Alaska Earthquake Information Center (AEIC)
Beeper Duty Manual

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1. Beeper Duties.

The duty cell phone, pager and laptop change hands at 8am on Monday. MAC laptop is available for responding to earthquake alarms and for weekend/holiday checks from outside the Lab. You have to have high-speed internet access to be able to do that.

The AEIC duty responsibilities include:

- respond to earthquake alarms
- perform quality control of automatic event locations
- release felt events regardless of magnitude
- check data flow and system health over the weekend/holidays
- check and respond to AEIC voice-mail messages (474-4300)

The beeper duty person should be present in the Lab during regular business hours and perform event checks at least every half hour. If you are on duty but can not be present in the Lab to monitor automatic event locations, you have to find someone to take care of the event quality control and updates and information releases in your place.

2. Weekend/Holiday Duties.

The beeper duty person must perform weekend and holiday checks either by coming into the Lab or through duty laptop as follows:

(1) Review automatic locations with *duty_dbevents*. Relocate and release as needed Ml $\geq$3.5 in region A or Ml $\geq$4 region B, or those that are grossly mislocated, regardless of magnitude. If there are no automatic locations within the past 12 hours - call Mitch Robinson or Natasha Ruppert.

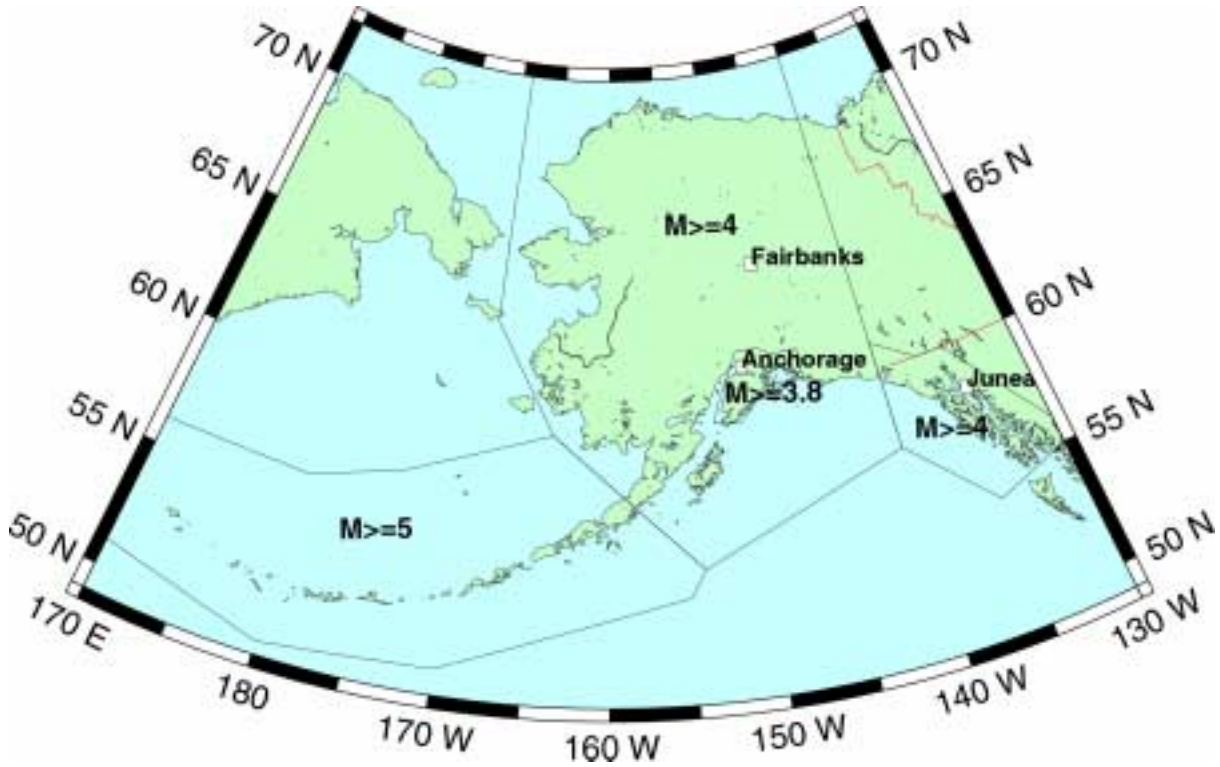
(2) Check the data flow. If in the Lab, look at the computer displays in the computer room (SCREAM PCs and large display with the waveforms scrolling across, next to the earthquake map). If there are no waveform data being shown on SCREAM PCs and/or vast amounts of data (e.g., more than half of the stations) are missing on the scrolling waveform display - call Mitch Robinson or Steve Estes. From outside the Lab, check *recenteqs* page. If there are no earthquakes within the past several hours, you need to come into the Lab to make sure the data is being recorded.

3. AEIC Earthquake Alarms.

Our goal is to respond to potentially damaging earthquakes and/or events that can be felt by significant number of people. Earthquake alarms are generated by *orb_quake_alarm* program (see man page for details). This program continuously monitors automatic locations in summary database on *kobuk* computer. Whenever parameters of an origin (magnitude, location, and number of phases) satisfy the alarm criteria, a text message is sent to the duty cell phone. This message contains alarm ID number (*alarmid*) and event ID number (*evid*) in the subject line. The body of the message contains the following information: magnitude, depth, number of phases, nearest population center, origin time. In case when this alarm is not cancelled within 3 min, a duplicate message is sent to the duty pager. If alarm is not cancelled within 10 min, the same text message is sent to Roger Hansen's cell phone. See "Earthquake Alarm Procedural Check List" for detailed description of how to cancel the alarm.

Currently, alarms are generated for origins with at least 15 associated phases and:
- M>=3.5 within 0.5 degree radius (~50 km) of Fairbanks, Anchorage and Juneau;
- M>=3.8 in the region that includes Matanuska-Susitna valley, Kenai, and Prince William Sound communities;
- M>=4.0 in the rest of the mainland Alaska, including the southeast region;
- M>=5.0 in the Aleutians.

Exact polygons for the above-mentioned regions are given in */Seis/databases/regions/alarm_regions* database. The alarm trigger parameters can be found in */iwrun/sum/run/pf/orb_quake_alarm.pf* parameter file. See also map below.



4. Felt Events.

Earthquake Hazard program at USGS maintains a website for reporting felt earthquakes. If you look at *http://pasadena.wr.usgs.gov/shake/ak/* you will see a list of events for Alaska. These links are automatically generated only for 4.5 and above earthquakes located anywhere in Alaska and the Aleutians and 3.8 and above in or near Alaska's main population centers. If event is not listed in this table, a person can fill out a questionnaire for unknown event. In this case an e-mail message is sent to several recipients including AEIC beeper duty personnel. These messages come from Shake Account. Look at the time of the reported shaking and compare it to the list of our automatic locations (you need to convert local AK time into UTC). If there is an event within a reasonable time of the reported shaking, then this event needs to be released. Beware of bogus felt reports, not all are real. DYFI page is also useful to check for felt reports to include into the information release.

Example of an e-mail message from Shake Account:

****

Date: Fri, 24 Feb 2006 20:09:52 -0800 (PST)
From: Shake Account <shake@ciim-pas.gps.caltech.edu>
To: wald@usgs.gov, vinceq@usgs.gov, alarm@kiska.giseis.alaska.edu, wcatwc@noaa.gov, felt@neis.cr.usgs.gov, duty@giseis.alaska.edu
Subject: CIIM Unk. (Glennallen, AK) I=3.4 (III)

T_Submit: Feb 24 2006 20:09:24 PST ***<Note: Time when this felt report was submitted>***
T_User: Feb 24 2006 6:50 PM (local) ***<Note: Time when the shaking was felt>***
Name: Lee Bauke(baukeL@alyeska-pipeline.com)907-320-1117--
Location: ZIP 99588 (Glennallen, AK) Region AK
Street: MP 186.5 Glenn Hwy (cross-st: Glennallen & Richardson intersection)

User CDI: 3.4 (III)
Location: Apartment
Were you asleep? No
Felt it? Yes
Others felt it? No answer
Describe motion: Moderate
Duration (s): 10
Your reaction: Very little
How did you respond? if it had lasted any longer i would have moved to a doorway
Creaking noises? Yes slight
Damage: none
comments felt like a rolling earthquake, shook the house and there was some creaking.
****

5. Guidelines for Reviewing and Releasing Events.

(1) Always review alarm events.

(2) In addition to alarm events, review (relocate) automatic events:

- with automatic magnitude M ≥ 3.5 in the mainland Alaska and as far south as the Kodiak Island and including the southeast Alaska (referred to as Region A);
- with automatic magnitudes M ≥ 4 south-west of the Kodiak Island, along the Alaska Peninsular and the Aleutian arc (referred to as Region B);
- mislocated events.

NOTE: Reviewed event has to have the same *evid* as automatic location.

(3) **Full RELEASE: From the origin table menu select Edit-> Respond**

- if the reviewed location has Ml ≥ 3.5 in region A;
- if the reviewed location has Ml ≥ 4 in region B;
- if the event was felt, regardless of the magnitude and location.

(See "7.1. Response Procedural Checklist" for detailed description of the information release procedures).

(4) **UPDATE (partial RELEASE)**: **From the origin table menu select Edit -> Update**

- if the reviewed location has Ml<3.5 in the region A or Ml<4 in the region B.

(See "AEIC Response Software Documentation" for a detailed description of the Partial release/Update procedures).

(5) Special provisions can be made for intense aftershock sequences, such as increasing magnitude thresholds for releases. Consult with lead seismologist regarding this.

6. Quality Control of Automatic Events.

This is a very important task. Real-time event locations are distributed to a number of recipients including AEIC and ANSS web pages, State Emergency Services, TAPS monitoring systems, ShakeMap triggering module, etc. The duty person is responsible for providing quality control of automatic locations, i.e. mislocated earthquakes should be relocated and false events deleted (for example, locations based on telemetery glitches).

(1) Always have the following program running with audio on while in the Lab:

duty_dbevents

This program displays seismic events and waveforms in real time (see *dbevents* man page for more information). This is an interactive program that allows you to monitor automatic events, send a "delete message" to remove bad locations and to relocate events when necessary. Currently, the quake database is the so-called summary database that includes our internal automatic and analyst reviewed locations and external reviewed locations from ATWC and NEIC. Reviewed events have flag "r" in the event list. When on duty, ignore these events. The only exception are the NEIC and ATWC reviewed locations. These events have higher priority over our automatic locations and listed with 0 associated phases. These still need to be reviewed if satisfy the criteria (1) or (2) on the previous page.

Note: Events in the *duty_dbevents* window may be listed out of the sequence; they are sorted by time they were added to the database, not by the earthquake origin time.

To delete an event: *R-click* on the event location on the map and choose *"Delete event ..."* option. To relocate an event, choose *"Review event"* option.

(2) Keep an eye on ANSS webpage with Alaskan earthquakes and our own *dbrecenteqs* page. If these pages do not receive any new earthquakes report it to Mitch Robinson.

earthquake.usgs.gov/recenteqs/recenteqsus/Maps/special/Alaska.php

http://www.aeic.alaska.edu/recent/sub/index.html

7.1. Earthquake Alarm Response Procedural Checklist.

This document outlines a procedural checklist for AEIC earthquake alarm response. In this paper, double quotes indicate a button or menu option, and mouse clicks are assumed to be a left mouse click unless noted. *Blue* text indicates a program. This outline is in 6 parts:

I. IMMEDIATELY UPON RECEIVEING THE EARTHQUAKE PAGE:

(Step 1a) You must cancel the alarm. This is done via text messaging with the cell phone or by sending e-mail message. Look at the text message with automatic location and remember alarm ID number that is included in the subject line (*alarmid*).

Cancelling via e-mail message:

Address this message to *seissum@giseis.alaska.edu*. Type 'ack' in the subject line and 'ack *alarmid*' in the body of the message, where *alarmid* is the alarm ID number. Send the message. The cancellation program will recognize messages sent from any of the *giseis* or *gi* accounts. If you have a private e-mail account that you would like to use for the alarm cancellations, it has to be included into the mail parser parameter file. Talk to Natasha Ruppert if you want to add your home e-mail account to the list of accounts authorized to cancel alarms.

