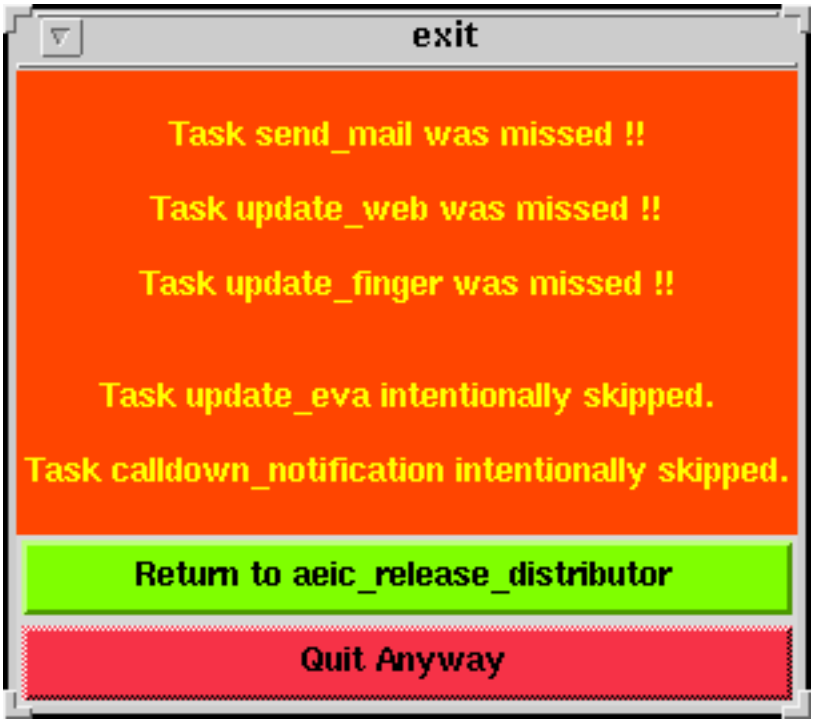
The “Update EVA log” button brings up a one-line text editor window with a note about the entire response process--usually the size and nearest city of the event, whether it was felt, and whether a release was issued. The window looks like this:



The “Mail feedback” window brings up a text-editor with which to send feedback about the entire response process:



If you quit the aeic_release_distributor without completing some of the tasks, or with some of the tasks intentionally skipped, you will get a warning message:



First-Order Corrections

We are aiming to make glitch-free software. However, in the interim, things may go wrong until we identify and correct possible problems. Reminder: Please report all problems in writing.

All work by *aeic_respond* is done in a single directory specified by the parameter file. Currently this is a subdirectory called ~/releases in the users home directory. A subdirectory named according to the time of the event contains all of the temporary files and output files if something needs to be edited by hand. An example listing of the finished directory is shown here:

```
nordic% ls /home/kent/releases/990209143344/
990209143344_.gif        dbmapevents.epsi      myrelease.fm.lck
990209143344_.pdf        dbmapevents.ps        myrelease_db.arrival
aeic_release.email       eva_log.text          myrelease_db.assoc
aeic_release.makertext   fmMacros              myrelease_db.origin
aeic_release.pf          myrelease.backup.fm
db_release.epsi          myrelease.fm
nordic%
```

Hopefully most of these will be self explanatory. They may be used to complete a release manually if something goes wrong with the automatic procedures. If something goes wrong halfway through the response procedures, the user may pick up from where the scripts left off with the partial results in this directory.

The major component programs of the release process are as follows:

aeic_respond: This is the driver script for the response process. This is the normal entry point into the response process. It is launched from the command line as explained above, or from dbe with the ***Edit->Respond*** Menubar option.

felt_report_tool: This script is launched with one argument, the name of the subset database containing only the single origin of interest. Under normal conditions this subset database will be placed in the working directory by the *aeic_respond* script.

dbmaprelease: This program is launched with the database name, the orid for the hypocenter to be mapped, and the range of the map. The map needs to be converted to epsi, preferably using the *alchemy* software.

maker: This is the launch script for framemaker. There is a template for AEIC information releases, into which one imports the response text and the map. Under normal conditions the working directory contains two versions of the response text for the earthquake, one formatted for email distribution and one specifically formated for the idiosyncrasies of importing text into framemaker (tabs adjusted correctly, etc.).

aeic_release_distributor: This must be run with no command-line arguments from the working directory.

calldown_notification_tool: This must be run with one argument, which is the database name of the subset database containing only one origin row, corresponding to the hypocenter of interest. Under normal conditions this subset database will be placed in the working directory by the *aeic_respond* script.

All of these component programs rely on the contents of the aeic_release.pf parameter file. Viewing this file may provide clues to hunt down particular pieces of the puzzle if necessary. To check whether the aeic_release parameter file is visible from your account as it is set up, type

pfecho aeic_release

This should print out the apparent contents of this parameter file.

