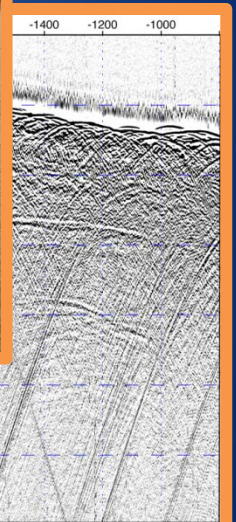
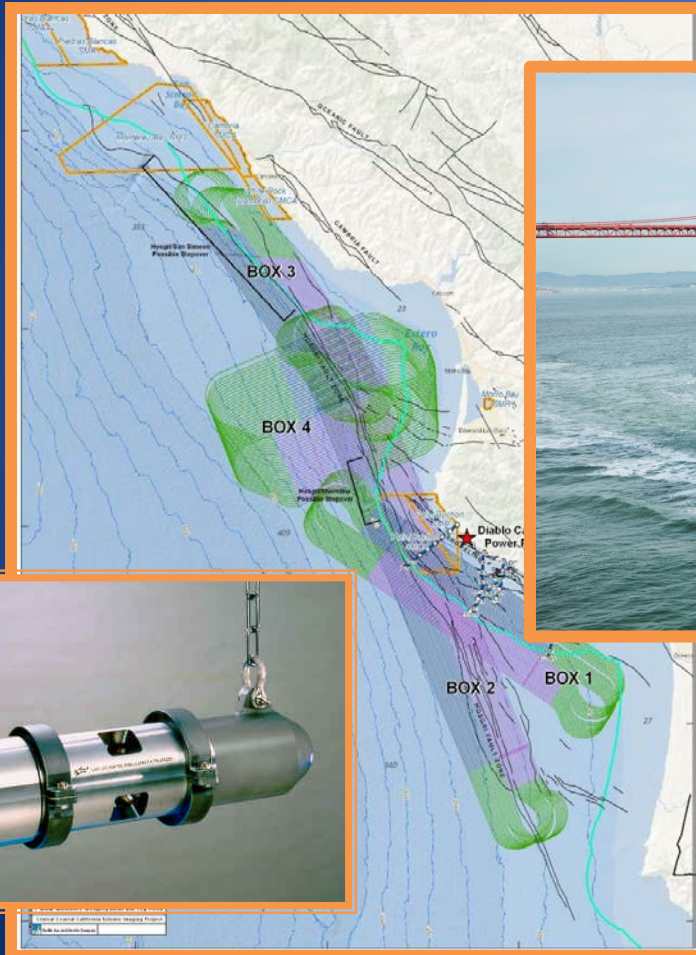


**Welcome**  
**to the NSF Public Hearing for the**  
**Draft Environmental Assessment**  
**of Marine Geophysical Surveys**  
**by the**  
**R/V Marcus G. Langseth for the**  
**Central Coastal California**  
**Seismic Imaging Project.**

**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.**



# Draft Environmental Assessment of Marine Geophysical Surveys by the R/V Marcus G. Langseth for the Central Coastal California Seismic Imaging Project



*Public Hearing:  
San Luis Obispo, CA  
August 8, 2012*





# 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



**NSF**  
**Arlington, VA**

# 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



R/V Langseth



R/V Langseth Main Computer Lab



# 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 DCPD.
- Obtain high-resolution deep-imaging ( $>.6$  mi) of the Hosgri and Shoreline fault zones in the vicinity of the DCPD to constrain fault geometry and slip rate.
- Obtain high-resolution deep-imaging ( $>.6$  mi) of the intersection of the Hosgri and Shoreline fault zones near Point Buchon.
- Obtain high-resolution deep-imaging ( $>.6$  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 ( $>.6$  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.

