
Preface

Some 100 people from 17 countries attended the Fourth International Workshop on Seismic Anisotropy (4IWSA), at the Edinburgh Conference Centre, Heriot-Watt University, Edinburgh, 2–6 July, 1990. About 100 papers and posters were presented, of which 30 are published in these proceedings. There have been significant advances in seismic anisotropy since the Third International Workshop on Seismic Anisotropy (3IWSA) in Berkeley, 1988, and important developments were reported at 4IWSA, particularly in processing shear-wave splitting in record sections, and in applications of shear-wave splitting to hydrocarbon production.

It is about 10 years since shear-wave splitting, the most diagnostic effect of seismic anisotropy, was first positively identified in the crust. During these 10 years, shear-wave splitting, thought to be usually the result of the effective anisotropy of stress-aligned fluid-filled inclusions present in most rocks, has been observed for almost all shear waves travelling along ray paths in the upper half of the crust. The phenomenon appears to be ubiquitous. The Earth, as we observe it on the surface of the crust, is anisotropic and almost all seismic and elastic phenomena that we measure must take account of this anisotropy.

The amount of anisotropy is probably small, perhaps 0.5 to 5 per cent shear-wave anisotropy, and it may have in many circumstances negligible effect on P-wave propagation, but its importance is that it can be interpreted in terms of the internal crack- and stress-structure of the in situ rockmass. This information, critical for many industrial and geological operations, is not easily obtainable by any other means. The necessary assumption of anisotropy, in place of isotropy, is a fundamental change for seismology that allows us to interpret the waveforms of shear waves in the crust for the first time, as well as having many other implications. Seismology will never be the same again! 4IWSA marked a turning point; seismic anisotropy has now been recognized, sophisticated techniques for processing and interpreting anisotropy are beginning to be developed, and the first applications to hydrocarbon production have been identified.

The success of the meeting was in a large measure due to Leon Thomsen and Sven Treitel, both of Amoco, who were highly successful in gathering financial support for the workshop. They are warmly thanked. Contributions in cash and in kind were received from: Amoco Production Research Co.; Arco Oil and Gas Company; British Geological Survey; Compagnie Générale de Géophysique; Conoco Inc.; Edinburgh Anisotropy Project; Exxon Production Research Co.; the Petroleum Science and Technology Institute; Schlumberger-Doll Research; and Western Atlas Geophysical Research. We are very grateful for this support which has produced in these proceedings what is, we suggest, probably the most important collection of papers on seismic anisotropy that has yet been published.

Stuart Crampin and John H. Lovell
British Geological Survey, Edinburgh

The next International Workshop, 5IWSA, will be held in Banff, Canada, 17–23 May, 1992. Enquiries should be addressed to Ms Lois Kokoski, The Conference Office, The University of Calgary, Calgary, Alberta, Canada T2N 1N4. Fax: 403 289-7287.