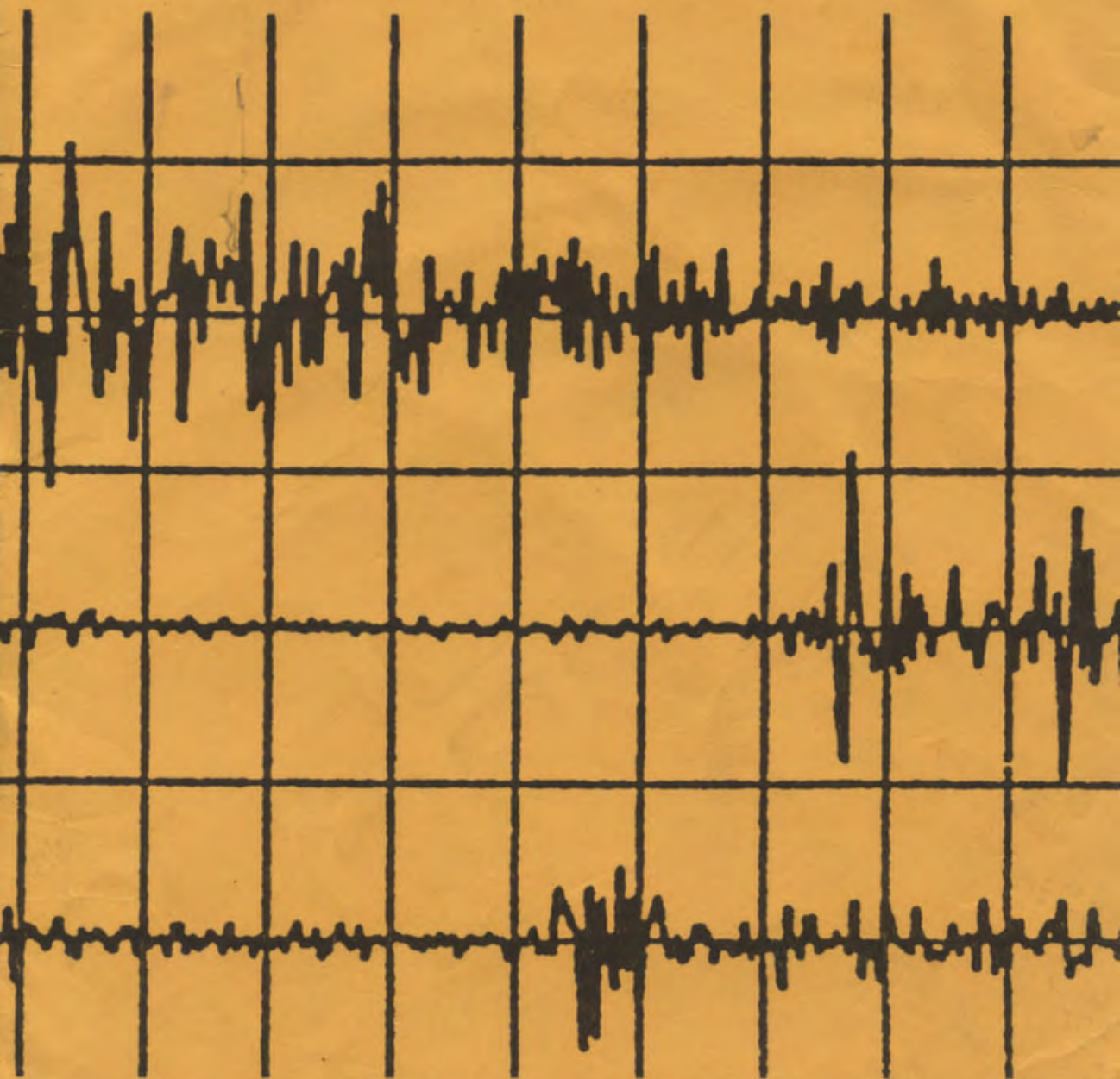
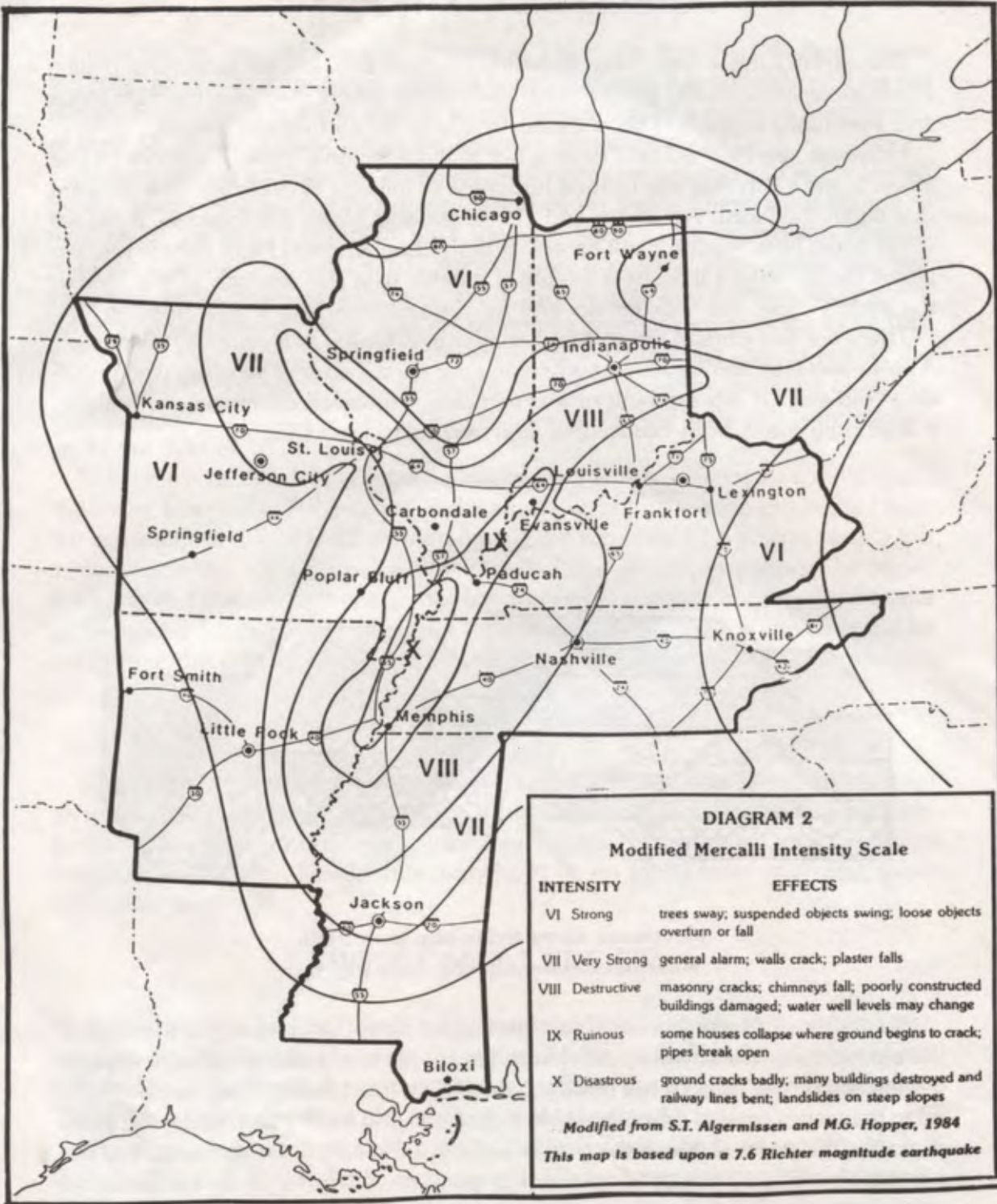