## *Earthquakes*



## *Landslides*

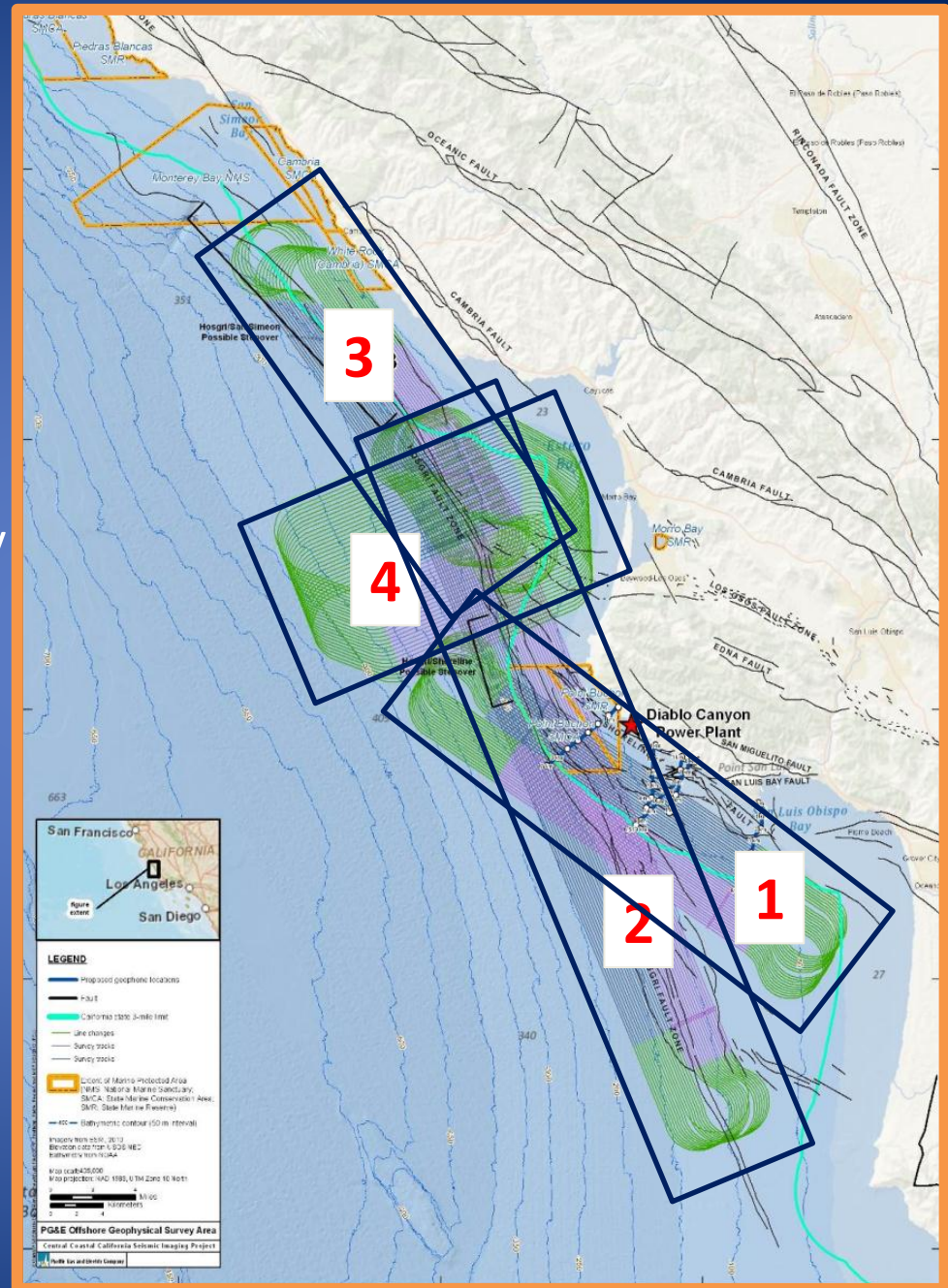


## *Tsunamis*



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

## Proposed Project Survey Track Line Map



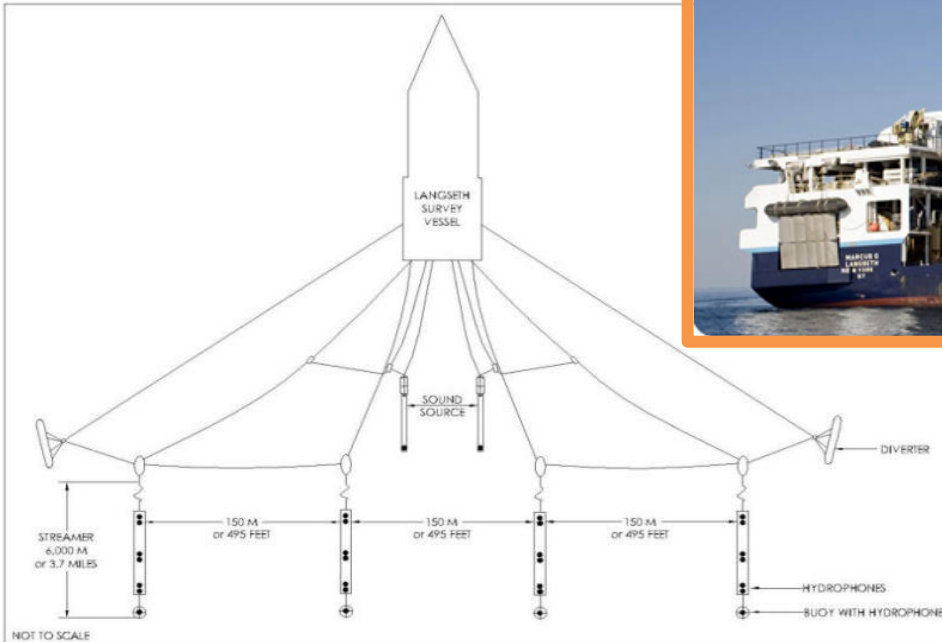


# R/V Langseth

- Primary vessel used for seismic surveys
- High Energy 3D Survey
- 18 airguns operating in an alternating pattern
- Total air discharge volume = 3300 in<sup>3</sup>
- 4 Hydrophone streamers 3.7 mi length



