

Integrated Ocean Drilling Program Expedition 315 Scientific Prospectus Addendum

NanTroSEIZE Stage 1: NanTroSEIZE Megasplay Riser Pilot

Juichiro Ashi

Co-Chief Scientist
Ocean Research Institute
University of Tokyo
1-15-1 Minamidai, Nakano-ku
Tokyo 164-839
Japan

Siegfried Lallemand

Co-Chief Scientist
Département des Sciences de la Terre
et de l'Environnement
Université de Cergy-Pontoise
5 mail, Gay-Lussac, Neuville-sur-Oise
95031 Cergy-Pointoise Cedex
France

Hideki Masago

Expedition Project Manager
Center for Deep Earth Exploration
Japan Agency for Marine-Earth Science
and Technology
3173-25 Showa-machi, Kanazawa-ku
Yokohama, Kanagawa 236-0001
Japan



Published by
Integrated Ocean Drilling Program Management International, Inc.,
for the Integrated Ocean Drilling Program

Publisher's Notes

Material in this publication may be copied without restraint for library, abstract service, educational, or personal research purposes; however, this source should be appropriately acknowledged.

Citation:

Ashi, J., Lallement, S., and Masago, H., 2007. NanTroSEIZE Stage 1: NanTroSEIZE megasplay riser pilot addendum. *IODP Sci. Prosp.*, 315 addendum. doi:10.2204/iodp.sp.315add.2007

Distribution:

Electronic copies of this series may be obtained from the Integrated Ocean Drilling Program (IODP) Scientific Publications homepage on the World Wide Web at www.iodp.org/scientific-publications.

This publication was prepared by the CDEX Science Operator, as an account of work performed under the international Integrated Ocean Drilling Program (IODP), which is managed by IODP Management International (IODP-MI), Inc. Funding for the program is provided by the following agencies:

National Science Foundation (NSF), United States

Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

European Consortium for Ocean Research Drilling (ECORD)

Ministry of Science and Technology (MOST), People's Republic of China

Korea Institute of Geoscience and Mineral Resources (KIGAM), Interim Asian Consortium

Disclaimer

Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the participating agencies, IODP Management International, Inc., or Japan Agency for Marine-Earth Science and Technology.

This IODP *Scientific Prospectus* is based on precruise Science Advisory Structure panel discussions and scientific input from the designated Co-Chief Scientists on behalf of the drilling proponents. During the course of the cruise, actual site operations may indicate to the Co-Chief Scientists, the Operations Superintendent, and the Expedition Project Manager that it would be scientifically or operationally advantageous to amend the plan detailed in this prospectus. It should be understood that any proposed changes to the science deliverables outlined in the plan presented here are contingent upon approval by the CDEX Director of the IODP Department in consultation with IODP-MI.

Abstract

Integrated Ocean Drilling Program (IODP) Expedition 315 is an integral part of the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) complex drilling project based on IODP Proposals 603-CDP3, 603A-Full2, 603B-Full2, 603C-Full, and 603D-Full2 (available at www.iodp.org/NanTroSEIZE). This addendum presents the revised operations plan for Expedition 315 based on new site survey data and operational requirements. Several new alternate and contingency sites are described that were not previously identified in the Expedition 315 *Scientific Prospectus*.

Introduction

The three expeditions that make up NanTroSEIZE Stage 1 operations (Expeditions 314, 315, and 316) are designed to log, core, and measure boreholes along a transect across the Nankai Trough subduction zone from the oceanic plate through the accretionary prism and into the forearc region. The original sites chosen for drilling are intended to investigate the character of sedimentary inputs, faulting, and fluid flow at the toe of the accretionary prism; the geometry and mechanical characteristics of faults and sediments in the megasplay system; and the character and history of the sediments deposited into the Kumano Basin. The overarching goal of this project is to understand the character, evolution, seismogenic potential, and current behavior of sediments, faults, and fluids along this subduction margin.

Because of the large number of sites chosen for drilling and the wide variety of potential challenges to drilling in this area (ranging from weather and currents, sediment/borehole stability, methane hydrate deposits, and/or potential gas or fluid overpressure), an array of alternate sites has been designated for contingency operations. As the processing and interpretation of the high-resolution three-dimensional (3-D) seismic data have progressed, the specific locations, depths, and potential challenges associated with particular scientific targets have been refined. The factors detailed above have required several minor changes and additions to the planned operations, which are outlined in this addendum to the Expedition 315 *Scientific Prospectus* (Ashi et al., 2007).

Changes to the drilling program

Contingency sites added

Two new contingency sites have been added and approved by the Integrated Ocean Drilling Program Environmental Pollution and Safety Panel and Site Survey Panel based on

1. Newly recognized scientific targets determined from 3-D seismic data,
2. Anticipated extra contingency time, and
3. The need for alternate sites in areas where drilling/weather/current conditions may be better than at primary sites.

Proposed contingency Sites NT2-05A and NT2-10A are located on the trench slope, between proposed Sites NT2-01D and NT1-03B (Table **T1**). The details of these sites are as follows:

- Proposed Site NT2-05A: 33°12.433'N 136°43.867'E, water depth = 2839 m, total depth = 275 meters below seafloor (mbsf)
- Proposed Site NT2-10A: 33°12.830'N 136°43.600'E, water depth = 2758 m, total depth = 325 mbsf.