**THE NEW MADRID FAULT:**  
**Living in Earthquake Country**





**DIAGRAM 2**

**Modified Mercalli Intensity Scale**

**INTENSITY**

**EFFECTS**

- |                  |   |
|------------------|---|
| VI Strong        | trees sway; suspended objects swing; loose objects overturn or fall                               |
| VII Very Strong  | general alarm; walls crack; plaster falls   |
| VIII Destructive | masonry cracks; chimneys fall; poorly constructed buildings damaged; water well levels may change |
| IX Ruinous       | some houses collapse where ground begins to crack; pipes break open                               |
| X Disastrous     | ground cracks badly; many buildings destroyed and railway lines bent; landslides on steep slopes  |

*Modified from S.T. Algermissen and M.G. Hopper, 1984*

*This map is based upon a 7.6 Richter magnitude earthquake*

## WHAT KINDS OF EFFECTS CAN I EXPECT?

The actual movement of the ground in an earthquake is seldom the direct cause of fatalities. Most casualties result from falling objects and debris as a result of the seismic waves which shake, damage, or demolish buildings and other structures. The hazard potential is greatest in Kentucky's metropolitan areas, even though other parts of the state are closer to the epicenter. The reasons for this are the high population of those areas, and because there tends to be a greater number of tall buildings in large cities.

Disruption of communications, power, gas, sewer and water systems can be expected. In addition, fires and explosions from natural gas and petroleum pipelines could increase damage to the affected area. Railroads, inland waterways, highways, telecommunications, and electric power networks are likely to receive damage and disruption. Numerous bridge and levee failures may also occur.

Another effect which Kentuckians face in the event of a major earthquake is liquefaction. Liquefaction occurs in areas where the soil is wet and sandy. If seismic waves of high acceleration and long duration pass through this type of soil, the soil may liquefy and act as a fluid for a short period of time rather than as a solid, causing displacement of buildings and bridges.

