



CHEWS RIDGE LOOKOUT

OPERATIONS MANUAL

January, 2020



IMPORTANT PHONE NUMBERS

(Nearest cellular connection area is at the 11.25 mile marker on Tassajara Rd.)

Scott McClintock	FFLA So-Cal Director	(760) 585-8400
Steven Dean	Capt., USFS Patrol 18	
Joni VanPelt	Monterey Ranger District Office	
Los Padres NF	Communications Ctr	
Patrick Marty	LPF Comms Tech	
Chris Reed	MIRA Observatory	

IMPORTANT WEBSITES

Automated weather station- Chews Ridge	http://tycho.mira.org/oosweather/
Los Padres National Forest	https://www.fs.usda.gov/lpnf/
FFLA National	http://www.firelookout.org/index.html
National Historic Lookout Register	http://www.nhlr.org
FFLA California-South Chapter	https://firelookouthost.org

ABBREVIATIONS USED IN THIS MANUAL

USFS	United States Forest Service
LPF	Los Padres National Forest
LPCC	Los Padres Communications Center (Dispatch)
FFLA	Forest Fire Lookout Association
CRLO	Chews Ridge Lookout Station
MRD	Monterey Ranger District
JHA	Job Hazard Analysis

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WELCOME!

Congratulations on joining the Forest Fire Lookout Association's Fire Lookout Volunteer Program and contributing to our public safety efforts in the Los Padres National Forest. You have become a "Caretaker of these special places".

By occupying and caring for the Chews Ridge Lookout, you are preserving an historical icon of forestry and conservation at the same time that you promote fire suppression and public safety.

You are a valuable member of the volunteer team. By welcoming visitors to the lookout and interpreting the natural and cultural history of the National Forest, you help them understand both their heritage and how the land and forests are used by everyone. By cooperating with the fire prevention and fire suppression arms of the Forest Service and various fire agencies, you help promote and preserve this unique ecosystem.

In addition to providing this worthwhile service, being a lookout volunteer is fun! From your splendid perch, where the air is clean, you can see for over fifty miles on clear days.

The importance of your volunteer duty is increasing. While the number of people seeking recreational opportunities in the mountains rises each year, the intensity and destructiveness of wildfires also increase annually.

Thank you for volunteering your time, effort, and energy. The Forest Fire Lookout Association and the U.S. Forest Service are grateful for your support and assistance.

Welcome to the team!

Scott McClintock

Forest Fire Lookout Association
California-South Chapter

PROGRAM OBJECTIVES

The Volunteer Fire Lookout Program's objectives are:

- Staff the Chews Ridge Forest Fire Lookout Station.
- Provide informal, impromptu interpretation of the natural and cultural history of the area surrounding the lookouts.
- Assist the National Forest by greeting visitors warmly and providing general forest orientation, information, and referrals.
- Assist the Fire Prevention staff through interpretive delivery of key fire prevention messages.
- Assist the Dispatch/Fire Suppression staff by providing accurate smoke reports, radio relay, and in other ways as incidents require.
- Create a positive image for the National Forests, the Forest Fire Lookout Association, related agencies, and sponsors.

UNIFORM REQUIREMENTS

When wearing your Fire Lookout Volunteer uniform, you represent the United States Forest Service. Keep your uniform clean and in good repair at all times. Remember that you may be the only "employee" visitors will encounter, so always be professional, cheerful and helpful. The following items are approved. Logos other than USFS or FFLA are prohibited, except for small manufacturers' labels on jackets.

- Class A or Class B uniform shirt
- Name tag, badge, or FFLA pins will be positioned according to diagrams posted on the Chapter website
- Work Pants – Hunter Green or Olive Green preferred
- Clean non-torn blue jeans acceptable
- Khaki or green shorts acceptable
- Hat (optional) – FFLA green cap, or any other conservative hat for sun protection
- FFLA logo accessories as sold by the Chapter or FFLA National acceptable
- Footwear – Closed-toed shoes required. Hiking boots for protection from snakes and thistles are recommended.
- Jackets are unrestricted at this time.

FIRE LOOKOUT VOLUNTEER PROGRAM POLICIES

Safety

The safety of the lookout volunteers overrides all operations and decision-making.

Minimum Age

Volunteers must be at least eighteen years of age. (Proof of age may be required.) Youth under age eighteen, but at least sixteen, must have the approval of the Chapter Chairperson, must complete all training, and may work only with their parent or legal guardian who is also a certified volunteer and who must be with them in the tower at all times.

Shift Times

The working day is defined as 9:00am to 6:00pm (0900 – 1800) but is subject to adjustment for weather or Daylight Savings. Volunteers will have the lookout fully in service and will respond at the time Dispatch calls the tower during the Morning Lineup.

Lookout Access

As part of in-tower training, volunteers are given the combination to locks on gates and the lookout structure. **These combinations must not be shared with anyone.** Further, no one is permitted to use the lookout unless on official business.

Two-at-a-Time

The preferred number of volunteers on duty at any time is **two**. This permits volunteers to handle larger numbers of visitors, to take breaks, and enjoy a measure of safety.

Weather/Road Conditions

Lookouts shall be aware of varying weather and road conditions. In general, weather is not an excuse for missing a shift. The exception, of course, is when the weather is so severe that road or trail conditions are hazardous. Significant rain and snow on Tassajara Road usually render it impassable by standard sedans. Give yourself enough time to reach the lookout prior to the start of your shift. Safety comes first!

Smoking, etc.

Since fire lookouts are government buildings, neither volunteers nor visitors may smoke in the lookout cab or on the catwalk. Volunteers are also expected to display good manners with regard to gum chewing, chewing tobacco, language, and the like. Absolutely no alcohol is permitted in or around the lookout.

Breaks / Rest Area

There are no official break times at lookouts, or designated rest areas. Volunteers should take breaks for food or refreshment when no visitors are present.

Guests

Volunteers may not invite friends or relatives to accompany them to work in the lookout. Friends and relatives are encouraged to visit the lookout, but may not stay for the entire shift.

Pets

Volunteers on duty may not bring pets to the lookout.

Absences

Volunteers must notify their Tower Leader if they cannot make their shift or arrange a substitute.

Food and Snacks

Volunteers will be discreet and neat while eating in the lookout. Crumbs on the floor, lunch and snack materials strewn around the cab, or a volunteer who displays less interest in visitors than in food, creates a poor image for the public. Additionally, crumbs and food debris need to be carefully managed to control vermin.

Housekeeping

Volunteers are expected to keep the lookout clean and tidy. Housekeeping duties include, but are not limited to, patrolling the grounds around the lookout, washing windows, sweeping or mopping the floor, dusting the furniture, and removing trash.