See Figures **F1**, **F2**, and **F3** for location, seismic data, and borehole position/depth information.

Both sites are available for contingency operations for both logging-while-drilling and coring/measurement operations using the hydraulic piston coring system. The scientific significance of the new contingency sites is related to the recognition that significant amounts of material shed from uplifted thrust blocks transported to the surface by faulting on the megasplay system have been deposited on older thrust blocks downslope toward the trench. Cores taken in these sedimentary packages may reveal the timing and relative age of past fault motions through the identification of provenance and age of deposited material and the age across any unconformities between newly deposited sediments and older uplifted fault blocks.

Reference

Ashi, J., Lallemand, S., and Masago, H., 2007. NantroSEIZE Stage 1: NanTroSEIZE megasplay riser pilot. *IODP Sci. Prosp.*, 315. [doi:10.2204/iodp.sp.315.2007](https://doi.org/10.2204/iodp.sp.315.2007)

Table T1. Location, depths, and basic program for the changed and added drilling sites (primary and contingency) for Stage 1 operations.

Proposed site	Location		Water depth (m)	TD (mbsf)	Program
	Latitude	Longitude			
NT2-05A	33°12.433'N	136°43.867'E	2839	275	HPCS to TD
NT2-10A	33°12.830'N	136°43.600'E	2758	325	HPCS to TD

Note: TD = total depth, HPCS = hydraulic piston corer system.

Figure F1. Seafloor bathymetry (50 m contour interval) showing locations of proposed contingency Sites NT2-05A and NT2-10A and the black seismic lines displayed in Figures F2 and F3. Red circles = proposed holes, red lines = three-dimensional survey boundaries.