Cancelling via text messaging:

- Go to "**Message Center**" through *Main Menu->Messages*.
- Select **"New Short Msg"**. It'll take you to the *Message Type* screen.
- Type in "ack" followed by space and alarm ID number. (Note: Enter a space by pressing the * key once. Switch to numeric entry mode the # key once).
- Press **"Send To"** button (upper right button). It'll take you to *Send To* screen.
- Using the 4-way toggle, arrow down and highlight "**Cancel Alarm**", then press the center button in the toggle to put a check in the box next to "Cancel Alarm".
- Lastly, press **"Send"**.
- You're done cancelling the alarm.

If alarm has been successfully cancelled, a text message will be send to the duty cell phone with the acknowledgment of your acknowledgment. It comes from *seissum* with subject line: '*Acknowledgment for alarmid XX*', and body of the message: '*Cancelled by 9073222014@msg.acsalasks.com at TIME UTC*'.

(Step 1b) If you don't have duty laptop and internet access, you need to drive to the lab to do a release. You may optionally call 474-7320 to see if anyone is in the lab to do a release for you. This can save unnecessary driving. While on duty, you should remain within 15 minutes of the seismology lab.

II.A. BEGIN THE ALARM RESPONSE - FROM THE LAB:

(Step 2a) Choose an appropriate workstation to process the earthquake. Due to e-fax settings, it has to be either your main working station or alarm station. Login and start *duty_dbevents* from the command line on the monitor that you are using to launch *dbloc2*.

(Step 2b) Find your alarm event on the map, right click on it and choose **"Review event"** option. **"Response"** window will appear.

(Step 2c) Click on **"Subset database & Relocate event"** button. Note: if you are reviewing event with NEIC location, you need to type in a different *orid* at the top of the **"Response"** window. All origins for the given event are listed in the bottom right panel of the *duty_dbevents* window. Choose an automatic *orid* with decent number of associations. You are then asked to delete a *tmp* directory. Click **"Delete"** without fear. *Dbloc2* will then start.

II.B. BEGIN THE ALARM RESPONSE - FROM OUTSIDE THE LAB THROUGH DUTYLAP

(Step 2a) Turn on the duty laptop. Make sure it is connected to the internet. Log in as *alarm* (password).

(Step 2b) Click on *VPNClient* icon in the upper right corner of the screen. Double-click on the GI entry or click on **"Connect"** icon. Log in with your Lab network username and your Banner ID as the password. If this fails, log in with the username and password that you use for your on-line time-sheet submissions. You may now minimize *VPN Client* window.

(Step 2c) Click on *X11* icon in the upper right corner of the screen. *xterm* window will appear. In this window type:

ssh -YC tele.giseis.alaska.edu -l dutylap

Alternatively, you can copy and paste this command from help file that sits on the desktop. Type in the password ( ). You are now logged into the seislab network. From now on, the response procedure is very similar to II.A.

(Step 2d) Start *duty_dbevents* by typing it in the *xterm* window.

(Step 2e) Find your alarm event on the map, right click on it and choose **"Review event"** option. **"Response"** window will appear.

(Step 2f) Click on **"Subset database & Relocate event"** button. Note: if you are reviewing event with NEIC location, you need to type in a different *orid* at the top of the **"Response"** window. All origins for the given event are listed in the bottom right panel of the *duty_dbevents* window. Choose an automatic *orid* with decent number of associations. You are then asked to delete a *tmp* directory. Click **"Delete"** without fear. *Dbloc2* will then start.

III. LOCATE THE EVENT:

(Step 3a) Locate the event using the appropriate software. *Dbloc2* is the standard locating software. Reference the guide "A Method for Using dbloc2 and dbpick" in this Manual.

(Step 3b) After acquiring a good location save it and open *alarm* database. You can access this database at the bottom of the *dbloc2* window. Under **"Database"** right click for a pull-down menu and select *alarm* database. A *dbe* window will open. Choose *origin* table. Alternatively, you can open *alarm* database from **"Response"** window by clicking on **"view database"** button. If the event is **ML 5 or larger**, coordinate location, depth and magnitude with NEIC (See Section 7.2 of this Manual).

(Step 3c) When confident with your solution, highlight any field in the *origin* table that corresponds with the appropriate solution. Then click **"Edit"** and choose **"Respond"** or **"Update"** from the pull-down menu.

IV. CHECK FOR FELT REPORTS:

(Step 4a) Check your own or *dutylap* (passw) e-mail for messages from *Shake Account* with felt reports. Check DYFI page for Alaska for felt reports: *http://pasadena.wr.usgs.gov/shake/ak/*.

(Step 4b) The *felt_report_tool* should now be open. Call a reasonable number of contacts to learn all you can about their experience. Edit the felt report to accurately describe the event. List where the event was felt, damage, etc. It this is an aftershock, add the description: "*This is an aftershock of the magnitude XX event that occurred on DA/MO/YEAR at 00:00 ADT*". When satisfied click **"Submit felt-report synopsis"**. You are now committed to the event!

V.A. CREATE RELEASE IN THE LAB:

(Step 5a) A map of the earthquake will show up on your monitor, then quickly close. Be patient and wait for *Frememaker* to start. Do not click anything or type any keys!

(Step 5b) When *Frememaker* does open, press **"Control-1"**. This activates a macro that is importing relevant event data. Wait for it to finish.

(Step 5c) Press **"Control-3".** This saves the document in your releases directory and sends it to the printer (lexbw). Several file conversions will take place, so be patient for a few moments. *Frememaker* will quit and *aeic_release_distributor* will start.

V.B. CREATE RELEASE THROUGH DUTYLAP:

(Step 5a) A map of the earthquake will show up on your monitor, then quickly close. Be patient and wait for *Frememaker* to start. Do not click anything or type any keys! It may take up to 5 minutes depending on your internet connection.

(Step 5b) When *Frememaker* does open, press **"Control-1"**. This activates a macro that is importing relevant event data. Wait for it to finish. You won't be able to see the imported map.

(Step 5c) **Do not use "Control-3".** In this case saving and printing has to be done manually. Do the following sequence of commands in the FrameMaker document window:
File -> Print -> Destination-Printer Lexbw -> Print
File -> Print -> Destination-PDF File -> Change file name -> *Print*
File name has to be changed from *myrelease.pdf* to *YYYYMMDDHHMMSS_.pdf*. Do not change directory. For example,
/home/dutylap/releases/20070101223344/myrelease.pdf
has to be changed to
/home/dutylap/releases/20070101223344/20070101223344_.pdf
It's important to have the correct file name. Otherwise the next program will never open. If everything goes well, *Frememaker* will quit and *aeic_release_distributor* will start. Several file conversions will take place, so be patient for a few moments. If nothing happens after over 5 minutes of waiting, see the "Troubleshooting" section (page 39).

VI. RELEASE DISTRIBUTION:

Note: the following order may be changed.

(Step 6a) Click **"Update Release Database"**

(Step 6b) Click **"Email information release to aeic_release"**

(Step 6c) Click **"Fax information release"**

(Step 6d) Click **"Update web release"**

(Step 6e) Click **"Send release to cell phones"**

(Step 6f) Click **"Update finger quake list"**

(Step 6g) Click **"Update lab voice mail"** Refer to Section 7.3 of this Manual for instructions.

(Step 6h) Click **"Notify people on the call down list"**. Answer the two questions that come up.

You will automatically be instructed what numbers to call if necessary.

(Step 6i) Select the red **"Quit"** button.

Pick up the printout when finished. On the lab bench is a two hole press. Use it on the top of the page, then place it on the clipboard hanging on the wall by the door to the secure computer room.

THAT'S IT!!
Don't forget to close all programs and windows after you're done.

7.2. Coordinating Magnitudes with NEIC.

7.2.1. Finding the magnitude.

For events with reviewed magnitudes 5 and higher coordinate magnitudes with NEIC. Reviewed locations come through e-mail and are available on NEIC website:
http://earthquake.usgs.gov/eqcenter/recenteqsus/Maps/special/Alaska.php

(1) Preferred source: NEIC website. Find your earthquake either on the map or in the event list and click on it. It will take you to a summary page for this event. The **"Source"** field should be USGS NEIC and it has to be a reviewed earthquake. Wait for it to be reviewed. Once it has been reviewed, look at the **"Magnitude"** field for the preferred magnitude value and at the **"Parameters"** field for type of magnitude. This is the magnitude that needs to be reported in your release.

(2) Second choice: E-mail from NEIC with the reviewed location. See example below. There are two places in which the magnitude is given. One is in the upper right part of the e-mail message body that gives the value and source of the magnitude, but not its type. Farther down in the message there is a line with various magnitudes, including *mb*. If the magnitude value on the top matches with *mb* below, then this is your magnitude for the release. If magnitude at the top does not match with *mb*, we assume its *Mw*. The former is true for most light and moderate earthquakes. The latter is more likely to be the case for strong and major earthquakes.

```
################################################################################
Date: Wed, 9 Jan 2008 14:49:54 GMT
From: bellini@nsn8.cr.usgs.gov
To: nsn_list@kiska.giseis.alaska.edu
Subject: REVIEWED LOCATION FROM USGS/NEIC

    9 JAN 2008  (  9)                    LZAS

   ot  = 14:40:01.21   +/-   0.23          QUEEN CHARLOTTE ISLANDS REGION
   lat =     51.701   +/-    3.9
   lon =   -131.096   +/-    3.9          MAGNITUDE 6.2 (GS)
   dep =       10.0  (geophysicist)

   210 km (130 miles) WSW of Bella Bella, British Columbia, Canada
   265 km (165 miles) SSE of Masset, British Columbia, Canada
   630 km (390 miles) WNW of Vancouver, British Columbia, Canada
   665 km (410 miles) NW of VICTORIA, British Columbia, Canada

   nph =   91 of 103    se = 1.03    FE=022                      A
   error ellipse = ( 45.7,  0.0,  6.8;135.7,  0.0,  2.4;  0.0,  0.0,  0.0)

 mb = 5.7 ( 63)  ML = 0.0 (  0)  mblg = 0.0 (  0)  md = 0.0 (  0)  MS = 0.0 (  0)

################################################################################
```

(3) Last resort: Call NEIC hotline for regional networks 303-273-8439.

7.2.2. Entering NEIC magnitudes into the database and release files.

(1) Entering *mb*. This has to be done in the *origin* table of your *alarm* database. Do the following:

- *Options -> Allow edits*
- *View -> Arrange*. A **"Display order"** window will paper.
- Check *mb* parameter and click **"OK"** button. This parameter will be added as the last column in your *origin* table.
- Click on your added *mb* field and type in your *mb* value.
- Proceed with release through *Edit->Respond* option.

mb value will be chosen by the response software as your preferred magnitude for the release. No need to do anything else in terms of the magnitude.

(2) Entering *Mw*. Enter *mb* value in the *origin* table if it is available for this event (see above). The origin row has to have *ml* and/or *mb* for the response software to be launched. There is no field for *Mw* in the *origin* table, so it has to be entered manually in all release files:

- Framemaker document: Change magnitude value, type (Mw) and source (NEIC) as needed both in the text body and in the earthquake parameter block. See if the earthquake strength needs to be changed too. See terminology in Session 10.1 of this Manual.

- E-mail message: Change magnitude value, type (Mw) and source (NEIC) as needed in the subject line, text and the earthquake parameter block. See if the earthquake strength needs to be changed too.

- Voice mail message: Substitute different magnitude and earthquake strength as needed.

7.3. Update the Lab Voice-mail Message.

1) Call up the voice-mail system:

Dial 1800 on campus or 474-1800 from off campus

2)Log in:

for the box number,

Enter 4300 #

for the password,

Enter 4300 #

3) Access the greetings:

Press 82

4) Access the external greeting

Press 1

5) Delete the old greeting

Press 76

6) Record new greeting

Press 5
read the new greeting
Press # to stop

7) Review the greeting (!)

Press 2

8) Exit the mailbox

Press 4

8. AEIC Response Software Documentation.

8.1. Introduction.

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

8.2. 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 for a full release.
- Choose ***Edit->Update*** from the dbe menubar for a partial release.

- Report problems in writing.

