Welcome to the NSF Public Hearing for the Draft Environmental Assessment of Marine Geophysical Surveys by the R/V Marcus G. Langseth for the Central Coastal California Seismic Imaging Project.

If you would like to make an oral statement for the record during tonight's meeting, please fill out a “Speaker Card” and hand it to an NSF Representative.
National Science Foundation (NSF)

- NSF is an Independent federal agency, created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense."
- Funds ~20% of federally supported basic research at U.S. colleges and universities
- Issues ~11,000 grants annually to fund proposals judged by merit-review
- Annual budget of ~$7.0B (FY 2012)
- NSF-funded researchers have won more than 180 Nobel Prizes as well as other honors
Purpose & Need for the Draft EA

• **Draft EA:** Examines the potential impacts that may result from the proposed Central Coastal California Seismic Imaging Project

• **Proposed Action:** Use of the NSF owned vessel, R/V Langseth to conduct a High Energy Seismic Survey 3D in the vicinity of the Diablo Canyon Power Plant (DCPP)

• **Purpose:** Survey the faults and geologic structures surrounding DCPP
Project Objectives

• Record high resolution 2D and 3D seismic reflection profiles of major geologic structures and fault zones in the vicinity of the Central California Coast and DCPP.

• Obtain high-resolution deep-imaging (>0.6 mi) of the Hosgri and Shoreline fault zones in the vicinity of the DCPP to constrain fault geometry and slip rate.

• Obtain high-resolution deep-imaging (>0.6 mi) of the intersection of the Hosgri and Shoreline fault zones near Point Buchon.

• Obtain high-resolution deep-imaging (>0.6 mi) of the geometry and slip rate of the Los Osos fault, and the intersection of the Hosgri and Los Osos fault zones in Estero Bay.

• Obtain high-resolution deep-imaging (>0.6 mi) of the intersection of the San Simeon and Hosgri fault zones near Point Estero.

• Provide all data to the broader scientific and safety community, and general public.
Proposed Action

Box 1 – Offshore Diablo Canyon
Box 2 – Estero Bay to offshore Santa Maria River Mouth fault intersections
Box 3 – Offshore Cambria to Estero Bay
Box 4 – Estero Bay
R/V Langseth

- Primary vessel used for seismic surveys
- High Energy 3D Survey
- 18 airguns operating in an alternating pattern
- Total air discharge volume = 3300 in$^3$
- 4 Hydrophone streamers 3.7 mi length
3D Reflection Surveys

Illustration of airgun source acoustic signals reflecting off of the seafloor and underlying geologic discontinuities, and received by towed hydrophone streamers.
Draft EA Analysis Approach

- Location
- Survey timing
- Source levels & configurations (number & type of airguns, 2D, 3D, etc.)
- Modeling to predict Take Estimates
- Monitoring and mitigation measures
- Affected environment and environmental consequences of the proposed action
- Cumulative Impacts

Photo by NASA
By Charles Melville Scammon
Photo by Mike Baird
Proposed Action & Alternatives

• Proposed Action – Survey Boxes 1-4
• Alternatives Considered and Analyzed
  – Alternative 1 - No Action Alternative
  – Alternative 2 – Survey Box 1, 2, and 4 Only
  – Alternative 3 – Alternative Survey Timing
  – Alternative 4 – Restrict Survey to Daytime Operations

• Alternatives Eliminated from Further Analysis
  – Alternative E1 – Alternative Location
  – Alternative E2 – Different Survey Techniques
  – Alternative E3 – Survey Optimization
Monitoring & Mitigation

Standard Mitigation Measures:
• Mitigation during survey planning phases
• Visual monitoring
• Passive Acoustic Monitoring (PAM)
• Proposed Safety Radii or “Mitigation Zone”
• Mitigation during Operations:
  – Vessel speed/course alteration
  – Airgun power down & shut down
  – Airgun ramp-up
  – Special mitigation measures for species of particular concern
  – Use of mitigation airgun during turns/transects

Additional Mitigation Measures:
• Verification of modeled Exclusion & Safety Zones
• Aerial surveys
• Avoidance of marine species high density areas
• Use of divers for geophone placements
• Develop and Implement an MWCP
Potential Environmental Impacts

Environmental Consequences:
• Direct and indirect affects of the proposed action would mainly be a result of noise from airguns
• Potential impacts to species would be expected to be limited to short-term and localized behavioral disturbances (such as Level B), and not significant to populations, including fish
• Proposed monitoring and mitigation measures influence results

Cumulative Impacts:
• Results indicate no significant cumulative effects to the affected environment from proposed actions

Coordination with other Agencies and Processes:
• Other Authorizations and Permits are being sought
2010/2011 Central Coastal California Seismic Imaging Project

1. 2D/3D Low Energy Northern End of Shoreline Fault Zone

2. 2D/3D Irish Hills/ Los Osos Valley
2011/2012
Central Coastal California Seismic Imaging Project

3. 3D Low Energy Pcable
   Southern End of Shoreline Fault Zone

4. 3D Low Energy Pcable
   Shoreline & Hosgri

5. 3D High Energy Seismic Survey (HESS)
Shoreline fault Trace?

Offset channel Wall?

Shoreline fault trace?

Coherency time slice

~ 60 m
Offshore Seismic Imaging

Specialized geophysical survey vessel *R/V Marcus Langseth* (National Science Foundation owned/ Lamont-Doherty Earth Observatory of Columbia University operated)

71.5 m (235 ft) length
NEPA Process

• Draft EA
  – Prepared Draft EA
  – Posted on NSF Website for Public Comment – 45 Days
  – Notice of Availability sent to Interested Parties and local newspapers
  – Public Hearing

• Final EA
  – Prepare Final EA
  – Post on NSF Website

• Agency Decision
Thank you!

Draft EA and this presentation available on NSF Website:

http://www.nsf.gov/geo/oe/envcomp/index.jsp

(Final EA will be available on same site when completed)

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Public Comment Period Closes: August 10