



OBSIP Instrument Functional Specifications

OBSIP Oversight Committee

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1. Short Period OBS (Passive source, long term)

1.1. Science Targets

Seismotectonics of plate boundaries, earthquakes, microseismicity experiments: hydrothermal processes, magmatic processes, mid-crustal activity, subduction zones. Seafloor and lake-bed volcano activity. Local earthquake studies.

1.2. Specification

Specification	Requirement	Justification/Notes
1. Fleet Size	a. 200 instruments	a. close station spacing needed for accurate hypocenter determination
2. Shielding	a.	a.
3. Trawl resistance	a. on 25% of instruments	a. Shallow deployments required for studies of megathrust tectonics, continental shelf seismic hazard studies
4. Clock accuracy	a. Correctable accuracy to 0.1ms for the length of the deployment	a. Accurate timing is essential for hypocenter determination, earthquake source, and tomography experiments
5. Clock operation duration	a. 24 months or greater	a. Ensure final clock lock at end of experiment

6. Recovery	<ul style="list-style-type: none"> a. Acoustically commanded release b. Steel anchor left on seafloor is standard operating method 	a.
7. Recording duration	<ul style="list-style-type: none"> a. 24 months at 100 sps 	a.
8. Depth	<ul style="list-style-type: none"> a. Max 6000 meters standard 	a.
9. Short period Seismometer	<ul style="list-style-type: none"> a. Required in all instruments b. Three-component seismometer, self gimbaling c. Passband: flat 5 s – 200 Hz (2 Hz natural frequency). d. Self-noise: below NLNM 1 to 100 Hz. e. Bandwidth: ? f. Clip level: no clipping for M3-4 event at 0-10km distance 	a.
10. Strong Motion Sensor	<ul style="list-style-type: none"> a. None 	a.
11. Absolute Pressure Sensor	<ul style="list-style-type: none"> a. Capable of being added and recorded. 	a.
12. Differential Pressure Gauge	<ul style="list-style-type: none"> a. None 	a.
13. Hydrophone	<ul style="list-style-type: none"> a. Required in all instruments b. High Tech HTI-90-U or better 	a.
14. Datalogger	<ul style="list-style-type: none"> a. 4 channels minimum: <ul style="list-style-type: none"> a. 3 Channels: Broadband seismometer: vertical and horizontals (Accelerometer capable) b. 1 Channel: APG or DPG b. Expandable to 9 channels: 	a.

	<ul style="list-style-type: none"> a. 3 Channels: Accelerometer (co-located with Broadband Sensor) b. 1 Channel: APG or DPG c. 1 Channel: Hydrophone c. Frequency response: DC to 80 Hz @ 200 sps. d. Anti-aliasing FIR filter. Double Precision FIR Filter Causal/Acausal; >140 dB attenuation at output Nyquist e. Sampling rates: 1, 10, 20, 40, 50, 100, 200, 250, 500, 1000 sps f. Sampling rates configurable by channel g. Datalogger dynamic range and noise floor do not limit sensor performance h. Acquisition modes: continuous, triggered, time windows i. Extendable time synch to other dataloggers/systems 	
15. Data delivery requirement:	<ul style="list-style-type: none"> a. DMC: SEED for all experiments, SEG-Y for active source 	i.