

Unit 3 | Handout 7

Lesson 3: Reading a Seismogram

**Purpose:** To learn how to read and analyze wave patterns on an actual seismogram.

- Guiding Questions:**
- What is a seismogram?
  - What information is recorded on a seismogram?
  - How is a seismogram read?

**Instructions.** Complete step 3 on your own. The procedure is found on pp. 35 of the XTP textbook. We will review these answers as a class before moving on in the procedure.

- 3a.** What do the numbers 0858 on the seismogram represent?
- 3b.** What does each mark on a line represent
- 3c.** How long did it take the for the seismogram to make one revolution around the drum? How do you know?
  
- 3d.** When did the first P-wave in the illustration arrive at the station?
- 3e.** When did the first S-wave arrive at the station?

**Instructions.** Follow the procedure of pages 35-38 of your XPT textbook. The numbers below correspond to the steps of the procedure in the book where you are required to record an answer. Do not skip any steps in the textbook.

- 5a.** How is the Bellingham seismogram different from the seismogram shown in Figure 3.6 on page 35?
  
- 5b.** How is it the same?
  
- 5c.** Why do you think this is so?

- 7d.** What is your estimate to when the first earthquake wave from the Alaska earthquake reached the seismograph station in Bellingham?
- 8.** What time, in AM or PM, did the first P-wave arrive in Bellingham?
- 9.** Calculate how long it took the first earthquake wave to reach Bellingham. Record this time below.
- 10.** Look at the bottom half of the seismogram. Look at the date. What do you think the waves in this bottom half represent?
- 11a.** Record the time that the first aftershock occurred on March 28, 1964.
- 11b.** Count the number of aftershocks you see altogether on the second day. How many aftershocks do you see?
- 13.** What does the position of the P-wave and S-wave on the seismogram tell you about each wave? Think about what you learned in lesson 2.
- 14.** What is the difference in arrival time between the P-wave and S-wave?
- 15.** Write a working definition of lag time (S-P interval).
- 17a.** Do you think seismographs all over the world, or only those near Alaska, were able to record the Alaska earthquake. Why?
- 17b.** In what ways might the seismograms recorded in other parts of the world look different from the one recorded in Bellingham?
- 18a.** What do the two wave shapes represent?

**18b.** Draw your conceptual map in the space below. Use the instructions on step 18 to help you. (Additional information: Conceptual maps/graphs do not rely on actual data. This is just to show a possible relationship. Think of it this way: if you graph one line for a p-wave and one line for an s-wave, what would they look like? Would they have a positive or negative slope? Will they have similar or different slopes?)

