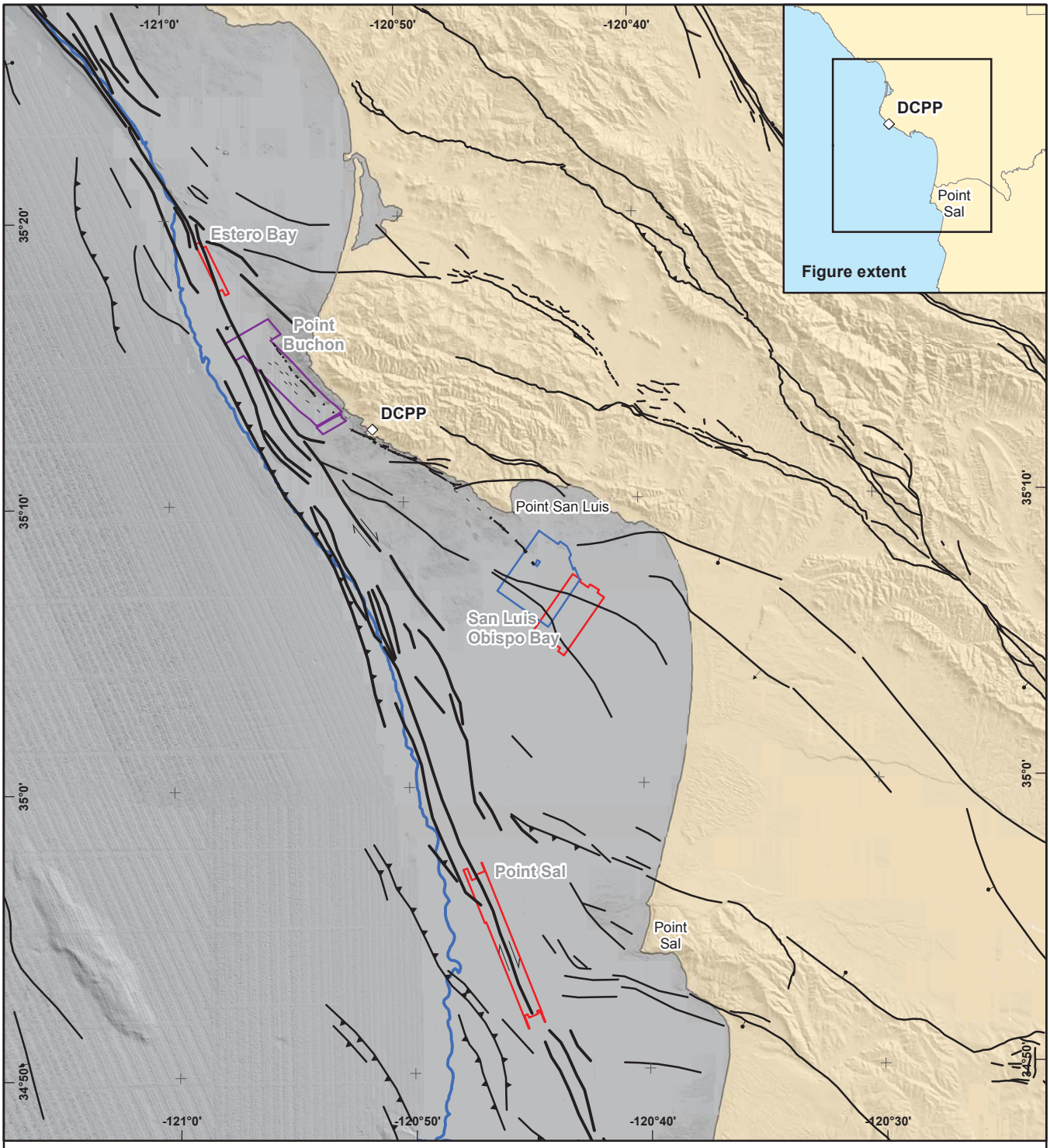


EXPLANATION

- Fault well located
- Fault approximated
- Fault concealed
- Thrust fault
- Normal fault
- 120 m isobath
- 2011 3D high-resolution survey extent
- 2012 3D high-resolution survey extent
- 2010/2011 3D high-resolution survey extent

N

0 5 10 mi.

0 5 10 km

Map projection and scale: WGS 84 / UTM Zone 10N,1:380,160

Note: See Plate 1 for details.

Sources:
- Fault locations from Jennings and Bryant (2010) and PG&E (2011).
- PG&E DEM compilation v2013.07.

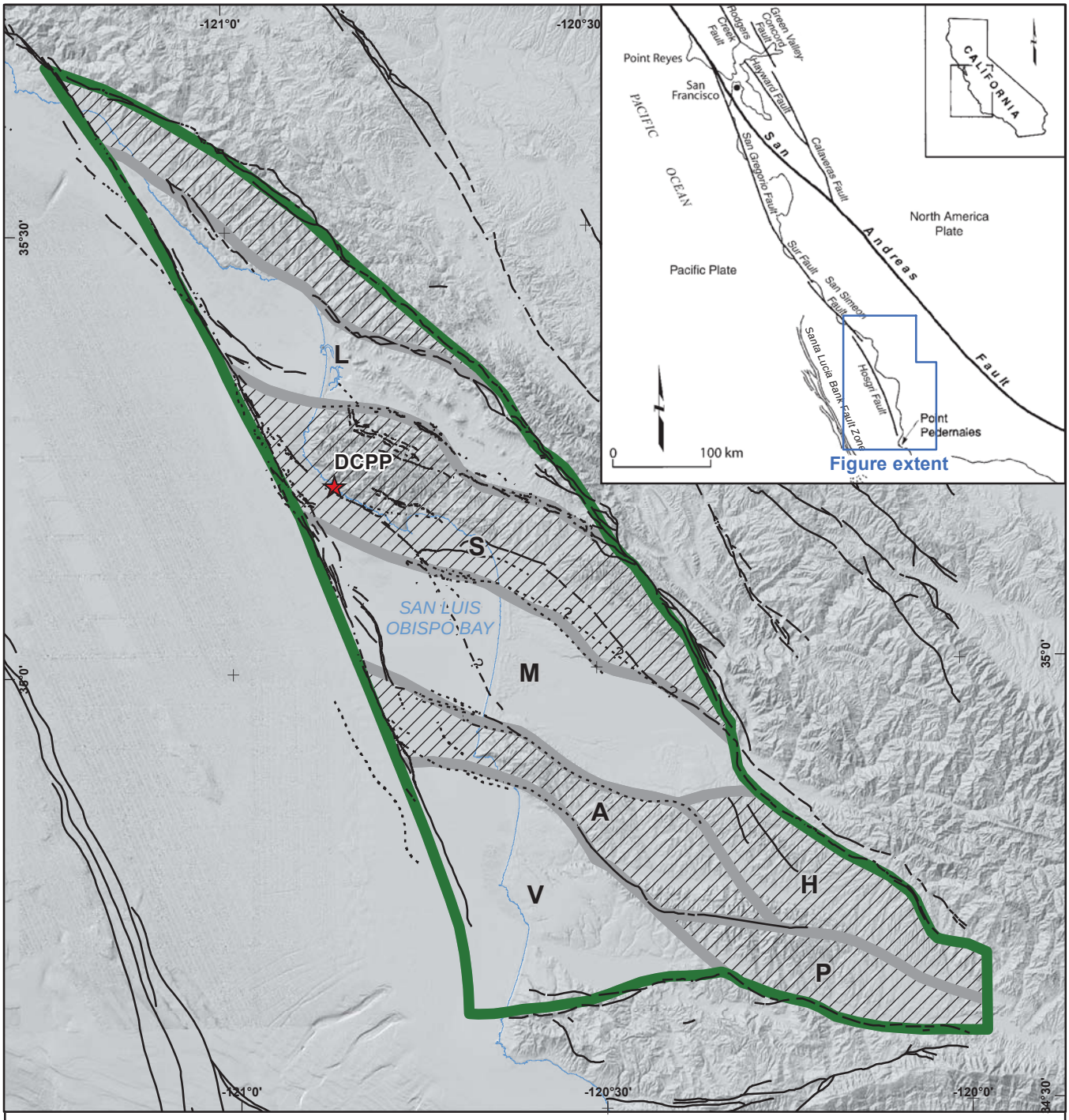
Regional Map of 3D LESS Survey Areas

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **1-1**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_1-1_RegionalMapof3D.mxd; Date: 07/27/2014; User: Ranon Dulberg, Fugro; Rev. 3



EXPLANATION

Fault: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence is uncertain.

Uplifted structural blocks within the Los Osos domain, outlined by thick gray line

Boundary outlining Los Osos domain

Diablo Canyon Power Plant site

Structural blocks within the Los Osos domain

- **A** = Casmalia
- **C** = Cambria
- **H** = Solomon Hills
- **L** = Los Osos
- **M** = Santa Maria Valley
- **P** = Purisima
- **S** = San Luis/Pismo
- **V** = Vandenberg/Lompoc

Sources:
- PG&E (1988, 2011, 2013)
- Regional tectonic sketch map from Hanson et al. (2004)
- AMEC (2011)