Sexual Harassment

Sexual harassment is not tolerated in any form and should be reported to the Chapter Chairperson for proper disciplinary action. Sexual harassment would be actual blatant suggestions or statements made by employees or volunteers. It can include pictures, jokes, gestures, or anything that makes someone feel uncomfortable. Forest Service policy statement:

The Forest Service is committed to creating and maintaining a work environment in which all people are treated with dignity, fairness, and respect, and are free from harassment. This commitment extends to all Forest Service employees, contractors, and anyone who does business with us. We will hold any employee who engages in harassing behavior accountable. We can only take action when we are aware of the behavior, and encourage anyone who experiences or witnesses harassment by a Forest Service employee to immediately report it. Reports can be made to any Forest Service management official or by calling our Harassment Reporting Center toll free at (844) 815-8943

JOB DESCRIPTION, Duties & Responsibilities: Fire Lookout Volunteer

- Assist the partner agency with fire detection, radio relay, and in other ways as incidents require.
- Be aware of safety concerns and hazards in and around the lookout.
- Perform all duties in compliance with health and safety regulations.
- Volunteer on-site, at least one shift per month.

- Promote a positive image.
- Communicate effectively with your Tower Leader.
- Provide general forest information to visitors.
- Provide informal interpretation of the natural and cultural history of the forest.
- Present enthusiasm for learning to volunteers and visitors.
- Complete applicable forms and reports, such as the Daily Log, Smoke Reports, and Lightning Strike logs.
- Perform housekeeping duties, including, but not limited to, sweeping and mopping inside the cab, washing windows inside and out, and trash removal.

PREPARING FOR A SHIFT

1. Schedule the date(s) you can work, and coordinate with a partner if you prefer one.
2. Check weather forecast for the scheduled day so you can take appropriate clothing, jacket, long underwear, shorts, etc. Experience shows that regardless of the forecast, it is prudent to take at least a light jacket for unexpected weather changes or emergencies.
3. Pack meals and snacks, and take extra water.

ACCESS TO THE TOWER

1. The keys to access the Tassajara Road gate and the tower locks are kept at the CalFire Tularcitos Fire Station located at 16650 Cachagua Road, Carmel Valley. Arrange with your scheduled partner for one of you to retrieve the keys, or meet each other there for carpooling to the tower. The keys are stowed inside a combination lock box affixed to the gate in front of the station. This combination is issued to lookouts before their first shift.
2. Time your meeting and key retrieval so as to have you at the tower by 0900 hours. It normally takes 50 minutes to travel from the Carmel River Station to Chews Ridge Lookout.
3. High-clearance vehicles are recommended for Tassajara Road.
4. The gate to the tower access road is on the left, 5.9 miles from the North end of Tassajara Road. After unlocking and driving through the gate, lock the lock in its chamber and close the gate behind you so that it looks to be locked. In the event of an evacuation, you can quickly open the gate, and leave it open for responders.
5. Park on the circular drive at the base of the tower and set the parking brake. Place your keys in a secure place where you can find them.
6. Look around the base of the tower for snakes or other hazards before proceeding up the stairs.

7. Because the stairs are unusually narrow and steep, use extreme care while unlocking the trapdoor. A rope is stowed in the cab in order to hoist supplies up to the catwalk instead of carrying them up the stairs, if practical.
8. Quickly unlock the cab door and turn on the radio so that you can begin the ever-so-important first binocular scan for fires that started during the night.

DAILY LOG [SAMPLE IN APPENDIX, p1]

The daily log is the primary means of documenting events that occur on every shift. It is also used for communication among the CRLO staff. Everything of importance needs to be recorded. This includes the names of the volunteers on duty, which shifts were filled, the visitor tally, weather, radio activity, any security concerns, and any issue regarding the safe operation of the lookout. Volunteers can also record interesting events, such as wildlife sightings, visitors from far-away places, etc. Accurately keeping the daily log ensures that tower leaders and other volunteers are well informed about what has happened in the lookout.

A new daily log is opened by each shift. Record the date and day of the week in the labeled spaces. See the sample Daily log sheet.

SIGN-IN AND TIME: The names of all volunteers working that shift are entered, followed by their assigned radio callsigns as well as the time that they arrived in the cab. Note that all times are recorded and reported as “military time,” based on the 24-hour day.

VISITOR TALLY: There are five lines of data in the visitor tally section. The first is the cumulative number of visitors for the year. That information is found on the log sheet for the previous day. Record the number of visitors for the morning and afternoon, then add the two numbers to get the daily total. Then add the daily total to the current yearly total to get the new yearly cumulative total. The number of visitors to the lookout is an important statistic. Count everyone who comes to your parking area, including those who do not climb the stairs into the lookout.

WEATHER: Describe the morning and afternoon weather conditions, including cloud cover, winds and precipitation. The flag can indicate wind direction, and a cloud type diagram is kept in the cab.

RADIO ACTIVITY / ADMINISTRATIVE ISSUES: Initial radio checks are entered here. A base radio line is on the form for future expansion to base radio equipment, but until then, leave this line blank. The second line is labeled HT (“handi-talkie” hand-held radio) The lookout is acknowledging the radio was set on the correct group, channel and tone when they came into service; or if not, that the radio was changed to the correct settings. Normally, these will be:

GROUP: MRD East

CHANNEL: Forest Net

TONE: 10

Information recorded in this section of the daily log is “official business.” Radio transmissions or messages received at the lookout, along with the time, should be recorded here. These include response to the morning lineup, smoke and lightning reports, radio relay operations, or other radio conversations conducted. This column continues on to the rear of the form if more space is needed. Radio traffic is discussed in detail in the Radio Protocol section of this manual.

MISC NOTATIONS: The “MISC NOTATIONS” box in the lower left-hand side of the form is for important safety or equipment issues deserving of front-page notation. Less critical, routine activities or events are documented on the reverse side of the log in the “NOTEWORTHY ACTIVITY OR EVENT” column. Noteworthy activities or events include sightings of rare wildlife, aircraft fly-bys, official visitors, earthquakes, non-safety related equipment issues, etc.

WEATHER REPORTING

Report to Dispatch instances of precipitation within forest boundaries, lightning down strikes anywhere in the lookout’s viewshed, or other extreme weather incidents. Details on the verbiage used are in the RADIO PROTOCOL section of this manual.

SMOKE REPORTING

The most exciting part of being a Fire Lookout Volunteer is spotting smoke. Although it is rare to see actual flames from a lookout, smoke can be readily seen. Consequently, this section is entitled “Smoke Reporting,” rather than “Fire Reporting.” A sample Smoke Report form is on page 2 of the Appendix.

