Proposed: Guidelines for Proposals Addressing the 2050 Science Framework

Preface:

The *JOIDES Resolution* Facility Board (JRFB) tasked the JRFB Working Group on Science Framework Proposal Requirements and Assessments (WG-SFP) in late 2020 to consider requirements and review processes for proposals that request use of a proposed U.S. globally ranging, non-riser drilling platform to address the *2050 Science Framework*. This document adapts the WG-SFP recommendations into draft proposal guidelines by building on the current (2013-2024) proposal guidelines. We envision that the guidelines presented here could be utilized and adapted by the international scientific drilling community for diverse platforms as the next phase of scientific ocean drilling develops. Adjustments to the guidelines will be warranted to enable evaluation of proposals for platforms funded by other countries, proposals with joint funding from other sources (similar to IODP Complementary Project Proposals), and joint proposals with other programs (similar to the IODP-ICDP Land-2-Sea proposals).

The WG-SFP Report concluded that the current IODP proposal submission and evaluation system contributed significantly to the scientific strength and international success of scientific ocean drilling program. The WG-SFP encouraged the next phase of scientific ocean drilling to continue implementing a similar proposal and site characterization review system when evaluating proposals to address the *2050 Science Framework*.

Given the WG-SFP conclusions, this document assumes that there will be entities similar to the current *JOIDES Resolution* Facility Board, Environmental Protection and Safety Panel, Science Evaluation Panel, and Science Support Office in a future program or programs. For ease of communications, we will refer to these future entities as Facility Board, EPSP, SEP, and SSO, respectively, and recognize that these entities may change as future program structures are defined. Furthermore, we will refer to the next phase of scientific ocean drilling as PROGRAM and outline procedures based on the current Proposal Database System (PDB) and Site Survey Data Bank (SSDB) functionality, although it is understood that details of these systems will change as well. Other to-be-defined program entities (e.g., OPERATOR) and to-be-written reference documents will similarly be written in all capital letters.

Proposal Guidelines:

Chapter 1: Introduction

Science in the PROGRAM is driven by community-generated proposals targeting the seven Strategic Objectives and five Flagship Initiatives of the *2050 Science Framework*. Proposals that address Flagship Initiative goals and proposals that address Strategic Objective goals have the same requirements, except that proposals that address Flagship Initiative goals have the additional requirement of linking to the objectives and strategies outlined by that initiative's most recent Flagship Initiative Workshop Report (see FLAGSHIP INITIATIVE WORKSHOP REPORT REQUIREMENTS) held at the Science Support Office (SSO). The *2050 Science Framework* Enabling Element: Broader Impacts and Outreach is addressed in proposals through the Science Communications Plain Language Summary.

Successful implementation of scientific objectives demands an iterative and open approach involving the science proponents, the advisory panels, and the platform operator. The level of investment for a scientific ocean drilling expedition goes beyond an individual researcher or a single research group. The PROGRAM proposal structure, review process, and science implementation are designed to ensure feedback amongst teams of proponents, panelists, and implementors. These processes are designed to transform great ideas at the scientific forefront into successful expeditions and overall outcomes.

1-1 Process Overview

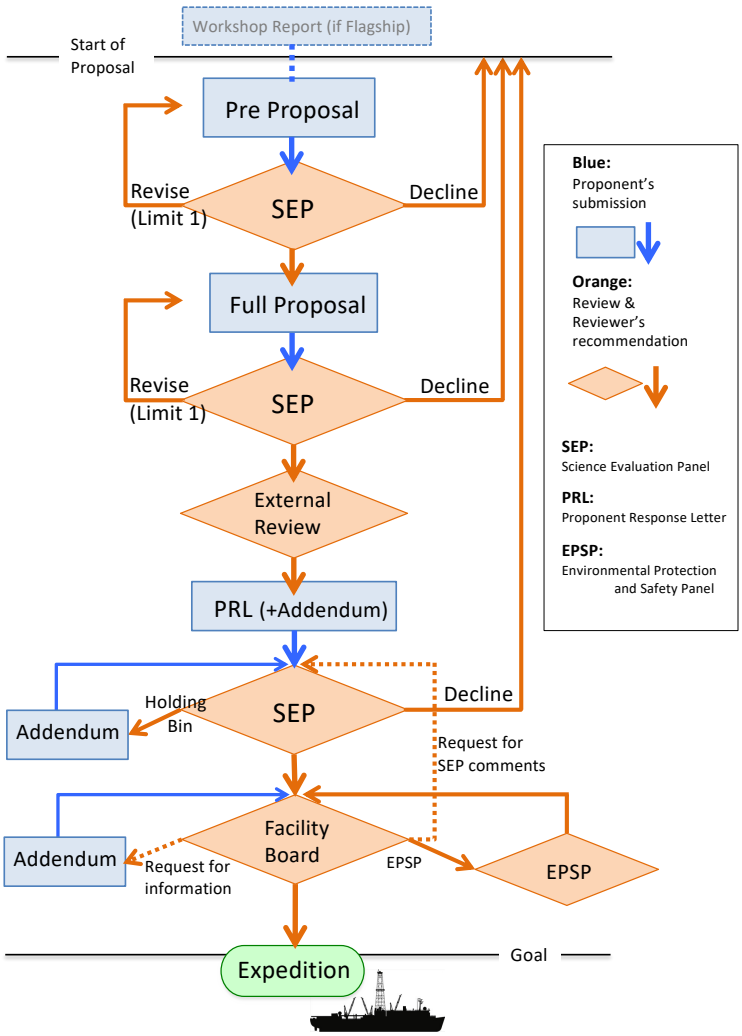
The scientific community submits proposals to the PROGRAM through the Proposal Database System (PDB). In most cases, the proposal authors ("proponents") are encouraged to submit a Preliminary Proposal first (Chapter 3). Upon positive review by the Science Evaluation Panel (SEP), the proponent team will be invited to submit a Full Proposal (Chapter 4), which must also contain supporting site characterization data (submitted through the Site Survey Data Bank; SSDB). SEP can request one revision to the Full Proposal, if necessary, before sending the proposal for external peer review. Proponents respond to external peer review comments through a Proponent Response Letter and, if necessary, and Addendum (Section 4-5). Based on the external peer reviews and SEP evaluations, SEP rates the Full Proposal (excellent, very good, or good) and forwards it to the Facility Board

Proposals at the Facility Board (Chapter 6) must be examined by the Environmental Protection and Safety Panel (EPSP) for safety and environmental issues that may be associated with the general and specific geologic circumstances of the proposed primary and alternate drill sites. To expedite this process, EPSP may conduct preliminary reviews of proposals at any stage of the proposal evaluation process.