0 10 20 mi.
0 20 40 km

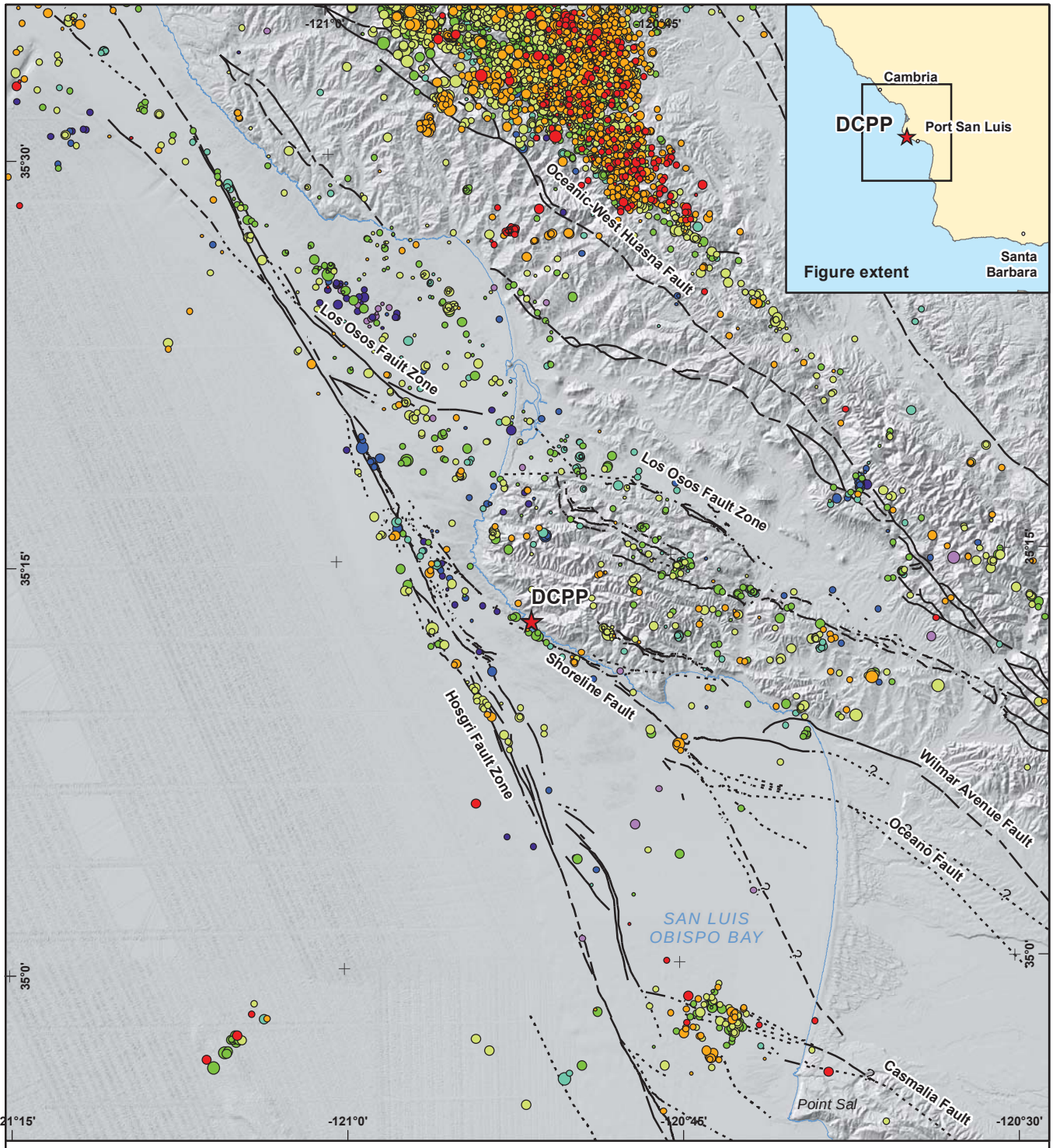
Map projection and scale: WGS 84 / UTM Zone 10N,1:750,000

Tectonic Setting

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **1-2**

File path: S:\1005\033\GIS\Figures\Figure_01-02.mxd; Date: 07/07/2014; User: Jeremie Chandler, LCI; Rev.1



EXPLANATION

Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.

Earthquake Data

Depth (km)

- 0.0–1.9
- 2.0–3.9
- 4.0–5.9
- 6.0–7.9
- 8.0–9.9
- 10.0–11.9
- 12.0–13.9
- 14.0 +

Magnitude

- 0.0–0.9
- 1.0–1.9
- 1.9–2.9
- 2.9–4.1

Note: Quaternary fault traces compiled from Lettis and Hall (1994), Lettis et al. (2004), AMEC (2011), PG&E (2013), and this study.

Sources:
- Relocated earthquake data from Hardebeck (2012).
- Project DEM compilation v2013.01.

N

0 4 8 mi.

0 10 20 km

Map projection and scale: WGS 84 / UTM Zone 10N,1:400,000

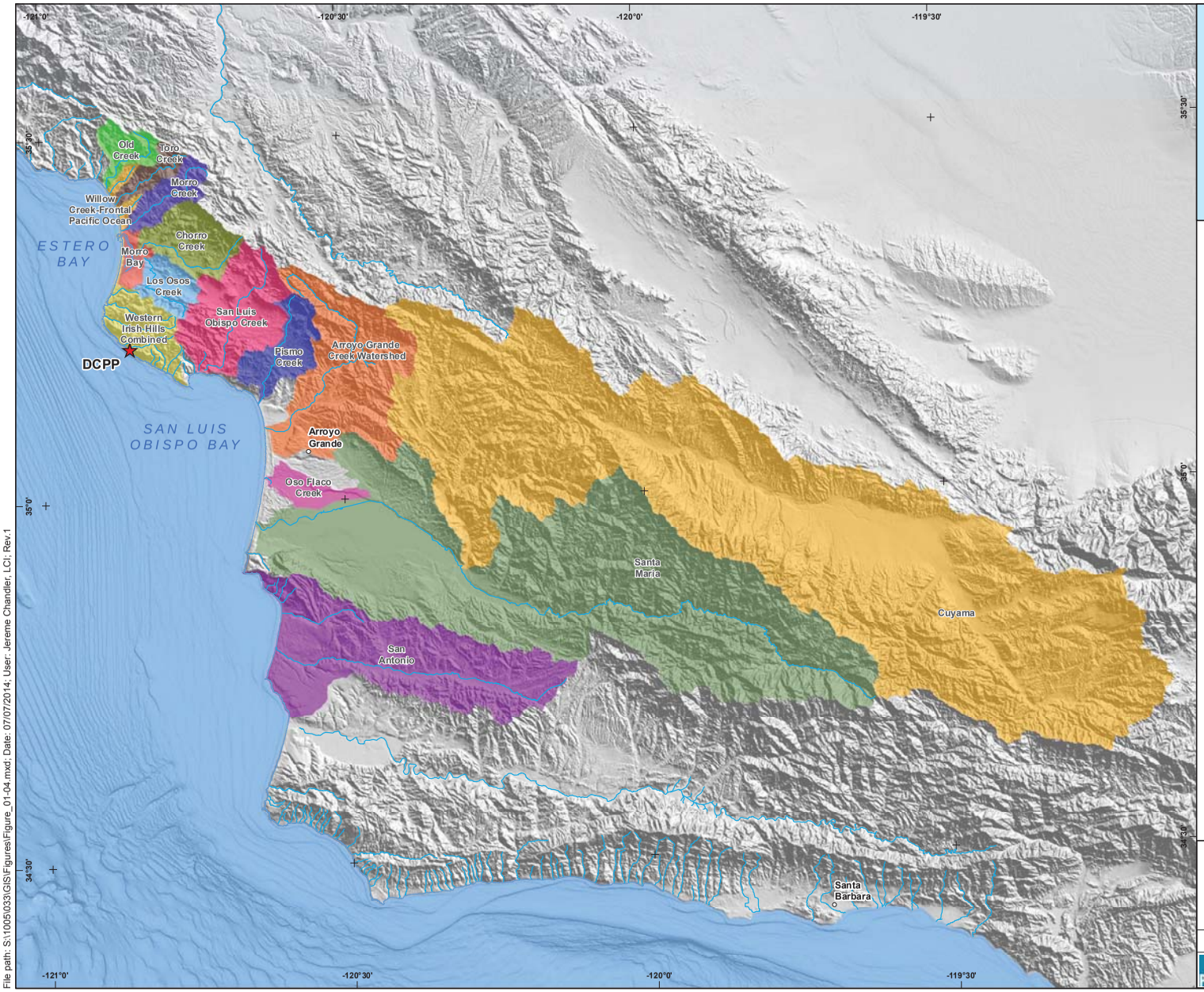
Regional Seismicity

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure 1-3

File path: S:\1005\033\GIS\Figures\Figure_01-03.mxd; Date: 07/07/2014; User: Alex Remar, LCI; Rev.1



EXPLANATION

Watershed	Area (sq. km)
Arroyo Grande Creek	375
Chorro Creek	113
Cuyama	2,962
Western Irish Hills Combined	107
Los Osos Creek	59
Morro Bay	28
Morro Creek	62
Old Creek	53
Oso Flaco Creek	51
Pismo Creek	98
San Antonio	548
San Luis Obispo Creek	220
Santa Maria	1,772
Toro Creek	39
Willow Creek-Frontal Pacific Ocean	20

DEM Source: NGC Coastal Relief Model Vol. 06 Shaded Relief Images (2003)

N

0 6 12 mi.

0 12 24 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:591,000

Regional Physiography Map Showing Boundaries of Watersheds That Drain into San Luis Obispo and Estero Bays

