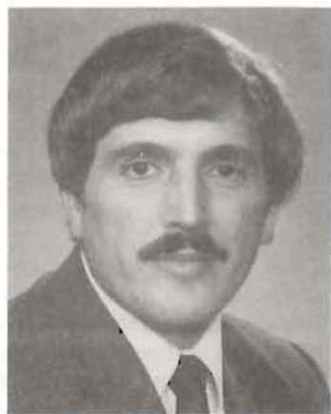


**DOUBLE PRESENTATION —  
SEPTEMBER 26, 1984**

**FRED J. HILTERMAN—Biographical Sketch**



Fred J. Hilterman received a Geophysical Engineering degree in 1963 and a PhD in Geophysics in 1970 from Colorado School of Mines. During his tenure with Mobil (1963 - 1966 and 1970 - 1973), his assignments ranged from field work to Activity Leader at the Field Research Laboratory.

Mr. Hilterman joined the University of Houston in 1973, where he held the positions of Associate Pro-

cessor and Professor of Geophysics. He co-founded the University's Seismic Acoustics Laboratory (SAL) in 1977 and was principal investigator until 1981 when he left the University to become one of the founders of Geophysical Development Corporation. Dr. Hilterman is currently Vice-President of Development of that company which provides geophysical processing services for the oil and gas industry.

Mr. Hilterman received the Society of Exploration Geophysicist's (SEG) Best Paper Award in 1970 for his paper "Three Dimensional Seismic Modeling" and the VanDiest Gold Medal from Colorado School of Mines in 1971. He is a member of the SEG, the American Association of Petroleum Geologists (AAPG), the American Geophysical Union and the Geophysical Society of Houston. He served as Vice-President of the SEG during 1982 - 1983 and is currently chairman of the Special Committee on Geophysics for the AAPG. He has authored over twenty papers and continues to be an active lecturer for the SEG and AAPG in their Continuing Education Programs. He is also scheduled to participate as a Distinguished Lecturer in the 1984 - 1985 AAPG Distinguished Lecturer Tour.

**SEISMIC MODELING:  
GEOLOGICAL PREDICTIONS AND PITFALLS**

Seismic sections across most geological structures are distorted by sideswipe and/or lateral velocity changes in the subsurface. Invariably, the distortion on the 2D migrated section hides the features that are most desired. However, through seismic models of similar geological structures, the interpretational pitfalls caused by sideswipe and velocity are turned into practical prediction tools.

Migrated seismic lines across domes and anticlines normally exaggerate the size of the anomalies. Migrated seismic lines across synclines and basins are characterized with false expressions which include grabens, contemporaneous deformation, cross-stratification, high-amplitudes, and crossing reflections. Geological areas that have large lateral velocity contrasts, such as reefs, diapirs, or fault blocks, exhibit false seismic expressions. These include relief faults, basement controlled tectonics, facies changes, and structures which are located in geologically ambiguous positions. Even the polarity of the seismic reflection is 3D dependent.

Modeling examples show that interpretational pitfalls, such as mapping from migrated sections and interpreting from the basement upward, must be supplemented with pseudo-3D interpretational techniques. Geologic models and their seismic analyses from salt provinces, reefs, overthrusts, etc., illustrate these pseudo-3D interpretational tools.