For investigations that will take 9 days or less of ship time, proponents may submit an Ancillary Project Letter (APL) (Chapter 5) instead of Preliminary and Full Proposal. APLs are shorter proposals to facilitate quick action as APLs can be sites of opportunity associated with expeditions awaiting scheduling. APLs are thoroughly reviewed by SEP, EPSP, and the Facility Board.

The Facility Board considers proposals for implementation and expedition scheduling based on regional planning, relevance of a proposal to the *2050 Science Framework*, funding availability, ship time availability, safety, and other logistical constraints. The Facility Board and the OPERATOR make final decisions on proposal implementation.

Proposal Development to Expedition



1-2 Proposal and Data Confidentiality

All PROGRAM proposals are confidential documents throughout the nurturing, evaluation, and scheduling processes. Individuals who receive and review PROGRAM proposals must agree not to disclose or disseminate proposal contents and not to discuss the proposal outside the context of their roles with the PROGRAM. Unless a proponent requests otherwise, the cover sheet, drilling sites, and proponent list will be publicly accessible on the WEBSITE upon acceptance of the proposal for consideration.

All PROGRAM proposal documents, including Site Forms, uploaded site characterization data files, and any other required data or optional supplemental documents, become available for expedition planning and implementation purposes when the Facility Board schedules a proposal as a PROGRAM drilling expedition. Restricted site characterization data that fall under a LIMITED NON-DISCLOSURE AGREEMENT are the only exception.

Proponents are responsible for ensuring the removal of all restricted text and figures information prior to the submission of a proposal document into the Proposal Database System (PDB) and for identifying restricted data files in the Site Survey Data Bank (SSDB). Before proceeding, read the CONFIDENTIALITY POLICY, for which the most up-to-date version is available at WEBSITE.

Restricted site characterization data (e.g., confidential industry data or data covered by a LIMITED NON-DISCLOSURE AGREEMENT) should be uploaded into the SSDB, if possible, with at least a predefined subset of minimum data made available in support of the review process and expedition science, implementation, and safety purposes. For restricted data, the minimum data requirement is described in Section XX of the CONFIDENTIALITY POLICY.

Chapter 2: Summary of Proposal Format Requirements

The PROGRAM collects all proposal material electronically. Proponents must use the Proposal Database System (PDB) to submit material for all proposal types – Preliminary Proposal, Full Proposal, Ancillary Project Letter, Addendum, and Proponent Response Letter. Site characterization data must be uploaded via the Site Survey Data Bank (SSDB). The GUIDELINES FOR SITE CHARACTERIZATON DATA outline data requirements in detail, and the deadline for site characterization data is typically one month following the proposal deadline. Both the PDB and SSDB are accessible through WEBSITE. If you encounter submission problems, contact the SSO (EMAIL).

All proposal types must adhere to following formatting requirements:

- Font Size: 11 or 12 point
- Line Spacing: 1.5
- Margin: 2.5 cm all around
- Figures: Cannot be larger than a single-page A4 or US Letter
- In-text References: Must be (Author, year) and not numerical superscripts

The maximum image and file sizes are:

- Single Site Figure PDF: Maximum 10 Megabytes (MB)
- Main Text PDF including Figures: Maximum 15 MB

The table below provides a summary of the proposal requirements for each proposal type. All forms are available in PDB and are completed within that electronic system. The remainder of this document provides important information about content requirements and should be read carefully.

Proposal Type	**Preliminary Proposal**	**Full Proposal**	**Ancillary Project Letter (APL)**	**Addendum**	**Proponent Response Letter (PRL)**
Deadlines	**April 1 and October 1**			**As requested**	
Proposal Cover Sheet	**Required**	**Required**	**Required**	**Required**	None
Abstract	≤ 400 words	≤ 400 words	≤ 400 words	≤ 400 words	None
Scientific Objectives	≤ 250 words	≤ 250 words	≤ 250 words	≤ 250 words	None
Science Communication Plain Language Summary	≤ 400 words	≤ 400 words	≤ 400 words	≤ 400 words	None
Main Text (inc. figure and table captions)	≤ 4,500 words	≤ 10,000 words	≤ 2,500 words	≤ 4,000 words	≤ 2,500 words
Figures and Tables (inc. in Main Text PDF)	≤ 8	≤ 12	≤ 5	≤ 8	≤ 5
Science Communications Form	None	**Required**	**Required**	**Required** if update changes response	None
Success Criteria and Risk Analysis Forms	None	**Required**	**Required**	**Required** if updated plan affects risk analysis	None
Cost Categories Form	None	**Required**	None	**Required** if cost categories change	None
List of Proponents	**Required**	**Required**	**Required**	**Required** if new proponent or group changes	None
List of Potential Reviewers	None	**Required**	None	None	None
Curriculum Vitae (CV)	None	**Required for lead proponents**	None	**Required** if new proponents are added	None
Site Forms: General, Site Survey, Environmental, and Lithologies	**General Site Form Required**	**All Site Forms Required**	**All Site Forms Required**	**All Site Forms Required for New Sites**	None
Site Figures	**Required**	**Required**	**Required**	**Required for New Sites**	None

Chapter 3: Submitting a Preliminary Proposal

Proponents who have a new idea for scientific ocean drilling are advised to submit a Preliminary Proposal. The Preliminary Proposal should outline the science that addresses one or more of the Science Objectives and/or Flagship Initiatives in the *2050 Science Framework* and the requirements for access to scientific ocean drilling. *The 2050 Science Framework* provides a context for generating proposals, but we also envision that new and exciting ideas requiring drilling will develop that are not in the current framework and flexibility is encouraged.

For Preliminary Proposals, it is strongly recommended that proponents contact the OPERATOR before proposal submission in order to discuss drilling platform capabilities, the feasibility of their proposed drilling plan and strategies, success criteria, associated risk, cost categories, and the required overall timetable for transiting, drilling, coring, logging, and other downhole measurements. Note that for Full Proposals, contacting the OPERATOR before submission is required.

Proposals that involve biosphere-related objectives may be affected by the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* (https://www.cbd.int/abs/). For targets within an Exclusive Economic Zone or an Extended Continental Shelf, proponents should become familiar with the protocol's requirements for potential users of genetic resources to obtain the prior informed consent of the country in which the targeted genetic resource is located.

