

# Introduction to ISO 89

H.-J. Dürbaum



## INTRODUCTION TO ISO 89

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Only at the end of January 89 the decision was finally made by the Federal Ministry of Research and Technology (BMFT) to support the complete programme of the so-called Integrated Seismic Experiment Oberpfalz (ISO) 89. This ended a long discussion on the priorities of the various experiments which had been proposed, and - at least for some time - on the value of a 3-D reflection seismic survey of an area around the KTB pilot hole. Fig. 1 lists in the form of a matrix the various seismic experiments on one side and the objectives on the other side indicating where contributions are hopefully expected. Details of the technical realisation are described in the following contributions by authors from the various groups of scientists involved, together with first results as they have been obtained so far. The timetable of the experiments as actually performed is given in fig. 2. One of the important instruments needed for the ISO 89 was a chain of five 3-components-geophones called SEKAN 5, supplied by PRAKLA-SEISMOS the performance of which has been described in an additional paper of this report. As such a long-time use of a chain of geophones is quite unusual in the exploration industry much experience has been obtained during ISO 89, and during the second half of the experiment its performance has been quite satisfactory.

Smoothly carrying through such a complex combination of observations together with the 3-D seismic survey in an area of difficult topography and widely covered with forests- and this practically in time with only few days of delay - is mainly due to the efficient work of Horst SCHWANITZ and his crew of PRAKLA-SEISMOS and his good cooperation with all the other groups involved, but also to the untiring assistance of Christian REICHERT and Johannes SCHMOLL of the DEKORP Project Management. This is gratefully acknowledged. I also thank all the others involved in ISO 89 for their excellent work and cooperation hoping that the results will be worth the joint efforts.

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Authors' Address: DEKORP Project Management, Niedersächsisches Landesamt für Bodenforschung, Stilleweg 2, D-3000 Hannover 51

| EXPERIMENTS<br>OBJECTIVES                                 | 3-D | "Durch-<br>schallung" | 3-D<br>Expanding<br>Spread | Shear wave<br>Common<br>Midpoint<br>Profiling | Vertical<br>Seismic<br>Profile | Moving<br>Source<br>Profile | Multiple<br>Azimuth<br>Shear wave<br>Experiment | Wide-Angle<br>experiment |
|---|-----|-----------------------|----------------------------|---|--------------------------------|-----------------------------|---|--------------------------|
| Exploring complex 3-D structures                          | X   |                       |                            |   |                                |                             |   |                          |
| Mapping of steeply dipping<br>elements                    | X   |                       |                            |   | X                              | X                           |   |                          |
| High resolution mapping of<br>structures in space         |     |                       |                            |   | X                              | X                           |   |                          |
| Identification of reflecting<br>elements in KTB boreholes | X   |                       |                            |   | X                              | X                           |   |                          |
| Extension of the "Erbendorf-Body"<br>in space             | X   |                       |                            |   |                                |                             |   | X                        |
| Dip of fault planes of the<br>Franconian Line             | X   |                       |                            |   |                                |                             |   | X                        |
| Azimuth of joint systems,<br>stress components            |     |                       |                            |   |                                |                             | X   |                          |
| 3-D velocity structure                                    |     | X                     | X                          |   |                                |                             | X   |                          |
| Anisotropy of elastic properties                          |     | X                     | X                          |   |                                |                             | X   |                          |
| Conclusion on lithological<br>properties                  |     |                       |                            | X   | X                              |                             |   | X                        |

Abb. 1: Objectives of ISO 89 and related experiments.



# INTEGRATED SEISMICS OBERPFALZ 1989

Time table of the actual performance

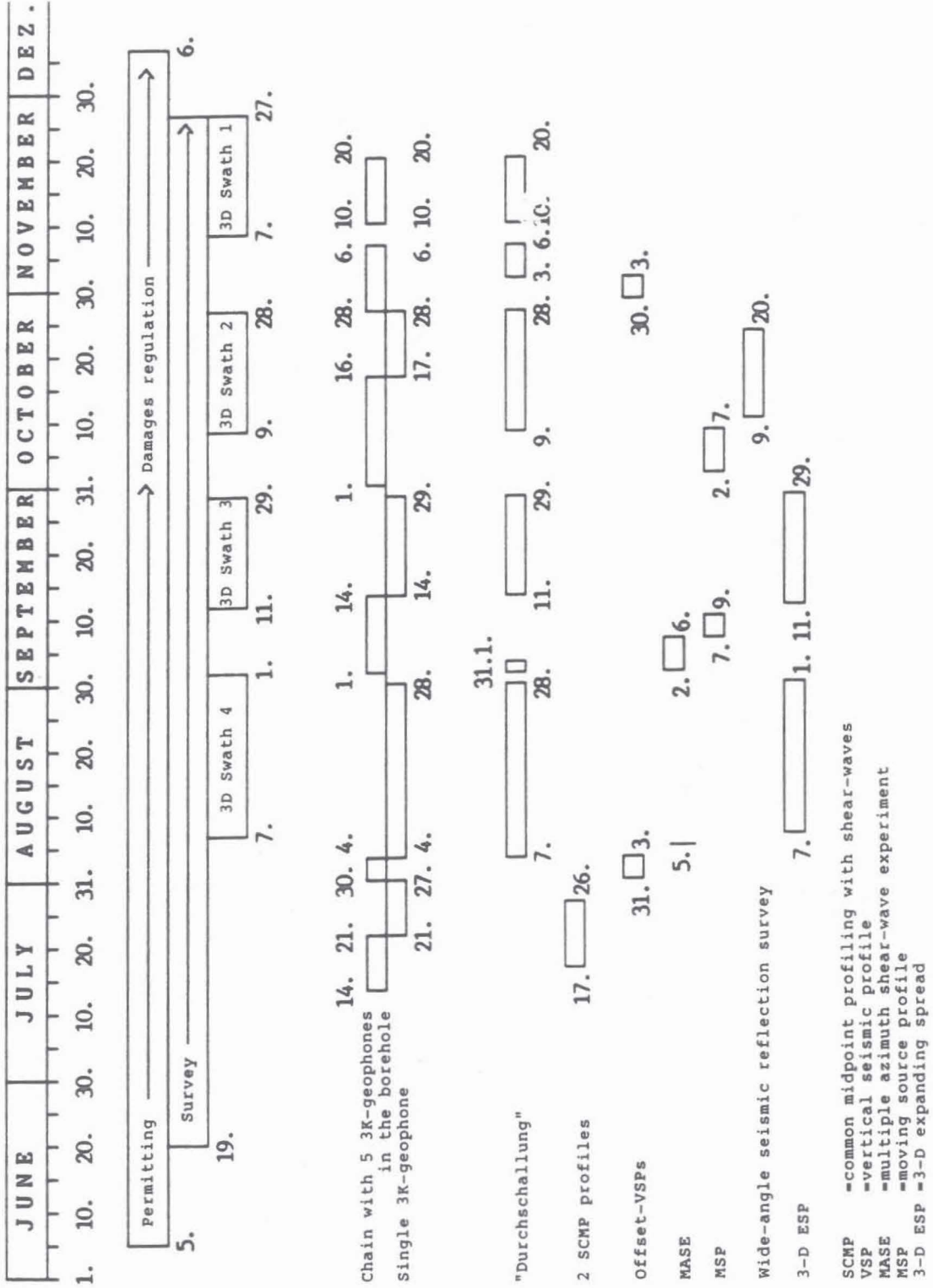


Fig. 2: Time table of ISO 89.