## HOW IS AN EARTHQUAKE MEASURED?

Two different scales are used to measure an earthquake. One is the Richter Scale, which measures the magnitude of energy released during the quake. The scale ranges from 1 to 10, with each higher number representing an increase of 31 times the strength of the previous number. For example, an earthquake which measures a 5 on the Richter Scale is 31 times more powerful than one which measures a 4. There is only one Richter reading for an earthquake, based on data taken within certain proximity to the epicenter of the quake.

The other means of measuring an earthquake is the Modified Mercalli Scale. This scale ranges from I to XII, and is based upon the amount of damage done to an area. There are thus several Modified Mercalli readings for an earthquake. The map shown in Diagram 2 shows the predicted Modified Mercalli readings for your area if an earthquake of 7.6 Richter magnitude should occur today.

## WHAT IS THE POSSIBILITY OF AN EARTHQUAKE OCCURRING?

Scientists believe that there is presently enough energy accumulated in the New Madrid Fault to release an earthquake of 7.6 magnitude on the Richter Scale. As time passes without an earthquake, more and more energy will build until the stress becomes unbearable and an earthquake occurs. However, not all of that energy may be released when an earthquake happens.

According to the Tennessee Earthquake Information Center, there is a 40 to 60 percent probability of a 6.5 magnitude earthquake within the next 15 years; there is a 97 percent chance a 6.5 magnitude earthquake will occur in the next 50 years. The average repeat time for a 6.5 earthquake along the New Madrid Fault has been every 70 years, plus or minus 15 years. The last earthquakes of that size occurred near Marked Tree, Arkansas in 1843, and Charleston, Missouri in 1895. Thus, the New Madrid Fault is a bit overdue for a 6.5 earthquake today.

## WHAT CAN I DO?

There are many things you can do to reduce the hazards caused by an earthquake. Here are some tips of what you should do before, during and after an earthquake to avoid serious injury to yourself and others.

### **Before an earthquake occurs:**

- ★ Check for potential fire risks. Defective electrical wiring and leaky gas connections are very dangerous should an earthquake occur.
- ★ Strap your water heater to the studs in your walls. Using metal strips will keep the heater in place during a quake. Provide strong support for other gas appliances, using flexible connections wherever possible.
- ★ Know where and how to shut off electricity, gas and water at main switches and valves. Check with your local utilities office for instructions.
- ★ Keep on hand a flashlight and portable radio, both with fresh batteries; plenty of fresh water and non-perishable foods that do not require cooking; blankets and tools. These items can sustain your family for several days in the event help cannot immediately reach you.
- ★ Place large and heavy objects on lower shelves. Bottled goods, glass, china and other breakables should also not be stored in high places or left where they can freely slide on shelves.
- ★ Plaster cracks, especially those found on ceilings, should be investigated. Falling plaster could result in injury.

## **During an earthquake:**

- ★ If you are outdoors, stay outdoors; if you are indoors, stay indoors. Most injuries during quakes occur as people are entering or leaving buildings.
- ★ If you are indoors, take cover under a heavy desk or table, or in doorways, halls, or against inside walls. Stay away from glass.
- ★ If you are outdoors, move away from buildings and utility wires. The greatest danger comes from falling debris just outside of doorways or outer walls. Once in the open, stay there until the shaking stops.
- ★ If you are in a moving car, stop as soon as you can, but stay in your car. A car may jiggle violently on its springs, but it is a good place to stay until the shaking stops. When you drive on, watch for hazards created by the quake. Some of these hazards include fallen or falling objects, downed electrical wires, or broken or undermined roadways.

## **After an earthquake:**

- ★ Be prepared for additional earthquake shocks called "aftershocks". Although most of these are smaller than the main shock, some may be large enough to cause additional damage.
- ★ Stay out of severely damaged buildings. Aftershocks can shake them down.
- ★ Check for injuries. Don't attempt to move seriously injured persons unless they are in immediate danger of further injury.
- ★ Don't check your utilities without first having them shut off. If you smell gas, open the windows, shut off the main gas valve, leave the building, and then notify the authorities.
- ★ Don't smoke. Gas leaks could make a cigarette your last. Don't use candles, matches or other open flames because of possible gas leaks. Douse all fires. Don't turn on the lights.
- ★ If water pipes are damaged, shut off the supply at the main valve. Emergency water may be drawn from water heaters, toilet tanks (not the bowl), and melted ice.
- ★ Check to see that sewage lines are intact before using sanitary facilities.
- ★ Clean up spilled medicines, drugs and other potentially harmful materials.
- ★ If your power is off, check your freezer and plan meals to use foods which will spoil quickly.

For additional earthquake awareness information write to the Kentucky Division of Disaster and Emergency Services, Boone National Guard Center, Frankfort, Kentucky 40601, or call (502) 564-8628.