3-1 Preliminary Proposal Format and Scope

A Preliminary Proposal should describe a compelling hypothesis, question, or idea of interest to the global scientific community that can be addressed by a drilling strategy. Proposals range from hypothesis-driven to question-driven, from discipline-specific to inter-disciplinary, and from simple to complex. Proposals should address questions that are of interest to the global scientific community. The main text of a Preliminary Proposal can contain no more than 4,500 words, including captions for figures and tables, and 8 or fewer figures and/or tables (Chapter 2). A Preliminary Proposal should:

- State the scientific objectives and explain how those objectives relate to or advance beyond the *2050 Science Framework*.
- Justify the need for drilling to accomplish the scientific objectives.
- Present a conceptual strategy for addressing the scientific objectives through drilling, logging, or other downhole measurements.
- Describe the proposed primary and alternate drilling sites, penetration depths, and expected lithologies (in conjunction with the General Site Form).

- Reference any previous drilling in the area or relevant existing proposals or expeditions.
- Discuss the availability of, or plans to acquire, site characterization data.
- Discuss the recovery rates needed to achieve key goals.
- Describe any development of advanced and non-standard tools, special sampling techniques, downhole measurements, and/or borehole observatories.
- Identify general risks or potential logistical problems (e.g., weather, core recovery issues, sites in an EEZ, seafloor, subseafloor or oceanographic hazards to drilling, unexpected stratigraphy or age, uncertainty in target depths, engineering challenges). A full risk analysis is not needed at this stage.
- Note any relationships to other bio- or geoscience programs or initiatives.
- Proposals that address Flagship Initiative goals must link to the objectives and strategies outlined by that initiative's most recent Flagship Initiative Workshop Report held at the SSO.

3-2 Additional Required Information

Preliminary Proposals include the following items that do not count against the word count limit (Chapter 2) and that are created interactively or uploaded separately in PDB:

- An official proposal **cover sheet**, complete with an abstract containing no more than 400 words, a statement of the scientific objectives containing no more than 250 words, and a **science communication plain language summary** containing no more than 400 words. The plain language summary should describe the proposed research and its broader impacts in a way that can be understood by a general audience (see Appendix 7-6).
- A **list of proposed drilling sites** with brief site-specific objectives and General Site Form for each proposed primary drilling site. Alternate sites (Appendix 7-3) may also be included, but are not required at this stage. All site names must conform to the established system (Appendix 7-2) and site coordinates must use WGS 84 in units of decimal degrees to at least the fourth decimal place.
- A **list of proponents** (maximum 20), specifying the name, affiliation, email address, ORCID identifier (when available), and expertise of each proponent. The Principal Lead Proponent and Data Lead (i.e., the lead proponent for site characterization data) must be identified. Up to 10 additional lead proponents may also be specified.
- A separate PDF document of the proposal's **references** that are cited in the Main Text.

Upon acceptance of the proposal by the SSO, individuals listed as proponents will receive an automatic email notification to confirm that they have agreed to this role.

3-3 Review of Preliminary Proposals

The SSO sends Preliminary Proposals to the Science Evaluation Panel (SEP) for review. The SEP consists of members of the international scientific community who volunteer to serve the PROGRAM. The SEP is a rich advisory resource for proponents in providing guidance and critical advice about the science and feasibility of their proposals.

3-3-A Watchdog Assignments

The SEP Co-Chairs assign watchdogs to examine and present each Preliminary Proposal to the panel. This watchdog team typically includes two scientists to assess the scientific objectives presented in the proposal and two to review the uploaded site characterization data; the fifth watchdog is a representative of the appropriate OPERATOR.

The SEP assesses each Preliminary Proposal in terms of its relevance to the *2050 Science Framework*, the suitability of the study area, drill sites, and platform for addressing the proposed scientific objectives, and whether the achievement of those objectives would likely result in fundamental scientific advances. The SEP seeks advice on technical aspects of the drilling proposal and proposed drilling strategies through the fifth watchdog and other operator representatives at the evaluation meeting.

3-3-B Proposal Evaluation and Decisions

Proponents receive a written summary of the SEP's review, including their consensus decision, after the meeting. The feedback proponents receive could be summarized by one of the following statements:

- Great idea, in line with the science vision of the program, likely achievable by scientific ocean drilling.
- Interesting concept with potentially high impact, but unclear if the problem can be addressed by scientific ocean drilling.
- Idea not as interesting or transformative as others received, and thus not likely to move forward as a drilling proposal in its current state.

The SEP review includes one of the following three decisions:

- Request for a Revised Preliminary Proposal: The SEP finds the proposal has a potentially compelling scientific objective but further work is required before moving to the Full Proposal stage. The SEP recommends revision of the Preliminary Proposal to incorporate comments and suggestions from the review

and to further develop the idea. Only one revision of a Preliminary Proposal is permitted.

- Request for Full Proposal: The SEP recommends development of a Full Proposal to further describe the idea and potentially to coordinate efforts with other closely related proposals.
- Preliminary Proposal is Declined: The SEP declines the Preliminary Proposal if the science objectives are not well described or are not compelling, if the drilling strategy doesn't adequately support the science questions, and/or if the drilling program is simply not feasible. Declination of a Preliminary Proposal can harbor a supportive message to re-scope the proposal and resubmit a thoroughly new Preliminary Proposal.

The SEP review includes the contact information for the proposal watchdogs and the SEP Co-Chairs. It is recommended that a proponent contact one or more of the watchdogs or Co-Chairs to discuss the SEP's recommendation and to gain more insight into the next steps in the proposal process. In these cases, proponents should copy the SSO (EMAIL) on the email correspondence.

3-4 Response to SEP and Proposal Improvements

When submitting a revised proposal at any stage (including a new submission of a previously declined proposal), proponents must include a Review Response Form of up to 500 words. This section will not count against the word count for the main proposal and does not need to be repeated in the main section of the proposal. In the Review Response, proponents must summarize how their submission has addressed previous SEP reviews (i.e., what has been changed from previous versions of the proposal). A revised or new submission can be rejected without SEP review if, for example, the proponent has submitted essentially the same proposal without making changes asked for by SEP in previous reviews. This decision will be made by the SEP Co-Chairs and the primary basis of this decision will be the material that the proponent provides in their Review Response Form.

Please note that the Review Response is an important part of a revised proposal and differs from a Proposal Response Letter, which is described in Section 4-5.

Chapter 4: Submitting a Full Proposal

A Full Proposal expands an initial idea, likely posed in a Preliminary Proposal, to a well-justified scientific plan that can be implemented in the real world with present technology and within a reasonable length of time. Proponents may submit a Full Proposal if advised to do so by SEP based on review of a Preliminary Proposal or a previous Full Proposal. Only

one revision of a Full Proposal (called Full2) is possible. Proponents may consider submitting a Full Proposal without a Preliminary Proposal; however, this is generally not advised as it limits review feedback.