The smoke report form records information about a fire, and provides a work sheet for the volunteer to relay the data to dispatch. The information must include:

- * Location of the fire
 - * bearing from the lookout
 - * distance from the lookout
 - * nearby landmark
 - * legal location (not required in the initial report but you may be asked for it later)

- * Description of the smoke
 - * volume
 - * type
 - * color

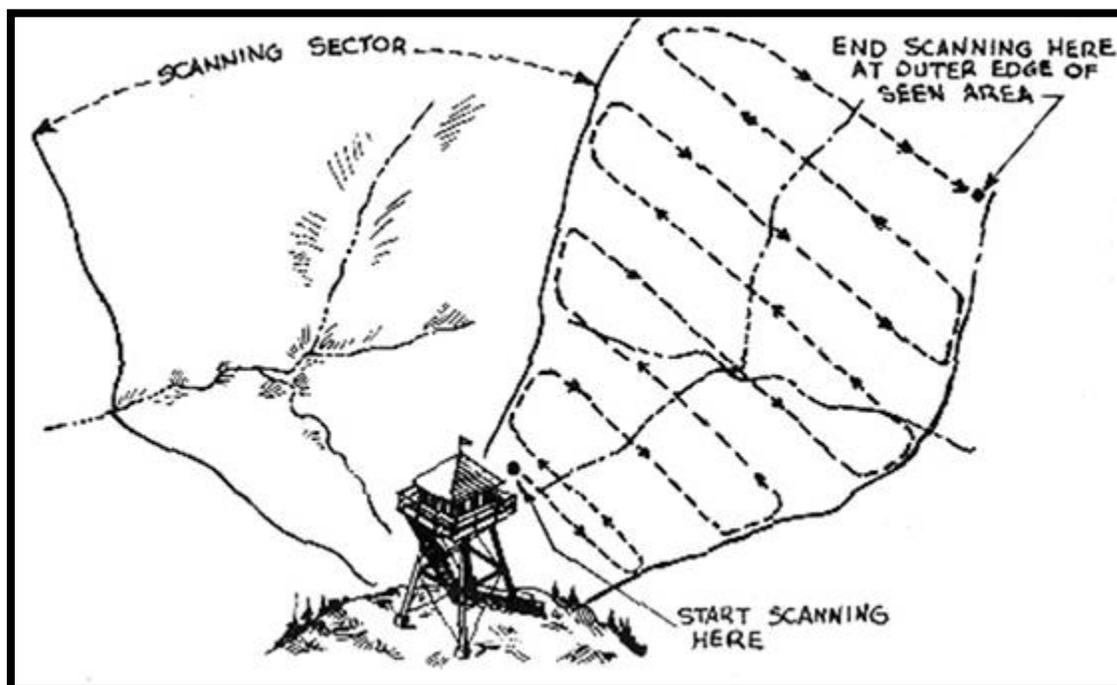
Looking for Smoke

Use a combination of general and intensive methods when scanning the area around the lookout for smoke.

General observations are a broad survey of the entire country instead of an intensive look at any particular point. Knowledge of the country around the lookout will enable the observer to instantly pick out anything unusual.

Volunteers should make general observations continuously throughout the day and a systematic, slow scan of the entire seen area, similar to the one shown in fig. 7, at frequent intervals -- every fifteen minutes or so. Use the following technique:

- Do not actually look on any particular point unless attracted by something unusual.
- Spend more time scanning areas of high risks such as camping areas and roads or known concentrations of individuals with limited escape routes such as scout camps, but do not overlook or skip areas of low risk or little use.
- After a lightning storm, thoroughly scan areas that received strikes.



Make intensive observations at 15-minute intervals during your shift in the following manner:

- Divide the entire seen area into units or sectors with readily recognized boundaries, as shown in the above diagram. Use ridges and drainages as boundary markers or use the firefinder to form sectors of about 45 degrees each. These sectors must be small enough to allow thorough examination with little shifting of the eye.

Start the intensive search in the same sector each time and progress in a clockwise direction until all sectors have been examined

- In each sector, start by examining the country nearest the lookout and progress outward to the limits of the observable area.
- Make an intensive part-by-part examination of each sector. Focus on those particular points of high hazard, within the sector, which have been determined as areas of heavy use by people.
- Depending on size and character of observable areas, an intensive check can be made effectively in 4 to 6 minutes.

Dark glasses may help relieve eyestrain. Polarized glasses make smokes more visible. Binoculars are essential in making the observations. They will help identify small or difficult smokes, false smokes, and legitimate (sanctioned) smokes. However, prolonged use of binoculars may result in eyestrain.

Constant practice enables a volunteer to make these general and intensive observations while performing housekeeping duties, checking on an on-going fire, or interacting with visitors.

Locating Smoke

Two pieces of equipment are needed to determine the location of smoke. The first is a set of binoculars, sometimes called field glasses. These permit the user to distinguish details of objects at a distance. Field glasses need minimal maintenance beyond cleaning the lenses. Any damage should be reported to the Tower Leader.

The second instrument is the Osborne Firefinder. This device was invented by W. B. Osborne in 1911 and was manufactured until 1989. The firefinder in the CRLO is an antique (pre-1934) and, as such, is irreplaceable. The instrument should be handled as little as possible, and then with care.

The individual parts of the Firefinder are identified in the diagram in the Appendix, page 3.

Using the Osborne Firefinder

The Firefinder measures angles in a manner similar to reading a compass. The horizontal angles are called the azimuth or bearing. The Firefinder is lined up with the compass directions, with the top of the map pointing north. The lookout is at the center of the map. The zero point on the azimuth ring, however, is located on the south side of the Firefinder.

When observers take readings, they are looking across the Firefinder. Thus, the arrow at the base of the rear sight points to the direction they are looking. Appendix page 4 shows a detail of the rear sight with the sighting arrow, the Vernier, and a section of the azimuth ring. The Vernier scale, which can be used to determine fractions of a degree, is not used in the lookouts.

A fire is not a single point that needs to be located with excruciating precision. The nearest whole degree is sufficiently accurate.

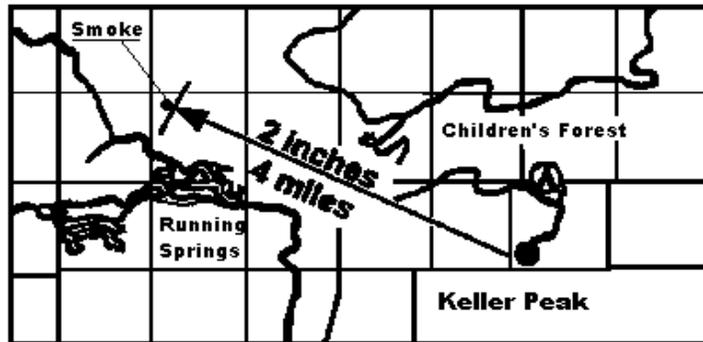
The procedure in using the Firefinder follows. The letters refer to the diagram in the Appendix.

- When smoke is spotted, use handle (J) to turn the sighting ring (D) until both front and rear sights line up with the smoke. **Never use the sights to turn ring.**
- With your eye about 2 inches from the rear sight (H), adjust the sighting ring until the vertical hair of front sight (A) and the slot in rear sight (H) line up exactly with the base of the smoke.
- If the smoke cannot be seen through the sights due to an obstruction (tree, window frame, etc.), slide the Firefinder on its tracks (P) until you can see the smoke. It may be necessary to move the Firefinder to the other set of tracks, if other tracks are provided.
- When you have the smoke lined up in the sights, you are ready to take a reading.
- The sighting arrow at the base of the rear sight (H) points to the azimuth angle. Read it to the closest whole degree.

