SEISMIC Q IN A SCATTERING MEDIUM; N. Warren, R. E. Trice, and O. L. Anderson, Institute of Geophysics and Planetary Physics, University of California, Los Angeles, CA 90024.

A study is being made of rock properties related to the attenuation properties of the lunar crust. The study is directed toward the problem of structure effects on the elastic and inelastic properties of a medium, and application of such data to the history and formation of the lunar crustal regions.

Two subjects are being emphasized in the study:

(1) The problem of the time decay of energy in a heterogeneous medium, in which the energy cannot be isolated in a single mode, and the determination of Q for such a medium, based on late portions of seismic coda. This portion of the study is applied to the problem of determining the Q of small rock samples by a pulse transmission technique and is extended to the problem of interpreting attenuation from the lunar seismic records.

At this date, results suggest that low-amplitude energy in coda decays relatively slowly, that is, implies a higher Q for a sample than that corresponding to earlier portions of a record. If mode conversion is present during the acoustic propagation, then the measurement of the low-amplitude tail may yield a "best" estimate of the attenuation of the medium. Noise level is expected to affect this estimate of Q from coda. The measured attenuation of lunar seismic signals may be influenced by constraints affecting attenuation determination from coda, the seismic signals being considered as low-amplitude coda with extremely low noise levels.

(2) The problem of the relation of rock structure or texture and attenuation. In particular, the effect on the elastic and attenuation properties of rock due to introducing fresh cracks is being studied.

At this date, results suggest that cracks may influence attenuation less and elastic moduli more than some other types of attenuating "structures," such as imperfect (but welded) grain bonds and hydrous minerals.