4-1 Full Proposal Format and Scope

A Full Proposal should describe extensively all aspects of the scientific experiment, the drilling plan, and the operational information necessary to determine feasibility, data availability, and site assessment needs. Full Proposals have been typically for two-month expeditions, but submission of shorter or longer operations is allowed, and may be targeted for possible available platforms. For example, the Facility Board could implement a shorter scientific effort as a hybrid expedition or using platforms with different operational capabilities. Proposals have also been implemented with multiple expeditions, so the two-month target is not an upper limit.

The main text of a Full Proposal can contain no more than 10,000 words, including captions for figures and tables, and 12 or fewer figures and/or tables (Chapter 2). Prior SEP reviews, input from other PROGRAM Advisory Panels, and/or workshops should be carefully considered and addressed in a Full Proposal.

Excellent Full Proposals, whether complicated and extremely interdisciplinary, or simple and discipline-specific, share several key elements:

- They have strong and compelling science hypotheses/questions that are clearly articulated.
- They address scientific hypotheses or questions that require scientific ocean drilling.
- They strongly link the scientific hypotheses or questions to the expected drilling and logging results.
- They are responsive to the input from the SEP.
- They are innovative and have an acceptable balance between risk and potential for achievement.

A Full Proposal should:

- State the scientific objectives and explain how those objectives relate to or advance beyond the *2050 Science Framework*, including the Strategic Objectives and/or Flagship Initiatives.
- Justify the need for drilling to accomplish the scientific objectives.

- Present a well-defined strategy for addressing the scientific objectives through drilling, logging, or other downhole measurements. This should be framed in the form of hypotheses or questions testable by drilling.
- Provide detailed estimates of and justification for the time required for drilling, logging, or other downhole measurements. Consultation with the relevant OPERATOR is required for these estimates.
- Describe the available site characterization data and/or any plans for acquiring additional data and discuss how the drilling targets relate to those data.
- Discuss the expected scientific outcome of drilling and any subsequent work required to complete the overall project.
- Describe any development (including a development timeline) of advanced and non-standard tools, special sampling techniques, downhole measurements, borehole observatories or other tools, and include an out-year plan for observatory data recovery, maintenance, and ultimate termination.
- Describe any external funding for non-standard tools.
- Identify any risk or potential logistical problems (e.g., weather, core recovery issues, sites in an EEZ, seafloor, subseafloor or oceanographic hazards to drilling, unexpected stratigraphy or age, uncertainty in target depths, engineering challenges).
- Proposals that address Flagship Initiative goals must link to the objectives and strategies outlined by that initiative's most recent Flagship Initiative Workshop Report held at the SSO.
- Describe, briefly, relationships to other bio- or geoscience programs and/or other initiatives, including relevant previous drilling, current proposals, or expeditions.

It is essential that Full Proposals include multiple alternate drill sites should safety or site characterization concerns preclude drilling at one or more primary sites (see Appendix 7-3 for definitions of alternate sites). Site characterization data must be submitted to SSDB to support review of the proposals. The site characterization data deadline is typically one month after the proposal deadlines; see the GUIDELINES FOR SITE CHARACTERIZATION DATA for more information.

In addition, proposals should discuss required recovery rates in general as a function of depth and highlight particular target zones (including required recovery rates for these) in order to achieve the primary objectives of the proposal. Finally, the proposal should address the impact on the science if required recovery rates, target depths or specific sites are not achieved.

4-2 Additional Required Information

Full Proposals include the following items that do not count against the word count limit (Chapter 2) and that are created interactively or uploaded separately in PDB:

- An official proposal **cover sheet**, complete with an abstract containing no more than 400 words, a statement of the scientific objectives containing no more than 250 words, and a **science communication plain language summary** containing no more than 400 words. The plain language summary should describe the proposed research and its broader impacts in a way that can be understood by a general audience (see Appendix 7-6).
- A **Science Communications Form**, which is necessary for development of a future communication plan should the proposal be implemented. The form asks about related scientific drilling expeditions, and if there are articles or media about this research in the popular press or general interest literature (see Appendix 7-6).
- A **Success Criteria Form** that defines the minimum criteria to achieve both scientific and operational success (see Appendix 7-7).
- A **Risk Analysis Form** that identifies the primary risks to achieving scientific and operational success, and that identifies the factors in the proposal that mitigate the identified risks (e.g., operational and scientific alternate sites). Consultation with the OPERATOR is necessary for understanding risk and developing mitigation strategies (see Appendix 7-7).
- A **Cost Categories Form** that identifies two cost categories based on two operational scenarios representing a range of success criteria and risk. These are developed by the OPERATOR who should be contacted to provide this information (see Appendix 7-7).
- A **list of proposed drilling sites**, including alternate sites, with brief site-specific objectives, the appropriate set of Site Forms, and a Site Figure for each proposed primary and alternate drilling site. Site names must conform to the established system and site coordinates must use WGS 84 in units of decimal degrees to at least the fourth decimal place. See the Appendix 7-4 for more information.
- A **list of proponents** (maximum 20), specifying the name, affiliation, email address, ORCID identifier (when available), and expertise of each proponent. The Principal Lead Proponent and Data Lead (i.e., the lead proponent for site characterization data) must be identified. Up to 10 additional lead proponents may also be specified.
- A two-page **curriculum vitae** or biographical sketch for the lead proponents, combined into one PDF.

- A list of at least five potential **reviewers** external to SEP.
- A separate PDF document of the proposal's **references** that are cited in the Main Text.

Upon acceptance of the proposal by the SSO, individuals listed as proponents will receive an automatic email notification to confirm that they have agreed to this role.

4-3 Review of Full Proposals by the SEP

The SSO sends all new and revised Full Proposals, with the accompanying site characterization data, to the Science Evaluation Panel (SEP) for review. The SEP consists of members of the international scientific community who volunteer to serve the PROGRAM. The SEP is a rich advisory resource for proponents in providing guidance and critical advice about the science and feasibility of their proposals.

4-3-A Watchdog Assignments

The SEP Co-Chairs assign watchdogs to examine and present each proposal to the panel. This watchdog team typically includes two scientists to assess the scientific objectives presented in the proposal and two to review the uploaded site characterization data; the fifth watchdog is a representative of the appropriate OPERATOR.

The SEP assesses each proposal in terms of its relevance to the *2050 Science Framework*, the suitability of the study area, study sites, and platform for addressing the proposed scientific objectives, and whether the achievement of those objectives would likely result in fundamental scientific advances. The SEP seeks advice on technical aspects of the drilling proposal and proposed drilling strategies through the fifth watchdog and other operator representatives at the evaluation meeting.