8.3. The Full Release Procedure.

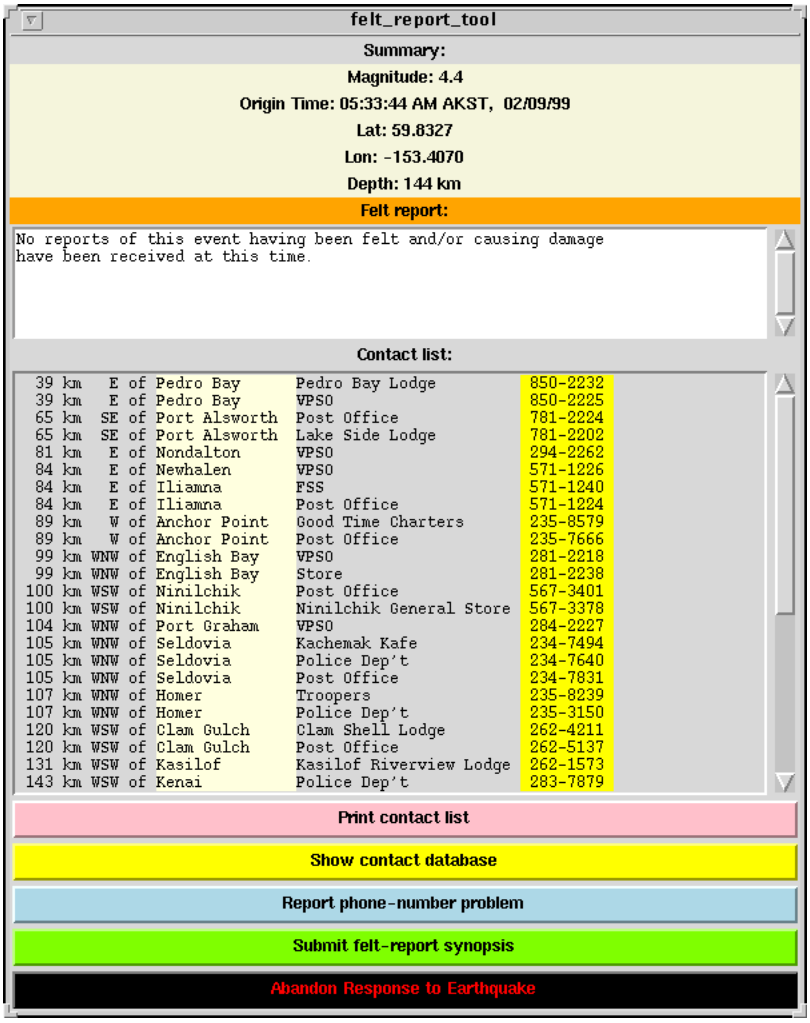
The first step is to locate the earthquake. This may be done with *Xpick*, with *dbloc2*, with another location program, or by stealing from appropriate sources such as the National Earthquake Information Center. Once the earthquake is located, the hypocentral coordinates must be put in a Datascope database. 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.

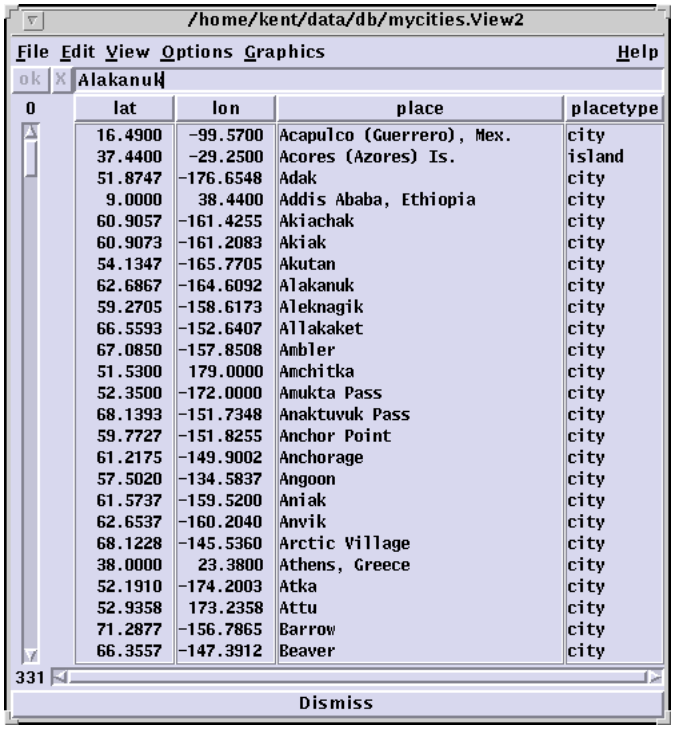
Once a hypocentral location is chosen, the response software will present the user with the *felt_report_tool*. On the screen, it looks like this:.



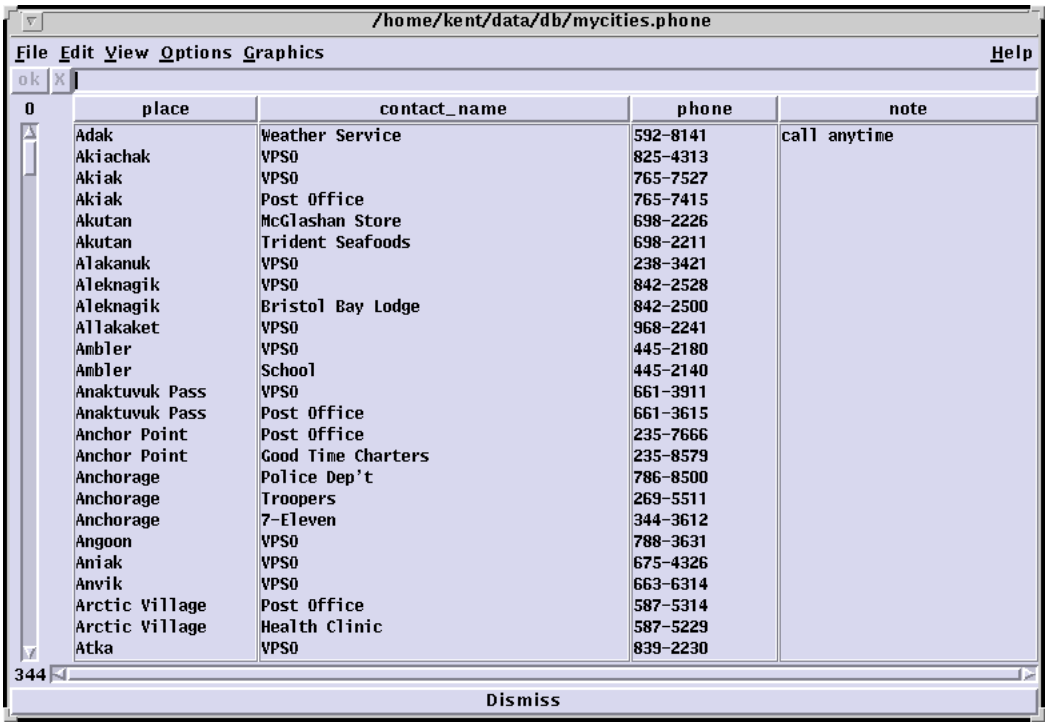
At the top is a summary of the earthquake's vital statistics, for convenience in calling people. The next window is a small text editor for the felt-report sentence or sentences. The stock report is that "no reports of this event having been felt and/or causing damage have been received at this time." 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 pro-

gram, for those familiar with it. The main window of dbe, which will appear if you hit the “Show contact database” button, looks like this:

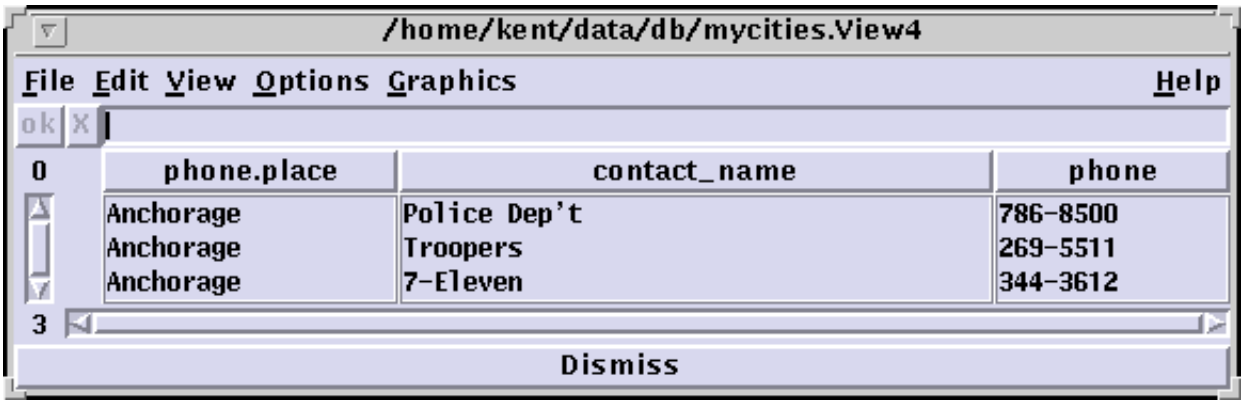
Hitting the “places” button brings up a table of places in the database



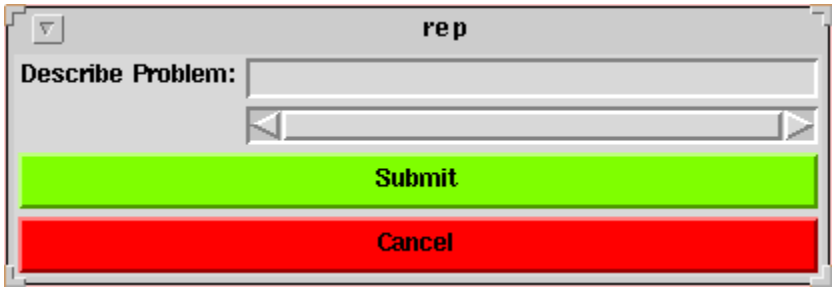
Similarly, hitting the “phone” button will bring up a table of phone-number contacts:



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

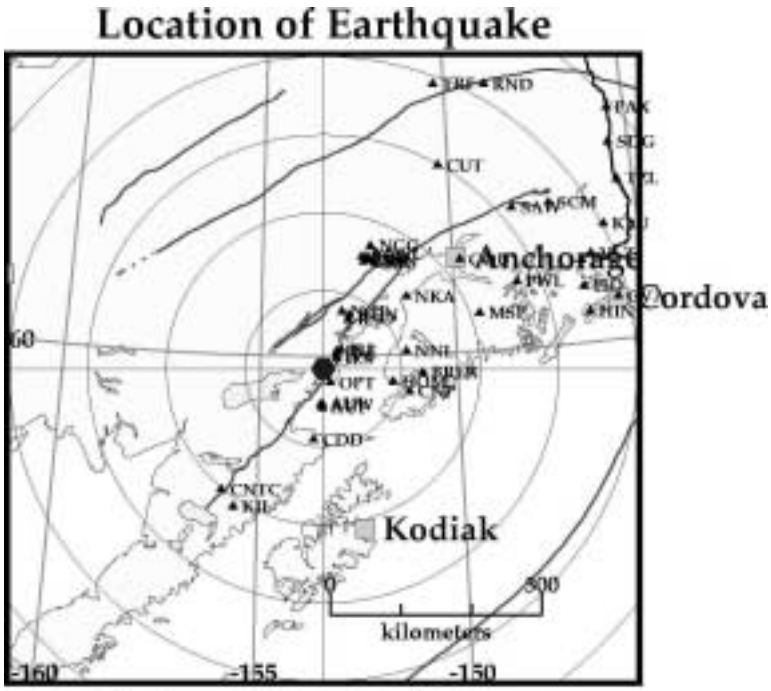


The next button in the *felt_report_tool* allows users to report problems with phone numbers to the person responsible for maintaining the database. This is critical if we are to have a useful database of contact information. Hitting this button brings up a problem-submission window with a one-line text-entry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