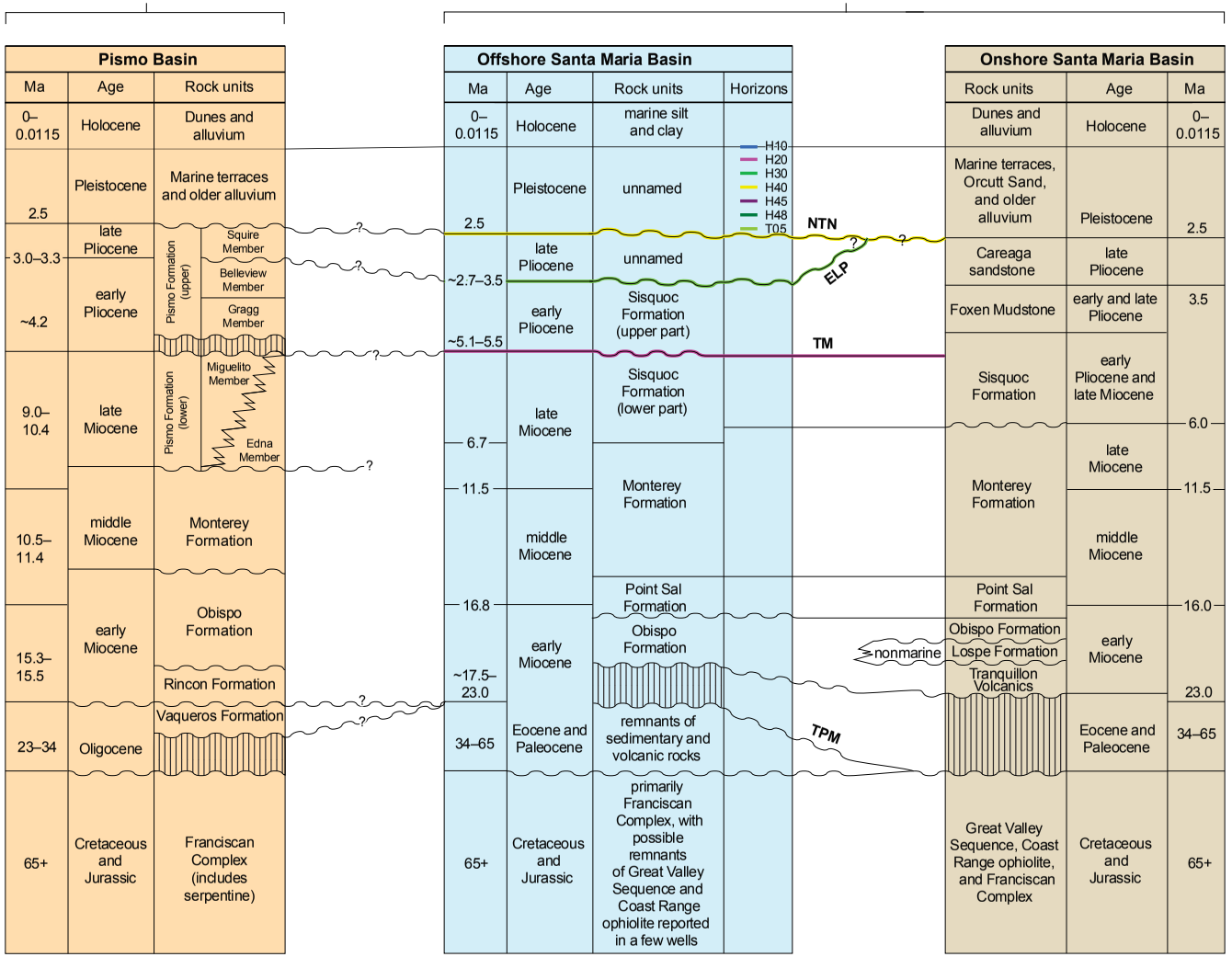
OFFSHORE LESS STUDIES

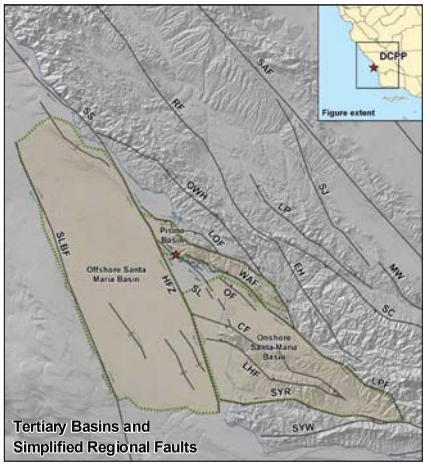
Pacific Gas and Electric Company | Figure **1-4**

File path: S:\1005\033\GIS\Figures\Figure_01-04.mxd; Date: 07/07/2014; User: Jereme Chandler, LCI; Rev.1

Based on Hall (1973) and PG&E (2011)

Modified from Willingham et al. (2013)





EXPLANATION

Approximate boundary of Tertiary basin

Unconformities

This study:
- H10 - H48 and T05
- NTN = Near top of Neogene unconformity

Willingham et al. (2013):
- ELP = Early–late Pliocene unconformity
- TM = Top of Miocene
- TPM = Top of Pre-Miocene basement

Notes:

1. Fault traces modified from the Uniform California Earthquake Rupture Forecast, version 3 (UCERF3), fault model version 3.1 (Dawson et al., 2012, draft received from author). Generalized trends of active contractional structures in the offshore and the offshore Santa Lucia Bank fault are based on Lettis et al. (2004), plate 1.
2. Fault names in sketch map are as follows: SAF, San Andreas Fault; RF, Rinconada fault; SJ, San Juan fault; MW, Morales (west) fault; LP, La Panza fault; SC, South Cuyama fault; EH, East Huasna fault; OWH, Oceanic-West Huasna fault; SS, San Simeon fault; HFZ, Hosgri fault zone; LOF, Los Osos fault; WAF, Wilmar Avenue fault; LPF, Little Pine fault; OF, Oceano fault; SL, Shoreline fault; CF, Casmalia fault; LHF, Lions Head fault; SYR, Santa Ynez River fault; SYW, Santa Ynez (west) fault; SLBF, Santa Lucia Bank fault.
3. Time scales in stratigraphic columns are not linear.

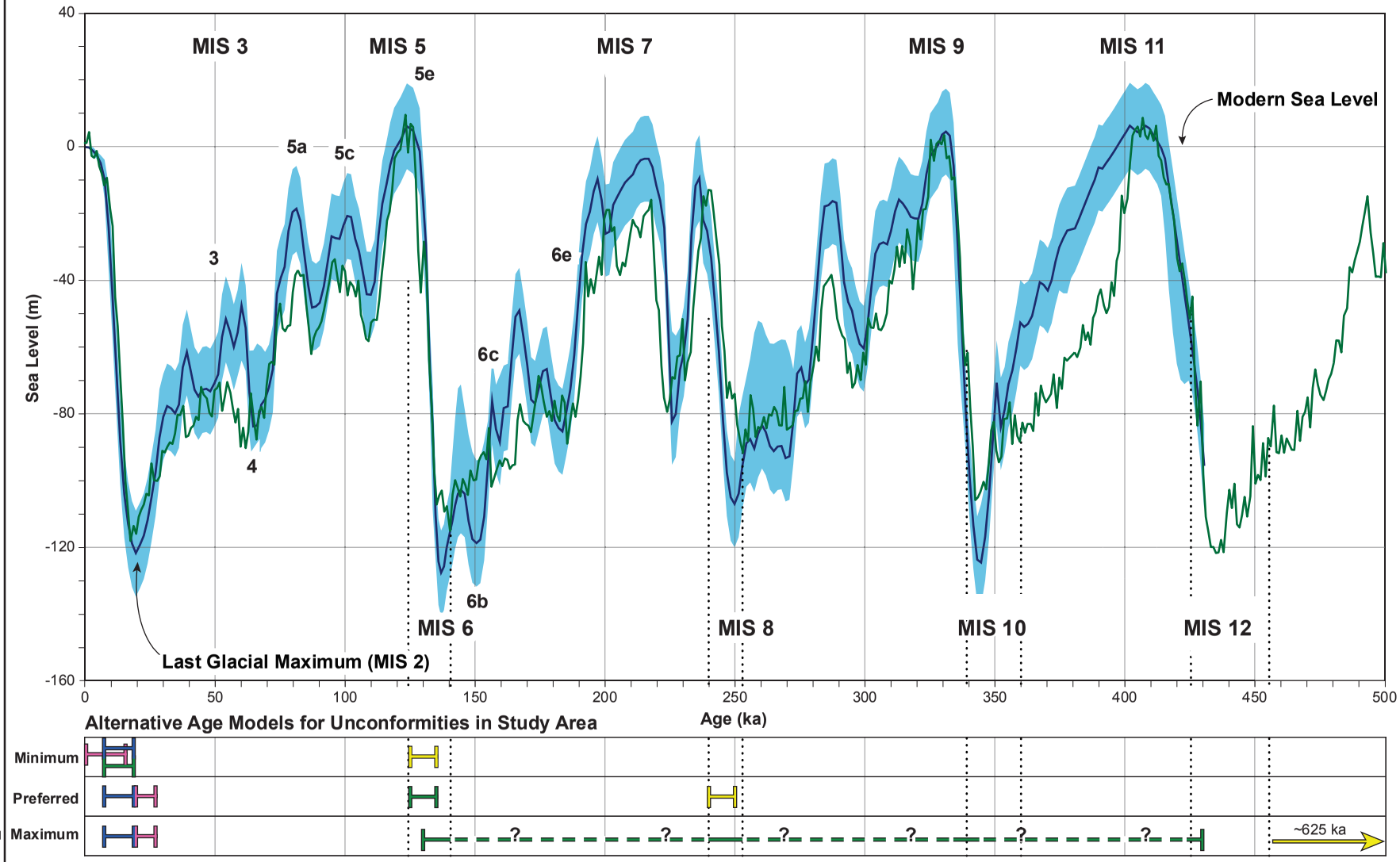
Sources:
- Stratigraphic columns for Santa Maria Basin from Willingham et al. (2013).
- Stratigraphic column for Pismo Basin from PG&E (2011) and Hall (1973).

Generalized Stratigraphic Columns for the Project Study Areas

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **1-5**

File path: S:\1005\033\GIS\Figures\Figure_1-5.ai; Date: 04/17/2014; User: Alex Remar, LCI; Rev.1



EXPLANATION

MIS — Marine oxygen isotope stage

6c — Marine oxygen isotope substage

Waelbroeck et al.[1]

Lisiecki and Raymo (2005)[2]

UNCONFORMITIES

H10 H20 H30 H40

Notes:

1. Waelbroeck et al. (2002) use regressions established from relative sea-level (RSL) coral terrace data and benthic foraminifera oxygen isotope data calibrated to sea temperature data from the North Atlantic and equatorial Pacific to create a composite RSL curve for past climatic cycles. Shaded region is confidence interval.

2. Lisiecki and Raymo (2005) use 57 globally distributed $\delta^{18}O$ records to compile a 5.3 Myr record. Scaled to sea level by Carlson (2008).