4-3-B Proposal Evaluation and Decisions

The SEP evaluates new and revised Full Proposals, and a written review report is prepared and sent to the proponents. Depending on the stage of the proposal and the latest assessment in the review process, an evaluation may have one of the following outcomes:

- Request for Revision of the Full Proposal: The SEP may request a revision of the Full Proposal. Full Proposals can be revised only once. There is not a strict time limit for resubmission because proponents may require time to seek essential outside advice on technical and funding aspects to improve the overall feasibility of their drilling proposal, collect additional site characterization data, and/or reprocess existing data. Proposals that are inactive for 5 years are flagged and the lead proponents are contacted by the SSO to update the status of their proposal. Proponents may submit the revised proposal and/or new data; or proponents may request a specified time extension via submission of a

Proponent Response Letter (Section 4-5). Inactivity or no response to the SSO inquiry results in the deactivation of the proposal.

- Full Proposal is Sent to External Peer Review: The SEP concludes that the Full Proposal is mature and ready for external peer review. External reviews are managed through the SSO. Peer reviewers are asked to comment on the importance of the scientific objectives toward the advancement of the *2050 Science Framework*, suitability of the study area for addressing the scientific objectives, the likelihood of achieving the scientific objectives with the proposed drilling and logging strategy, and the scientific competence of the proponents. External reviewers always remain anonymous outside of the SSO.

- Full Proposal is Forwarded to the Facility Board for Implementation: Following the external reviews, the SEP reviews the proposal again, together with the Proponent Response Letter and any Addendum (Section 4-5). In addition, the SEP reviews all available and updated site characterization data in the SSDB for completeness and adequacy. The SEP then decides whether the proposal should be forwarded for possible implementation to the Facility Board (Chapter 6). The SEP also rates the proposal (see the Appendix 7-1 for rating definitions) and writes a final review assessing the priority of the proposal with respect to the *2050 Science Framework*.

- Full Proposal is Declined: The SEP may decline Full Proposals at any stage if the science objectives and hypotheses, drilling plan, or the accompanying site characterization data are not sufficiently compelling or developed. Declination means that the proposal is no longer active in the system, and proponents can only reenter the system via the submission of a new Preliminary or Full Proposal. Reasons that a proposal might not advance include:
    - The proposal's science is incremental (i.e., makes only a small step forward) or is one-sided (i.e., doesn't account for alternative hypotheses).
    - The proponents are unresponsive to the SEP and/or external reviewer comments.
    - The proposed science is simply undrillable.
    - The proposal does not critically select drilling sites and target depths to answer well-defined questions.
    - The proposal does not clearly state how the proposed measurements will be used to answer the scientific questions/hypotheses.
    - The proposal has scientific objectives that conform poorly with the overall goals of the *2050 Science Framework* or and that do not bring added value to the PROGRAM.

  - The data that are needed to characterize the drill site (location, target depth, stratigraphic and structural framework) and place it in a proper context are not sufficient to underpin the science or to conduct operations safely.

- Full Proposal is Placed in the Holding Bin: Following external review, the SEP may place a Full Proposal in the Holding Bin if the science of the proposal is mature enough to forward to a Facility Board, but the proposal still needs to complete site characterization data requirements or address specific operational issues. The proposal is released from the Holding Bin and forwarded to a Facility Board when the SEP agrees that the proposal meets all the requirements.

4-4 Response to SEP and Proposal Improvement

When submitting a revised proposal at any stage (including a Full Proposal developed from a Pre-Proposal, and a new submission of a previously declined proposal), proponents must submit a Review Response Form of up to 500 words. This section will not count against the word count for the Main Text. In the Review Response, proponents must summarize how their submission has addressed previous SEP reviews (i.e., what has been changed from previous versions of the proposal). A revised or new submission can be rejected without SEP review if, for example, the proponent has submitted essentially the same proposal without making changes asked for by SEP in previous reviews. This decision will be made by the SEP Co-Chairs and the primary basis of this decision will be the material that the proponent has provided in their Review Response Form.

Please note that a Review Response is an important part of a revised proposal and differs from a Proposal Response Letter, which is described in Section 4-5.

4-5 Proponent Response Letters (PRL) and Addendum

After a proposal is externally reviewed, proponents must submit a Proponent Response Letter (PRL) that responds to the external reviews and to the previous SEP review. The SSO will provide the proponents with the external reviews, the previous SEP review, and a deadline for the PRL submission. PRLs and Addendum can also be submitted once a proposal reaches the Facility Board (Chapter 6).

A PRL is a PDF file submitted through the PDB that contains no more than 2,500 words, including captions for figures and tables and 5 or fewer figures and/or tables (Chapter 2). The PRL should address only the specific comments or questions posed by the external reviewers and the SEP review. Occasionally, the SEP may request an additional PRL during subsequent stages of the review process. For these uncommon requests, the SSO will set an appropriate deadline.

In addition to a PRL, proponents of Full Proposals that have been externally peer reviewed may choose to or be requested by SEP to submit an Addendum to provide an update on relevant scientific research, including new data from a new site survey; to fulfill a specific request for more information; to move proposed sites or to add new drill sites; or to present an offer of outside support from another scientific program or agency.

If drill sites are changed or added, submission of an Addendum is required to describe the changes or new sites, and to provide a rationale for how those fit the objectives of the proposed scientific drilling project. However, if significant changes are implied to the objectives or strategy of the original proposal, the proponents must submit a new proposal instead of an Addendum.

The Addendum text can contain no more than 4,000 words, including captions for figures and tables, and 8 or fewer figures including tables (Chapter 2). An Addendum must also include the following items that do not count against the word count limit, and that are created interactively or uploaded separately in the PDB:

- An official proposal **cover sheet**, complete with an abstract containing no more than 400 words, a statement of the scientific objectives containing no more than 250 words, and a **science communication plain language** summary containing no more than 400 words. The plain language summary should, using simple terms, describe the proposed research and its broader impacts in a way that can be understood by a general audience (see Appendix 7-6).
- A **list of the newly proposed or relocated drilling sites**, including alternate sites, with brief site-specific objectives, the appropriate set of Site Forms, and a Site Figure for each proposed primary and alternate drilling site. Site names must conform to the established system and site coordinates must use WGS 84 in units of decimal degrees to at least the fourth decimal place. See the Appendix for more information.
- A PDF document of any **references** that were newly cited in the Main Text of the Addendum.

The PDB submission system requires that an Addendum be submitted to change a site location. Any new location, even a small move from a previous location, requires that a new site be created. The Addendum must include revised Site Forms for the new sites and the relevant SSDB site data and metadata must be updated. In the case of small changes, the main text of the Addendum can be brief, simply stating the reason for the site changes; the abstract, scientific objectives, and science communication plain language summary on the cover sheet can remain unchanged.