R/V Langseth



# 3D Reflection Surveys

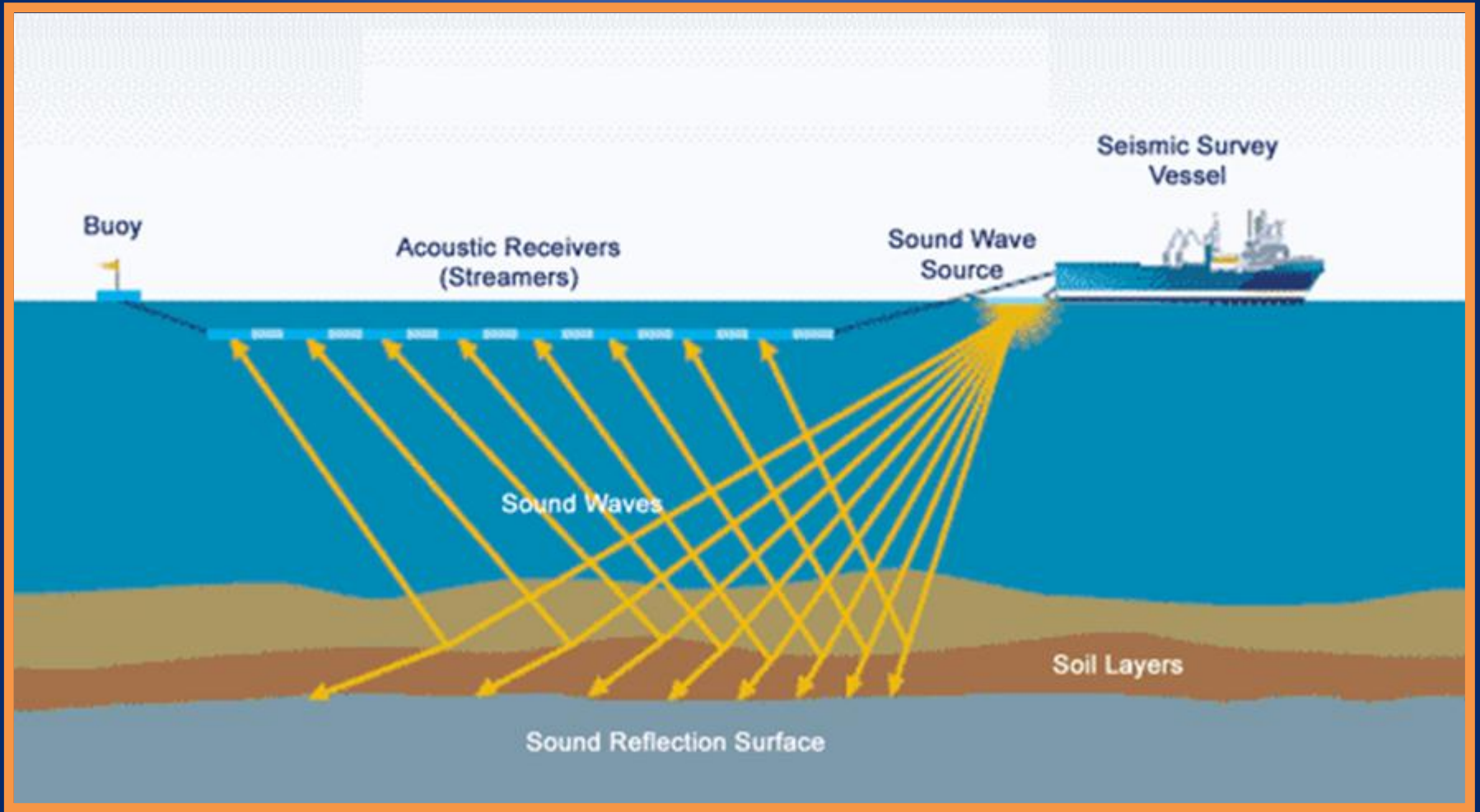


Illustration of airgun source acoustic signals reflecting off of the seafloor and underlying geologic discontinuities, and received by towed hydrophone streamers.

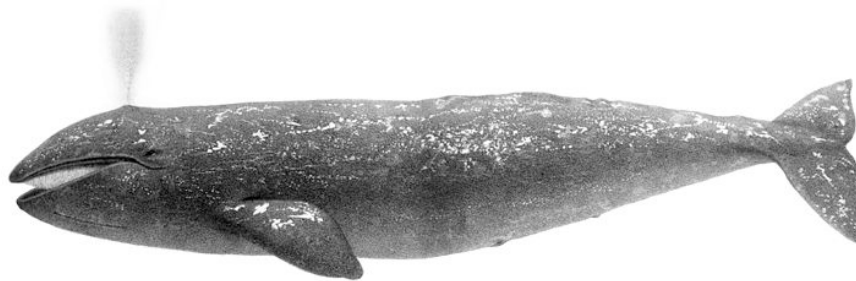