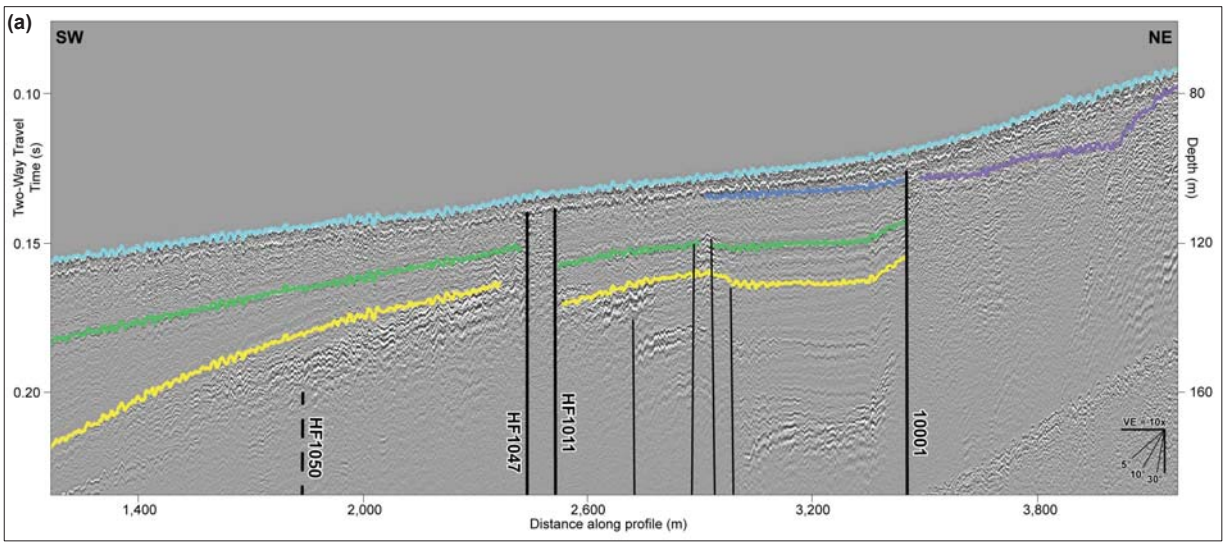
Age Model for Quaternary Unconformities in Study Areas

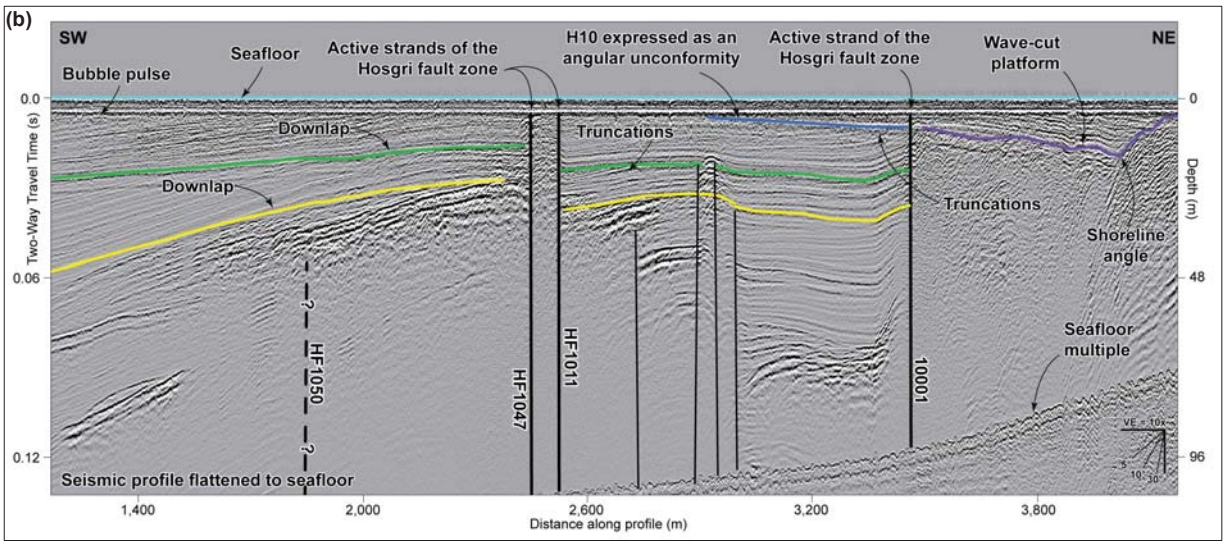
OFFSHORE LESS STUDIES

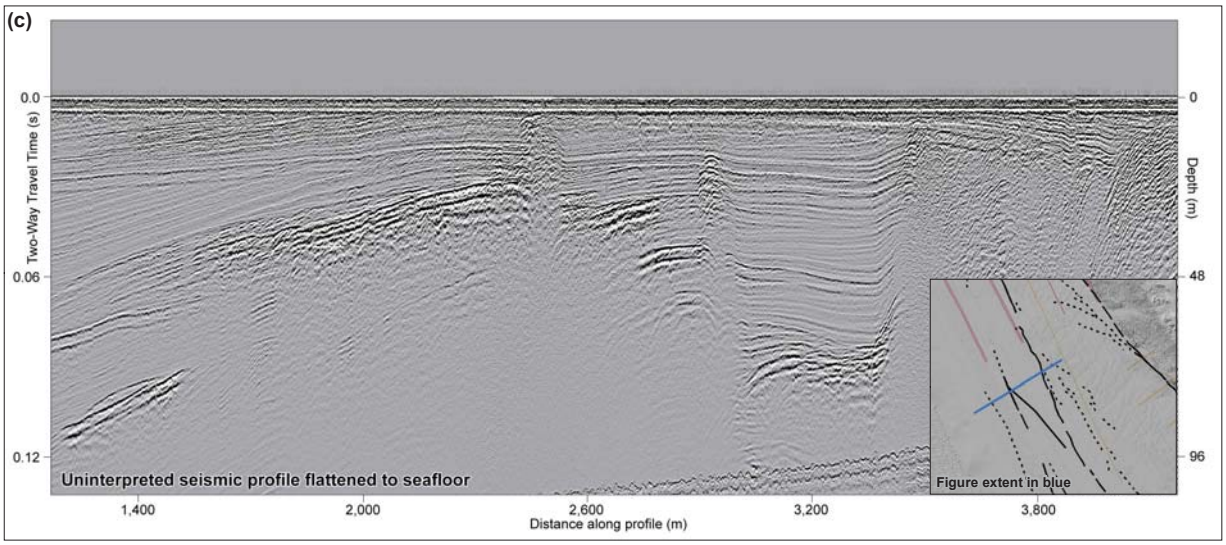
Pacific Gas and Electric Company

Figure **1-6**

File path: S:\1005\033\GIS\Figures\Figure_01-06.ai; Date: 04/17/2014; User: Jereme Chandler, LCI; Rev.1







EXPLANATION

Fault: solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.

Seafloor

Unconformity H10

Unconformity H30

Unconformity H40

Top of pre-Quaternary rock

Location of seismic profile

USGS survey trackline

Fugro 3D survey extent

Fugro 2D survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. In profiles, thin black lines are unassigned faults, heavy black lines are named faults.
4. Faults in location map described on Plate 1a.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Fugro 3D and 2D seismic-reflection data (2012).
- Project DEM compilation v2013.01.

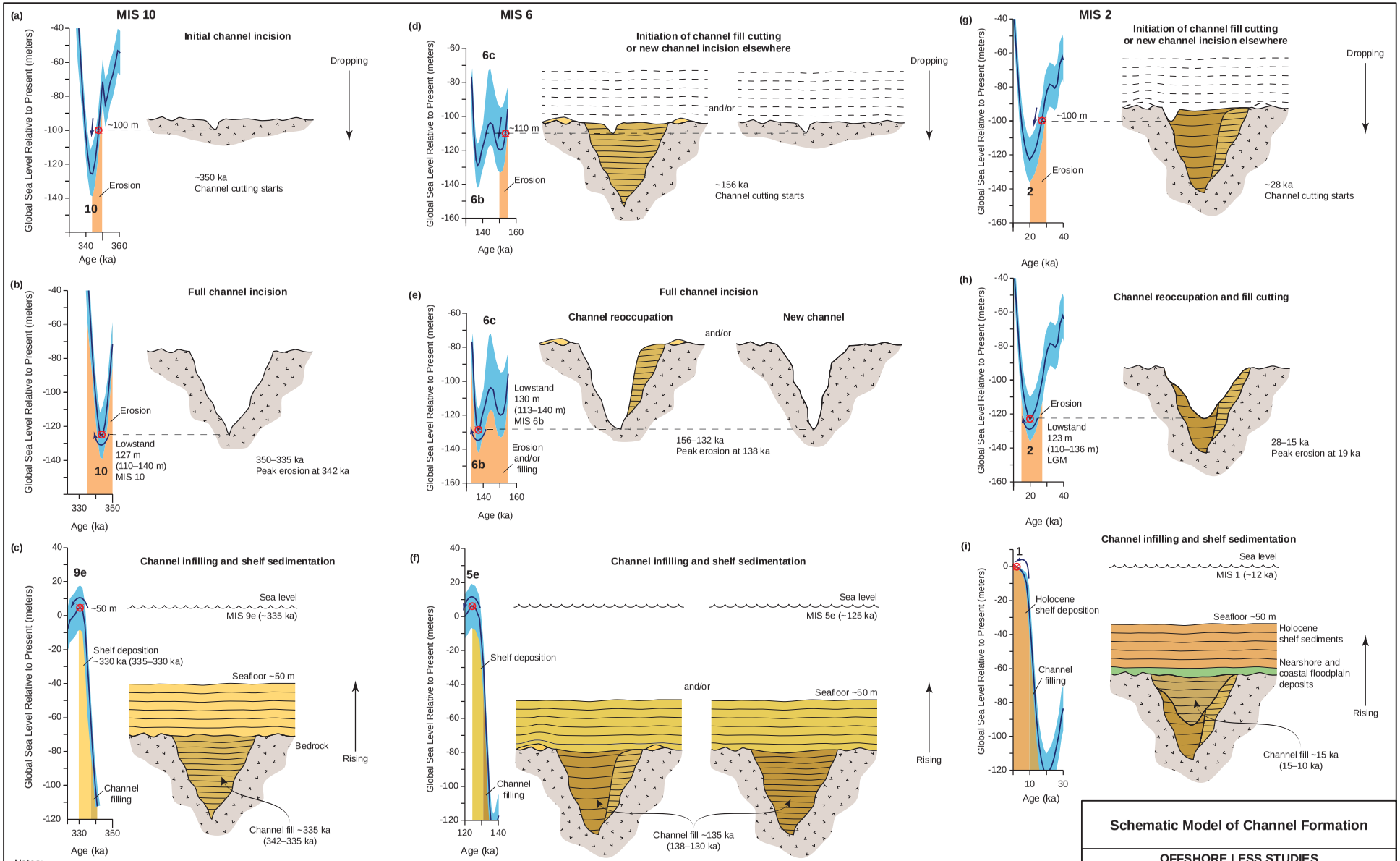
Excerpt of Profile PBS-23 Showing Key Regional Unconformities Offshore of Point Buchon

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **1-7**

File path: S:\1005\033\GIS\Figures\Figure_01-07.mxd; Date: 07/11/2014; User: Jereme Chandler, LCI; Rev.1



Notes:
1. Sea-level curve modified from Waelbroeck et al. (2002). See Figures 1-6, 6-52, and 7-45.
2. See Section 1.2.9.1 for discussion of alternative age models.