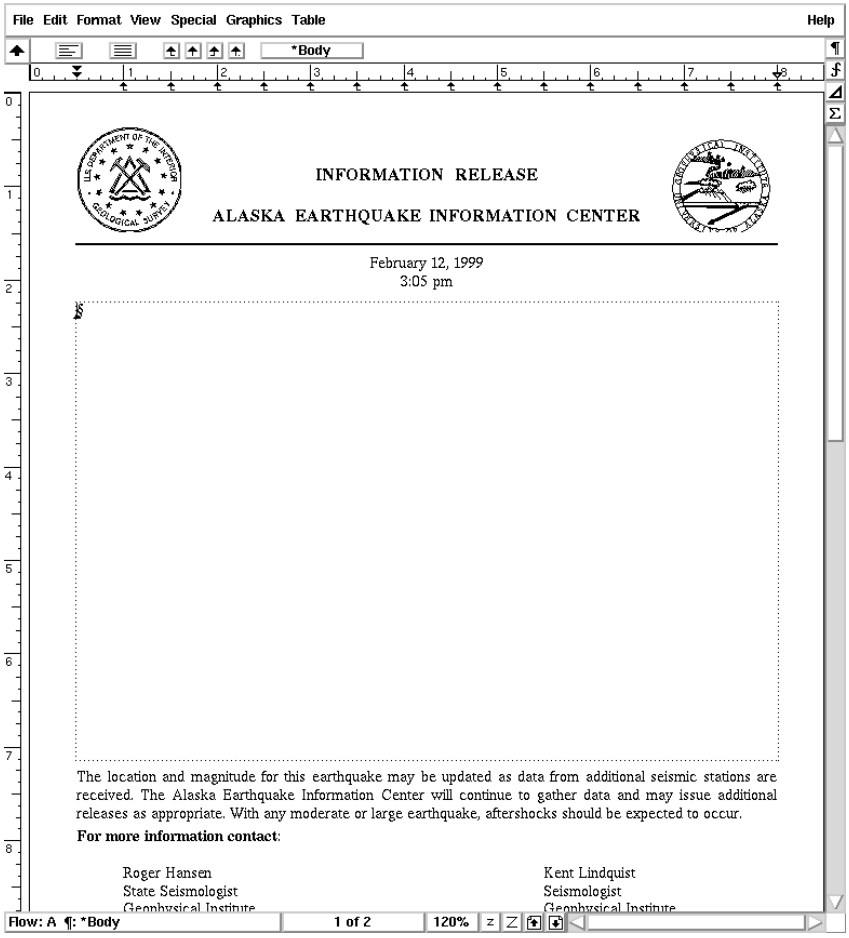
Finally, the "Submit felt report synopsis" button on the *felt_report_tool* commits the seismologist to the edited felt report. When this button is hit, the *felt_report_tool* will disappear, allowing the response process to continue to the next step. The last button on the *felt_report_tool* allows 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:



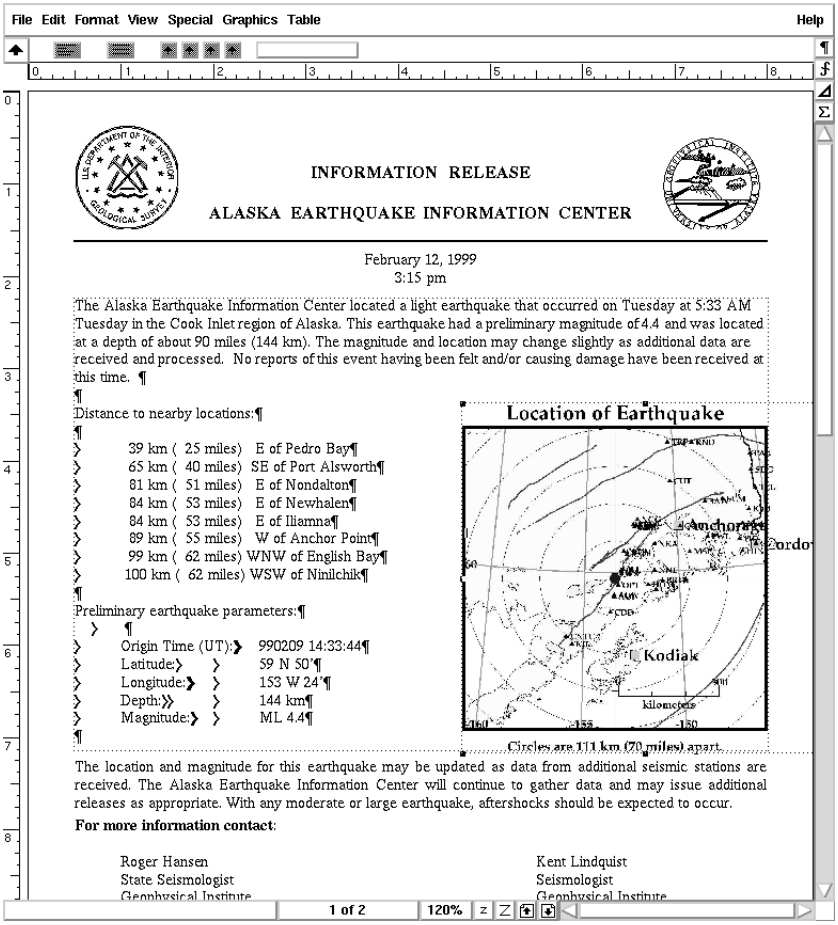
Circles are 111 km (70 miles) apart.

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:

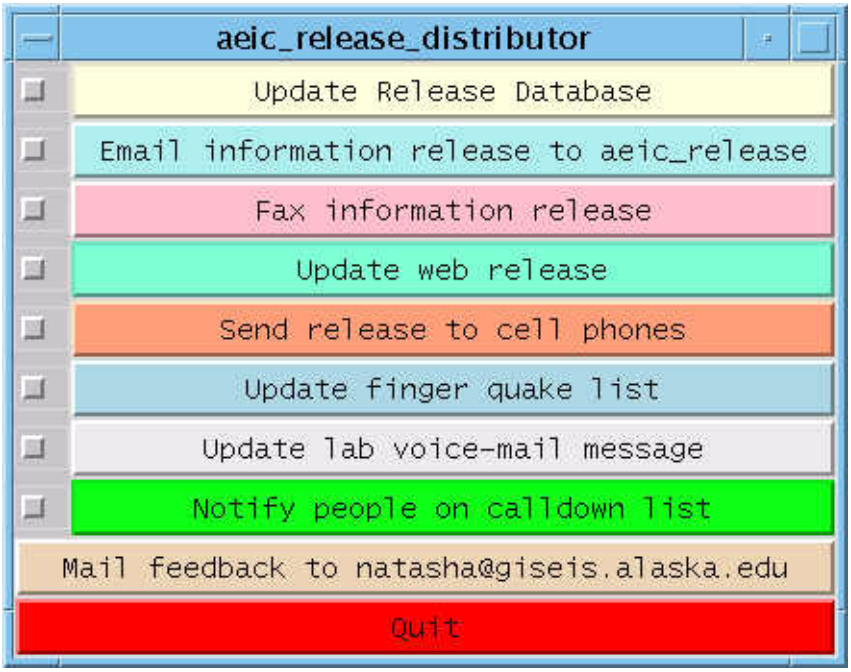


Review the document. Edit if necessary. Then hit “Cntl-3” to commit to the completed release. This will print out the release [unless you’re running in training mode] to the printer specified in the aeic_release.pf parameter file, currently the default printer is “lexbw” located in the dark room. Then 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. 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:



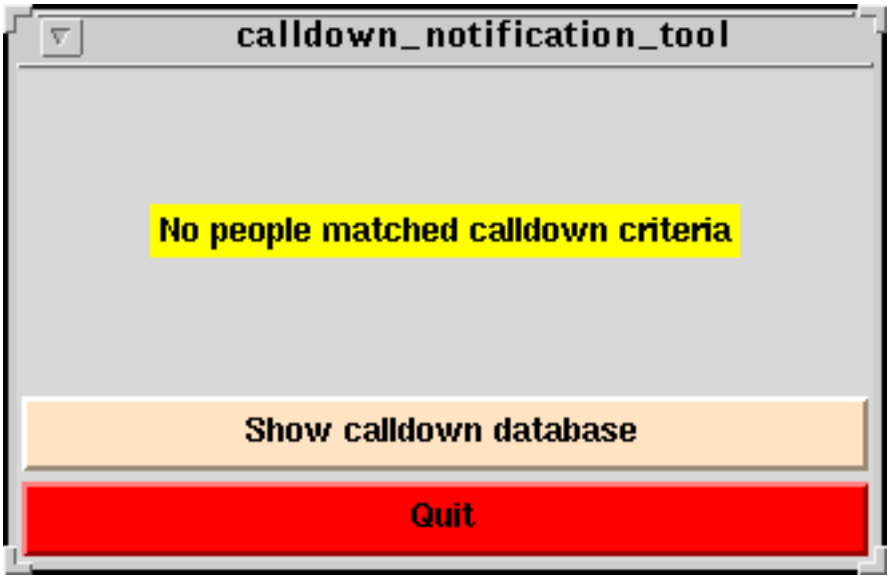
Each button triggers one of the distribution steps. The buttons are the broad colored bars. The checkboxes at left are intended for notetaking by the seismologist. If a button is pressed, the corresponding checkbox will turn red to indicate that the task has been completed. Also, the button will be deactivated. 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.

Some functions run silently in the background and do not require additional input from analyst ("**Update web release**", "**Send release to cell phones**", "**Update finger quake list**", "**Update Release Database**", "**Fax Information Release**").

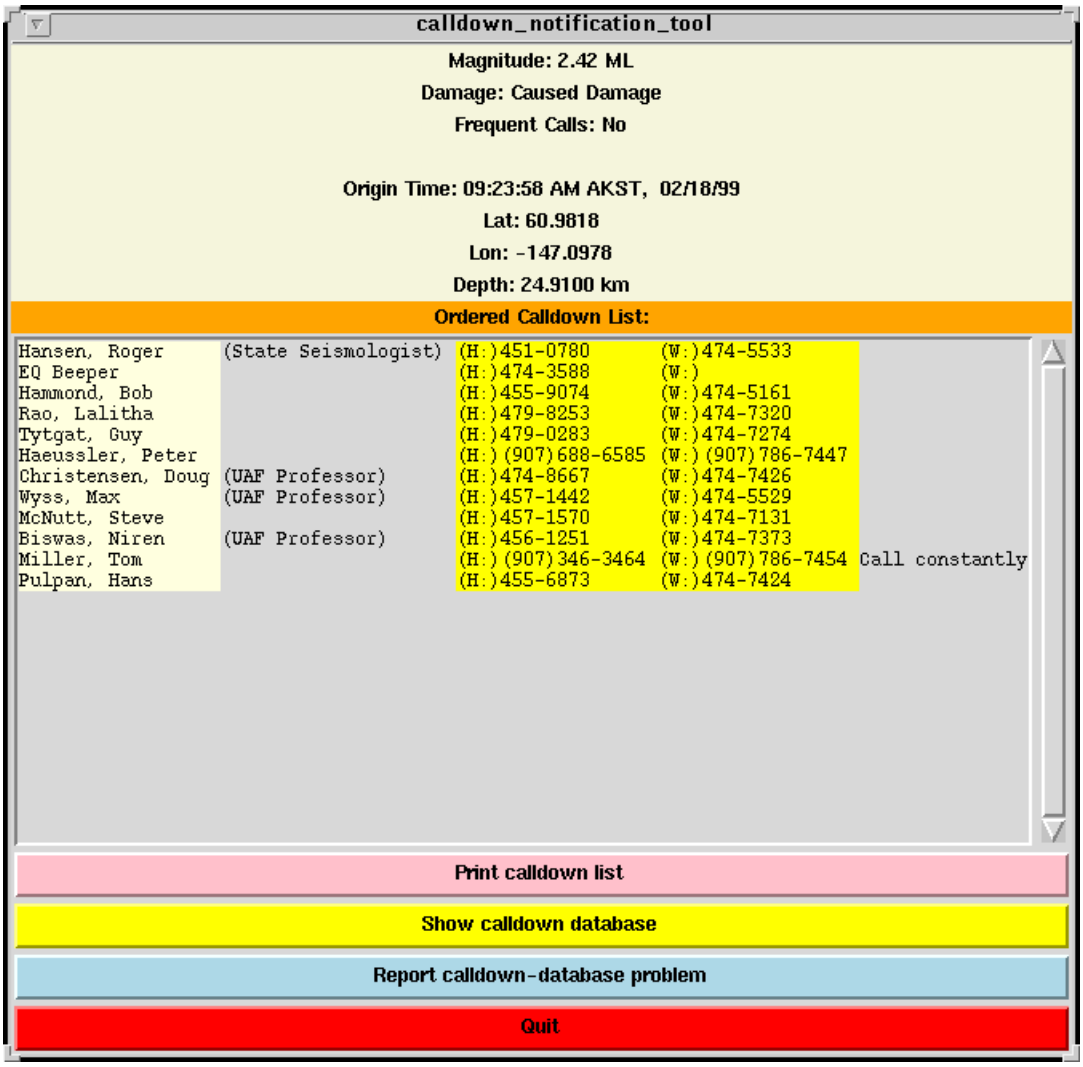
The following is a description of the functions that are interactive and may require additional input from analyst.