Estimating the Distance to the Smoke

The metal tape stretched across the center of the map on the Osborne Firefinder, (G) in the diagram, is used to estimate the distance from the lookout to the fire. The scale on the tape must be matched (calibrated) to the scale on the map. The tape on the Firefinder is marked off in inches. Each inch on the map, however, represents 2 miles. (The squares on a Forest Service map are a half-inch on each side. They represent “sections” which are a mile square.)

Consider an example, in the diagram below. A fire is estimated to be 2 inches on the map (using the tape), from Keller Peak Lookout. Since each inch on the tape or map represents 2 miles on the ground, the fire would be 4 miles from the lookout.



In mountainous terrain, it can be difficult to determine the precise distance to a fire. Smoke rising from behind a ridge may be anywhere along the line of sight. Thus, the distance to a smoke is at best an estimate.

Landmarks

Perhaps the key piece of information in locating a fire is a landmark near the source of the smoke. The naming of a landmark permits the fire crews to reach the fire with a minimum of wasted time. A landmark could be any of the following, or a number of other things:

- * A named peak, creek, or canyon
- * A town or settlement
- * A numbered state, county, or Forest Service road
- * A body of water such as a lake or stream

Panoramic photos with landmarks indicated are available in the tower cab.

Knowing landmarks is the key to being able to pinpoint the location of a smoke.

Volunteers should begin to memorize prominent landmarks, along with their distances from the tower.

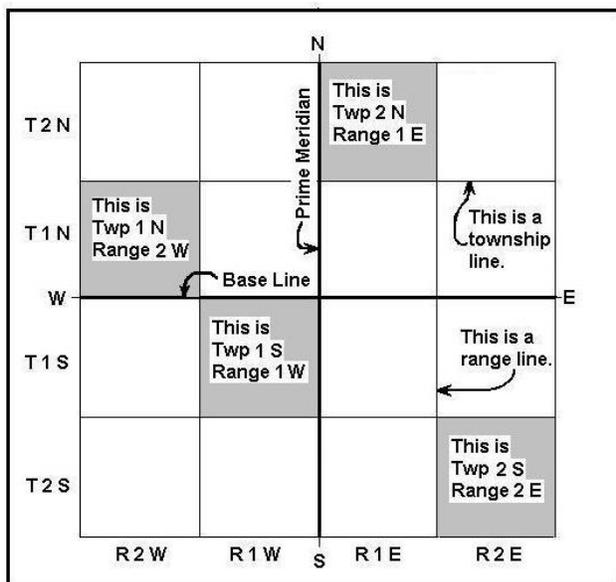
Computer-Aided Dispatch

When a lookout calls the azimuth and distance of the smoke into the Forest Service radio system, the dispatcher enters those two values into a computer, which then projects the area described onto a digital map, with an "X" on the location of the smoke. The dispatcher then directs responding firefighters (and possibly aircraft) to that location. Because the distance that the lookout provides is a subjective estimate, it is subject to error. Providing a nearby landmark adds accuracy to the distance estimate.

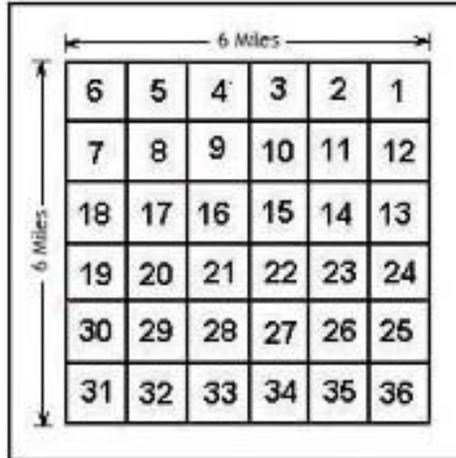
Legal Location

Forest Service protocols sometimes require using the “legal location” to describe a fire’s location. To save time, we do not cover legal locations in the CRLO lookouts’ initial training, but volunteers are encouraged to learn this process as it will help them understand fire traffic on the radio.

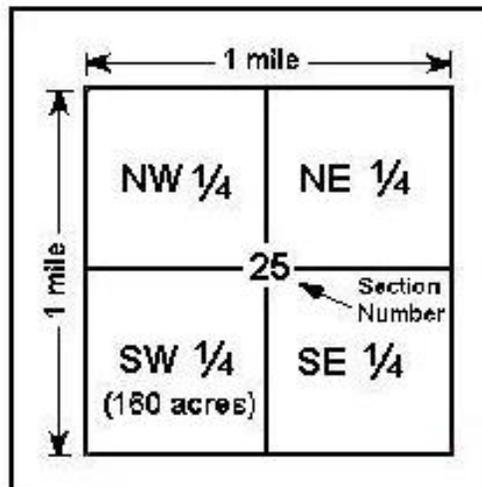
Each county is divided into townships which are designated by a pair of numbers. The “T” number indicates the position of the township north or south of a Base Line, an arbitrary line drawn by surveyors. The “R” number indicates the position of the township east or west of the local Prime Meridian, one of the longitude lines. The dividing lines between townships are called Township Lines (the east/west running lines) and Range Lines (the north/south running lines).



Townships are divided into 36 sections. Each section is one mile on a side and the sections are numbered snake-wise from the northeast corner of the township, as is shown below. The squares on Forest Service maps and on the Osborne Firefinder maps are sections.



Each section may be further subdivided into quarters, although these divisions are not shown on maps. The quarters are named for the compass directions and are shown below.



Description of Smoke

The color of smoke depends on the fuel that is burning. Table I is a brief summary of the common colors of smoke and their sources. Smoke coming from one fire may be several colors. The darkest color should be reported since it represents the hottest burning fuel. For example, a column of white smoke that suddenly turns black could result from a small fire in fallen pine needles igniting the tree itself, a much more serious situation.

Table I. Color and Sources of Smoke

Color	Fuel
White	Grass, herbs
Gray	Light brush, sage
Yellow	Pine trees
Copper	Light brush
Black	Heavy brush, oak, manzanita, pitch logs, structure, vehicle
Blue	Same as Black, but less dense

The type of smoke refers to its density and its transparency, while volume reflects the size of the fire. Table II lists the type of smoke.

Table II. Type of Smoke

Type	Density / Transparency
Thin	Light / See objects through smoke
Moderate	Moderate / Objects not seen clearly
Heavy	Thick / Objects hidden
Billowy / Building	Thick / Objects hidden / Turbulent
Drifting	Follows air currents Indicates direction of wind on the fire
Blanket	Layered over large area / Opaque

Determining the volume of smoke from a fire is very subjective. What one person considers small, another might consider large. Use your best judgment, and try this unofficial comparison:

One large trash can fire emits a **small** volume of smoke

A dumpster fire emits a **medium** volume of smoke

Anything larger than a dumpster fire emits a **large** volume of smoke

Note: A large fire can make its own cloud which merges with the smoke. These clouds can produce lightning, rain, hail, turbulence, and fierce downdrafts that affect the fire in the same way as natural weather.