Schematic Model of Channel Formation

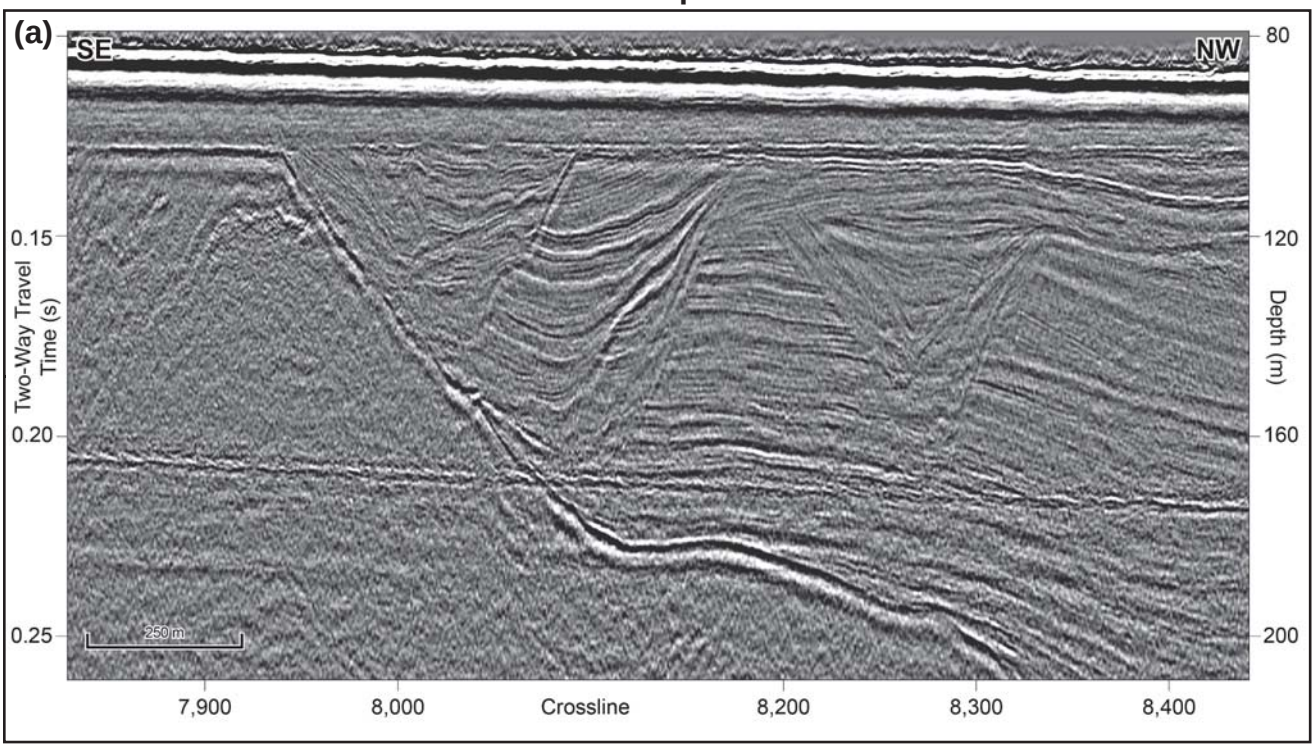
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

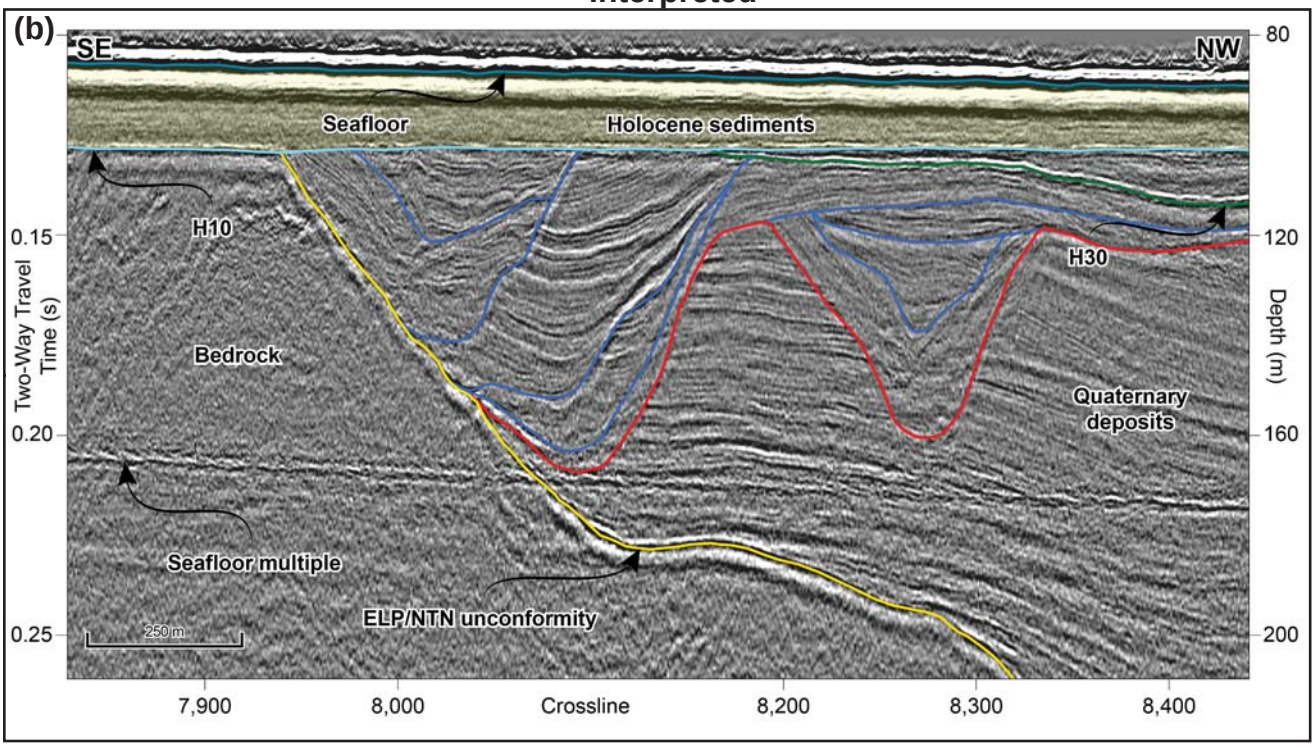
Figure 1-8

File path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\ai\Figure_1-8_Channel_Formation.ai; Date: 04/20/2014; User: Bryan Bergkamp, Fugro; Rev.1

Uninterpreted



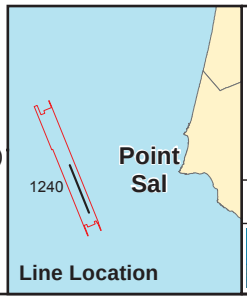
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/near top of Neogene unconformity (ELP/NTN)
- Nested channel margin
- Base of channel complexes
- 2012 Point Sal 3D high-resolution survey extent

Note: Depth values on seismic profile assume a velocity of 1,600 m/s.

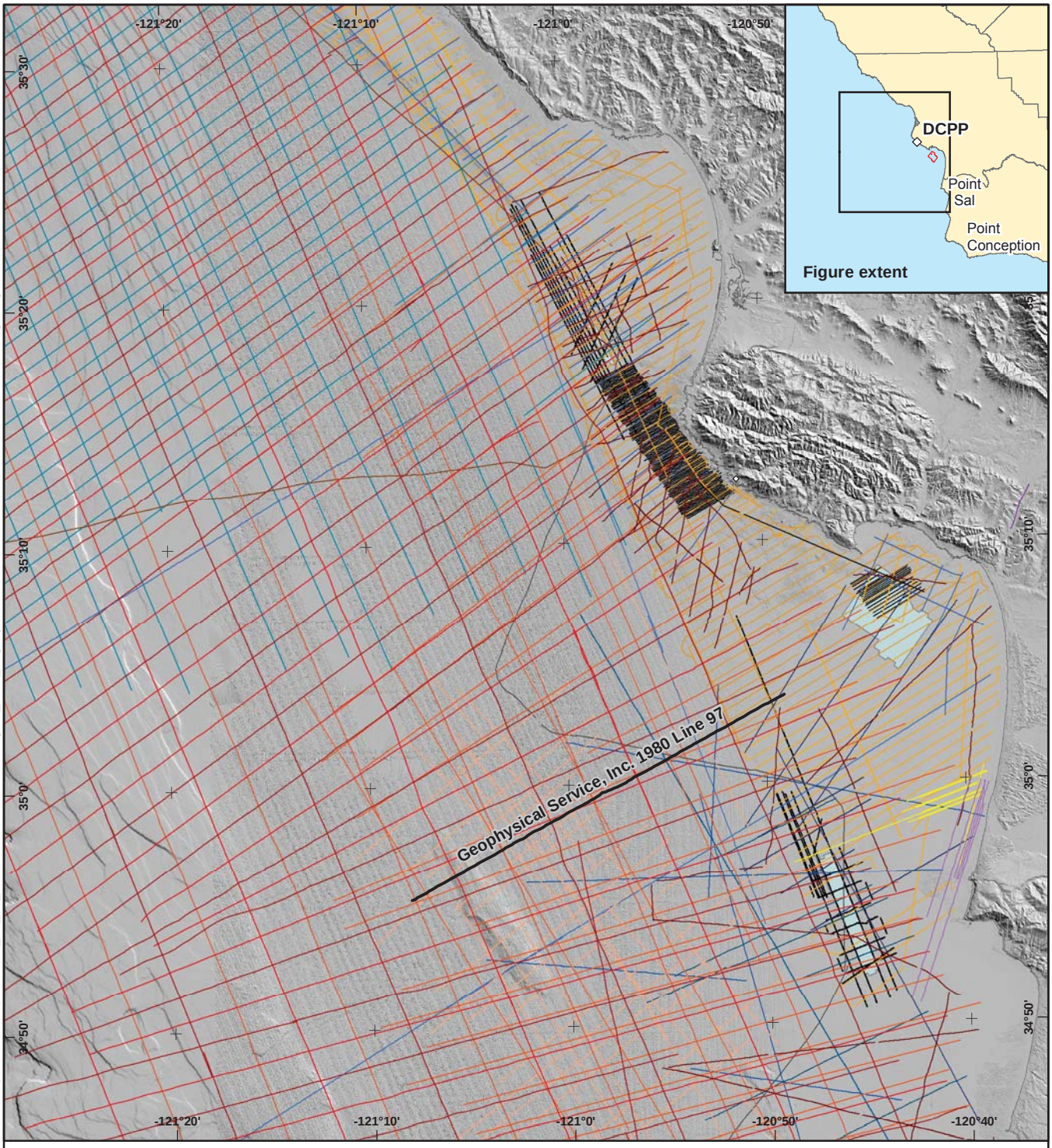


Example of Nested Channels

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **1-9**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_1-9_NestedChannels.mxd; Date: 6/9/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fugro 3D 2011-2012
- Fugro 2010-2012
- USGS S-6-09-SC
- USGS S-6-08-SC
- USGS L-4-90-SC
- PG&E FLEC 1987
- COMAP 1986
- DSL 1986
- Nekton 1986
- GSI 1985
- NEKTON 1985
- W-38-83-SC
- USGS W-32-82-SC
- GSI 1980
- USGS H-14-79-SC
- USGS L-5A-79-NC
- USGS W-22-79-SC
- USGS W-10-78-SC
- USGS W-12-76-SC
- USGS W-5-75-SC
- USGS W-4-74-SC
- Aquatronics 1974
- PXP Price Canyon

N

0 5 10 mi.