# Draft EA Analysis Approach

- 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



*Protected Species Observer on R/V Langseth Observer tower*

# 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:

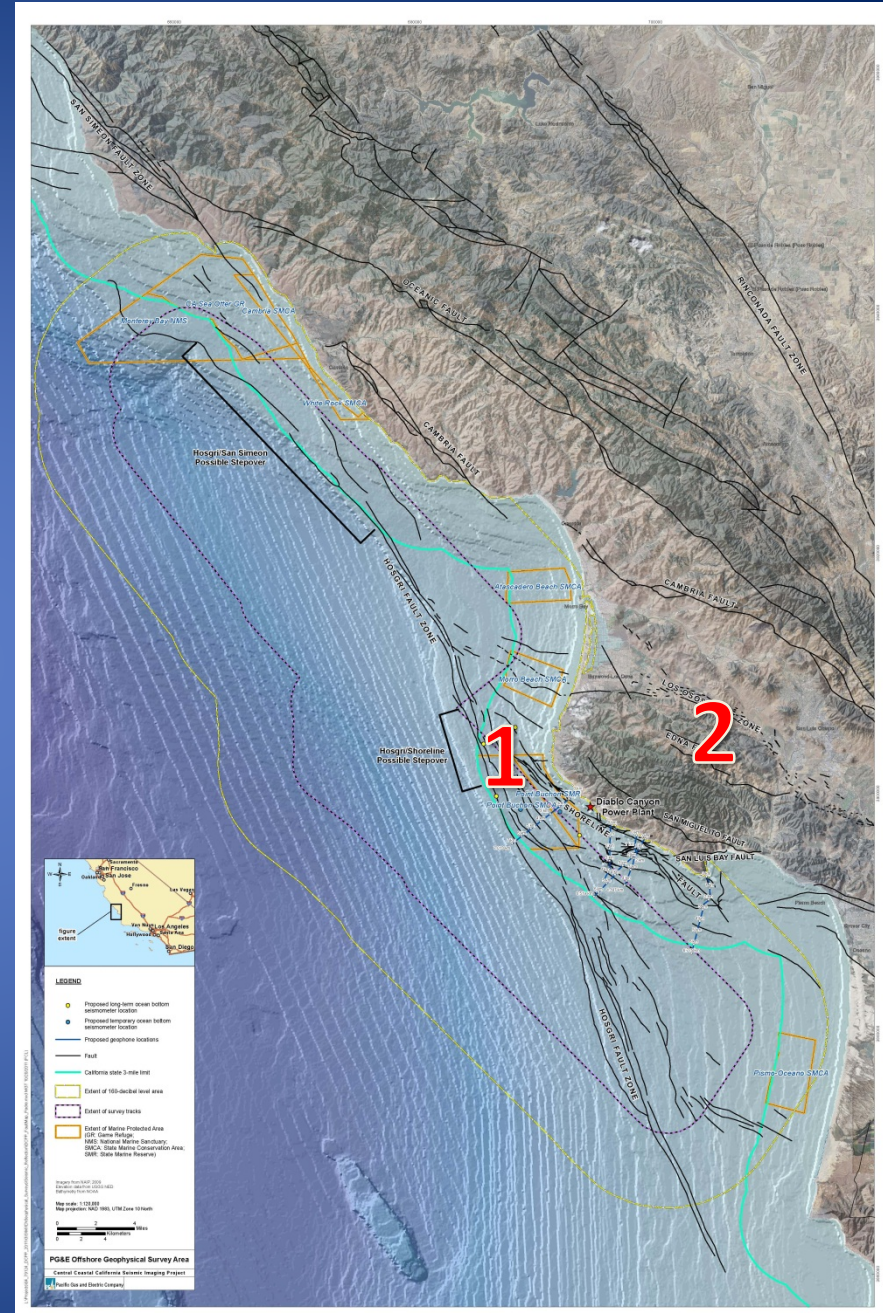
- Other Authorizations and Permits are being sought





