

Figure 1. A series of model snapshots of an expanding seismic wavefield at 200 ms time intervals for a surface seismic source above a salt dome model. The figure is from a paper by Whitmore and Lines (1986) and is used with the authors' permission.

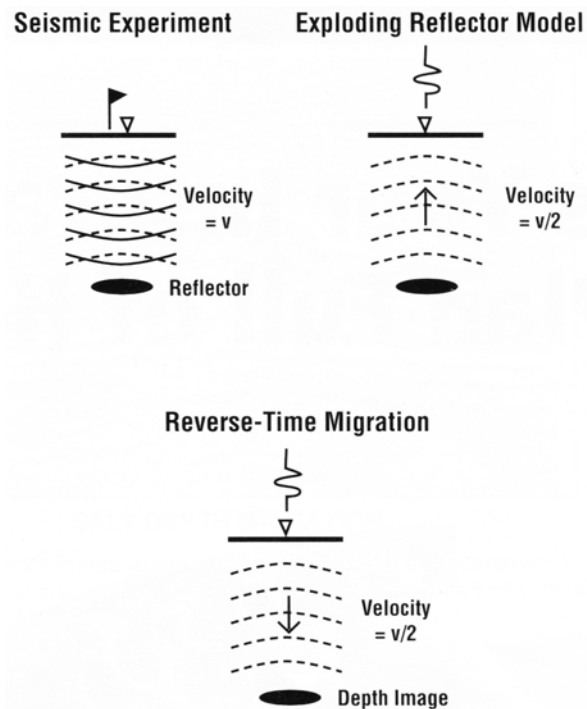


Figure 2. This cartoon shows the seismic experiment, and the concept of the “exploding reflector” used in the reverse-time migration experiment. The upper left part of the figure shows the seismic reflection experiment for a coincident seismic source (flag) and receiver (triangle). Seismic energy travels from the source, down to the reflector and returning back to the receiver. In the upper right we see the "exploding reflector" model that is almost always equivalent to this seismic reflection experiment. In this model, we consider seismic waves to travel a one-way path from the reflector to the surface receiver (or half the reflected distance) at a velocity that is half the velocity of the medium. Reverse-time migration images the seismic data by reversing the path of the exploding reflector model. Recorded seismic energy is propagated backward in time to its point of origin.

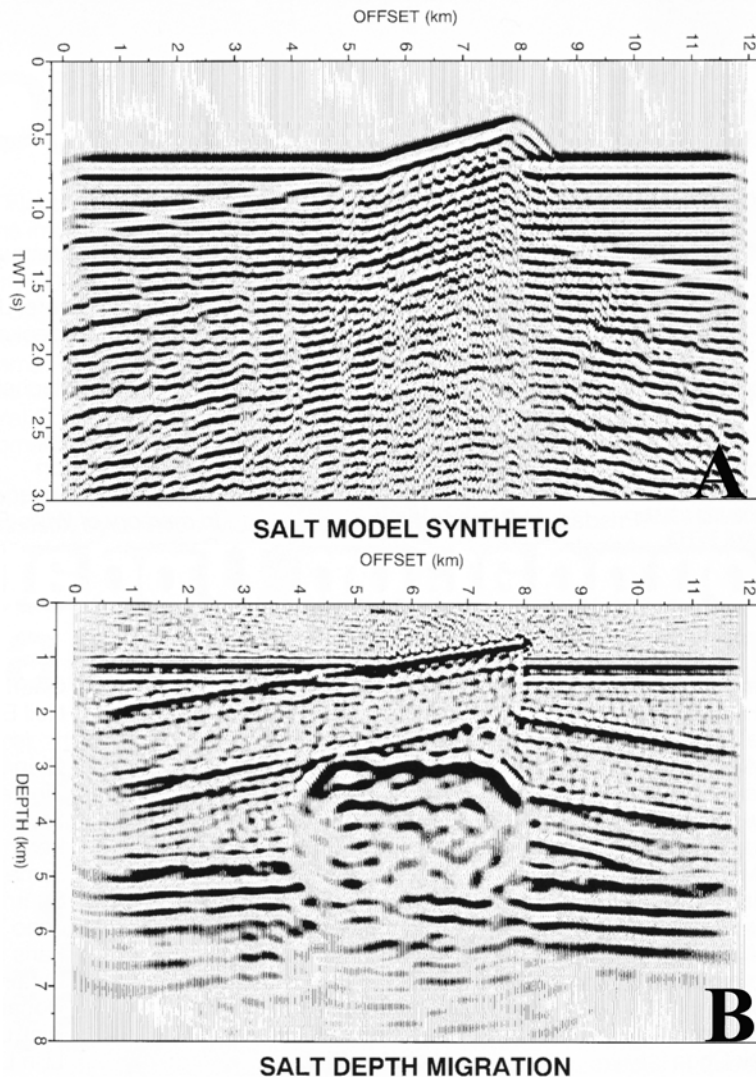


Figure 3. An example of reverse-time migration for a salt pillow model from Bording and Lines 1997 SEG publication “Seismic Modeling and Imaging With the Complete Wave Equation.” Figure 3a shows an unmigrated stacked section - few reflection events can be discerned on the seismogram. Figure 3b shows the depth image of the salt pillow obtained by reverse-time migration. The dipping seismic reflectors and the salt pillow between offsets of 4-8 kilometers and depths of 3-5 kilometers can be readily interpreted.