0 10 20 km

Map projection and scale: WGS 84 / UTM Zone 10N,1:450,000

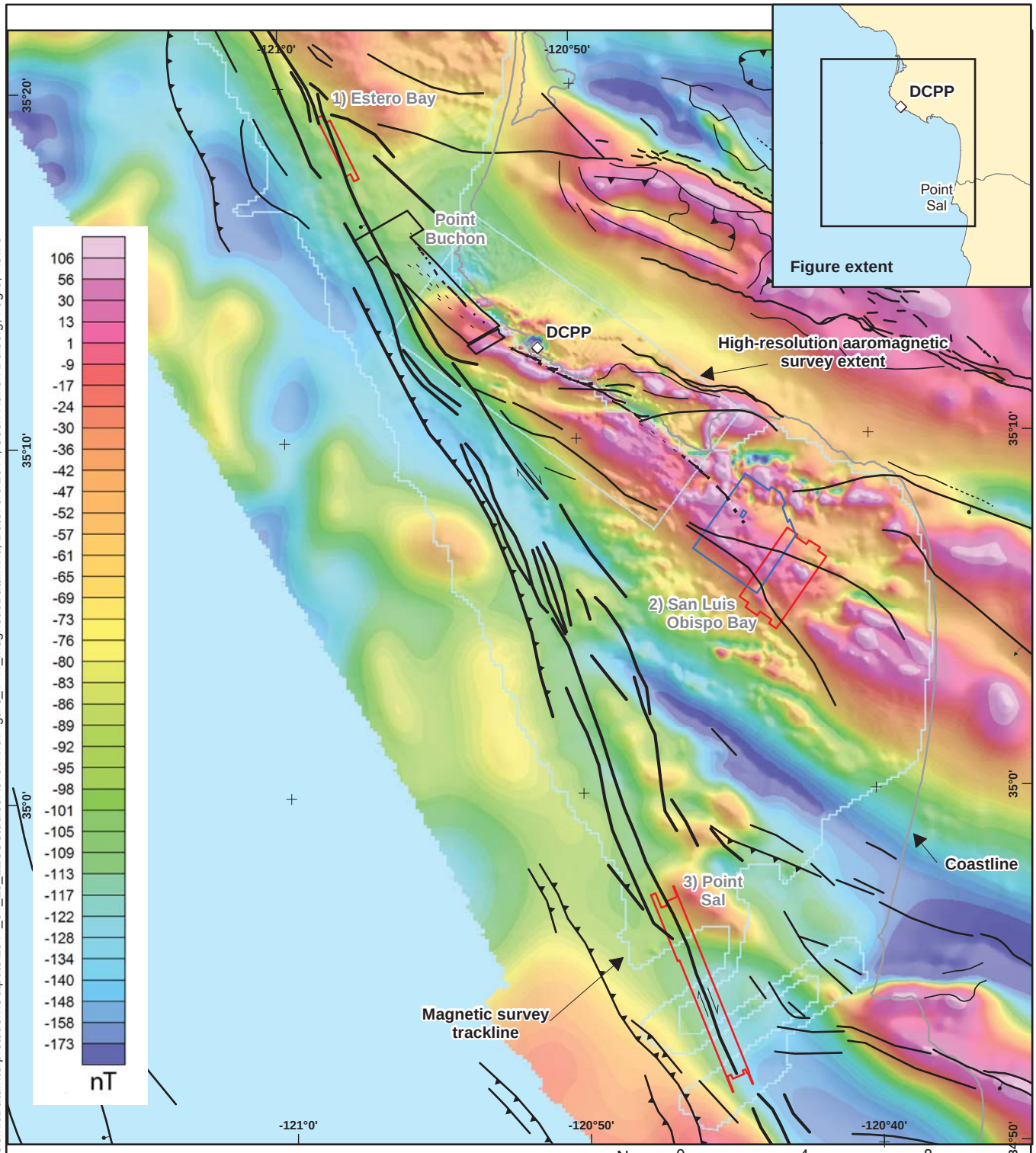
Source: PG&E DEM compilation v2013.07.

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_1-10_LegacyArchive.mxd; Date: 6/9/2014; User: Ranon Dulberg, Fugro; Rev. 3

Regional Trackline Map from Legacy Archive Data

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **1-10**



EXPLANATION

- Fault well located
- Fault approximated
- Fault concealed
- Thrust fault
- Normal fault
- 2011 3D high-resolution survey extent
- 2012 3D high-resolution survey extent
- 2010/201 3D high-resolution survey extent

Sources:
Fault locations from Jennings and Bryant (2010) and PG&E (2011).
PG&E DEM compilation v2013.07.

Note: See Plate 1 for details.

Map projection and scale: WGS 84 / UTM Zone 10N, 1:300,000

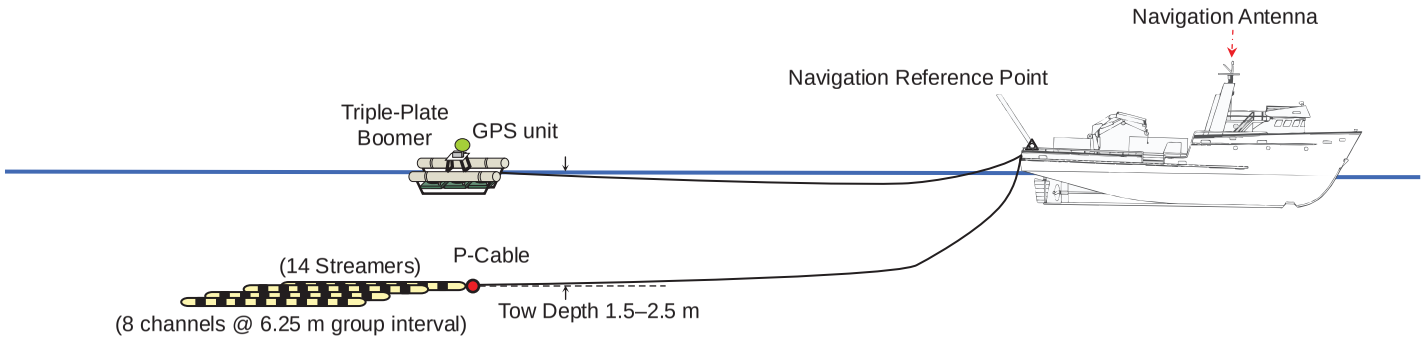
Magnetic Data

OFFSHORE LESS STUDIES

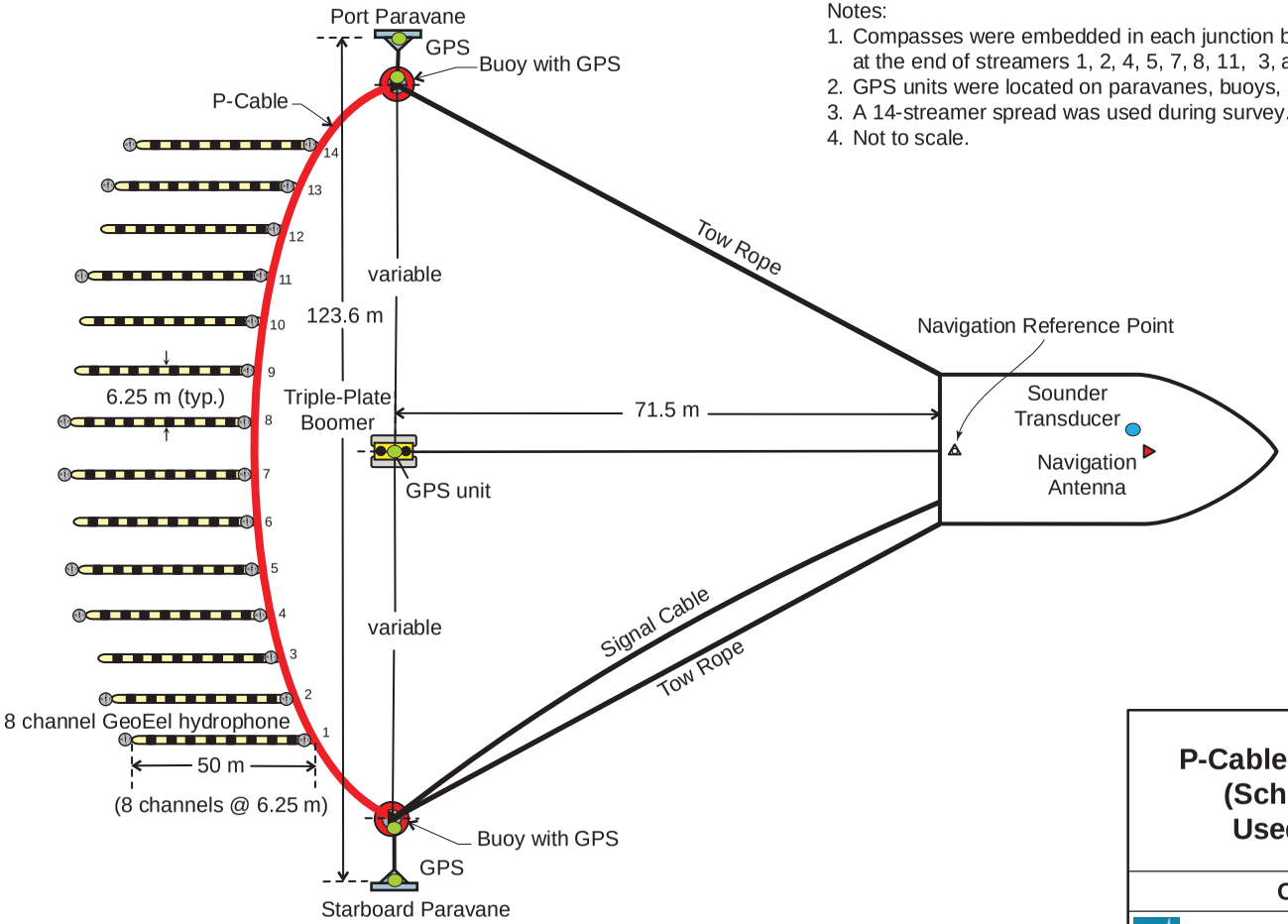
Pacific Gas and Electric Company

Figure **1-11**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_1-11_MagneticData.mxd; Date: 6/9/2014; User: Ranon Dulberg, Fugro; Rev. 3



