



VSP TRAINING COURSE

CONTENTS

Preface

- **Background**
- **Who should benefit from this course?**
- **How is the course structured?**
- **Suggestions and interest of the audience**

Agenda-Day 1

➤ Introduction

- Development of VSP technology
- VSP's versus check shots and surface seismic
- Principles of VSP wave propagation

➤ Equipment

- Energy source
 - Land
 - Marine

Day 1

➤ Equipment (contd.)

- **Downhole tools (geophones)**
 - **Fixed and Gimbaled**
 - **Z, 3C and 4C**
 - **Single Level**
 - **Multiple Levels**
 - **Geophones for TLC**

- **Recording Equipment**

Agenda-Day 1

- **Noise types and methods of attenuation**
 - **Source generated noise**
 - **Ambient and environmental**
 - **Noise due to borehole conditions**

- **Field operation**
 - **Field logistics**
 - **Field tests**
 - **QC of equipment**
 - **QC of recorded data**

Agenda-Day 2

➤ Zero offset VSP

- Revisit different types of energy arrivals
- Processing sequence and methodology
 - Alignment of upgoing and downgoing energy
 - Wave field separation
 - Downgoing energy subtraction
 - Deconvolution
 - Front Corridor

➤ Interpretation of VSP data

- Identification of reflectors
- Identification of primaries and multiples

Agenda-Day 2

- **Interpretation of VSP data (cont.)**
 - **Identification of multiples in seismic section**
 - **Horizontal and dipping formation**
 - **Faults and diffraction patterns**
 - **Prediction ahead of the bit**
 - **Estimation of attenuation**

Agenda-Day 2

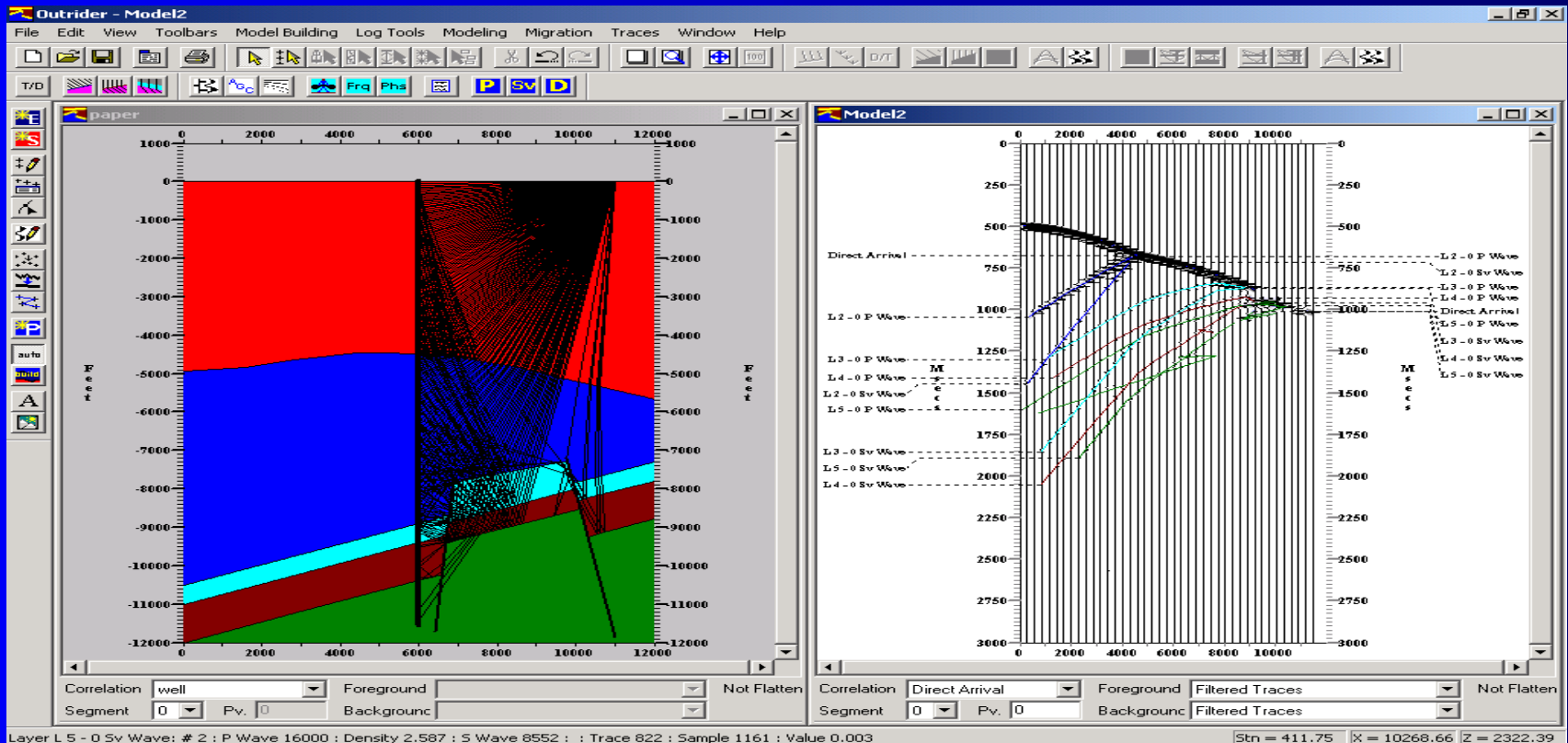
- **Different survey configurations, applications and interpretation**
 - **Rig source VSP**
 - Vertical well
 - Deviated well
 - **Offset Source VSP**
 - **Moving source moving geophone (walkabove)**
 - **Walkaway surveys**
 - **3C/3D VSP's**
 - **9C/3D VSP's**

Agenda-Day 3

- **Other borehole seismic configuration and applications**
 - **Fracture Monitoring**
 - **Cross hole tomography**
 - **Reverse VSP's**
 - **In-hole seismic**

Day 3- MODELING WORKSHOP

➤ Survey design and interpretation



Agenda-DAY 3

- **Discussions on real data supplied by Client**
- **Questions and hopefully answers**

Overview

- **This training course is designed to cover both the theory, practical applications and interpretation of the Vertical Seismic Profile Technology.**

