SYNOPSIS:

While the earth's surface may seem stationary, it is always in motion. Scientists have studied earthquakes, volcanoes, and other seismic activity, and have evolved theories that explain the movement and deformation of the earth's crust over millions of years. This program examines how our planet has been changed by volcanic eruptions and colliding continents. It also illustrates earth's history, from a single landmass known as Pangaea to today's configuration of continents and oceans.

CURRICULUM UNITS:

Earth Science
Geology
Plate Tectonics
Seismology
Volcanology

CAREER OPPORTUNITIES:

Engineer
Geologist
Geophysicist
Oil Explorer
Seismologist
Volcanologist

PROGRAM OVERVIEW:

Scientists have been studying data to understand the movement of tectonic plates that began over 250 million years ago when Pangaea broke apart. Geologists have drilled about 11 kilometers into the earth's crust. The rock samples they collected proved to be older than any others preciously found. Other information came from seismometers and magnetometers that measure magnetic field variations on the ocean floor.

Along the oceanic ridge in the middle of the Atlantic and Pacific Oceans, the plates are pulling apart. The program illustrates how underwater eruptions create cushion lava and how this process builds a new sea floor.

A collision between an oceanic plate and a continental plate causes the subduction of the heavier oceanic plate. However, a collision between two continental plates creates mountain ranges like the Alps and the Himalayas. When two plates slide against each other, earthquakes are produced.

People can never control volcanoes or alter the course of colliding continents. However, the scientific knowledge we gain may enable us to predict future changes before they happen and to understand their potential effect on the world in which we live.

ISSUES AND CRITICAL THINKING:

1. After viewing the program, ask your students the following:
   - What is a tectonic plate?
   - What happens when two plates slide past each other?
   - What events create volcanoes?
   - What are some of the methods that scientists use to study the earth?

GLOSSARY:

CRUST- the outer layer of the earth.

CUSHION LAVA- masses of lava, resembling pillows that flow from an underwater eruption.

DEFORMATION- a change in the shape and size of a body.

DORMANT- temporarily inactive.

DYNAMO- a generator that converts energy of mechanical motion into electronic current.

FAULT LINES- the intersection of a rock fracture with the ground surface/

LATITUDE- the distance north or south of the equator, measured in degrees along a meridian, as on a map or globe.

MOLTEN- made liquid by heat.

POLARITY- polar separation or alignment.

PRESSURE- the force that is exerted per unit area.

RADIUS- a line that joins the center of a circle to its circumference.

SEISMIC- caused by an earthquake or vibration.

SEISMOMETER- a device that measures the motion of the earth.

SILICATES- compounds containing silica, oxygen and one or more metals.

STRATIFIED- formed, arranged, or laid down in layers or strata

SUBDUCTION- a process in which one tectonic plate descends beneath another.

TECTONICS- the study of the earth's structural features.

VARIATION- a change in form, position, or condition.

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