# 2010/2011 Central Coastal California Seismic Imaging Project

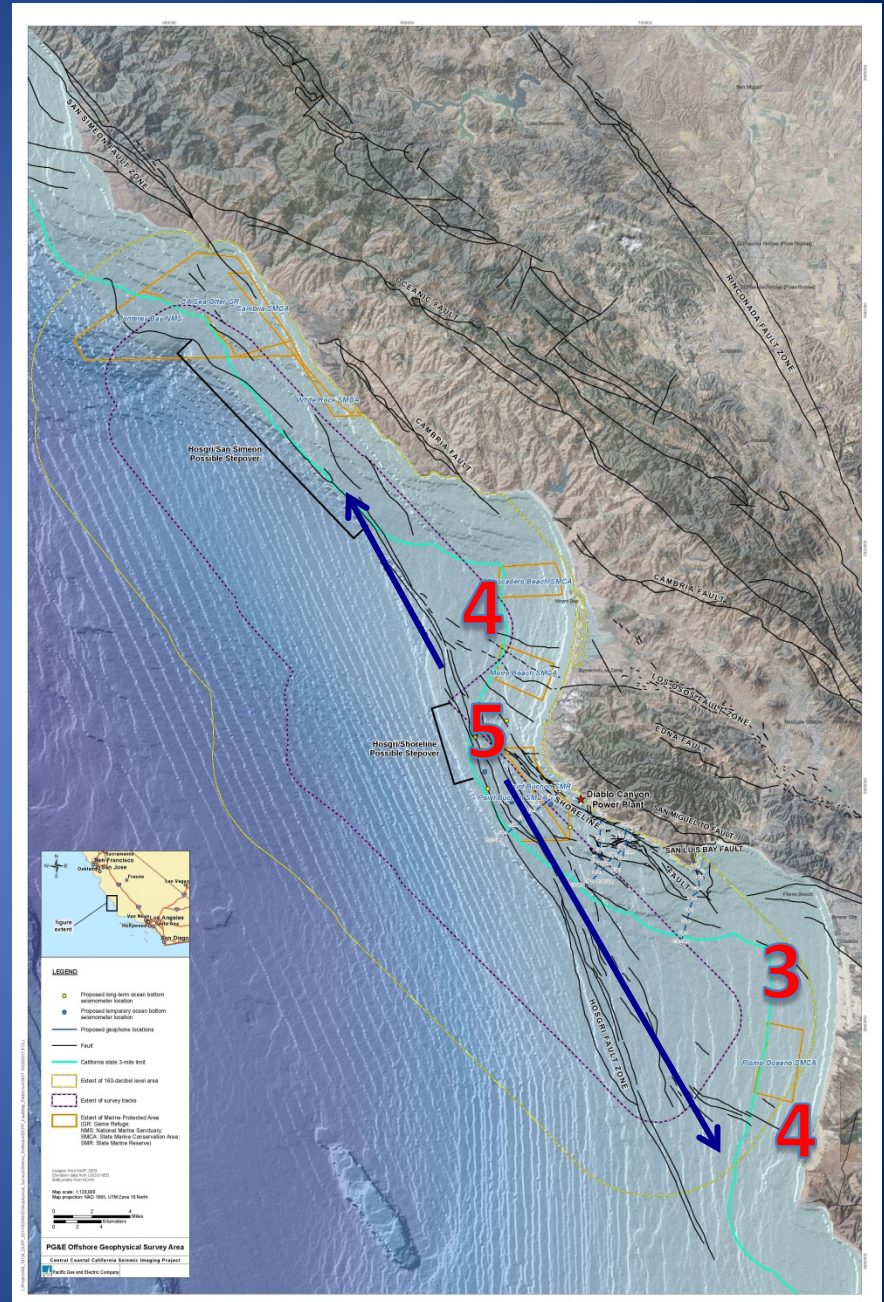
1. 2D/3D Low Energy  
Northern End of  
Shoreline Fault Zone
2. 2D/3D Irish Hills/ Los  
Osos Valley



