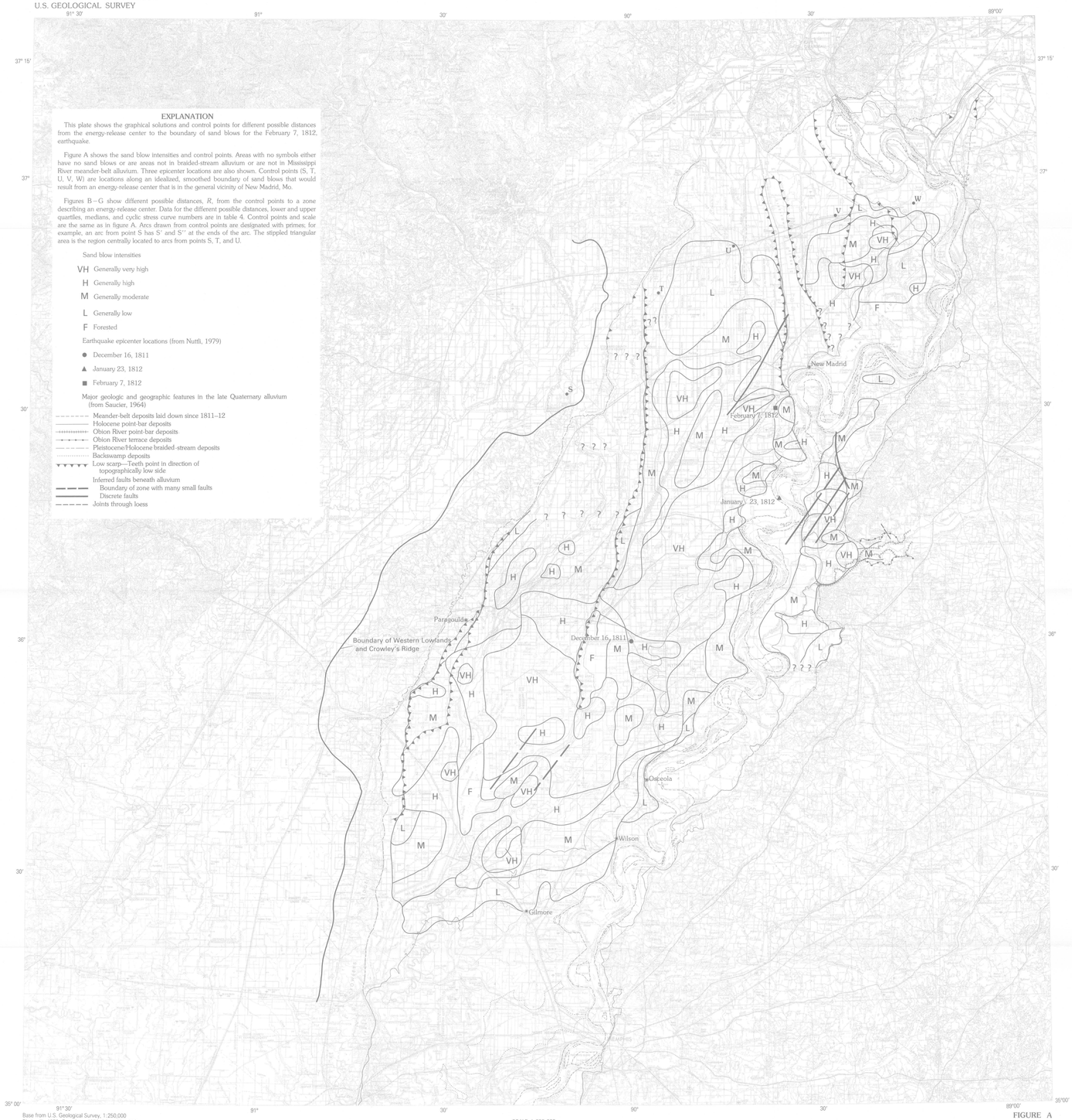

EXPLANATION

This plate shows the graphical solutions and control points for different possible distances from the energy-release center to the boundary of sand blows for the February 7, 1812, earthquake.