Chapter 5: Ancillary Project Letters (APLs)

An individual scientist or group of scientists may wish to request drilling for additional data/samples from an already scheduled expedition in order to achieve valuable science objectives with minimal additional platform time. The mechanism to request additional site(s), coring and/or logging is an Ancillary Project Letter (APL). Projects proposed through an APL must require less than 15% of dedicated platform time in an expedition, including transit. This amounts to nominally a maximum of 9 expedition days of a two-month expedition.

APLs can require an investment of drilling, coring, logging, and technician time, as well as a berth on the platform; therefore, the PROGRAM strives to integrate such projects with an appropriate drilling proposal as early as possible in the normal planning process. An important consideration is whether the planned science party, along with the single additional scientist (one berth provided) and technicians, are equipped to undertake the necessary onboard scientific analysis.

5-1 APL Format and Scope

Investigators must submit an APL in accordance with the normal proposal and data upload deadlines, after which they are reviewed by the SEP. The APL main text must be less than 2,500 words, including captions for figures and tables, and contain 5 or fewer figures and/or tables (Chapter 2). A well-prepared APL should:

- Describe the project and its overall scientific goals and how they relate to the *2050 Science Framework*.
- Identify the locations of interest for drilling and explain how the proposed site(s) provides the data necessary to meet the primary objectives.
- Explain the proposed types of shipboard measurements and data collection.
- Define the requirements for ship time and shipboard personnel.
- Identify any risk or potential logistical problems (e.g., weather, core recovery issues, sites in an EEZ, seafloor, subseafloor or oceanographic hazards to drilling, unexpected stratigraphy or age, incorrect target depths, engineering challenges).

5-2 Additional Required Information

APLs include the following items that do not count against the word count limit (Chapter 2) and that are created interactively or uploaded separately in PDB:

- An official proposal **cover sheet**, complete with an abstract containing no more than 400 words, a statement of the scientific objectives containing no more than 250 words, and a **science communication plain language** summary containing

no more than 400 words. The plain language summary should, using simple terms, describe the proposed research and its broader impacts in a way that can be understood by a general audience (see Appendix 7-6).

- A **list of proposed drilling sites**, including alternate sites, with brief site-specific objectives, the appropriate set of Site Forms, and a Site Figure for each proposed primary and alternate drilling site. Site names must conform to the established system and site coordinates must use WGS 84 in units of decimal degrees to at least the fourth decimal place. See the Appendix for more information.
- A **Success Criteria Form** that defines the minimum criteria to achieve both scientific and operational success (see Appendix 7-7).
- A **Risk Analysis Form** that identifies the primary risks to achieving scientific and operational success, and that identifies the factors in the proposal that mitigate the identified risks (e.g., operational and scientific alternate sites). Consultation with the OPERATOR is necessary for understanding risk and developing mitigation strategies (see Appendix 7-7).
- A **list of proponents** (maximum 20), specifying the name, affiliation, email address, ORCID identifier (when available), and expertise of each proponent. The Principal Lead Proponent and Data Lead (i.e., the lead proponent for site characterization data) must be identified. Up to 10 additional lead proponents may also be specified.
- A PDF document of the **references** that are cited in the APL's Main Text.

Upon acceptance of the proposal by the SSO, individuals listed as proponents will receive an automatic email notification to confirm that they have agreed to this role.

5-3 Review of APLs by the SEP

The SEP Co-Chairs assign watchdogs to examine and present each APL to the panel. This watchdog team typically includes two scientists to assess the scientific objectives presented in the APL and two to review the uploaded site characterization data; the fifth watchdog is a representative of the appropriate OPERATOR.

The SEP may advise investigators to further develop their ideas in a revised APL and/or to collaborate with the proponents of an existing proposal. If the latter is the case, the SSO and/or the SEP Co-Chairs can initiate contact between the two or more investigator groups. The SEP may also forward a well-received APL directly to the Facility Board. Note that APLs are not given a rating by the SEP.

Chapter 6: Consideration by the Facility Board

Once the SEP has forwarded a Full Proposal or APL to the Facility Board, further actions are within the jurisdiction of the Facility Board. Any dialog to develop the proposal into a PROGRAM expedition takes place between the Facility Board, the OPERATOR, the proponent team, and the assigned co-chief scientists. On some occasions a Facility Board can request additional analysis by the SEP, for example if changes to planned drilling operations are made. All correspondence between Facility Boards and proponents must be copied to the SSO for the proposal's formal record.

6-1 Expedition Scheduling

In general, Facility Boards consider scheduling once per year. A proposal may be included in an upcoming schedule of expeditions based on factors such as platform location and capability, regional planning, estimated operational cost, anticipated science outcome and returns, and fit within the overall *2050 Science Framework*. Action also may be deferred to a future scheduling opportunity.

The Facility Board Chair communicates any decisions to the proponents, which must be done via email through the SSO. At any stage, the Facility Board may ask the proponents for more information. Replies to specific Facility Board inquiries should be made via a PRL (Section 4-5) submitted through the PDB. Proponents can also submit an unsolicited PRL to communicate any changes or status updates that are important for scheduling decisions about a proposal to the Facility Board.

The Facility Board may also ask the proponents to submit an Addendum (Section 4-5) to provide an update on relevant scientific research, provide more information, relocate proposed primary or alternate drilling sites, or add new primary or alternate sites.

When drill sites are changed or added to an already scheduled expedition, but before the expedition sails, submission of an Addendum is required to describe the changed or new sites and to provide a rationale for how those fit the primary objectives in the proposed scientific drilling project. Upon review by the Facility Board Chair, the SEP may be asked to provide comments on the Addendum (Section 4-5), and, in all cases, the EPSP reviews the sites in question (Section 6-3). The Facility Board has the final decision in approving or rejecting any or all of the changed or added sites that are part of an Addendum.

6-2 SEP Comment Forms to IODP Facility Boards

The Facility Board may ask the SEP to give an opinion on specific aspects of a proposal to help the Facility Board in its scheduling decisions or implementation of expeditions. In this case, the SEP comments to the Facility Board become part of the proposal record maintained by the SSO via the SEP Comment Form. The SSO sends the SEP Comment Form

only to the Facility Board Chair and the OPERATOR. The Facility Board Chair and/or OPERATOR may follow up with the proponent and co-chief scientists to explain what actions, if any, they require based on the SEP opinion. It is important to understand that such proposals retain their Facility Board status; they are not being re-reviewed by the SEP.