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. These numbers are also updated and listed on pages 41 and 42 of the beeper duty manual.



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:

mycontacts.contact

File Edit View Options Graphics

ok X

0

name	priority	role	work_ph	home_ph	email
Hansen, Roger	A	State Seismologist	474-5533	451-0780	roger@giseis.alaska.edu
EQ Beeper	A			474-3588	analyst@giseis.alaska.edu
Ak Fire Service	B		356-5670		
Curry, Dave	B	AK Fire Service		457-6364	
Billing, Scott	B	AK Fire Service		455-7337	
Dash, Dave	B	AK Fire Service		474-8784	
Ribar, Joe	B	AK Fire Service		452-1365	
Haeussler, Peter	C1		(907)786-7447	(907)688-6585	pheuslr@tardaddy.wr.usgs.gov
Christensen, Doug	C2	UAF Professor	474-7426	474-8667	doug@giseis.alaska.edu
Wyss, Max	C4	UAF Professor	474-5529	457-1442	max@giseis.alaska.edu
McNutt, Steve	C5		474-7131	457-1570	steve@giseis.alaska.edu
Biswas, Niren	C6	UAF Professor	474-7373	456-1251	niren@giseis.alaska.edu
Miller, Tom	C7		(907)786-7454	(907)346-3464	futpm@acad3.alaska.edu
Hammond, Bob	C		474-5161	455-9074	bob@giseis.alaska.edu
Tytgat, Guy	C		474-7274	479-0283	guy@giseis.alaska.edu
Rao, Lalitha	C		474-7320	479-8253	lalitha@giseis.alaska.edu
Weaver, Craig	D		(206)553-0627	(206)881-3410	craig@usgs.gov
Pulpan, Hans	D		474-7424	455-6873	hans@giseis.alaska.edu
Eichelberger, John	D		474-5530	479-7127	eichel@giseis.alaska.edu
Keith, Terry	D		(907)786-7443	(907)746-5423	tkeith@tardaddy.wr.usgs.gov

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Dismiss

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

mycontacts.threshold

File Edit View Options Graphics Help

ok X

0

name	regname	minmag	maxz	damage	freq_calls
Ak Fire Service	Anchorage	6.50			
Ak Fire Service	South Central	7.00	50.0000		
Billing, Scott	Anchorage	6.50			
Billing, Scott	South Central	7.00	50.0000		
Biswas, Niren	Alaska Peninsula	9.00			
Biswas, Niren	Anchorage	5.00	30.0000	y	y
Biswas, Niren	Andreanof Islands	9.00			
Biswas, Niren	Bering	9.00			
Biswas, Niren	Denali	9.00			
Biswas, Niren	Fairbanks	9.00			
Biswas, Niren	Fox Islands	9.00			
Biswas, Niren	Gulf of Alaska	9.00			
Biswas, Niren	Near-Rat Islands	9.00			
Biswas, Niren	Northern	9.00			
Biswas, Niren	South Central	9.00	30.0000	y	y
Biswas, Niren	South East	9.00			
Christensen, Doug	Alaska Peninsula	7.00		y	y
Christensen, Doug	Anchorage	7.00	50.0000	y	y
Christensen, Doug	Andreanof Islands	9.00		y	y
Christensen, Doug	Bering	9.00		y	y
Christensen, Doug	Denali	7.00		y	y
Christensen, Doug	Fairbanks	7.00		y	y
Christensen, Doug	Fox Islands	9.00		y	y
Christensen, Doug	Gulf of Alaska	9.00		y	y
Christensen, Doug	Near-Rat Islands	9.00		y	y

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Dismiss

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

mycontacts.regions

File Edit View Options Graphics Help

ok X

0

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

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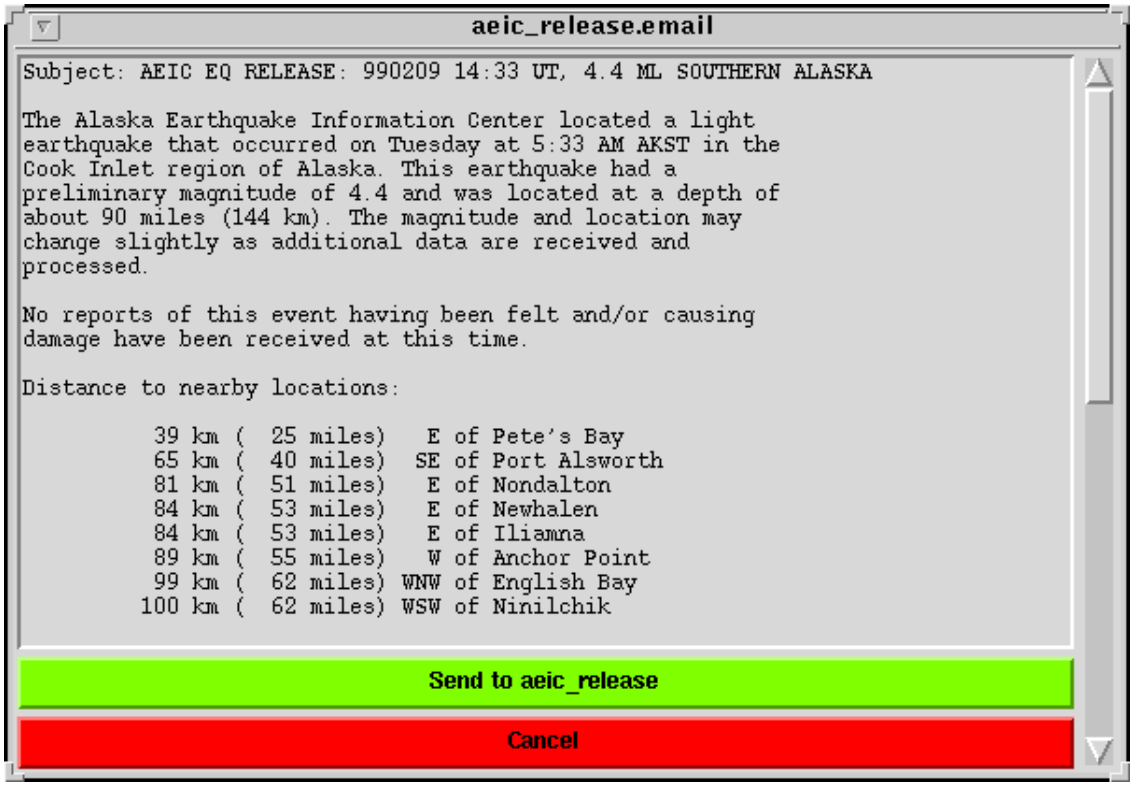
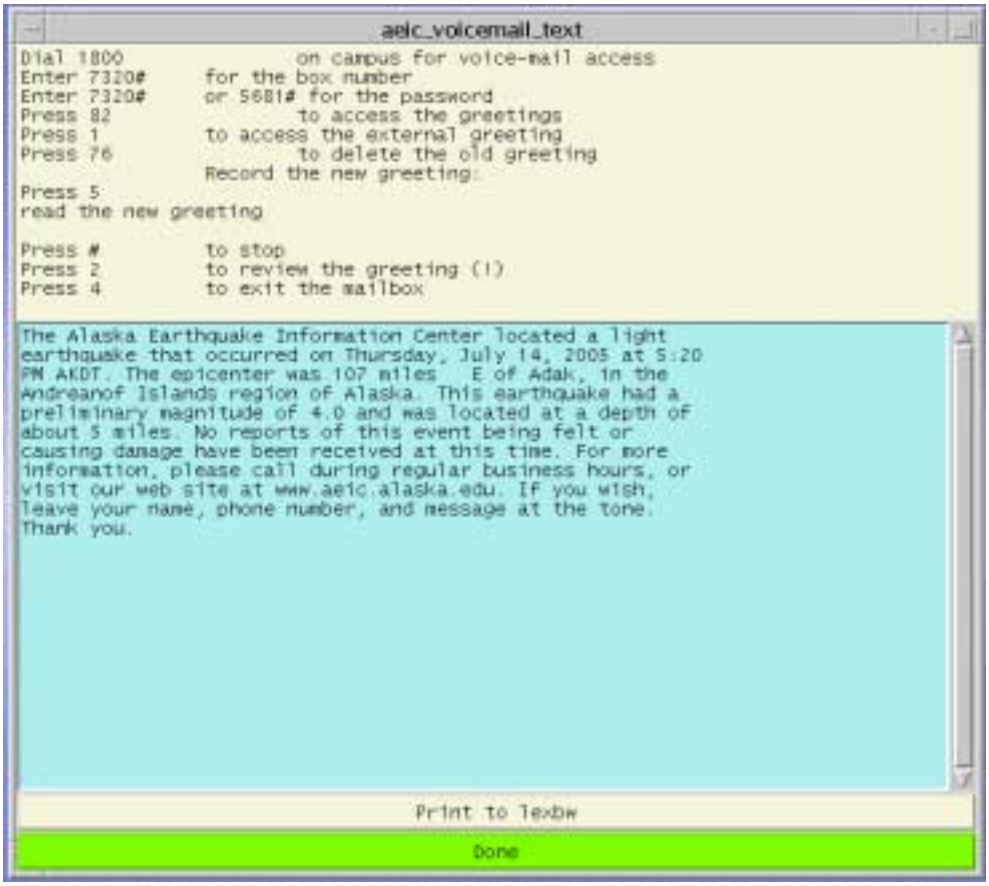
Dismiss

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:



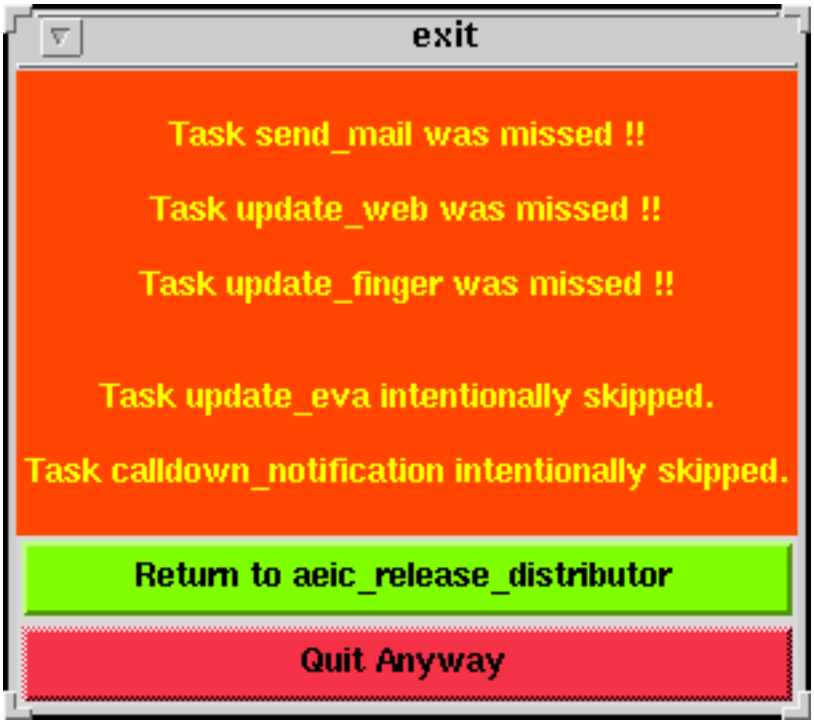
The "**Update Lab voice mail message**" button of the *aeic_release_distributor* brings up a window with instructions on how to do the update. The window looks like this:



"Print" button would make a print out of the message, but no the instructions.

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

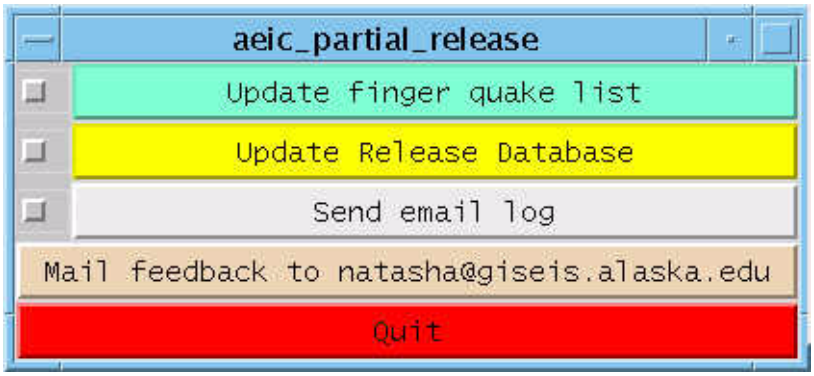
If you quit the aeic_release_distributor without completing some of the tasks, or with some of the tasks intentionally skipped, you will get a warning message:



8.4. The Partial Release (UPDATE) Procedure.

This procedure is similar to a full release, however there are fewer steps. Follow the same procedure for a full release with respect to locating the earthquake. Once you have a database of the event, you need to launch the partial release script. This is called aeic_partial_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->Update** 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.