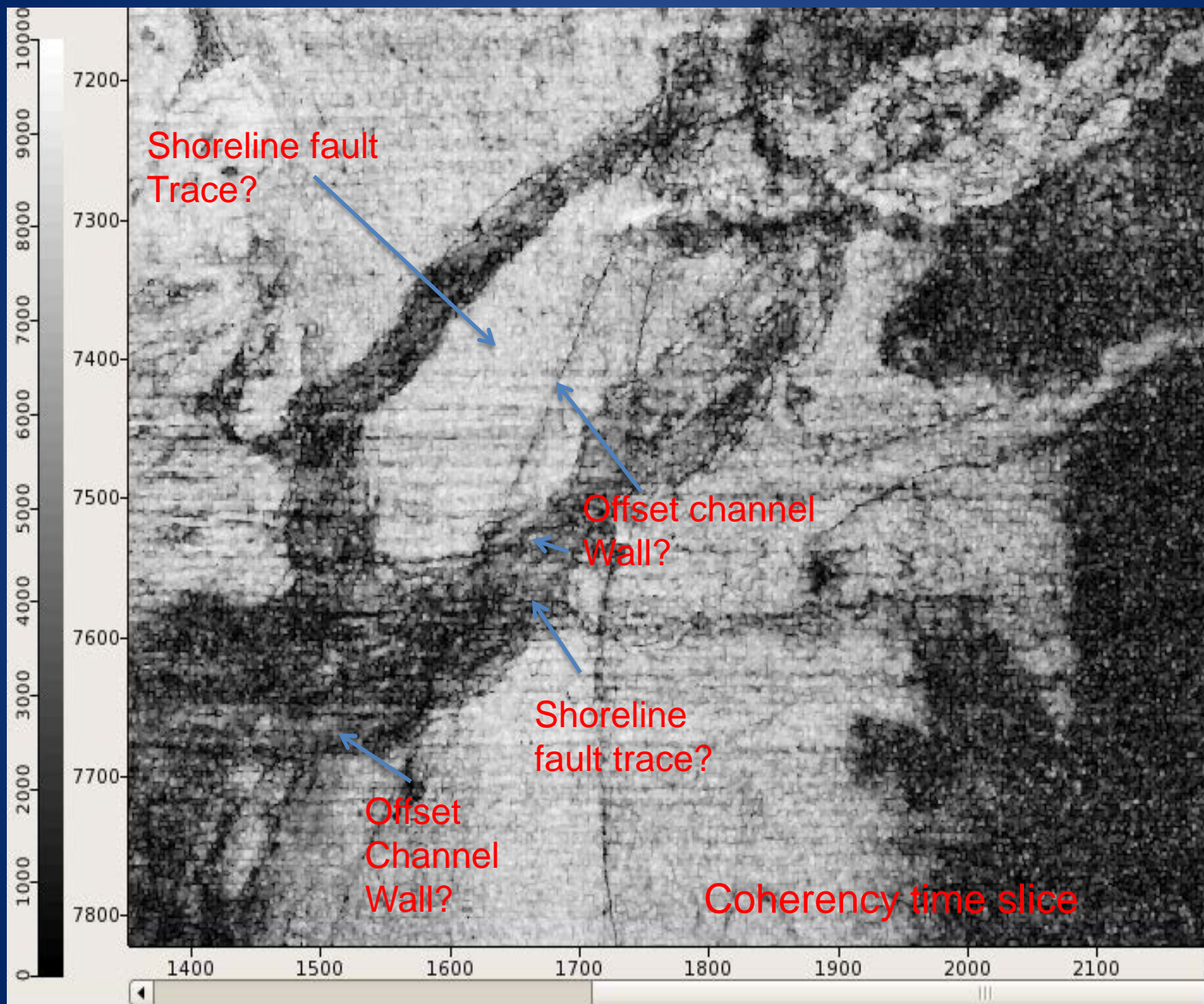


# 2011/2012 Central Coastal California Seismic Imaging Project

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)