During normal operation, the *aeic_respond* script generates or triggers the generation of some output to the screen from which it was launched (or from which its parent process, such as *dbe*, was launched). A snapshot of one instance of this output, for a run which went smoothly, is shown below:

nordic% dbe alarm

aeic_respond: Launching felt_report_tool...

aeic_respond: Launching thumbnail-map generator...

Image Alchemy PS (v1.11) - Copyright (c) 1990-98, Handmade Software, Inc.
Reading EPS / PostScript file dbmapevents.ps
Writing EPS / PostScript file dbmapevents.epsi (output type 3000)
Interpreting PostScript file -
Saving image.....

aeic_respond: Launching Framemaker...

starting maker ...
maker: Using /usr/local/frame5.5/fminit
maker: Starting FrameMaker 5.5. Copyright (c) 1986-1997 Adobe Systems Incorporated.
Before using FrameMaker for the first time, read the online
manual “Customizing FrameMaker Products” for information on
configuring FrameMaker products for use with various window managers.
maker: Finished loading
fmprintdr.ps: Using /usr/local/frame5.5/fminit
request id is ec-153 (1 file(s))
fmprintdr.ps: Using /usr/local/frame5.5/fminit

WARNING: This version of the Acrobat Distiller may not be fully compatible with previous versions of Acrobat Exchange and Acrobat Reader due to new functionality based on recent PDF language additions. To ensure compatibility with previous versions of Acrobat Exchange and Acrobat Reader, the DEFAULT for compatibility can be set inside your personal preference file. Setting this compatibility switch, however, will result in the disabling of new features of the Acrobat Distiller. The compatibility switch may easily be overridden at run-time through the specification of -compatlevel and in no way represents an actual permanent loss of features for Acrobat Distiller.

NOTE: Running the Acrobat Distiller with the -noprefs option will effectively disable the preference chosen below.

Enter Acrobat Distiller personal preferences file modification [1, 2, 3]
[1] use 3.0 new features
[2] use 2.1 compatibility
[3] leave compatibility undefined
Image Alchemy PS (v1.11) - Copyright (c) 1990-98, Handmade Software, Inc.
Reading Adobe PDF file /home/kent/work/response/990218182358/990218182358_.pdf
Writing GIF file /home/kent/work/response/990218182358/990218182358_.gif
**Interpreting PDF file **
Saving image..... (00:01:55)

aeic_respond: Launching aeic_release_distributor...

aeic_respond: Successfully finished earthquake response.

Customizing and Tuning the AEIC Response software

The AEIC response software is configured by an Antelope [BRTT, Inc.] parameter file. Most of the contents of this parameter file will not need to be changed by standard users. An example of this parameter file is shown here:

```
# aeic_release parameter file
#
# K. Lindquist
# Geophysical Institute
# University of Alaska, Fairbanks
# 1999
```

 # Where to send the output
##
email_release_recipient aeic_release
web_directory /usr/local/frame2html/results
EVA_LOG /home/quake/eva_alarm.log

printer ec

 # Where to get necessary information and templates
##

place_database /home/kent/work/mynearest/mycities_AK
contact_database /home/kent/data/db/mycities
calldown_database /home/kent/src/calldown_notification_tool/mycontacts
maker_template /home/kent/work/response/mytemplate.fm

number_of_contacts 40 # How many contacts to show for felt report investigation

 # What the output should look like
##

num_nearest 8 # Number of nearest cities shown
map_range 4 # Range of map in degrees

stock_felt_report &Literal{
No reports of this event having been felt and/or causing damage
have been received at this time.
}

 # Where and how to get the job done, and with what software
##

base_release_dir HOME/releases

 # Working files. These templates refer to the origin time
email_file aeic_release.email
makertextfile aeic_release.makertext
fmrelease_file myrelease.fm
fmpdf_file %y%m%d%H%M%S_.pdf
gif_release_file %y%m%d%H%M%S_.gif
map_epsi_file db_release.epsi
eva_log_file eva_log.text
subset_database myrelease_db

Helpers &Arr{

aeic_region_name /usr/tools/bin/aeic_region_name
aeic_release_distributor /usr/tools/bin/aeic_release_distributor
alchemy /usr/local/bin/alchemy
dbmaprelease /usr/tools/bin/dbmaprelease
felt_report_tool /usr/tools/scripts/felt_report_tool
Framemaker /usr/local/frame5.5/bin/maker
update_finger /usr/tools/scripts/update_finger
calldown_notification /usr/tools/bin/calldown_notification_tool
}

 # Who to harass with problems
##

maintainer kent@giseis.alaska.edu

The two parameters that general users might be interested in modifying would be the base_release_dir, in order to relocate the directory of working files somewhere else in their home directory, or the printer. These modifications should be made by putting a subset parameter file called aeic_release.pf, containing just these modifications, in the ~/data/pf directory of the users home directory. Again, this presumes the environment variable PFPATH is correctly set, i.e. by using the System Administrator's standard setup files.