The following image will pop-up.



Click each button. Then Quit.

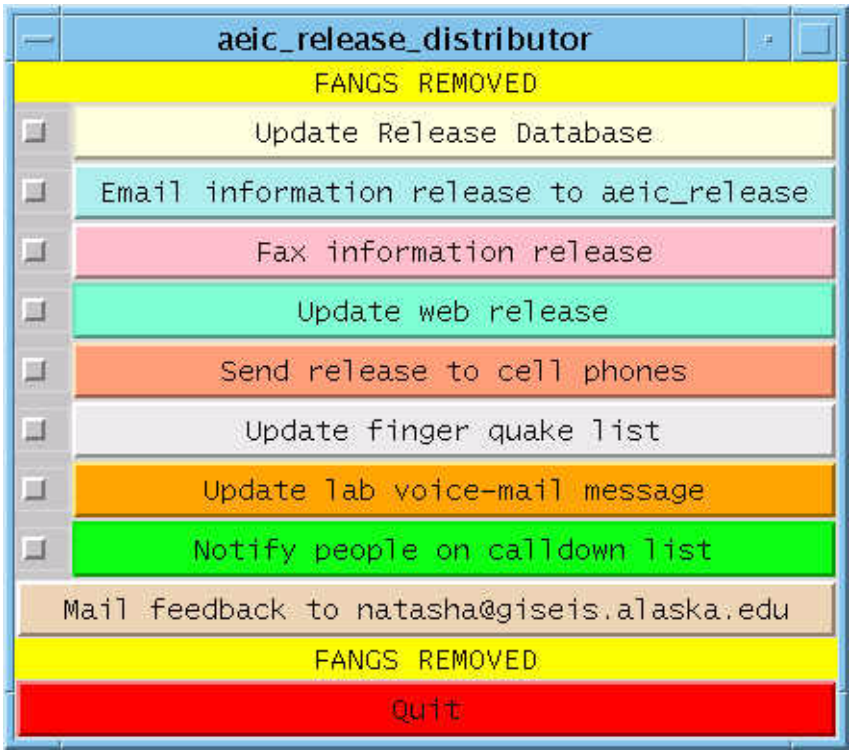
8.5. AEIC Release Procedure for Training Purposes.

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

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



8.6. 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 formatted 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.

8.7. 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
fax_release_recipient &Literal{
  907XXXXXXX@emailfaxservice.com, 703XXXXXXX@emailfaxservice.com}
web_directory           /usr/local/frame2html/results
release_database        /Seis/catalogs/releases/initial_releases
cellphone_mail_recipients       &Arr{
   907XXXXXXX@msg.acsalaska.com
   907XXXXXXX@mobile.celloneusa.com
}
printer lexbw

########################################################################
# Where to get necessary information and templates
cellphone_reference_cities      /Seis/databases/places/cellphone_cities
common_place_database   /Seis/databases/places/wellknown_alaskan_cities
place_database  /Seis/databases/places/cities
maker_template  /usr/local/aeic/4.7/data/response/aeic_response_template.fm
region_phrases_database /Seis/databases/regions/alaska_region_phrases
contact_database        /Seis/databases/notify/contactss
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 or causing damage
have been received at this time.
}

voicemail_file  aeic_voicemail_text
voicemail_instructions  &Literal{
Dial 1800               on campus for voice-mail access
Enter 7320#     for the box number
Enter 7320#     or 5681# for the password
Press 82                to access the greetings
Press 1         to access the external greeting
```

```
Press 76              to delete the old greeting
          Record the new greeting:
Press 5
read the new greeting

Press #       to stop
Press 2       to review the greeting (!)
Press 4       to exit the mailbox
}

########################################################################
# 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
email_update            aeic_update.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
subset_database  myrelease_db

Helpers &Arr{
   Framemaker  /usr/local/frame6.0/bin/maker
   aeic_partial_release        /usr/local/aeic/4.7/bin/aeic_partial_release
   aeic_release_distributor    /usr/local/aeic/4.7/bin/aeic_release_distributor
   alchemy     /usr/local/bin/alchemy
   calldown_notification       /usr/local/aeic/4.7/bin/calldown_notification_tool
   cellphone_notifier  /usr/local/aeic/4.7/bin/aeic_cellphone_release
   dbmaprelease        /usr/local/aeic/4.7/bin/dbmaprelease
   felt_report_tool    /usr/local/aeic/4.7/bin/felt_report_tool
   tkshow_message      /usr/local/aeic/4.7/bin/tkshow_message
   update_finger       /usr/local/aeic/4.7/bin/update_finger
   rtmail                    /opt/antelope/4.7/bin/rtmail
}

########################################################################
# Who to harass with problems
maintainer natasha@giseis.alaska.edu
pf_revision_time        1117047267
########################################################################
```

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.

8.8. 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 a timestamp based on the origin time of the earthquake (YEARMODAHOMISE). 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 output of the command which should keep you occupied and entertained.

8.9. Troubleshooting a Problem Release.

- If you have located an event and saved it in *alarm* database, you can start response by opening alarm database from the command line by typing *dbe alarm* and opening origin table. You do not have to subset the database again and relocate this event.

- If you previously aborted a response or update and want to return to the same event, you first have to remove directory created for this event in the releases directory and only then restart release or update:
  cd /home/YOU/releases
  rrm -r YYYYMMDDHHMMSS

- If *aeic_release_distributor* does not launch after you went through all steps in FrameMaker, you can open it from release directory for this particular event:
  cd /home/YOU/releases/YYYYMMDDHHMMSS
  aeic_release_distributor

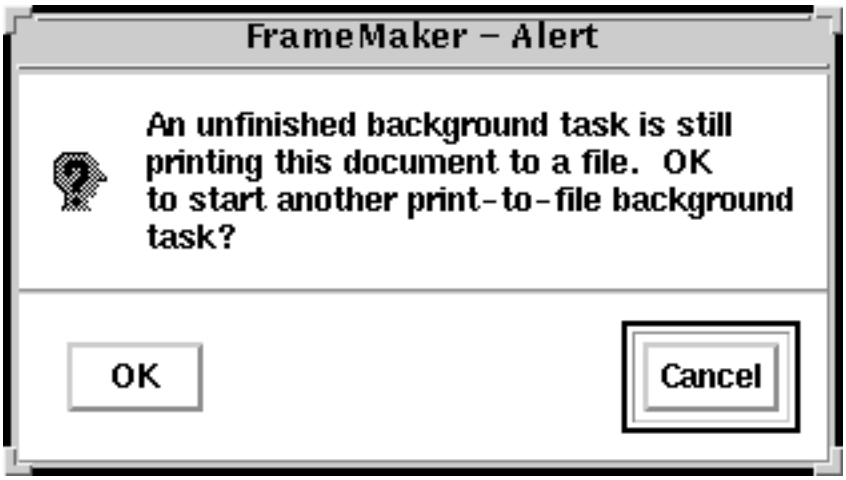
8.10. Known Problems.

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.

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.

8.11. Limited Warranty.

We are 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, we 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:

    •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 ***in writing.***

9. AEIC Phone Lists.

Table 1: AEIC Numbers to Know!

Name	Phone
Beeper Duty Cell Phone	978-8572 (CellOne)
Beeper Duty Pager	496-3588 (Personal Page)
Seismology Lab - General	474-7320
Seismology Lab - AVO	474-5681
State Seismologist Cell Phone	460-7215

Table 2: Affiliated Organizations

Name	Phone
West Coast/Alaska Tsunami Warning Center	907-745-4212 907-694-2698 (do not give out)
NEIC Main Number	303-273-8500 (hard to get through)
NEIC Recorded Message	303-273-8515
NEIC Hotline	303-273-8439 (for regional networks)

Table 3: Press

Name	Phone
Associated Press	907-272-7549 206-682-1812 (after hours)
Fairbanks Daily News Miner	456-6661

Table 4: Beeper Duty Personnel

Name	Office	Home	Email
Burris, Lea	x 5517	374-5920	leab@giseis.alaska.edu
LaFevers, Martin	x 5627	456-1370	martin@giseis.alaska.edu
Kozyreva, Natasha	x 6873	699-6011	kozyreva@giseis.alaska.edu
Roush, Jamie	x 5161	456-3092	jamie@giseis.alaska.edu
Ruppert, Natasha	x 7472	451-7257	natasha@giseis.alaska.edu
Sandru, John	x 1151	457-3735	sandru@giseis.alaska.edu
Thompson, Glenn	x 7472	451-5593	glenn@giseis.alaska.edu

Table 5: Non-beeper Duty Personnel

Name	Office	Home	Email
Estes, Steve	x 7425	479-5819	estes@gi.alaska.edu
Freymueller, Jeff	x 7286	479-3550	jeff@giseis.alaska.edu
Hansen, Roger	x 5533	451-0780	roger@giseis.alaska.edu
Robinson, Mitch	x 7440	458-9065	mitch@giseis.alaska.edu
Suleimani, Elena	x 7997	458-9517	elena@giseis.alaska.edu

Table 6: AVO Fairbanks Numbers to Know

Seismology Lab: 474-7320	CS and AVO cell phones: 322-4084 and 322-4085
Seismology Drums: 474-5681	AVO duty seismologist 590 8248
Emergency Phone in Lab: 474-5682	

Table 7: AVO Fairbanks Personnel

Name	Office	Home	E-mail
Dixon, Jim	x 6014	479-4306	dixon@giseis.alaska.edu
McNutt, Steve	x 7131	474-9600	steve@giseis.alaska.edu
Nye, Chris	x 7430	455-6695	cnye@giseis.alaska.edu
Stihler, Scott	x 5450	474-2138	scott@giseis.alaska.edu
Tytgat, Guy	x 7274	460-0016	guy@giseis.alaska.edu

10.1. Earthquake Strength Terminology.

Magnitude Range	Strength
3.0 - 3.9	minor
4.0 - 4.9	light
5.0 - 5.9	moderate
6.0 - 6.9	strong
7.0 - 7.9	major
8.0 +	great

10.2. Sources of Data.

Continuous Waveform Data:

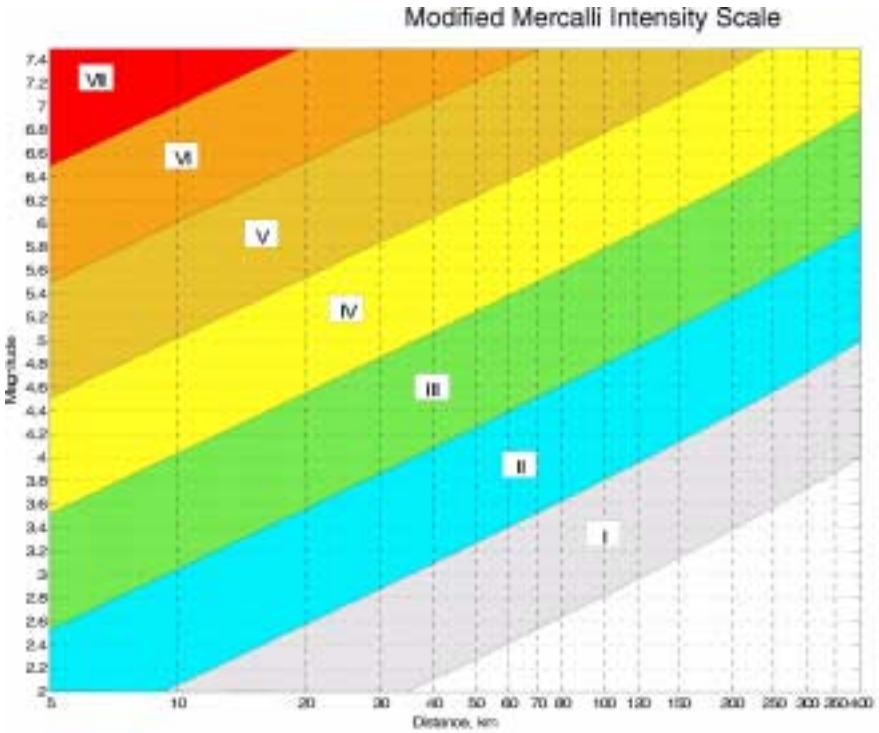
/iwrun/op/db/archive/archive - operational system

/iwrun/bak/db/archive/archive - backup system

Earthquake database:

/iwrun/sum/db/dbsum/dbsum

10.3. Modified Mercalli Intensity Scale.



Intensity	Level	Summary	Full Description
I		Not felt	
II		Felt by few	Felt only by a few persons at rest, especially on upper floors of buildings.
III		Felt indoors	Hanging objects swing. Vibration like passing of light trucks. May not be recognized as an earthquake.
IV		Dishes rattle	Dishes, windows, doors rattle; walls make cracking sound. At night, some awakened. Vibration like passing of heavy trucks.
V	Light	Pictures move	Liquids disturbed, some spilled. Doors swing, close, open. Pictures move. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Moderate	Objects fall	Furniture moved or overturned. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Weak plaster and masonry cracked.
VII	Strong	Nonstructural damage	Difficult to stand. Furniture broken. Weak chimneys broken. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures.
VIII	Very Strong	Moderate damage	Heavy furniture overturned. Twisting, fall of chimneys, monuments, towers. Branches broken from trees. Changes in flow or temperature of springs and wells. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures.

Determination of hypocentral distance

Epic. Dist, km	Depth, km								
	10	20	30	40	50	75	100	150	200
10	14	22	32	41	51	76	100	150	200
20	22	28	36	45	54	78	102	151	201
30	32	36	42	50	58	81	104	153	202
40	41	45	50	57	64	85	108	155	204
50	51	54	58	64	71	90	112	158	206
60	61	63	67	72	78	96	117	162	209
70	71	73	76	81	86	103	122	166	212
80	81	82	85	89	94	110	128	170	215
90	91	92	95	98	103	117	135	175	219
100	100	102	104	108	112	125	141	180	224
125	125	127	129	131	135	148	160	196	236
150	150	151	153	155	158	168	180	212	250
200	200	201	202	204	206	214	224	250	283
250	250	251	252	253	255	261	269	292	320
300	300	301	301	303	304	309	316	335	361
350	350	351	351	352	354	358	364	381	403
400	400	400	401	402	403	407	412	427	447

10.4. Parameter File *aeic_release.pf*.

/opt/local/aeic/4.6/data/pf/aeic_release.pf

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

########################################################################
# Where to send the output
email_release_recipient aeic_release
fax_release_recipient &Literal{
  907XXXXXXX@emailfaxservice.com, 703XXXXXXX@emailfaxservice.com}
web_directory           /usr/local/frame2html/results
release_database        /Seis/catalogs/releases/initial_releases
cellphone_mail_recipients       &Arr{
   907XXXXXXX@msg.acsalaska.com
   907XXXXXXX@mobile.celloneusa.com
}
printer lexbw

########################################################################
# Where to get necessary information and templates
cellphone_reference_cities      /Seis/databases/places/cellphone_cities
common_place_database   /Seis/databases/places/wellknown_alaskan_cities
place_database  /Seis/databases/places/cities
maker_template  /usr/local/aeic/4.7/data/response/aeic_response_template.fm
region_phrases_database /Seis/databases/regions/alaska_region_phrases
contact_database        /Seis/databases/notify/contactss
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 or causing damage
have been received at this time.
}

voicemail_file  aeic_voicemail_text
voicemail_instructions  &Literal{
Dial 1800               on campus for voice-mail access
Enter 7320#     for the box number
Enter 7320#     or 5681# for the password
Press 82                to access the greetings
Press 1         to access the external greeting
Press 76                to delete the old greeting
            Record the new greeting:
Press 5
read the new greeting
```

```
Press #       to stop
Press 2       to review the greeting (!)
Press 4       to exit the mailbox
}

########################################################################
# 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
email_update            aeic_update.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
subset_database  myrelease_db

Helpers &Arr{
   Framemaker  /usr/local/frame6.0/bin/maker
   aeic_partial_release        /usr/local/aeic/4.7/bin/aeic_partial_release
   aeic_release_distributor    /usr/local/aeic/4.7/bin/aeic_release_distributor
   alchemy     /usr/local/bin/alchemy
   calldown_notification       /usr/local/aeic/4.7/bin/calldown_notification_tool
   cellphone_notifier  /usr/local/aeic/4.7/bin/aeic_cellphone_release
   dbmaprelease        /usr/local/aeic/4.7/bin/dbmaprelease
   felt_report_tool    /usr/local/aeic/4.7/bin/felt_report_tool
   tkshow_message      /usr/local/aeic/4.7/bin/tkshow_message
   update_finger       /usr/local/aeic/4.7/bin/update_finger
   rtmail                    /opt/antelope/4.7/bin/rtmail
}

########################################################################
# Who to harass with problems
maintainer natasha@giseis.alaska.edu
pf_revision_time        1117047267
########################################################################
```