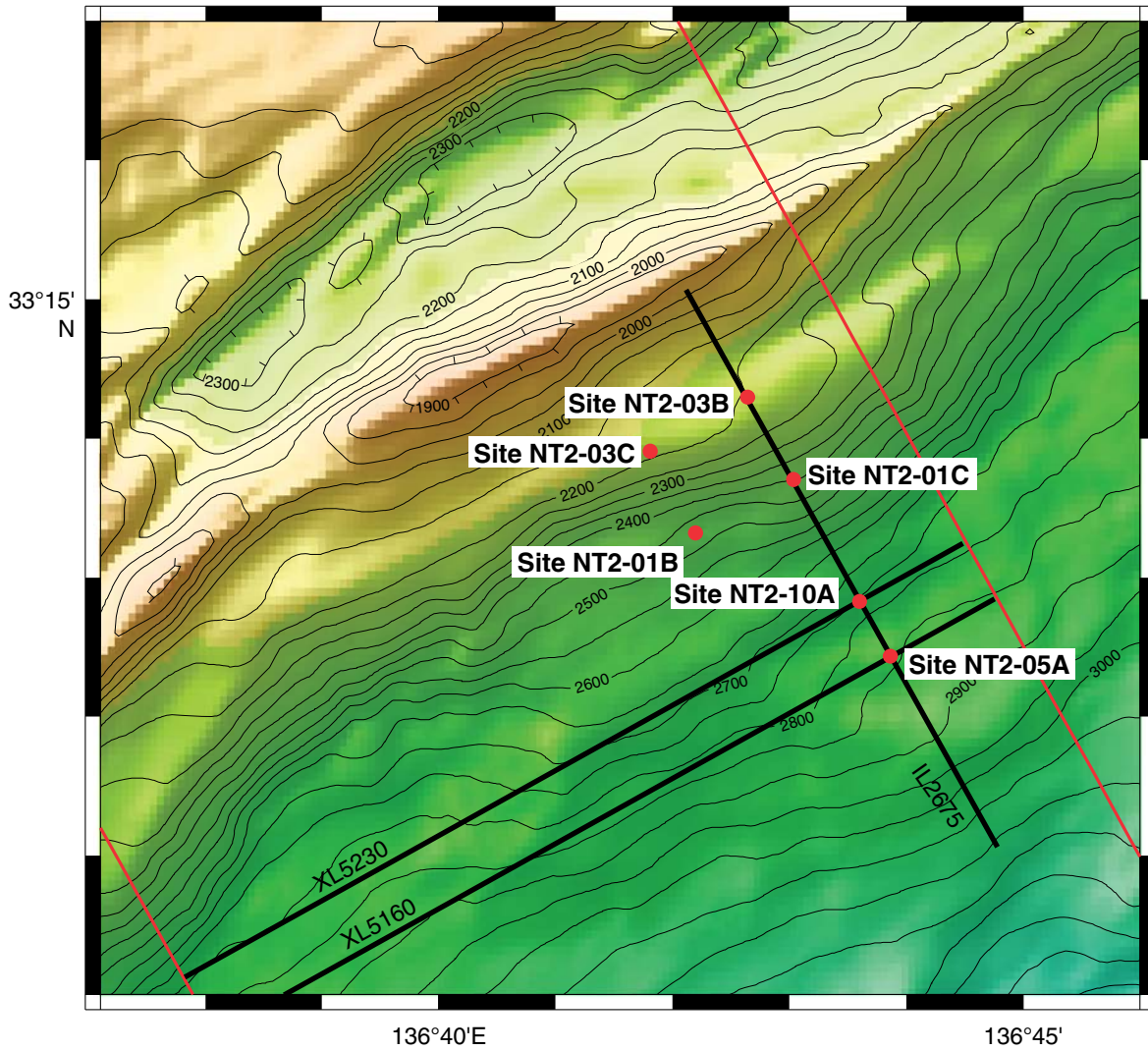


Figure F2. Seismic inlines (trench perpendicular) showing the seismic structure, borehole location, and depth for proposed contingency Sites NT2-05A and NT2-10A. **A.** Depth-migrated seismic data. **B.** Seismic data in two-way traveltimes. VE = vertical exaggeration.

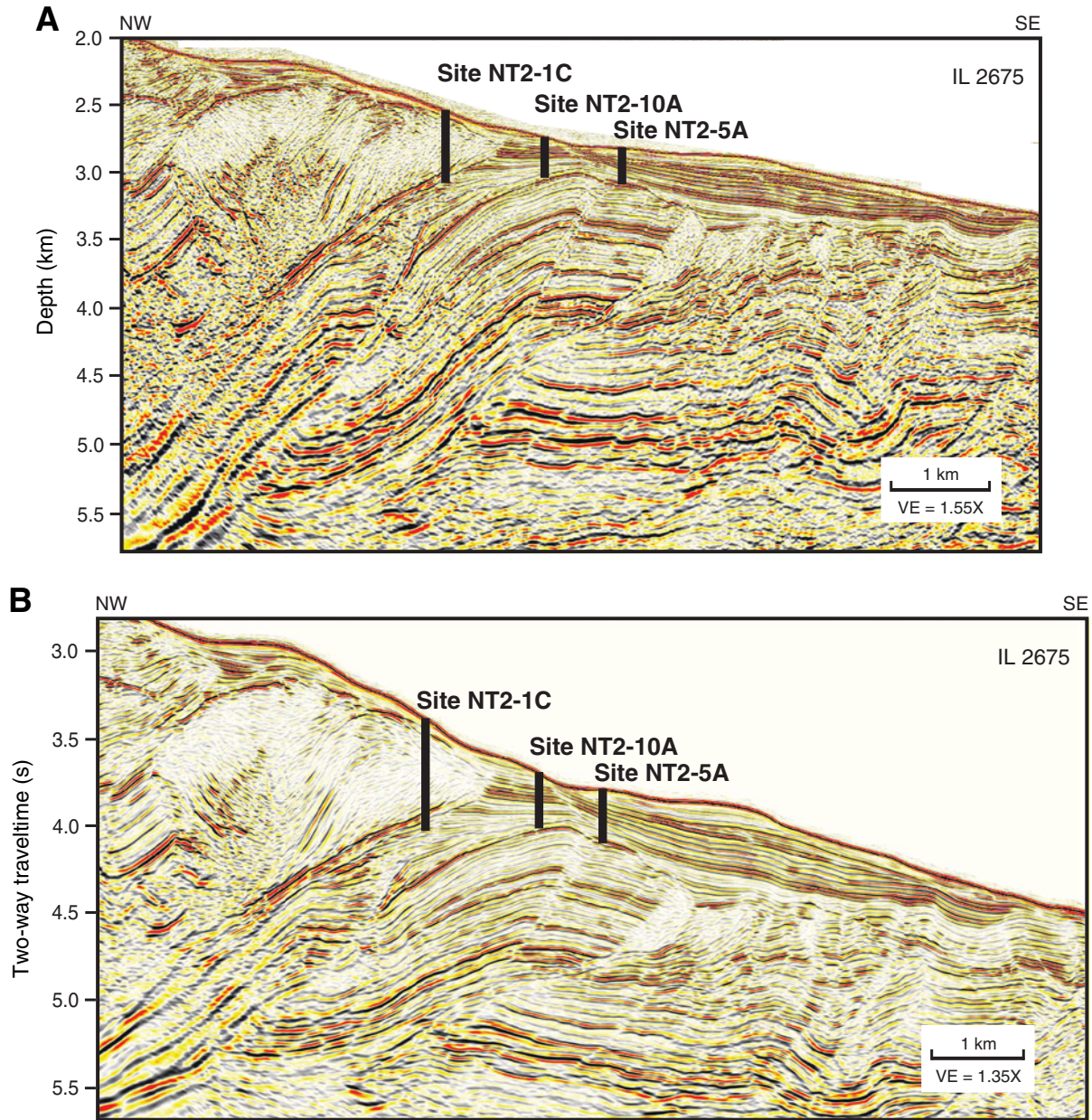


Figure F3. Seismic crosslines (trench parallel) showing the seismic structure, borehole location, and depth for proposed contingency Sites (A) NT2-05A and (B) NT2-10A. VE = vertical exaggeration.