Figure A shows the sand blow intensities and control points. Areas with no symbols either have no sand blows or are areas not in braided-stream alluvium or are not in Mississippi River meander-belt alluvium. Three epicenter locations are also shown. Control points (S, T, U, V, W) are locations along an idealized, smoothed boundary of sand blows that would result from an energy-release center that is in the general vicinity of New Madrid, Mo.

Figures B–G show different possible distances, *R*, from the control points to a zone describing an energy-release center. Data for the different possible distances, lower and upper quartiles, medians, and cyclic stress curve numbers are in table 4. Control points and scale are the same as in figure A. Arcs drawn from control points are designated with primes; for example, an arc from point S has S′ and S″ at the ends of the arc. The stippled triangular area is the region centrally located to arcs from points S, T, and U.

Sand blow intensities

- VH Generally very high
- H Generally high
- M Generally moderate
- L Generally low
- F Forested

Earthquake epicenter locations (from Nuttli, 1979)

- ● December 16, 1811
- ▲ January 23, 1812
- ■ February 7, 1812

Major geologic and geographic features in the late Quaternary alluvium (from Saucier, 1964)

- Meander-belt deposits laid down since 1811–12
- Holocene point-bar deposits
- Obion River point-bar deposits
- Obion River terrace deposits
- Pleistocene/Holocene braided-stream deposits
- Backswamp deposits
- Low scarp—Teeth point in direction of topographically low side
- Inferred faults beneath alluvium
- Boundary of zone with many small faults
- Discrete faults
- Joints through loess

Base from U.S. Geological Survey, 1:250,000
Blytheville 1970; Dyersburg 1970; Memphis 1978;
Paducah 1969; Poplar Bluff 1978

SCALE 1:500 000

10 0 10 20 30 MILES

10 0 10 20 30 40 KILOMETERS

FIGURE A

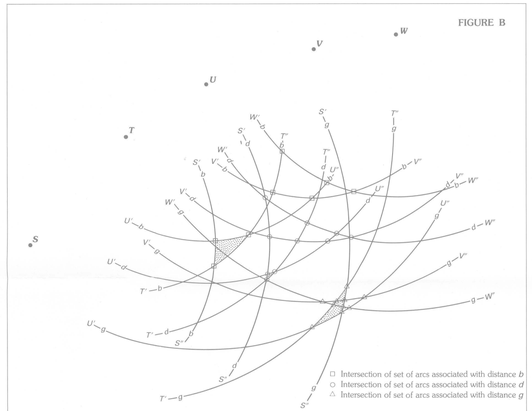

FIGURE B

Lower quartile, cyclic stress curve 1, with distance (*R*) equal to *b*, *d*, and *g* (see table 4)

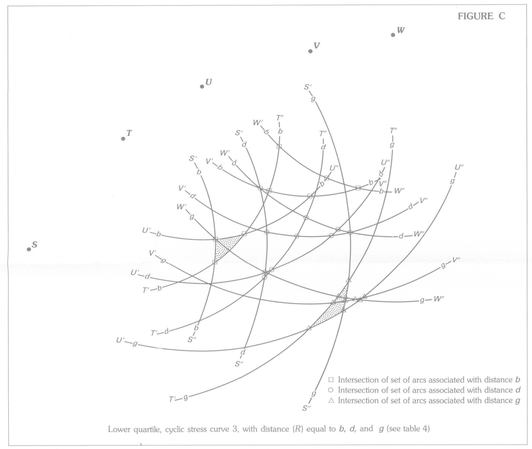

FIGURE C

Lower quartile, cyclic stress curve 3, with distance (*R*) equal to *b*, *d*, and *g* (see table 4)