6-3 Safety Review by the EPSP

As part of the development of a proposal into an expedition, and typically following the forwarding of a proposal to a Facility Board, the OPERATOR asks the Environmental Protection and Safety Panel (EPSP) to conduct a safety review of the proposed drill sites. In order to expedite the process, EPSP may decide to preview select proposals before they are forwarded to a Facility Board.

Prior to the review, proponents submit a Safety Review Report (see SAFETY REVIEW REPORT AND EXPEDITION SAFETY PACKAGE GUIDELINES). During the review, the Data Lead represents the proponents and participates in the EPSP safety review meeting. The EPSP makes one of three potential recommendations for each proposed site: approve as proposed; approve with modification (e.g., in position and/or target depth); or decline approval with suggestions for improvement. The EPSP Safety Review Guidelines (WEBSITE) contains additional information and details about this review process.

The OPERATOR has final approval of all drill sites, and the Facility Board Chair decides whether any EPSP modification to the drilling plan creates a need for re-examination by the SEP. Any changes to a proposed drill site or addition of new primary or alternate drill sites requires submission of an Addendum to enter new site information (Section 4-5); the latter also requires uploading of new site characterization data in the SSDB. When an Addendum captures EPSP-directed site modifications, the main text can be brief (e.g., “site modification requested by EPSP”) and the proposal cover sheet/abstract can remain unchanged.

Chapter 7: APPENDIX

7-1 Proposal Ratings

The SEP rates the proposal according to the criteria described as follows:

- Excellent Proposal: The proposal addresses science considered of very wide importance. It tackles new and exciting scientific problems, or it will take novel approaches to existing problems that remain unresolved/controversial. The proposal has strong potential for new discoveries and breakthroughs and most likely will open new avenues of research. It should be drilled.

- Very Good Proposal: The proposal addresses science considered of probable wide importance. It will significantly advance understanding of existing scientific problems. Compared to 'Excellent' proposals, 'Very Good' proposals have reduced potential for major new discoveries but will produce datasets to address globally important scientific problems. It should be drilled if possible.
- Good Proposal: The proposal has potential for producing good scientific results. The scientific problems to be addressed are important, but potentially more regional in nature. Compared to 'Excellent' and 'Very Good' proposals, 'Good' proposals address more mature scientific problems with limited potential for major new discoveries, but they are still likely to produce important datasets and result in important refinements of existing scientific concepts. It should be seriously considered for drilling if it can be incorporated into long-term efforts and platform schedules.

7-2 Proposed Drilling Site Names

PROGRAM follows a uniform system for naming proposed drilling sites whereby any seafloor site ever considered for possible drilling receives a unique name. Incorrect site names are the single largest reason that proposals fail compliance check. Site names must strictly conform to the general format AAAAA-nnX, where AAAAA represents a string of two to five alphabetic characters referring to the geographic area of the proposed drilling site, nn represents the specific two-digit site number within that area (always preceded with a 0 for site numbers less than ten, e.g., WLSHE-01A), and X represents a capital alphabetic character indicating the version of a specific site. For all newly proposed sites, site names thus end with X=A. For the second version of a site (if necessary) the site names end with X=B, etc. Proponents are encouraged to check site names with the SSO in advance of creating site forms and proposal documents.

Sites cannot be moved after they are submitted as part of a proposal unless they are renamed. Sites that are shifted a small distance and have the same scientific objective should be named by incrementing the X. New sites that are further away geographically or have a different scientific objective should have a new AAAAA or nn in the site name.

Designated primary and alternate site names should not encode any indicators of relative priority, because site priorities often change as a proposal develops and matures. Alternate sites must have unique site names by changing nn or AAAAA (but not X). For example, PIG-03B refers to the second (hence "B") proposed location of Site 3 in Pigafetta Basin. PIG-04A could represent a newly proposed alternate site for PIG-03B.

7-3 Definition of Alternate Site

An important way to mitigate risk is through operational and scientific alternate sites. An operational alternate site offers an alternative location where scientific objectives similar to the primary site can be achieved. The site data should be interpreted so that it is clear

the site can act as an alternate to the primary site. It should be sufficiently far from the primary site such that the same operational problems would be unlikely or less likely to occur. Ideally the operational alternate site would offer a lower probability of operational problems than the primary site (e.g., shallower target depths or differing sea ice conditions), providing the opportunity to meet similar objectives if problems are encountered at the primary site. Additional alternate sites should also be proposed in the event that additional operational time becomes available.

A scientific alternate site offers an alternative location for cases where an underlying assumption of the primary site proves incorrect, such as stratigraphic intervals being different than anticipated in lithology or age such that expedition goals are not served, errors in depth estimates to targets (based on seismic velocities) result in untenable drilling times, or engineering requirements to obtain a scientific objective cannot be met (e.g., inability to re-enter a previous scientific drilling hole in order to deepen it or an observatory installation encounters challenges at the primary site).

7-4 Geographic Coordinates

The PROGRAM uses the WGS 84 referenced system for all geographic coordinates. Any geographic coordinates presented in documents or data submitted to the PROGRAM must be use WGS 84 and be written in decimal degrees, to the 4th decimal place if possible.

7-5 The Site Survey Data Bank (SSDB)

The Site Survey Data Bank (SSDB) is the official digital repository for all site characterization data related to a particular proposal or expedition. The SSDB is accessed at WEBSITE. Required data types (e.g., maps, multichannel seismic profiles, and SEGY data) and acceptable file formats are explained in full in the SITE CHARACTERIZATION DATA GUIDELINES (WEBSITE).

7-6 Science Communications Planning

Proponents provide valuable information in the Science Communication Plain Language Summary and the Science Communications Form. This information is used to support the development of expedition communication plans and other PROGRAM outreach goals.

The Science Communication Plain Language Summary asks proponents: “Using simple terms, describe in 400 words or less your proposed research and its broader impacts in a way that can be understood by a general audience.” This section is intended to provide a non-technical summary of a proposal’s research and societal impacts; it is not intended to include specific outreach activities. Proposals should consider the unique aspects of their proposed research or expedition plan in writing their summary. The Science Communication Plain Language Summary will be evaluated during the standard proposal

review process, with proponents receiving feedback and advice on how to improve their summary (e.g., speaking with communication specialists at a PMO).

The Science Communications Form asks if the proposal builds on past scientific ocean drilling experience or knowledge. Proposals do not have to build on past scientific ocean drilling legs/expeditions to be successful, but this information is useful in structuring a broader communication strategy. The Science Communication Form prompts are:

- Does this proposal build on previous scientific ocean drilling legs/expeditions from which a wider communications narrative could be built? If so, please provide the leg/expedition number(s).
- Do articles or media about this research already exist in the popular press or general interest literature? If so, please provide references, with links if available.