# Offshore Seismic Imaging

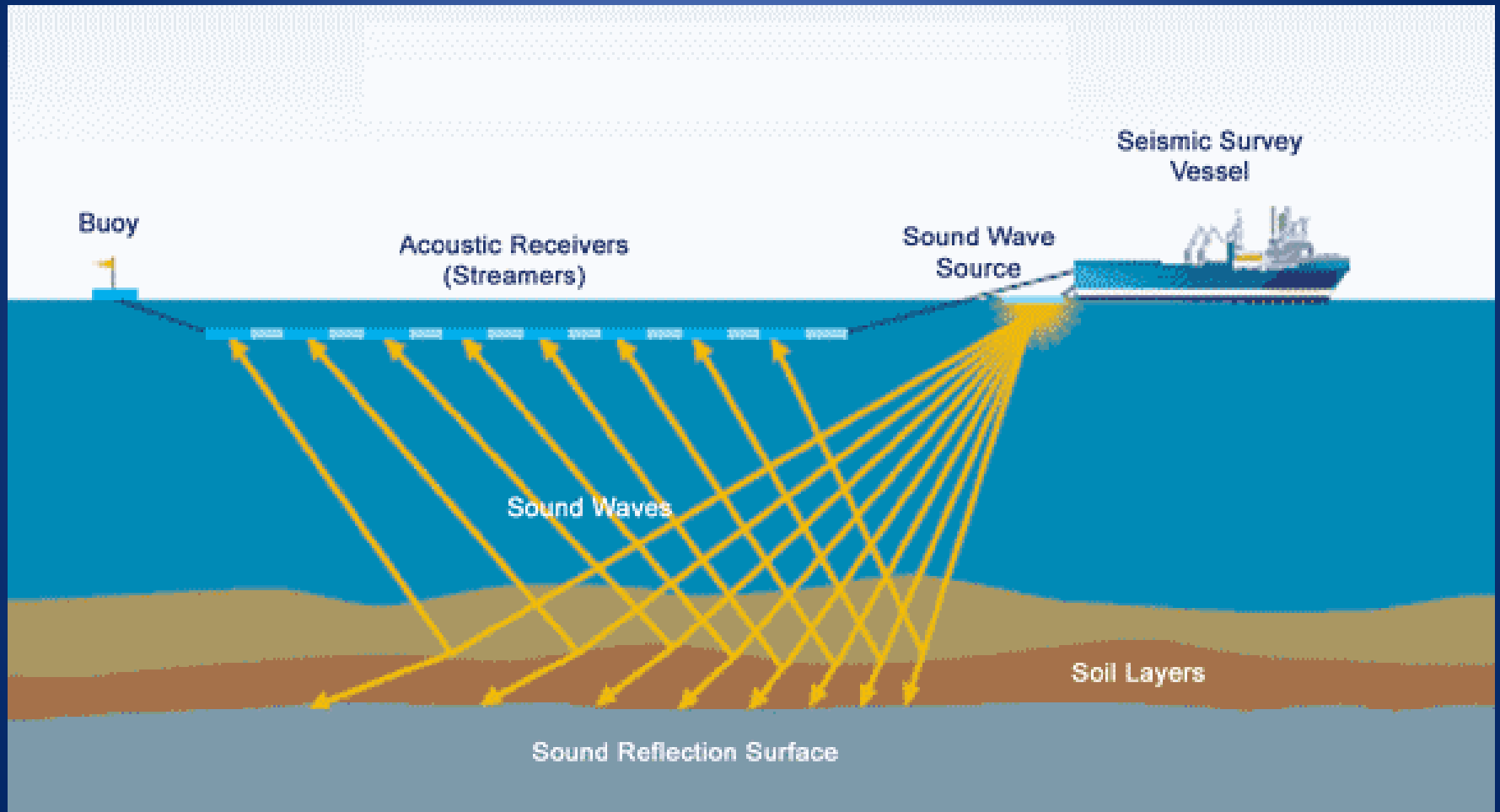
Specialized geophysical survey vessel *R/V Marcus Langseth* (National Science Foundation owned/ Lamont-Doherty Earth Observatory of Columbia University operated)



