

Mission Specific Platforms (MSP) Standard Measurements

(Final: June 2014)

A. Standard Measurements

Mission Specific Platforms (MSP) standard measurements are those that should be made on all MSP expeditions if practical for the material being drilled or recovered and within the budgetary constraints. Deviations from standard measurements should be identified in the Scientific Prospectus. In addition, the Implementing Organization may require additional measurements to meet safety requirements and protocols.

1. Core Characterization Measurements (*at the Onshore Science Party, OSP)

- Core orientation (APC only)
- Gas sniffer
- Headspace gas sample acquisition (sediments)
- Pore water chemistry (e.g., nutrients, pH, alkalinity, ammonia, sulfate (*only if data affect drilling decisions*), chloride*, major and trace elements*)
- Borehole depth scale
- Thermal conductivity* (both whole core and pieces)
- Core logging
 - Whole Round
 - Natural gamma ray*
 - Gamma ray attenuation
 - Magnetic susceptibility
 - P-wave velocity
 - Split Core
 - Digital imaging*
 - Reflectance spectroscopy and colorimetry*
 - Natural remnant magnetism (NRM) with step-wise demagnetization*
- Moisture and density/porosity* (discrete samples)
- P-wave velocity* (discrete samples)
- Biostratigraphy (*offshore on CC samples only*)
- Visual core description*
- Smear slides and/or thin sections*
- Carbonate analyses (sediments)*
- Bulk carbon-hydrogen-nitrogen-sulfur (CHNS) analyses*
- Whole rock major and trace elements* (hard rock)

2. Downhole Logging and Measurements

Once per site, as hole conditions allow:

- Natural gamma ray
- Spectral gamma
- Density
- Porosity

- Resistivity
- Sonic
- Borehole imaging
- Caliper
- Formation temperature

3. Rig Floor Measurements

- Driller depth
- Heave compensation
- Weight on bit
- Penetration rate
- Mud pressure
- Mud logging (important for Expeditions with Microbiology component)
- Pump rate

B. Supplemental Measurements

Supplemental measurements are defined as additional measurements that may be needed to meet expedition objectives, and are conducted where possible and scientifically justified and if practical and within the budgetary constraints.

1. Core Characterization

- Anhyseretic Remanent Magnetization (ARM) and Isothermal Remanent Magnetization (IRM) with step-wise acquisition and demagnetization
- Shear strength
- Cell counts
- Contamination testing
- Microbial activity measurements using radiotracers
- Whole rock major and trace elements (sediments)
- Rock maturity analysis
- X-ray diffraction
- Micro-imaging
- Whole round core digital surface photography (hard rock)
- Whole round non-contact resistivity

2. Downhole Logging and Measurements

- Magnetic susceptibility
- Borehole temperature
- Vertical seismic profile or check-shot (requires permitting)
- Magnetic field
- Formation pressure
- Logging and measurement while drilling
- Packer tests