Proponent responses to these sections will be available to PMOs, funders, operators, and/or others as they develop education, outreach, and communication activities.

7-7 Success Criteria, Risk Analysis, and Cost Categories

The topics of success, risk, and cost are closely related to each other (e.g., likelihood of success depends on risk, steps to mitigate risk will affect cost). Proponents should describe their success criteria with benchmark steps, scientific and operational risks, and mitigation strategies by answering the following prompts in the Success Criteria and Risk Analysis Forms:

- Define your minimum criteria for achieving both scientific and operational success.
- What are the primary risks to not achieving your scientific and operational success?
- What factors in your proposal (e.g., operational and scientific alternate sites) mitigate these risks?

Outlining these elements will require proponents to communicate with the OPERATOR at an early stage of the proposal writing process. The OPERATOR may set a deadline prior to the proposal submission deadline for beginning these discussions to ensure enough time for analysis. When the Cost Categories Form is required, the OPERATOR will provide this information to the proponent based on two operational scenarios representing a range of success criteria and risk. The proponents then enter the cost categories into the Cost Categories Form.

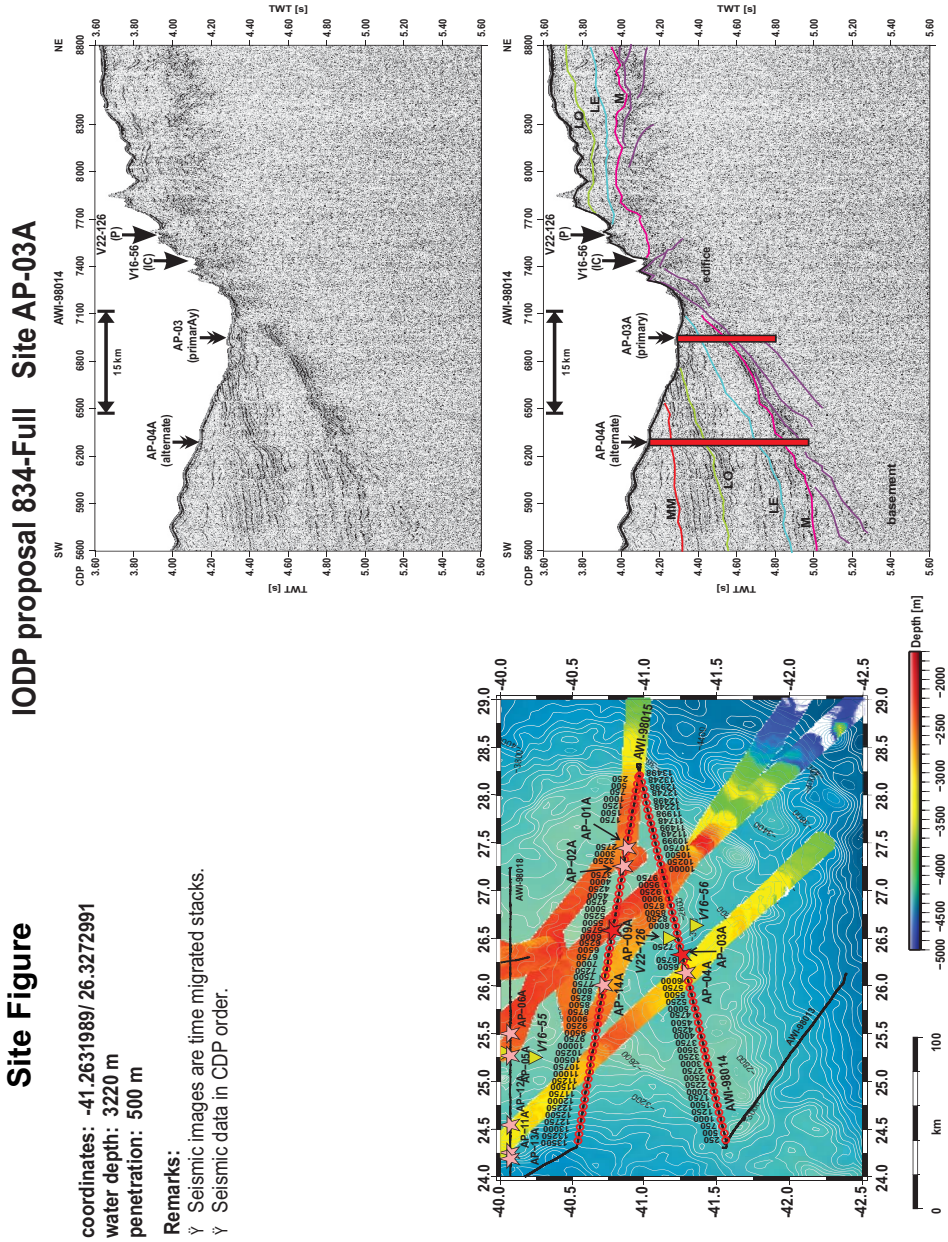
7-8 The Site Figure

For all Full Proposals and APLs, a Site Figure must be prepared for each proposed primary and alternate drilling site and uploaded into the PDB. While the Site Figure does not substitute for submitting data files to the SSDB, it gives a quick overview of the quality of

the SSDB files for each proposed drill site. Proponents must create the Site Figure as a single-page PDF document (see the following pages for representative examples) that contains the following elements, depending on data availability:

- A label identifying the document as the Site Figure and indicating the site name.
- For any displayed data that have not been submitted to the SSDB yet, the form should specify when the data will be uploaded into the SSDB.
- A clearly annotated map showing all relevant details around the proposed drilling site, including:
    - Seafloor bathymetry, with labeled contours or a depth scale;
    - The exact site location;
    - Track charts for the key seismic lines, annotated at regular intervals with the same horizontal unit (e.g., CDP (common depth point), shot-point number, etc.) as the accompanying seismic profiles; and
    - A distance scale if not apparent from the horizontal and vertical annotation.
- Two profiles for each seismic line that crosses the proposed drilling site where appropriate. The first profile should include an annotated vertical line showing the location (e.g., Site ABC-01A, CDP 4871) and penetration depth (or time using best depth-to-time conversion) of the proposed drilling site; this profile may also show an interpretation of the seismic data. The second profile should show the same image as the first profile, but without showing the drilling site or any interpretation.
- Each seismic profile should indicate the name and orientation (e.g., NW–SE) of the survey line, have well-annotated horizontal and vertical axes, including a horizontal scale bar in kilometers, and have sufficient resolution to show the relevant structure imaged by the data.

7-8-A Site Figure Example 1



7-8-B Site Figure Example 2