CORRECTING ERRORS ON FIREFINDER MAPS 8653
(1987)

Maps on the firefinders of the department are being mounted for the most part in plastic. CDF unit administrative maps are normally used on firefinders; the scale of these maps is 1 inch = 2 miles.

A discussion of possible adjustments for errors in a firefinder map follows. By a study of this section the accuracy of the firefinder base map may be checked.

When a lookout finds a discrepancy, he/she should immediately inform his/her supervisor. It is possible that the supervisor may wish to get the advice of a technically trained person or have the disc sent to the Sacramento office. It is very important that the map on a firefinder be as nearly right as possible because it is used for locating fires. It is not good practice to continue using a map in which errors exist for season after season. A map may be correct, yet old or torn, and not legible. Here again, action to correct the situation should be taken immediately.

DETERMINE CAUSE AND CORRECT 8653.1
(1987)

After a firefinder has been set up, adjusted and oriented, the bisecting steel tape should cut through the mapped position of any object on which it is sighted. If it does not do this, it is due to some error in the map.

This error, however, may be due to any one of the following causes:

Cause 1: An error in the construction of the inked meridian line used for positioning map.

Cause 2: An error in centering the mapped position of the lookout station occupied on the instrument (over center pin).

Cause 3: An error in the mapped position of the lookout station occupied.

Cause 4: An error in the mapped positions of the objects sighted which may be the result of paper distortion, of compilation errors, or of errors in original survey.

The procedure for running down the specific cause of error and for correction is as follows:

Make a double series of azimuth readings on a number of mapped peaks on all sides of the lookout station. One series of readings should be made by sighting directly on the peak and the other series by setting the bisecting steel tape so that it cuts through the mapped position of the peak.

Determine and record the angular discrepancy in the two readings on each peak by subtraction, and note down whether it is a plus (+) or a minus (-) value, i.e., whether the readings obtained from the map are larger or smaller than those obtained by direct sighting. In selecting peaks to sight, choose U.S.G.S. points and lookout stations as far as practical. All mapped points should be at least five or six inches from center of instrument--the farther the better.

After this double series of actual and map azimuth have been assembled, the readings will generally follow three patterns.

Pattern 1: If the discrepancies in readings are approximately the same in all cases, the map is accurate but the inked meridian line is not.

(Cause 1) To correct this, simply sight on one of the peaks, and revolve the map disc until the mapped position of this peak lies directly under the tape.

Pattern 2: If the discrepancies are approximately the same in all but one or two cases, it may be assumed that there is some error either in the mapping of this erratic point or in the sight on this point, and an adjustment may be made as in Pattern 1 for Cause 1.

Pattern 3: If the discrepancies are erratic, i.e., large in some and small in others, or a plus value in some cases and a minus value in others, the error must be due to Causes 2, 3 or 4 (following).

(Cause 2 - error in centering the map on the instrument.) This can be easily checked by comparing the disc map with an unmounted map and scaling off the distance to the center hole. If this is found to be inaccurate, redrill the map disc and set over to the proper position.

(Cause 3 - error in the mapped position of the occupied station.) This can best be checked by the ECC officer by cutting in the position of the lookout station in question from reversed readings to two or three U.S.G.S. or lookout stations whose positions are known to be accurate.

(Cause 4 - errors in the mapped position of the objects sighted.) After finding and correcting the errors described under Causes 2 and 3, you may find that angular discrepancies still exist when checking by the double series of azimuth readings. These errors will be erratic. There are three possible causes of error in the map.

These causes are as follows:

- Distortion through uneven expansion or contraction with or across the grain of the paper on which the map is made.

- Cumulative errors--inaccuracies in the measurement of township lines which upon compilation have been carried all the way across the map.

- Lack of accurate surveys.

A detailed analysis of these causes of map inaccuracy follows. If it is felt that any of these apply to the base map or if in checking with the ECC officer, there seems to be a difference in map locations of a fire resulting from a particular azimuth reading, it is advisable to call again for technical aid.

DISTORTION 8653.2

(1987)

Distortion is kept to a negligible factor by making lithographs direct from the original without the intermediate step of tracing and by using precautions in mounting. Distortion usually occurs at the edges of the map, if at all.

If expansion and contraction occurred evenly in both directions, there would be distortion of scale, of course, but none in the angles between mapped points, and the locations secured by the plotted intersection of angles would be accurate.

With uneven expansion, which usually occurs, angles are distorted. The following are methods of detecting this:

- By scaling distances between parallels of latitude and adjacent meridian lines and comparing with actual distances.

- By scaling known distances such as the length of lines between U.S.G.S. triangulation stations.

- By comparison with the original map or unmounted copies.

- By measuring the conventional scale showing the number of miles represented by a certain line (the scale should be long and constructed with and across grain of paper).

- By comparison of plotted locations with the location in reference to section corners as tied in on ground.

LACK OF ANY ACCURATE SURVEY 8653.3

(1987)

The location of topographic features is in this case unreliable, especially in the case of streams. In such cases it is a simple matter to replot well- defined points which can be seen from two lookouts, thus forming a rough guide for correcting drainage. Sights down streams or on junctions also afford opportunities for making corrections. Fires located by intersection really amount to triangulation stations which may be used for making local corrections of drainage or other features. These things should be done by lookouts and ECCs. Until they are done, the location of streams, ridges, or other features may not be in correct relation to a plotted location of a fire, and the mapped relation of the two will mislead fire crews. In such cases, crews must depend upon the lookout's description of fire in reference to local landmarks. A record of relative locations as found by crews may lead to a crude correction factor which can be applied to any fires within a radius of several miles.

The above suggests some of the many ways in which the lookout and the ECC may overcome the handicap of poor maps. They must study their maps and become familiar with map flaws. By knowing these flaws, they can make correct adjustments.

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