There are phenomena, both natural and artificial, that can be mistaken for smoke. Dust from construction sites and from agriculture tends to be brownish and occurs repeatedly in the same location. Clouds building over the mountains in the afternoon can look like thick, white smoke. Waterdogs are small patches of ground fog that rise in wispy columns from valleys and canyons. These often occur after a rainstorm, or in the morning when the humidity is high and the temperature is low.

Always watch a suspected smoke for a few minutes to be sure it is really smoke and not dust or clouds.

Calling in the Smoke

The smoke report form [Appendix page 2] includes a script for calling in the smoke report. If in the excitement of spotting a smoke a volunteer may temporarily forget the proper radio protocol, it is helpful to have everything written down. Here are a few suggestions.

- Fill in the form completely before picking up the radio.
- Stay calm and speak slowly and clearly.
- **Read the script.**
- When finished, release the microphone key. (Otherwise, you block DISPATCH from contacting you.)
- Listen for DISPATCH to read the report back. Correct any transmission errors or misunderstandings.
- Be prepared to respond to questions from DISPATCH or the unit responding to the fire. Respond crisply and accurately.
- Do not hesitate to report a second smoke, but make it clear to DISPATCH that you are reporting an additional fire. **Otherwise, restrict radio traffic to emergencies until the fire emergency is cleared.**

An example of a formal smoke report for a smoke spotted within forest boundaries:

TOWER: Los Padres, Chews Ridge, Forest Net, Tone 10, smoke report.

DISPATCH: Chews Ridge, go ahead

TOWER: Smoke is 160 degrees, 12 miles, near Lost Valley Trail and Forest Service Road 19 Sierra 09.
It is small in volume, thin in type, gray in color. I cannot see the base of the column.

DISPATCH: Copy 160 degrees, 12 miles, near Lost Valley Trail and 19S09, received 1433 hours.

If smoke is spotted outside of the forest boundary, it is helpful to advise of this in the pre-call:

TOWER: Los Padres, Chews Ridge, Forest Net, Tone 10, smoke report, North of the forest.

Once the report has been made, record the smoke report in the log book and put the smoke report sheet into the binder behind the daily log sheet for that day.

LIGHTNING

Thunderstorms and lightning are a potential source of wildland fires. They are also a potential danger to a fire lookout volunteer since lookouts are located on the tops of isolated peaks, which are well known as lightning attractors. However, exercising a little common sense and a few precautions reduces the danger and permits the volunteer to monitor any lightning strikes.

As the storm is approaching, note the location of lightning strikes. Go inside the lookout cab. **Close and secure the door and windows since lightning will follow air currents.**

When the storm is about two miles away, suggest, firmly if necessary, that visitors leave the lookout and get into their cars. Notify DISPATCH that a storm is in progress and that you are going Out-of-Service until it passes. Turn the radio off and set it aside. Isolate yourself from any metal in the lookout by standing on the insulated lightning stool. Remain in the lookout which is grounded; you are much safer there than exposed on the mountaintop.

Note: Sound travels at approximately 1100 ft/sec. Therefore it takes about 5 seconds for the sound to travel one mile. A lightning strike's distance from the tower can be estimated by counting the seconds between viewing the strike and hearing the thunder. For example, a storm is about two miles away when 10 seconds elapse between seeing the lightning flash and hearing the resulting thunder clap.

While the storm is in progress, quickly record the cloud-to-ground lightning strikes on the fire finder plexiglass with a grease pencil. Use an X to indicate where the strike touched down, as well as the time. Then watch for and record additional strikes. If you observe smoke from a downstrike location, complete a Smoke Report form and call it in when you go back into service.

After the storm, go back In-Service, and fill in the Lightning Strike Record form. [Appendix page 5] Also record the activity in the Daily Log and Diary and put the strike record sheet in the binder behind the daily log sheet for that day.

In the days following the storm, search the locations of ground strikes for smoke since a “sleeper” fire can smolder for days and weeks before bursting into flame. Leave the marks on the fire finder plexiglass for at least two weeks. This permits volunteers coming on duty on succeeding days to know where to watch for sleeper fires.

When lightning storms approach, the Forest may implement its Lightning Operations Plan. This involves pre-positioning fire crews and other personnel for timely and tactical response. When Dispatch announces implementation of the plan, they likely will also announce changes of radio channels for different purposes, so lookouts should be carefully monitoring the radio for channel changes.

RADIO PROTOCOLS

The Forest Service expects fire lookout volunteers to perform their duties with the same degree of professionalism they demand from their paid staff. **Volunteers must pay attention to radio protocols and etiquette.**

1. Always monitor the radio. Turn on the radio as soon as you open the lookout, and listen to radio traffic. Even during conversations between lookouts or when there are visitors to the tower, be aware of all radio traffic.
2. The callsign for Dispatch is “Los Padres”. The callsign for Chews Ridge Lookout is “Chews Ridge”.
3. Chews Ridge volunteers will be assigned individual callsigns, such as “Lookout 9” or “Lookout 32”. Dispatch will have a list of everyone’s name and respective callsign. Use your individual callsign when going in-service during the morning roll call. More on this is below in *Example Radio Conversations*.
4. CHANNELS- The Forest Service radio system uses a number of different channels, which you can change with a switch on the tower radio. Lookouts will normally be dealing with these channels:

	Channel Name	Normal Function
	Forest Net	Morning lineup, announcements, fire dispatch
	Admin Net	Everyday traffic
	Service Net	Fire Camp traffic

Note that the chart lists “Normal” function of the channels. As fires or other emergencies occur, dispatchers will move functions and incidents around to different channels, and will announce these changes on the air. This is why it is important for the lookouts to carefully monitor all radio traffic, so they know which channel to use.

5. Because the forest is 220 miles long, and is in mountainous terrain, a signal from dispatch's antenna may not reach distant units, especially if they are in a valley or canyon. The radio system therefore uses "repeaters" on some mountaintops that receive the signal, amplify it, and send it further away on a slightly different frequency. These different frequencies are called "tones" and they all have numbers, such as Tone 8, or Tone 10. When Chews Ridge initiates a call, it needs to notify Dispatch what channel it is on (Forest Net), and which Tone or repeater it is using (normally Tone 10).
6. Government radio conversations are as terse as possible to keep the channel as free as possible in the event of emergencies needing the channel. The messages should be business only, without redundancies, pleasantries or other unnecessary words.
7. When making a transmission, rehearse what you want to say before you pick up the radio. Always use plain English instead of codes. See the next section for a list of "Clear Text" phrases.
8. Wait before making any radio transmission—including reporting smoke—because you could cover important radio traffic. There is no set wait-time, but be sure no one else is transmitting. "Stepping on" a conversation could endanger people during a fire response.
9. Depress the microphone key for one full second before starting to speak. This guarantees that you will not cut-off your first sentence and your entire message will be heard.
10. When transmitting, always start with the name (callsign) of the unit you are calling, followed by your own unit/callsign. When initiating a conversation always use a pre-call to get the attention of dispatch before conveying your message. For example:

"Los Padres, Chews Ridge, Forest Net, Tone 10".
11. Wait for the unit/person you are calling to answer before you deliver your message.
12. **Under no circumstances interrupt emergency traffic or fire traffic.** When you hear an alert tone, **stay off the radio until the dispatch has finished.** If you need to use the radio and your channel is busy, consider switching channels (From FOREST NET to ADMIN NET for example). There are four separate alert tones to get users' attention:

ALERT TONE	WARNING
One burst (beep)	Pre-alert for message to follow, either an incident, or a daily broadcast.
Two bursts	Indicates standby or cancellation of a dispatch
Fast warble	Fire-related response
Slow warble (back & forth horn)	Non-fire response

13. Do not call in a smoke report on a fire that already has units on-scene. However, on a new call with units not yet on scene, it can be helpful to advise dispatch that you have smoke showing in the area of their current dispatch, giving azimuth, distance and description.