10.5. Parameter file *orb_quake_alarm.pf*.

/iwrun/sum/sun/pf/orb_quake_alarm.pf

```
##########################################################################
message_expressions &Arr{
      local_time      epoch2str(time,"%a %b %o at %l:%M %p %Z","")
      gmt_time        epoch2str(time,"%L/%d/%Y %H:%M:%S.%s GMT")
      subj_time       epoch2str(time,"%D %H:%M")
     beeper_mag      ml != NULL ? "Ml " . ml : ( mb != NULL ? "Mb " . mb : ( ms != NULL ? "MS " . ms : "No mag"
) )
      email_mag       ml != NULL ? ml . " Ml" : ( "NO MAG" )
      grname          grname(lat,lon)
near_fairbanksdistance(lat,lon,64.836,-147.7098) < 0.5 ? 1 : 0
near_anchoragedistance(lat,lon,61.2175,-149.9002) < 0.5 ? 1 : 0
near_juneau     distance(lat,lon,58.3012,-134.4185) < 0.5 ? 1 : 0
}

alarms &Arr{
   hypocenter &Arr{

# Trigger conditions for aeic beeper duty earthquake alarms

      aeic_beeper_cell    &Arr{
            trigger_condition       &Literal{
                  ( ndef >= 15 && ml >= 3.45 && %{near_anchorage} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 3.45 && %{near_fairbanks} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 3.45 && %{near_juneau} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 3.75 && %{in(South-central Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 3.95 && %{in(Mainland Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 3.95 && %{in(South-east Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 4.95 && %{in(Eastern Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 4.95 && %{in(Central Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 4.95 && %{in(Western Aleutians)} && review == NULL )
            }
            subject         Alarm %{alarmid}, Evid %{evid}
            body            &Literal{
    %{beeper_mag}, %{ndef} ph., %{depth} km, %{local_time}, %{nearest(1)}
            }
            wait_ack        1
            ack_subject Acknowledgment for alarmid %{alarmid}
            ack_body    Cancelled by %{ackauth} at %{acktime}
            recipients      &Arr{
                  9076996011@msg.acsalaska.com          0 # N.Kozyreva
                  9074601875@msg.acsalaska.com          0 # N.Ruppert
#                   9074604488@msg.acsalaska.com          0
                  4963588@epage.personal-page.com       180 # beeper pager
                  9079788572@mobile.celloneusa.com      0 # beeper cell
                  9074607215@mobile.celloneusa.com      600 # R.Hansen
            }
      }
```

```
# Trigger conditions for beeper duty e-mail notifications

    aeic_beeper_email    &Arr{
        trigger_condition &Literal{
            ( ndef >= 4 && ml >= 3.45 && %{near_anchorage} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.45 && %{near_fairbanks} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.45 && %{near_juneau} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.45 && %{in(South-central Alaska)} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.45 && %{in(Mainland Alaska)} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.45 && %{in(South-east Alaska)} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.95 && %{in(Eastern Aleutians)} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.95 && %{in(Central Aleutians)} && review == NULL ) ||
            ( ndef >= 4 && ml >= 3.95 && %{in(Western Aleutians)} && review == NULL )
        }
        wait_ack        0
        ack_subject
        ack_body
        subject         AEIC AUTOMATIC EQ: MAG %{ml} %{subj_time} UT, %{grname}
        body &Literal{

    This is an automatic earthquake solution from the
    Alaska Earthquake Information Center.

    Location and magnitude estimates are subject to change
    upon review of a human analyst.

    Please DO NOT DISSEMINATE this automatic solution.
    Contact the Alaska Earthquake Information Center
    for updated, analyst-reviewed information.

    Lat:    %{lat}
    Lon:    %{lon}
    Depth:  %{depth} km
    Time:   %{gmt_time}

    Magnitude: %{email_mag}

    %{ndef} phases used in solution

    This earthquake was located in %{grname}:

        %{nearest(1)}
        %{nearest(2)}
        %{nearest(3)}

    For more information contact the
    Alaska Earthquake Information Center
    at 907-474-7320

        }
        recipients &Arr{
            duty@giseis.alaska.edu   0
        }
    }
```

```
# Trigger conditions for non-AEIC cell phone notifications

      aeic_outside_cell    &Arr{
            trigger_condition       &Literal{
                  ( ndef >= 15 && ml >= 4.5 && %{in(Mainland Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 4.5 && %{in(South-east Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.5 && %{in(Eastern Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.5 && %{in(Central Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.5 && %{in(Western Aleutians)} && review == NULL )
            }
            subject         AEIC Automatic EQ
            body            &Literal{
    %{beeper_mag} %{lat} %{lon} %{depth} km depth %{local_time} %{nearest(1)}
            }
            wait_ack        0
            ack_subject
            ack_body
            recipients      &Arr{
#                   9074607214@msg.acsalaska.com    0
# Chris Jonientz-Trisler
#                   4259857576@mmode.com            0
# Rod Combellick
                  9073784419@mobile.celloneusa.com    0
            }
      }

# Trigger conditions for non-AEIC e-mail notifications

      aeic_auto_email    &Arr{
            trigger_condition &Literal{
                  ( ndef >= 15 && ml >= 4.0 && %{in(Mainland Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 4.0 && %{in(South-east Alaska)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.0 && %{in(Eastern Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.0 && %{in(Central Aleutians)} && review == NULL ) ||
                  ( ndef >= 15 && ml >= 5.0 && %{in(Western Aleutians)} && review == NULL )
            }
            wait_ack        0
            ack_subject
            ack_body
            subject         AEIC AUTOMATIC EQ: MAG %{ml} %{subj_time} UT, %{grname}
            body &Literal{

      This is an automatic earthquake solution from the
      Alaska Earthquake Information Center.

      Location and magnitude estimates are subject to change
      upon review of a human analyst.

      Please DO NOT DISSEMINATE this automatic solution.
      Contact the Alaska Earthquake Information Center
      for updated, analyst-reviewed information.

      Lat:    %{lat}
```

```
        Lon:    %{lon}
        Depth:  %{depth} km
        Time:   %{gmt_time}

        Magnitude: %{email_mag}

        %{ndef} phases used in solution

        This earthquake was located in %{grname}:

                %{nearest(1)}
                %{nearest(2)}
                %{nearest(3)}

        For more information contact the
        Alaska Earthquake Information Center
        at 907-474-7320

                }
                recipients &Arr{
                        Gary_Brown@ak-prepared.com   0
                        nymandj@djna.com   0
                        pheuslr@usgs.gov 0
                        rod@dnr.state.ak.us 0
                        tneal@usgs.gov 0
                        wcatwc@noaa.gov 0
                        guy@giseis.alaska.edu 0
                        scott@giseis.alaska.edu 0
                        mitch@giseis.alaska.edu 0
                        jpdixon@usgs.gov 0
steve.mcnutt@gi.alaska.edu 0
estes@gi.alaska.edu 0
                }
        }
    }
}

placedb /iwrun/op/params/alarm_regions/alarm_regions
placedb_branchcut_deg 360

max_ack_wait_sec 18000

alarm_dbfilenames %Y/%j/alarmid_%{alarmid}.%Y:%j:%H:%M:%S

pf_revision_time 1138650179
```

10.6. Duty Laptop Features.

- Duty laptop MAC is to be used for the holiday and weekend event checks and earthquake alarm response. It has *alarm* account set up for the beeper duty tasks (password). *Admin* account has the same password as *alarm*. Individual user accounts have password and can be used for customizing your account and storing your personal preferences.

