

## **Basic Primer: Retreat Mining in Underground Coal Mines**

There are two methods of mining that are typically used in underground coal mines in the United States: room and pillar mining or longwall mining. The purpose of this primer is to provide general background information on retreat mining, which is often used in conjunction with room and pillar mining. It is not intended to describe the exact method of mining used at any specific mine.

All underground coal mines must have a Mine Safety and Health Administration (MSHA) approved roof control plan that is specific to that mine. As part of the plan, mines must include safety procedures that will be followed. For retreat mining, the plan includes the use of temporary supports (timbers) or mobile roof supports to protect miners against roof falls.

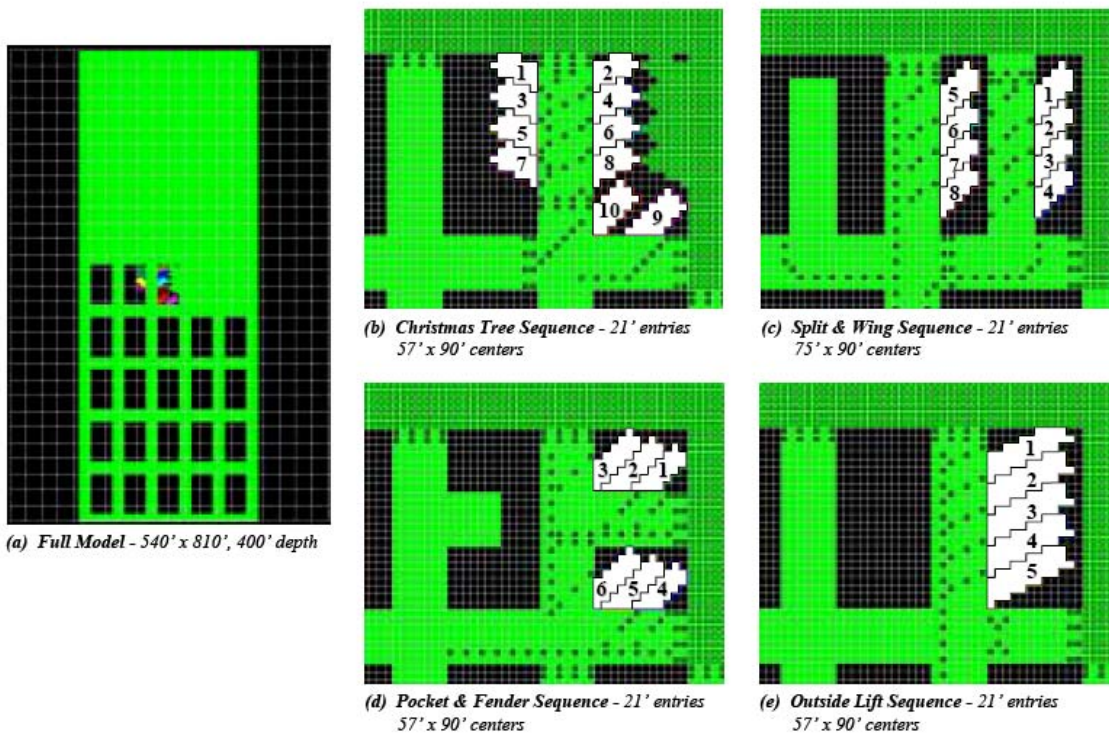
**Room and Pillar Mining** – In room and pillar mining, coal seams typically are mined using continuous mining equipment (continuous miner) that cuts a network of "rooms" into the seam of coal. (See drawings below.) As the rooms are cut, a series of pillars, or columns of coal, is left to help support the mine roof and control the flow of air. Generally, openings are driven 20 feet wide and the pillars are generally rectangular in shape measuring 35-50 feet wide by 35-80 feet long. As mining advances, a grid-like pattern of tunnels (entries) and pillars is formed. Shuttle cars or scoops are used to transport coal to the conveyor belt for transport to the surface.

The room and pillar method is often used to mine smaller coal blocks or thin seams as opposed to longwall mining, where large blocks of coal are mined. In some mines, both room and pillar and longwall mining methods may be used based on the nature of the coal seam(s). In 2006, approximately 58 percent of the coal produced at underground mining operations used the room and pillar method with continuous mining equipment.

**Retreat Mining** - When room and pillar mining advances to the end of a panel, retreat mining may begin. Retreat mining is a planned and engineered method of removing all or part of the pillars. The removal of the pillars occurs in the opposite direction (retreat) from which the mining initially advanced.

In retreat mining, as much coal as is feasible is mined from the pillars that were created in advancing the panel. Based on the extent of pillar removal, the roof may be engineered to cave to relieve stresses created by the removal of the coal pillars. When retreat mining is completed to the beginning (mouth) of the room and pillar panel, the mined panel is abandoned, and a new area developed using the continuous mining machine.

### Typical Methods of Room and Pillar Retreat Mining



**Sources:**

National Institute of Occupational Safety and Health

Mine Safety and Health Administration

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