PRECISION ACOUSTICS LTD

HYDROPHONE MEASUREMENT COURSE CONTENT

1. **Introduction** 10.00-10.10
   Course overview, including a brief introduction to Precision Acoustics, the tutors and the other delegates.

2. **How Do I Select a Hydrophone?** 10.10-10.40
   The basic criteria governing selection of the most appropriate hydrophone for a particular application will be presented, to include: CW vs. pulsed waveforms, membrane vs. needle devices, sensitivity, element size, spatial averaging, frequency response and directivity.

3. **What Equipment Do I Need?** 10.40-11.10
   Choice of Apparatus: a) measurement tank (size, water purification, mounting arrangements, absorbing materials and positioning systems), b) data acquisition (analogue vs. digital, bandwidth, sensitivity, bit resolution, triggering requirements, interfaces/data transfer, data storage capacity), c) computing requirements (hardware, interfaces, software), d) transducer excitation (function generator, power amplifier, alternative methods)

4. **Lab Session 1 – Equipment** 11.10-11.40
   Opportunity to put some of the procedures from sessions 2 and 3 into practice.

5. **Set up and Basic Measurements** 11.40-12.10
   Procedures for setting up the measurement equipment, aligning the transducer beam, finding the acoustic signal, basic troubleshooting and locating the beam maximum will be described.

6. **Measurement of Acoustic Parameters** 12.10-12.40
   Methods for using hydrophone calibration data to produce pressure waveforms and the measurement of pressure and intensity parameters will be described. Some guidance will also be given on measurement of acoustic power.

7. **Lunch Break and Informal Discussion** 12.40-13.30

8. **Lab Session 2 – Basic Measurements** 13.30-15.00
   Opportunity to put some of the procedures from sessions 5 and 6 into practice.

9. **Ultrasound Scanner Measurements** 15.00-15.30
   Discussion of issues relevant to measurement of acoustic output from ultrasound scanners and will cover the following topics: beam geometry, triggering, scanner controls affecting acoustic output, locating the beam maximum and measurement of temporal average quantities.

10. **Lab Session 3 Ultrasound Scanners** 15.30-16.30
    Opportunity to put some of the procedures from session 9 into practice.

11. **Summary and Questions** 16.30-17.00

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