Clear Text

Aside from plain English, clear text is a set of established words and phrases that are standard for use on the USFS radio and must be used whenever possible. They are listed in the table below. Meanings are given only if the word or phrase is not self-explanatory. Codes such as 10-4 are NEVER used, nor are the terms “Over” or “Out”.

Words and Phrases	Meaning
Unreadable	Some type of interference is preventing message from being understood.
Loud and Clear	
Stop Transmitting	
Copy, Copies	Receiving station understands message.
Message received	
Affirmative	Yes.
Negative	No.
Respond, Responding	Proceed to, Proceeding to.
En route	
In-Quarters	Arrived at duty station, ready to respond.
In-Service	
Repeat	
Weather	
Return	
What is your location?	
Call by Phone/ Land Line	
Disregard	
Standby	Wait to transmit / Wait for response

On Scene	Unit has arrived at an incident.
Available	
Available on scene	Unit is on scene, available to respond to another incident.
Available at Residence	
Can Handle	
Prescribed Burn	A fire that is planned and started by fire personnel under specific parameters and guidelines to meet forest resource and project needs.
Report on Conditions	Size up of Incident: Type of fuel that is burning, weather factors influencing fire behavior, slope, aspect, barriers, improvements and any other pertinent information.
Fire Under Control	

Phonetic Alphabet

Single letters are often difficult to understand on radio transmissions. Consequently, a specific set of words, called the phonetic alphabet, is used to represent the letters. Below is the international alphabet, but if you are already versed in the Law Enforcement phonetic alphabet, you can use that also.

A Alpha	B Bravo	C Charlie	D Delta
E Echo	F Foxtrot	G Golf	H Hotel
I India	J Juliet	K Kilo	L Lima
M Mike	N November	O Oscar	P Papa
Q Quebec	R Romeo	S Sierra	T Tango
U Uniform	V Victor	W Whiskey	X X-Ray
Y Yankee	Z Zulu		

24-Hour Time

Government radio utilizes 24-hour (military) time, as opposed to saying “am” or “pm”. 24-hour time always uses 4 digits, and can be calculated by adding 12 hours to pm times.

1 am	0100 (pronounced “oh-one hundred hours”)
2 am	0200
3 am	0300
4 am	0400
5 am	0500
6 am	0600
7 am	0700
8 am	0800
9 am	0900
10 am	1000 (pronounced “ten hundred hours”)
11 am	1100
12 Noon	1200
1 pm	1300
2 pm	1400
3 pm	1500
4 pm	1600
5 pm	1700
6 pm	1800
7 pm	1900
8 pm	2000
9 pm	2100
10 pm	2200
11 pm	2300
12 midnight	2400 (pronounced “twenty-four hundred hours”)

Example Radio Conversations

MORNING LINEUP:

At approximately 0935 hours every morning, Dispatch will call every unit in the entire forest to record who is on-duty and who is not. Dispatch will begin the process by saying “All stations, standby for the morning lineup.” At this time, all fire crews and other officials with radios listen for their callsign to be called, and then respond that they are in service. Dispatch will go through this exercise district by district. You may not hear distant transmissions because they may be using different repeaters. Dispatch will

eventually get to the Monterey Ranger District and after they call the Arroyo Seco Fire Station, they will call Chews Ridge.

DISPATCH: Chews Ridge?

TOWER: Chews Ridge in service, staffed by lookouts 4 and 22.

OUT OF SERVICE:

At approximately 1745 hours, Dispatch will sometimes call Chews Ridge for a status check.

DISPATCH: Chews Ridge, Los Padres, status check?

TOWER: Los Padres, Chews Ridge, will be out of service at 1800 hours.

DISPATCH Out of service 1800.

TOWER: Chews Ridge

Giving your callsign at the end of the conversation lets Dispatch know that you acknowledge what was said.

SMOKE REPORT:

Chews Ridge Lookout staff spot a young smoke, and complete a Smoke Report form. They then listen to make sure no one else is speaking on the radio, and calmly and professionally call in the smoke:

TOWER: Los Padres, Chews Ridge, Forest Net, Tone 10, smoke report.

DISPATCH: Chews Ridge, go ahead

TOWER: Smoke is 160 degrees, 12 miles, near Lost Valley Trail and Forest Service Road 19 Sierra 09.
It is small in volume, thin in type, gray in color. I cannot see the base of the column.

DISPATCH: Copy 160 degrees, 12 miles, near Lost Valley Trail and 19S09, received 1433 hours.

Dispatch then begins sending responders. The lookouts stay off the air but monitor the incident closely in case field units or Dispatch call for additional observations.

EMERGENCY CALL:

In this example, a forest visitor comes up to the tower and reports that his off-roading buddy just drove off the road and crashed in the canyon near the entrance to White Oaks Campground. His buddy is bleeding and can't get out of his jeep. By using the term "emergency traffic" in the pre-call, everyone else in the forest will stay off of the air so that the emergency can be handled as quickly as possible. If there are two volunteers in the tower, one can leave to assist responders in finding the scene, while the other remains in the tower.

TOWER: Los Padres, Chews Ridge, Forest Net, Tone 10, Emergency traffic, medical aid.

DISPATCH: Chews Ridge, go with your traffic.

TOWER: Reporting party witnessed a vehicle go over the side of Tassajara Road near White Oaks Campground, is injured and trapped in his vehicle. Lookout 16 is going to the area to help direct responders to the location.

DISPATCH: Chews Ridge, copy vehicle over the side of Tassajara Road with injuries near White Oaks Campground, 1604 hours.

Dispatch then begins sending responders.

PRECIPITATION:

Forest personnel want to know about rainfall:

TOWER: Los Padres, Chews Ridge, Forest Net, Tone 10, precipitation activity.

DISPATCH: Chews Ridge, go ahead.

TOWER: A localized cell, moving south-to-north over the South Ventana Cone area. No lightning activity at this time.

DISPATCH: Copy precip in the South Ventana Cone area, 1016 hours..