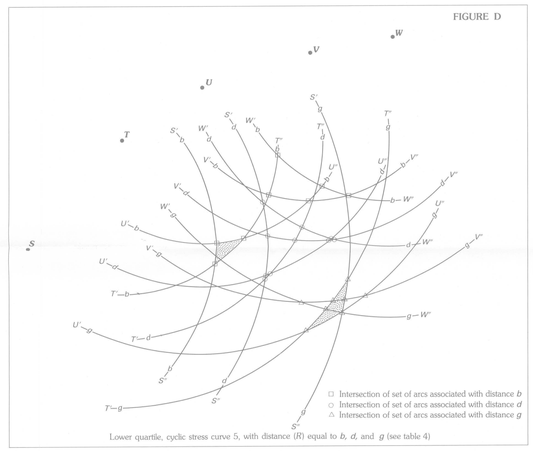

FIGURE D

Lower quartile, cyclic stress curve 5, with distance (*R*) equal to *b*, *d*, and *g* (see table 4)

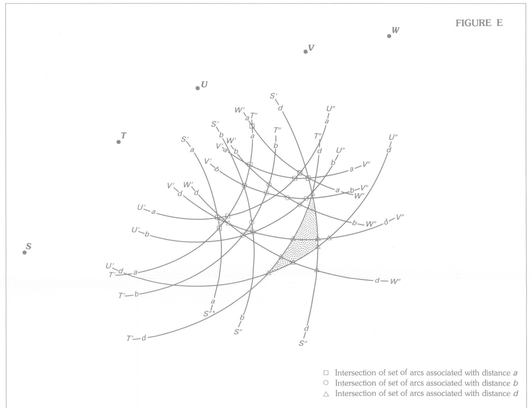

FIGURE E

Median, cyclic stress curve 2, with distance (*R*) equal to *a*, *b*, and *d* (see table 4)

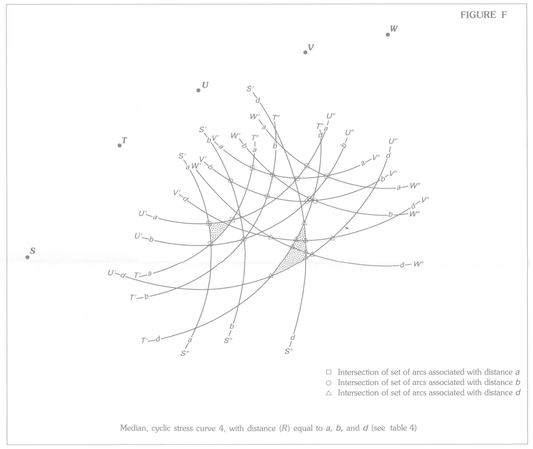

FIGURE F

Median, cyclic stress curve 4, with distance (*R*) equal to *a*, *b*, and *d* (see table 4)

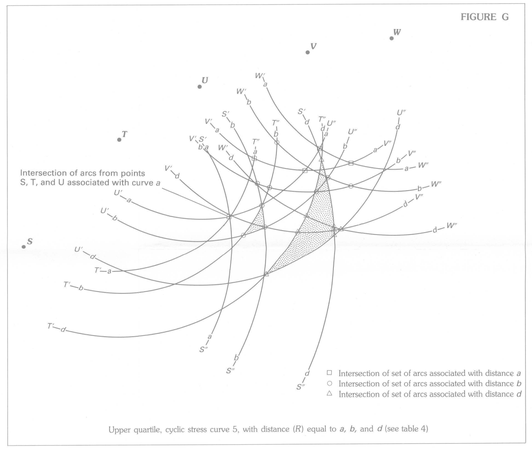

FIGURE G

Upper quartile, cyclic stress curve 5, with distance (*R*) equal to *a*, *b*, and *d* (see table 4)

GRAPHICAL SOLUTIONS, ENERGY-RELEASE CENTERS TO BOUNDARY OF SAND BLOWS, FEBRUARY 7, 1812, EARTHQUAKE