Notes:
1. Compasses were embedded in each junction box at the head of each streamer and at the end of streamers 1, 2, 4, 5, 7, 8, 11, 3, and 14 ( )
2. GPS units were located on paravanes, buoys, and on the triple-plate boomer sled.
3. A 14-streamer spread was used during survey.
4. Not to scale.

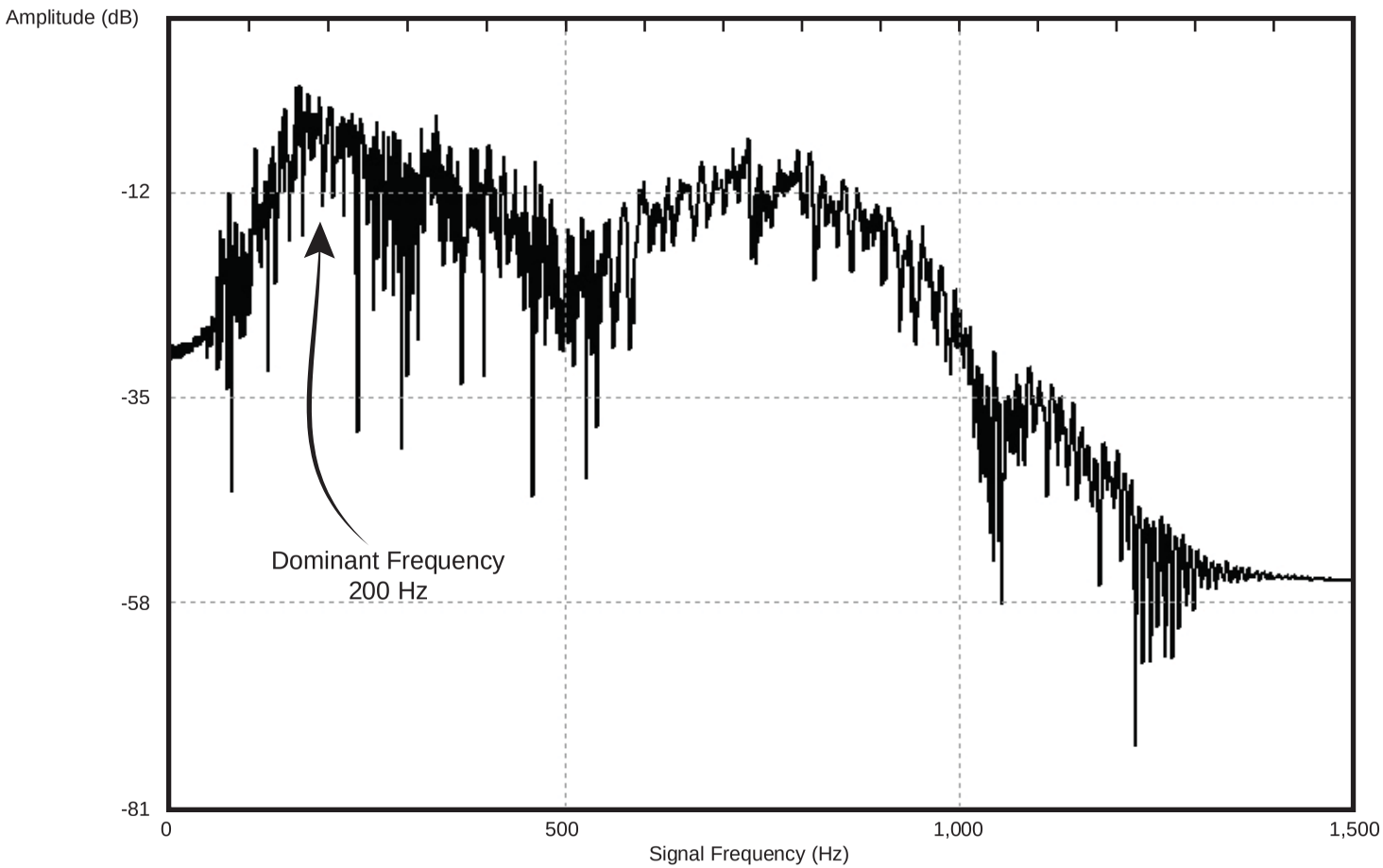


P-Cable 3D Survey Streamer Layout (Schematic Layback Diagram) Used in 2012 Data Collection

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **2-1**

Amplitude Frequency Spectrum



Calculated Vertical Resolution

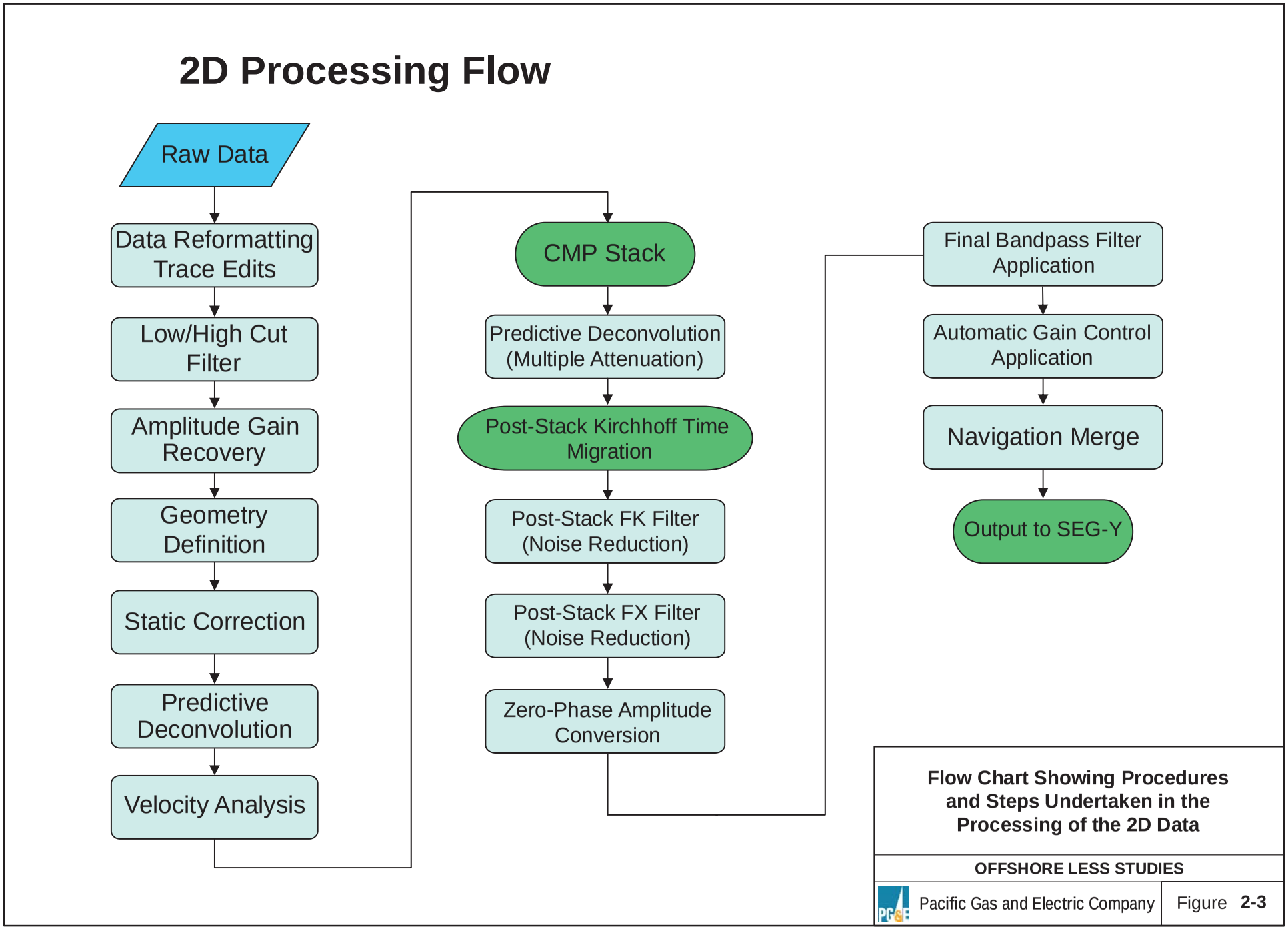
$$VR = \frac{\lambda}{4} = \frac{T \times v}{4} = \frac{v}{DF \times 4} = \frac{1600 \text{ m/s}}{200 \text{ Hz} \times 4} = 2 \text{ m}$$