TOWER: Chews Ridge.

LIGHTNING DOWN STRIKE(S):

Firefighters want to know when and where lightning strikes touch the ground. If lookouts see an individual down strike, note the location and time with a grease pencil

on the firefinder map and watch for additional strikes. If you can discern if the strike is accompanied by rainfall or not, call it in as a “wet strike or a “dry strike”. If you cannot discern this, do not use either term.

TOWER: Los Padres, Chews ridge, Forest Net, Tone 10, lightning activity.

DISPATCH: Chews Ridge, go ahead.

TOWER: Two dry down strikes just north of Ventana Cone.

DISPATCH: Chews Ridge reporting lightning activity in the area of Ventana Cone, 1451 hours.

TOWER: Chews Ridge

RADIO FUNCTION

Chews Ridge sits in a difficult radio location, due to its distance from the Communications Center, extreme terrain, and the positioning of area repeaters. Radio communications are sometimes good, sometimes intermittent, and sometimes non-existent. When radio communications are not working, the lookout crew has the option of calling the Communications Center by cell phone, at (805) 938-9142, Extension 0. Staff may need to drive to the 11.25 mile marker on Tassajara Road to get cell phone service. The tower has two different types of radios, so that when one does not work well, the other one may work better. Lookout volunteers should note radio performance problems in the daily log.

RADIO SETTINGS – Bendix King radio

The primary hand-held radio issued to Chews Ridge Lookout is a **Bendix King** (BK), model P-150S. It is readily recognizable by its bright orange battery pack. It is turned on via the volume knob on the top.

When the staff opens the tower in the morning, they place fresh AA batteries into the battery pack. It is opened by pressing down on the orange release tab and pulling the battery pack open.

The Bendix radio will sound an alarm and display a message when the batteries are too low to operate.

With fresh batteries installed, turn on the radio. Check that the radio is set on the below settings, and note the settings on the Daily Log in the top of the Radio Activity box.

The screen displays three main lines of text:

- The radio group: MRD EAST (Monterey Ranger District, East)
- The channel: FN REPEAT (Forest Net, via repeater)
- The tone: TxT10 (Tone 10)

If these settings are displayed, the radio is ready for lookout duty.

CHANGING CHANNELS:

There will be times (especially during an incident) that Dispatch will advise uninvolved units to switch to Admin Net. To do this, turn the Channel Select knob on the top of the radio one click in the only direction that it will go.

This knob can also select numerous additional channels that might be needed. For example, Patrol 18 or a responding aircraft might need to talk to the lookout staff on a tactical channel other than Forest Net or Admin Net. They will call Chews Ridge and tell you the name of the channel they want you to switch to. Turn the Channel Select knob until the display gives the name of the tactical channel and proceed with your conversation. Remember to switch back to FOR NET or ADMIN NET when the conversation is concluded.

CHANGING TONES:

Repeaters (Tones) are sensitive instruments that sometimes break down. If Tone 10 becomes inoperable, you can change to Tone 8 by pressing the Diamond Button (on the front of the radio, just below the display screen), then press the up or down arrow buttons until 8 appears on the screen, then press the Square Button to save the setting.

SCANNING OTHER CHANNELS:

Lookout staff need to have situational awareness of what's going on in the forest. The radio is set up to automatically scan other channels in order to monitor activity. Scanning will operate when the Scan toggle switch on the top of the radio is switched toward the front of the radio.

There could be situations when the lookouts need to concentrate on an immediate incident and need to silence the scanning. The scan function is turned off by turning the Scan toggle switch toward the back of the radio.

RADIO SETTINGS - Kenwood radio

Chews Ridge Lookout also has two **Kenwood TK-5210** hand-held radios, which provide additional transmitting channels, especially channels for the State Responsibility Areas (SRA) outside of the Los Padres National Forest.

The Kenwood will operate with a rechargeable battery – or with an orange clamshell that takes six (6) AA batteries. To change either battery, release the battery lock on the bottom of the radio and install the new battery.

A battery charger for the Kenwood rechargeable batteries is located on the left side of the of the South countertop in the cab. The charger will only accept the rechargeable batteries – not the AA clamshell. Remove the clamshell and attach the rechargeable battery before trying to put the radio in the charger.

The charger will accept a rechargeable battery for charging even if it is not attached to the radio. When the red light turns green the battery is charged.

Turn off the radio before putting it into the charger. Do not turn on the radio while it is in the charger.

SUGGESTION: Keep a spare battery in the charger to exchange with the battery in the radio that needs charging, or keep the second radio in the charger to exchange with a radio that needs charging.

At the end of a shift, remove the radios and batteries from the charger to avoid depleting the main charge batteries. The next shift in the tower may be 2 or 3 days away. The next shift will start by charging a radio or batteries.

The next shift should also deploy the solar panel to keep the main storage batteries charged. At the end of the shift, bring the solar panel back inside and disconnect it from the batteries.

Avoid over-tightening the antenna. Spin it on lightly until it stops.

The radio is most effective if the antenna is vertical. Holding the radio at an angle reduces the effectiveness of the radio signal from the antenna.

To operate the radio, turn it on using the top left knob. This knob also controls the volume. The top middle knob is the channel selector. Turn this to change channels. If you change to a position that has no channel, the radio will sound a tone. Change back to a valid channel position.

The radio will scan all of the channels in the active bank. To turn on the scan feature, use the lever at the top of the radio. A small icon will appear in the screen. The icon will disappear when the scan is turned off. The blue button on the top left side of the radio is the scan “add” or “delete” button.

In the radio display, each channel will show a small triangle if it is enabled for scanning. To delete that channel from the scan feature, change to that channel, and then use the blue button. The triangle will disappear and that channel is removed from scanning. To re-enable a channel for scanning, turn to that channel and use the blue button. The small triangle will reappear and that channel is now active for the scanning feature. The radio will transmit while the scan feature is active. While scanning the radio will hold an active channel for a moment after it stops transmitting. If you transmit at that time you will transmit on that channel. Wait a moment after that channel finishes transmitting and the radio will revert back to your selected channel.

The other option is to turn off the scan feature to revert back to the channel you want to transmit on. While scanning, if a channel is active you will not hear radio traffic that is on other channels until the active channel finishes and the radio begins scanning again.

The large bar on the left side of the radio is the transmit bar. The small button below it is the light. This will light the display for nighttime use. Protect the transmit bar to avoid what is known as an “open mike”. When an “open mike” condition exists on the radio network, check your radio to make sure you are not the cause.

The remaining control features on the radio are disabled. Using them will sound a tone to remind the user that it is not activated.