- You have to have high speed internet access to use this laptop for the beeper duty tasks. There are some differences in how response software works depending on your internet provider. Currently, GCI seems to be working better than ACS. See *"Earthquake Response Procedure"* section for details.

- All standard tools, such as mail and internet browser, can be accessed by moving cursor into the right screen margin.

- Programs and files that are used for the beeper duty tasks have shortcuts on the desktop (for example, *Help* file, *X11* icon, *VPN Client* icon, *Resources* folder).

- Mail tool opens with the *dutylap* e-mail account, password .

- *Help* file has some useful information on how to log into GI VPN and then into the seislab network.

- *Resources* directory has some information in it too, such as response manual, contact list, intensity scale, etc. You may add more resources to this directory.

- Safari is the internet browser. It has a couple of frequently used tabs, such as AEIC *recenteqs* page and the USGS *Did You Feel It* page for Alaska.

- One thing to remember - each window has to be activated before you can do anything in it.

- Generally, do not leave *duty_dbevents* running continuously unless you have unlimited internet access.

- *VPN Client* will disconnect whenever laptop lead is closed.

- One more thing to remember, *dbpick* window will not open automatically when you click first time on the *"Waveforms"* button in *dbloc2* window. You need to open *dbpick* window manually from *smartpick* window and then click again on *"Waveforms"* button to bring up the waveforms for this particular event.

- And lastly, "*Control-3*" *Framemaker* macro does not work properly from *dutylap* over the internet connections from outside the GI. See "*Response Procedures*" section for detailed description of what needs to be done to save and print files manually.

10.7. E-fax Settings.

Electronic fax services are provided by *DataOnCall* company through a special AEIC account. Our account can be accessed at: *http://www.dataoncall.com*
Username: *aeicinfo*, password: *DQr7t92v,* service type: *UniFax*

How it works: we send e-mail with info release as PDF attachment to the list of recipients at DataOnCall, who then faxes it for us. List of recipients is specified in *aeic_release.pf* parameter file as *fax_release_recipient* parameter. Only e-mails from specified accounts are accepted by *UniFax*. These are entered through *Setting/Outbound Settings* option in *UniFax*. Currently it contains all *giseis.alaska.edu* accounts for beeper duty personnel as well as *alarm* and *dutylap* accounts. This needs to be updated in case of the personnel changes. All settings are specifically tuned for faxing earthquake information releases. It does not fax e-mail body, only attachment.

This is the list of current fax recipients:

Table 8: Fax recipients of AEIC earthquake information releases.

#	Organization	Fax Number	Telephone Number
1	AK DEC	907-269-3061	907-269-3061
2	AK DES	907-428-7095	907-428-7000
3	APRN	907-550-8402	907-277-2776
4	AK DGGS Bank Bldg	907-451-5050	7147
5	AK DNR Juneau	907-465-3886	907-465-2400
6	Governor Juneau	907-465-3532	907-465-3500
7	AK Governor Fairbanks	907-451-2858	451-2920
8	Associated Press	907-274-2189	907-272-7549
9	AVO Anchorage	907-786-7425	907-786-7456
10	ATWC	907-745-6071	907-745-4212
11???	EPA	703-557-0243	703-349-8970
12	Fairbanks Daily News	907-452-7917	456-6661
13	KTOO Juneau	907-586-3612	907-586-1670
14	KUAC	907-474-5064	7491
15	Geology & Geophysics	907-474-5163	7565
16	Sen. Stevens – D.C.	202-224-2354	202-224-8479
17	Sen. Stevens – Fairbanks	907-451-7290	456-0261
18	USGS – Jack Townshend	907-456-0356	7626
19	USGS – HVO	808-967-8890	808-967-7485
20	USGS – Menlo Park	650-329-5163	415-329-5227
21	Copper Valley Electric Assoc.	907-835-5860	cannon@cvea.org
22	Bradley electric Plant	907-235-5413	907-235-4444
23	AEIC	907-474-5618	474-7320

10.8. A Method for Using *dbloc2* and *dbpick*.

by M. LaFevers, updated by T. Cox 3/14/2002

Many options are available using dbloc2 and dbpick. The purpose of this summary is only to get you processing an alarm event with a minimum frustration level. Many of the options are left for you to discover through practice. I will present these instructions with the intention that you wish to process an alarm event. Routine processing requires a slightly different approach that is addressed in the routine processing manual, soon to be implemented.
These instructions assume you have already started dbloc2 and are ready to process the alarm event. This paper is divided into the following sections:

1.0 TO SEE WAVEFORMS
2.0 EDITING PICKS
3.0 ADDING PICKS TO AN AUTOMATIC LOCATION
4.0 LOCATING THE EVENT
5.0 THE CHECKER TOOL
6.0 ADDING AN ALARM EVENT WITH NO AUTOMATIC SOLUTION

In this paper, double quotes indicate a button, green text indicates an action, and mouse clicks are assumed to be a left mouse click unless noted. Blue text indicates a program.

Getting Started
The dbchecker tool and the dbloc2 window are opened up with the first automatic location and associated picks for you to observe. This event is ready for you to finalize.

1.0 TO SEE WAVEFORMS

Start by clicking the **"Waveforms"** at the bottom of the dbloc2 window. Be patient, it will take a few seconds to completely load. A dbpick window and a smartpick window will open on your other monitor. The waveforms you see are sorted by distance from hypocenter. If you do not see picks, or the times in the dbpick window do not agree with dbloc2, click **"Waveforms"** again to complete synchronization of dbloc2 with dbpick.

optional:
There are two command windows for dbpick. One is called simply smartpick. The other is called smartpick_dbpick_(some number).
You may access this window to use the command line interface if desired. The commands are listed on the dbpick man page.

2.0 EDITING PICKS

NOTE: picks can be finalized from any dbpick window you have open. Practice will help you determine the fastest and most convenient time to edit picks.

Click **"display associated picked traces"** in the smartpick buttons pane. This will update the dbpick window with the waveforms used by the automatic location program and the associated picks. You should now edit them to obtain a good solution.

On the left of the waveform window is the list of stations. Left click on the station code will highlight or unhighlight that station. You can highlight as many as you want, 3 or 4 is good, up to 10 can be selected with good detail. Left click on **"Traces",** then **"New Window"** on the pull-down. The highlighted stations and waveforms will come up on a new window. Alternative and quicker option is to use right click on an arrival box and choose **"Magnify"** option to bring it in a smaller new window.

Left click and hold on a phase will enable you to move the phase. **Middle click** on the phase will access a pull-down menu of phase options. **Left click** will select a phase.
Right click will access a pull-down of delete or magnify a phase. **Shift + left** click will add an error bar to the phase.

Shift + two right clicks anywhere on the waveforms (except on the phase flags) will draw a box to expand the waveforms.
Shift + two left clicks will draw a box to compress the waveforms.

The size of the box you draw will determine how much the waveforms compress or expand and the time required to display the trace. Note that the compression of the waveforms will also change the effect of the error bar.

Hold the middle mouse button down on any waveform will enable you to drag the waveform screen. **Left click** will move waveforms to the left. **Right click** will move waveforms to the right.

The proximity of the cursor to the center of the screen will determine how far the waveforms will be moved.

IF YOU MAKE A MISTAKE AT ANYTIME, DRAWING A BOX, OR WHATEVER, CLICKING THE MIDDLE MOUSE WILL OFTEN CANCEL. This can be very effective.

Another method to edit a specific trace is to right click on the phase in the dbloc2 plate and select **"show this waveform"**. Then finalize the pick.

3.0 ADDING NEW PICKS TO AN AUTOMATIC LOCATION

Click the **"Waveforms"** button at the bottom of the dbloc2 screen. In the waveform window, waveforms will display, sorted from the hypocenter of the event.

Add new picks by clicking **"Add Arrivals".** You can add a series of picks by using the right click placing cursor at the point you want to add the phase. Left click will cancel "Add arrivals".

Place cursor on a new arrival, right click and choose **"Magnify"** option to bring it in a smaller new window. Select the phase for each pick with cursor on the pick and the middle mouse button. Then add an error bar.

If you have finalized all of the picks in the main dbpick window, you may click on **"Further"** in the dbloc2 window to advance to the next set of waveforms moving away from the hypocenter.

Note on adding phases:
You can set a default phase in the smartpick buttons pane. The buttons are:
"set default phase p" and **"set default phase s"**

4.0 LOCATING THE EVENT

You may notice that the phases you have added are greyed out in the dbloc2 window. You can left click on each phase to enable the locator to use it, OR, you may draw a box around several picks to enable them using the left mouse button, OR, you may click the **"Select All"** button if you want to use all of the picks in the window for the location (inconvenient if there are phases from another event in the pane).

Velocity model options:
Different regional velocity models are available for locating earthquakes. Use scak and northak for the region south and north of 62.5N, respectively. gulfak should be used for events in the Gulf of Alaska. If none of these models work to your satisfaction, you may use ttlvz/iasp91 model. These options are located in the bottom third of the dbloc2 window. Change with a left click on the pull-down menu. Default is tt1dcvl/scak model.

When the proper algorithm is selected for your event, click **"Locate"** at the bottom of the screen. Depending on the size of the event and number of stations used, the location program can take up to five minutes to do its job.

Observe your solution, noting error is displayed as an sdobs. Also note the station list and associated phases. These are updated every time you click **"Locate"**. The number next to the station code is distance from hypocenter in degrees. The number and arrow next to the phase represent time residuals in seconds.

If your location is acceptable, you must select **"Delete"** by the defunct locations, and **"Keep"** for the desired location. Also click the **"Prefor"** diamond to highlight it. You are able to keep other solutions for the event by selecting **"Chop"** instead of delete, but make sure to click the **"Prefor"** diamond for the most usable one.

If you need to stop the program before finishing the event, you must finalize the location for the current event as described above, then select **"File"** then **"Quit"**. Your location will be saved. When you return at a later time and restart dbloc2, the program will resume at the same place you stopped.

5.0 ADDING AN ALARM EVENT WITH NO AUTOMATIC SOLUTION

Occasionally, the alarm may be set off but no event shows up in the database such as a far away Aleutian event or sometimes an extremely northern AK event. These situations are difficult to deal with, but a method has been developed.

1. First make sure that 10 minutes have passed with still no event showing up in the **wormwatch event list**. Building an event from station triggers does take some time for the automatic system to accomplish. If still no event is listed after 10 minutes and you have evidence that it was not a false alarm, continue with the following.

2. Since the alarm went off, you have some reference to the time it occurred, such as the pager readout, or the alarm triggering statistics on the screen above the **EVA** adjustment panel. Note the origin time and the station(s) that set off the alarm. Begin the alarm response as directed in the **response manual** and continue to the point of selecting an event from the **wormwatch event list** (the one with the map).

3. Select an event from the wormwatch event database with an origin time closest to the event you need. This is probably the most recent event. If your event time is too close to UTC midnight to have another event, try the last event from the previous day.

4. "**Subset the event database"** as when processing a normal alarm event and "**relocate"** to start dbloc2.

Adding picks:
5. Click **"Waveforms"** to start smartpick/dbpick. Make sure the origin time in dbloc2 corresponds with the waveform window time. If not click **"Waveforms"** again.

6. Here is where the method changes. In the lower right corner of smartpick, click **"show station with nearby stations".** Then from the **"station"** button on the lower left of the smartpick window, select the offending alarm station from the pull-down menu. dbpick is smart enough to then display the 30 closest stations to the alarm station. Scroll the waveform window to the time of the earthquake to make picks.

Get a location:
7. In the dbloc2 window, click **"Ignore All"** to grey out all picks from each of the two events and avoid location confusion. Using the left mouse, draw a box around the picks that correspond with the event you want.
8. Select the correct location program and the appropriate velocity model. Click the **"Locate"** button. A new orid will come up in the location pane of dbloc2.
9. Finalize the location and continue the normal earthquake response.

Some hints for troubleshooting
If you are having difficulty, refer to the Response Software section of this manual. There you will find information about the default directories setup by the response software to manually view your work and methods to operate the alarm software with command line arguments.

11. Contributors.

An earlier version of this manual (1999) was compiled by Trilby Cox (AEIC data analyst), Martin LaFevers (AEIC data manager and data analyst) and Kent Lindquist (AEIC seismologist). Most of the later modifications and additions were made by Natalia Ruppert (AEIC seismologist). Some assistance was provided by Lily Wong (AEIC data analyst). Modified Mercalli Intensity scale was produced by Artak Martirosyan (AEIC seismologist).

This document lives in

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