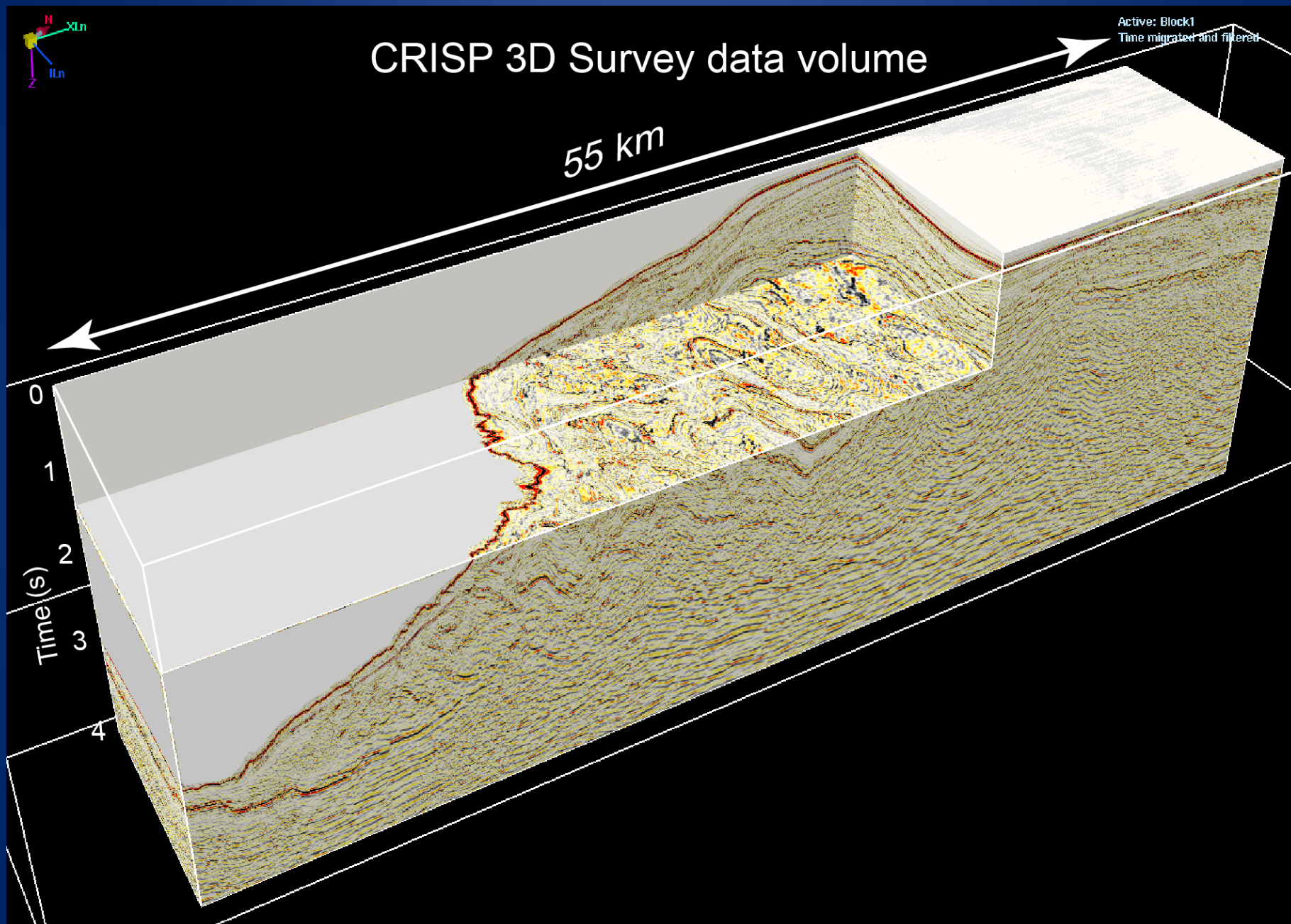
71.5 m (235 ft) length



# Seismic Survey Process



# CRISP 3D Survey data volume





# 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



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# Thank you!

**Draft EA and this presentation available on NSF Website:**

**<http://www.nsf.gov/geo/oce/envcomp/index.jsp>**

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

**NSF contact for more information and submitting written comments:**

Holly Smith

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4201 Wilson Blvd

Arlington, VA 22230

703-292-8583

**[nsfnepacommentcentralca@nsf.gov](mailto:nsfnepacommentcentralca@nsf.gov)**

***Public  
Comment  
Period Closes:  
August 10***