

## **IODP SSP and EPSP Drill Site Characterization Data Requirements Matrix**

### **Introduction**

In the following document, the indented site characteristics apply to the next higher subheading only. For example:

Numbers 1, 2, 3 etc. are independent of each other: choose one or more that fit your site.

Numbers 2a and 2b are alternatives under 2 but independent of 1.

Thus, if you have a site located on an active margin, penetration depth between 100–400m into sediment without a riser, with no suspected overpressure, numbers 1, 2b(i), and 5a would apply, plus any of 6 to 21 depending on the precise situation.

For more information about many of the data types referred to in this document, see [http://ssdb.iodp.org/documents/Site\\_Survey\\_Guide\\_v1.pdf](http://ssdb.iodp.org/documents/Site_Survey_Guide_v1.pdf).

### **Basic Requirements**

1. A bathymetric map is required for surface characterization of all sites.
2. Information about lithologic projections and structural configurations is required for all sites. (Usually achieved by seismic profiling using data as indicated in the table below.)
3. Gravity and magnetic data are required by the **SSP** on a case-by-case basis.
4. Weather window, current, ice and tidal data may be required (on location-specific basis) by the **EPSP** (and IO) where these aspects are recognized as a specific threat to operations. Current and tidal data are required by the **SSP** on a case-by-case basis.
5. Information about potential man-made hazards, hydrocarbon shows and environmental restrictions are required by the **EPSP**.
6. Other basic information required for all sites:
  - a. Latitude & longitude
  - b. Water depth
  - c. Depth of penetration
  - d. Tectonic/depositional setting
  - e. Relevant nearby drill sites and/or wells

### **Data Requirements**

The term "Requirement", as applied to site survey data in this table, should be interpreted to mean that the listed data types are *usually* required by either the Site Survey Panel (**SSP**) and/or the Environmental Protection and Safety Panel (**EPSP**) for review purposes. Either panel may waive a requirement, or request additional requirements on a case-by-case basis. These panels are also responsible for judging the quality of the available data; poor quality data may not satisfy their "requirements". A site survey data package that does not include all of the "required" data types does not necessarily preclude drilling; the Science Planning Committee (SPC) and, ultimately, the drill ship Operator are responsible for determining whether an expedition can go forward.

Number	Site Characteristic	Data Requirement
1	Site on active/subduction margin	<b>SSP:</b> Swath bathymetry; Backscatter or sidescan
2	Target in sediment	
2a	Penetration depth <100 m	<b>SSP &amp; EPSP:</b> Two nearly perpendicular crossing 2-D single-channel high resolution (or ultra-high resolution if it images the target) seismic lines that image the drill target at the intersection
2b	Penetration depth ≥100 & <400 m	
2b(i)	Site located on active/subduction or passive/rifted/transform margin	<b>SSP &amp; EPSP:</b> Grid of 2-D multi-channel seismic lines
2b(ii)	Site located away from active/subduction or passive/rifted/transform margin (open ocean)	<b>SSP &amp; EPSP:</b> Crossing 2-D single-channel seismic lines
2c	Penetration depth ≥400 & <1000 m	<b>SSP &amp; EPSP:</b> Grid of 2-D multi-channel seismic lines
2d	Penetration depth ≥1000 m	<b>SSP &amp; EPSP:</b> Grid of 2-D multi-channel seismic lines with line spacing to be determined, or a 3-D multi-channel seismic survey (to be determined on a case-by-case basis)
3	Target in crystalline basement	
3a	Target into top of crystalline basement	<b>SSP:</b> Single-channel or multi-channel seismic line
3b	Target within structurally simple crystalline basement	<b>SSP:</b> Crossing 2-D multi-channel seismic lines
3c	Target within structurally complex crystalline basement	<b>SSP:</b> Grid of 2-D multi-channel seismic lines with line spacing to be determined, or a 3-D multi-channel seismic survey (to be determined on a case-by-case basis)
4	Riser required [*]	<b>SSP:</b> Swath bathymetry; Backscatter or sidescan; Sub-seabed sound velocity profile (time-depth control); also required by EPSP on case-by-case basis <b>EPSP:</b> Pore pressure; Fracture gradient; Pressure prediction; Well program; Abandonment plan
4a	Deep (>1000 m) riser drilling in structurally complex areas (with potential for multiple hazards and environmental and operational risks)	<b>EPSP:</b> 3-D multi-channel seismic survey
5	Riser not required [*]	
5a	Penetration depth > 200m	<b>SSP:</b> Sub-seabed sound velocity profile (time-depth control); also required by EPSP on case-by-case basis
5b	Suspected overpressure	<b>EPSP:</b> Pore pressure; Fracture gradient; Pressure prediction; Well program
6	Drilling into hard rock	<b>SSP:</b> Swath bathymetry; Backscatter or sidescan; Surface samples
7	High-resolution sedimentary or palaeontological study	<b>SSP:</b> Surface samples
8	Drilling into hard irregular outcrop	<b>SSP:</b> Video/Photography
9	Drilling into living reefs or chemo-synthetic communities	<b>EPSP:</b> Video/Photography
10	Total sediment thickness at drill site > 2 km	<b>EPSP:</b> Organic maturity indicator: e.g., measured or modeled vitrinite reflectance data or other indicator of the extent of possible hydrocarbon generation and/or preservation
11	Suspected gas seep	<b>EPSP:</b> Side-scan
12	Re-entry site	<b>EPSP:</b> Surface samples
13	Surface slope > 10°	<b>EPSP:</b> Surface samples
14	High risk area. (E.g., shelf areas/continental crust and passive and active margins where shallow hazards were previously encountered or are likely to occur, in areas with proven petroleum occurrence.)	<b>EPSP:</b> Shallow drilling hazard assessment (usually carried out by contractor/IO)
15	Low risk area. (Same as "High risk area" but for sites on oceanic crust.)	<b>EPSP:</b> Shallow drilling hazard assessment may be required (usually carried out by contractor/IO). Determined on case-by-case basis by EPSP
16	Suspected hydrocarbon province	<b>EPSP:</b> Heat flow; Hydrocarbon thermal maturity
17	Suspected high heat flow	<b>EPSP:</b> Heat flow
18	Drilling in an EEZ (Exclusive Economic Zone)	<b>EPSP:</b> Waste disposal plan (on case-by-case basis); Environmental survey (on case-by-case basis)
19	Returns (e.g., cuttings, mud) to the seafloor [**]	<b>EPSP:</b> Waste disposal plan [**]
20	Require use of bottom-founded rig [*]	<b>EPSP:</b> Side-scan; Geotechnical properties; High resolution magnetic (usually carried out by the IO); determined on case-by-case basis by EPSP
21	Require use of anchored rig [*]	<b>EPSP:</b> Geotechnical properties; High resolution magnetic (usually carried out by the IO); determined on case-by-case basis by EPSP

[\*] Choice of riser or non-riser vessel or rig type is made by the IODP

[\*\*] Mainly an operator issue; waste disposal plan would normally be incorporated into a drilling protocol document, not prepared by proponent. Particularly important when drilling into living reefs.