As of September, 2019, the channels programmed into the Kenwood radio are:

- 1) Los Padres Forest Net
Repeater Channel
- 2) Los Padres Forest Administration
Repeater Channel
- 3) Los Padres Forest Service Net
Repeater Channel
- 4) Los Padres Forest Tactical Channel 3
Simplex (line-of-sight, non repeater) channel normally used for on-scene communication
- 5) Los Padres Forest Tactical Channel 4
Simplex (line-of-sight, non repeater) channel normally used for on-scene communication
- 6) BEU East
Repeater Channel
Cal Fire Dispatch Channel. 24-hour operation. To be used for an emergency and only if unable to reach Los Padres Dispatch. Callsign: “Monterey”.
Attempt BEU East before trying BEU West.
- 7) BEU West
Repeater Channel. Use in the same manner as BEU East.
- 8) Calcord

Simplex Channel. Used by medical helicopters, CHP helicopter, and Bear Valley Cal Fire helicopter for on-scene communication with ground units involved in an incident. Do not use unless you are involved in the incident.

SAFETY

Safety must be the primary concern of all Fire Lookout Volunteers. This means both for their personal safety and the safety of visitors to the lookouts. Volunteers' safety responsibilities include, but are not limited to, the following:

- Perform all tasks with proper skill and without error.
- Prevent accidents by thinking ahead about what may go wrong.
- Be aware of hazards in and around the lookout.
- Read and understand the Job Hazard Analysis (JHA), FS 6700-7, which is posted in the lookout.
- Notify Lookout Leader if lookout or its surrounding area fails to comply with safety standards.

Should an accident or injury occur to either a volunteer or a visitor, the following steps must be taken:

- Immediately report the accident or injury to dispatch who will instruct you on emergency procedures.
- Notify your Lookout Leader and the Fire Lookout Volunteer Program Coordinator as soon as possible.

JOB HAZARDS: The Forest Service supplies a Job Hazard Analysis document (FS-6700-7), Appendix page 6, which is maintained in the cab. Volunteers should read the JHA and be alert to the following potential hazards specific to Chews Ridge lookout Station:

1. Driving on mountain roads. Paved roads leading to Tassajara Road are narrow with many sharp turns, and speeding drivers drifting out of their side of the roadway. Volunteers must observe speed limits, stay as far to the right as possible and drive alertly and defensively. The unpaved section of Tassajara Road is also very narrow in some places with many blind curves. Volunteer lookouts must drive slowly enough to negotiate the tight turns and to keep from sliding on the loose dirt of the roadway.
2. Steep Staircase. The stairs leading up to the Chews Ridge catwalk are unusually steep, and each step is unusually narrow (approx. 5 inches). Volunteers must use the handrails for stability on these stairs, and use extreme caution while unlocking the security chain on the trap door. When supplies must be carried up to the cab, staff should consider handing the items up the stairs to a partner, or hauling them up using the rope stored in the cab for this purpose.
3. Catwalk trap door. The trap door is heavy and awkward to open while standing on the stairs. Volunteer lookouts must make sure their footing is as secure as

possible while raising the door and securing it with a safety device that holds it open.

4. Dangerous wildlife. Lookout staff must look down while walking on the ground at the lookout site, and be wary of rattlesnakes or other dangerous wildlife.
5. Antagonistic or aggressive visitors. Volunteers may occasionally find themselves faced with antagonistic individuals or groups. Although such occurrences are fortunately rare, volunteers should be aware of methods to defuse the situation. Region 5 Law Enforcement policy states:

When damage to resources and property cannot be prevented without risking personal injury to the employee or the public, the risk will not be taken. Volunteers will avoid all such confrontations. Instead a FOREST OFFICER or DEPUTY SHERIFF should be summoned immediately to handle rowdiness or serious and flagrant violations.

Call for help if you feel the situation could lead to damage to the lookout, injury to yourself, or is dangerous in any way. Although there are no set rules for recognizing a possible conflict, there are some indicators that can alert you to a potentially dangerous situation. Ask yourself the following questions:

- Is the person intoxicated?
- Does the person appear to be under the influence of drugs?
- Does the person have a weapon?
- Is the person openly hostile?
- Am I alone in the lookout?

Other factors that may affect your response may include:

- Is assistance readily available or is it hours away?
- Do I have a radio and the ability to transmit to others?
- Is this contact made during night hours?

To achieve separation from aggressive visitors, lookouts can retreat to the catwalk and close the trap door.

6. Illegal shooters. The forest attracts firearms shooters, some of whom damage or destroy forest signs, property and resources. Lookouts can deter some illegal shooting simply by staffing the tower, showing that representatives of the Forest Service are present. Flying the flag whenever possible enhances this presence.
7. Earthquakes. The movement from an earthquake can be magnified in a structure sitting on steel legs. If lookout staff feel an earthquake while inside the cab, they should crouch at the base of the fire finder pedestal and hold onto it while turning their faces toward the base of the pedestal and away from the windows. Lookouts should not attempt to descend the stairs during the quake.
8. Africanized honey bees. In the event of a swarming attack by aggressive bees, lookouts have then option of retreating inside the cab, or inside their car.
9. Hantavirus. There is a lot of rodent activity at Chews Ridge. Hand sanitizer dispensers are kept in the cab and should be used often. When rodents are caught in traps in the tower, spray the area of the trap with disinfectant and use the hand sanitizers.

Dealing with Displeased Visitors

Most visitors to the National Forest come to have a good time. A visit to a fire lookout is often the high point of an enjoyable experience. However, there are rare occasions when visitors are irritated about the Forest Service and will voice their opinions to you, the only available Forest Service representative. Here are some tips for dealing with displeased visitors.

- * Don't take it personally. Many times displeased visitors are just irritated at "the government" and not at you. Keep calm. Don't let yourself get angry or emotionally involved.
- * Stay neutral. Don't agree or disagree. However, do acknowledge that you understand they have a point of view.
- * Deal with their feelings. Don't ignore or pass them by. Listen while they vent their frustrations.
- * Try to help when and if you can. Provide only information you know is correct. It is better to say "I don't know" than to give false information. Provide them with an address or phone number to which they can direct their complaints if they want it.
- * Don't let complaints ruin your day. Continue to smile, and enjoy your contact with other visitors. Try to put the unpleasantness aside and stay professional and friendly to visitors.

Ordered evacuation

Chews Ridge Lookout may have a need to be evacuated due to a fire or other emergency situation. All fire lookout volunteers should be familiar with the procedure for evacuating their tower. Instructions for a safe evacuation are posted next to the door of the lookout.

You must be prepared to either spend the night in the tower ("shelter in place") or go to a different place of safety, such as the MIRA Observatory. In either case, here are some essential tips.

- Carry extra food and water with you whenever you work a shift.
- Always wear sturdy shoes or hiking boots when on duty.
- Carry a cell phone, but remember that cell phone service in the mountains is not as reliable as in urban areas.

The Forest Service is aware that you are in the tower and they will always get you out safely. Follow their instructions given on the radio whether to leave the lookout immediately and descend Tassajara Road; to remain in the tower until conditions improve; or to relocate to the MIRA Observatory.

APPENDICIES

- 1. Daily Log form**
- 2. Smoke Report form**
- 3. Osborne Fire Finder diagram**
- 4. Osborne vernier diagram**
- 5. Lightning Strike form**
- 6. Job Hazard Analysis**