Common Questions

You may dry-run the entire procedure without consequence, until you get to the final *aeic_release_distributor* button window. Up to this point, at worst you will waste a sheet of paper making a printout of a non-release.

If the *aeic_respond* script does not exit, even though you appear to completed all the tasks, make sure you do not still have any of the child processes running, such as a *dbe* launched from within the response software.

The *aeic_respond* script makes a working directory, usually in a subdirectory called releases in your home directory. All work for an event is done in a subdirectory of this releases directory. The name of the subdirectory is some kind of timestamp based on the origin time of the earthquake. If the directory already exists, for example if you are rerunning *aeic_respond* on the same earthquake or on a different earthquake that occurred in the same minute, you must remove or rename the other directory or *aeic_respond* will complain and exit.

After *framemaker* exits, the pdf file is converted to a gif file for the web. In order to make a reasonable quality image, this procedure takes about a minute and a half. There is a small clock in the text putput of the command which should keep you occupied and entertained.

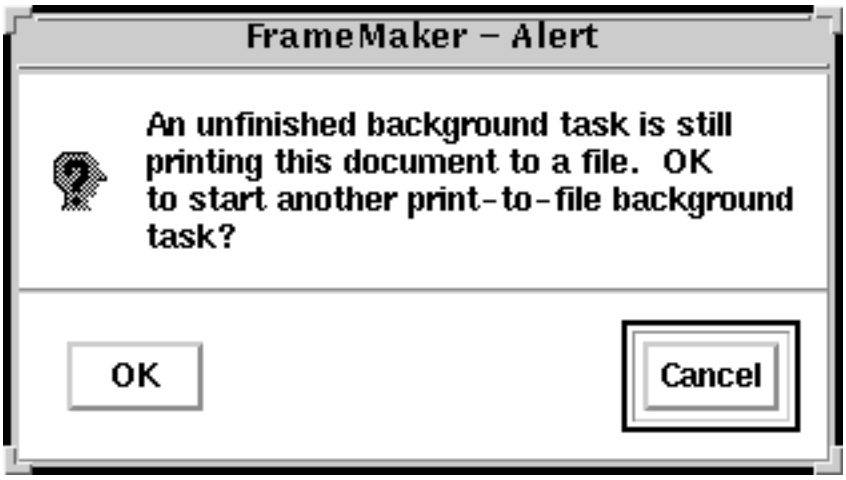
Known Problems

1) If you do not have enough disk space in your home directory for the temporary files, the entire procedure will die unpleasantly.

2) Currently, the driver script does not check whether it will be possible to get a license for Framemaker. The results of failure to get a license are unpredictable.

3) The finger quake implementation currently depends on /Seis/pickfiles. This will need to be completely overhauled in order for non-pickfile solutions to appear in the finger quake list.

4) Sometimes the “commit” macro, the “Cntl-3” macro in Framemaker, moves a little too fast for the system to keep up. The PDF file starts to get printed before the framemaker script sending the file to the printer is finished. The result is the following dialog box from Framemaker:



At this point hit “OK”. This idiosyncrasy appears harmless. I haven’t yet come up with a way to circumvent it.

5) There are a couple problems that don’t really apply to these scripts directly, but the user should be aware of them. If the descriptor file for the database points to some files on a system which is down, you may get an “NFS server earlybird [megathrust, etc.] not responding” hang. For example, if the descriptor file points to the site database /iwrun/op/params/Stations/worm, and if that site database is on Earlybird, and Earlybird is down, dbe will hang. The solution here would be to point to the backup site database instead, and restart dbe. Similarly, if *aeic_respond* does not start up because of an NFS server problem, your computer may need to be rebooted by the system administrator.

6) Sometimes *aeic_respond* brings up two copies of *aeic_release_distributor.* Just use one of them. I’m not sure yet what causes this.

Limited Warranty

I am committed to building response software that does not break, die, fail, squeal, whine, or spit stomach acid at its users. This is a challenging task, but worth the effort to avoid unpleasant experiences at 3:00 am. In order to achieve the goal of seamless performance, I need cooperation from the users. The following are the necessary terms of this warranty:

1) The software was written under certain assumptions. The user must adhere to these assumptions; I will not be held responsible for any software difficulties unless these conditions are met.

•First, the approved system-setup shell for your account is tcsh.
•Second, the user must run the System-administrator's path, login, and environment setup files.

2) Report all errors, inconveniences, and problems to me ***in writing.*** I can't fix what I don't know about. Also, I need a printout in your own words to put in my file of problems to solve, since I almost never have the opportunity to immediately drop what I'm doing to fix something.