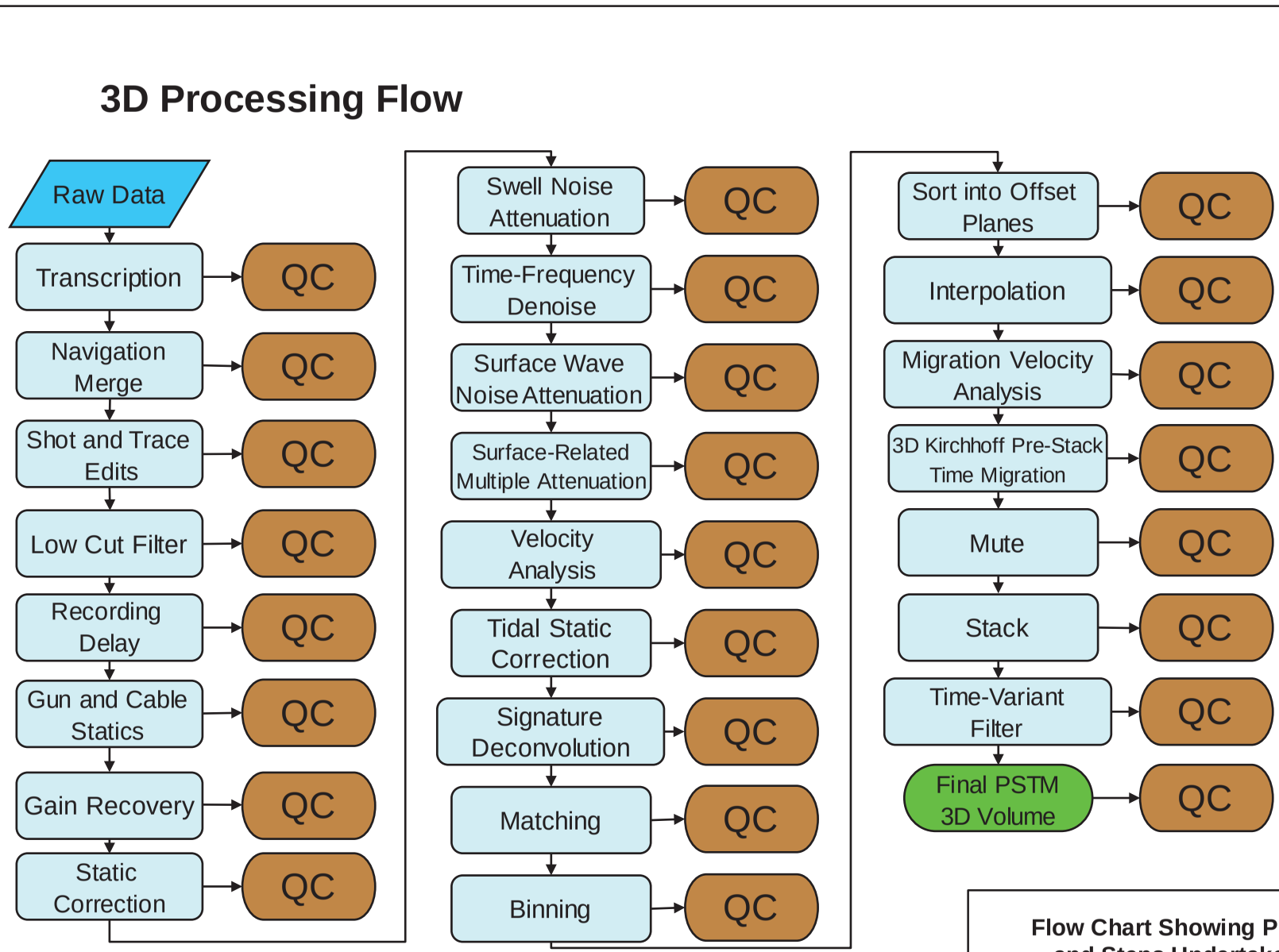
VR = vertical resolution, *DF* = dominant frequency, *v* = velocity, *λ* = wavelength, and *T* = period

Frequency Spectrum for 2D/3D Seismic Source

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **2-2**



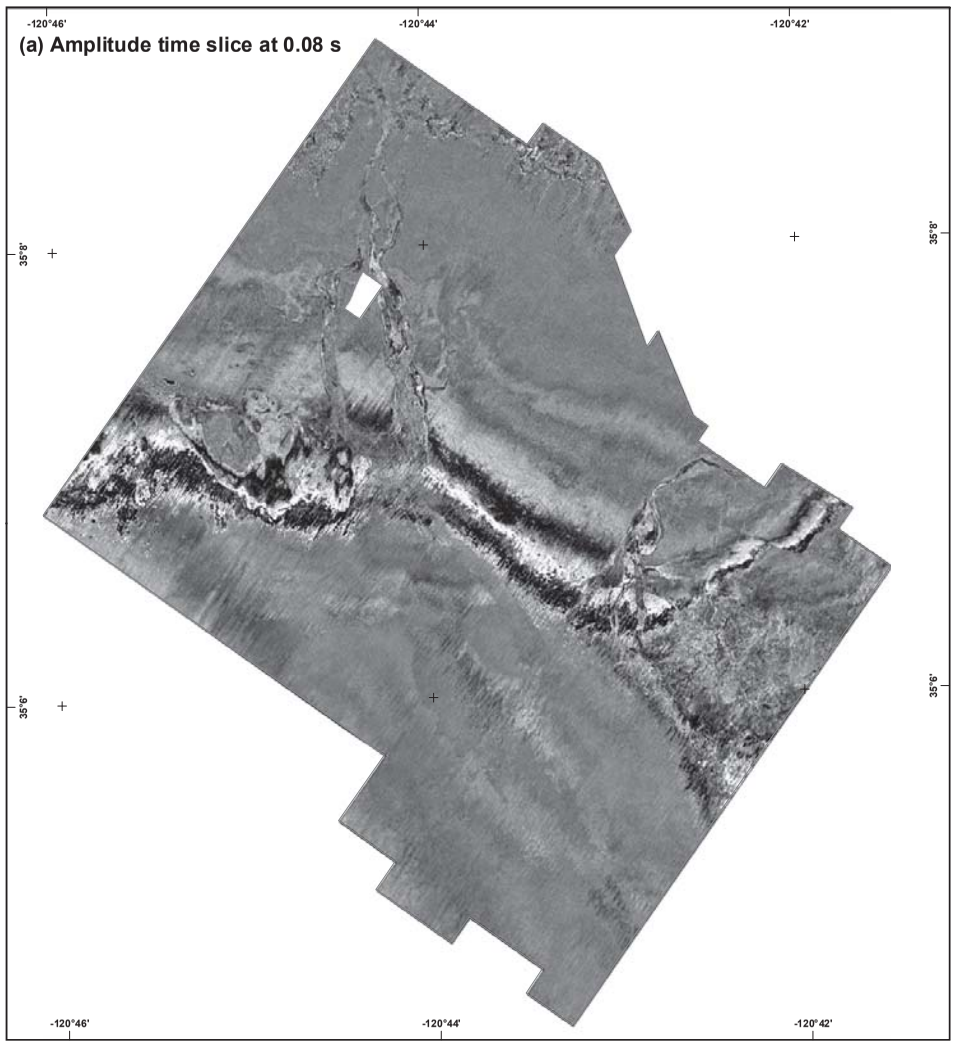


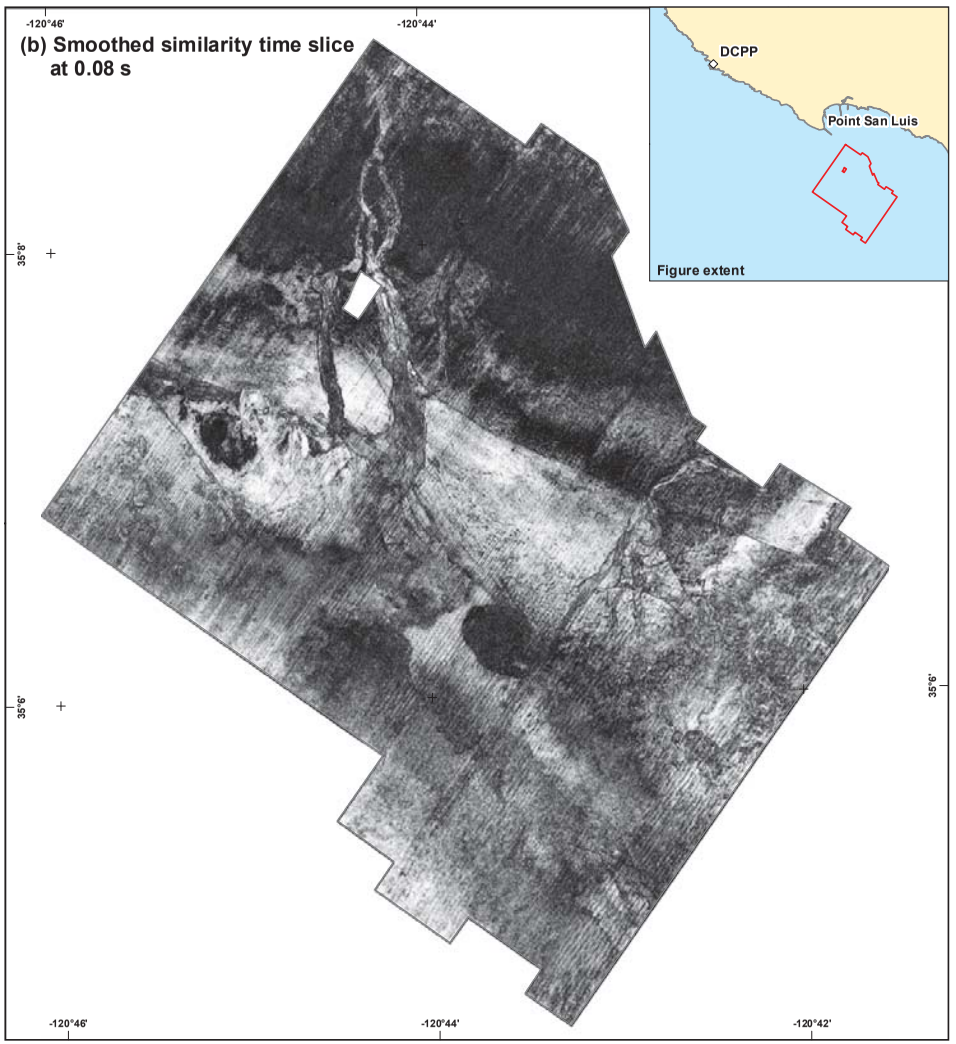
Note: All quality control (QC) assessments were made prior to advancing to the next step of processing.

Flow Chart Showing Procedures and Steps Undertaken in the Processing of the 3D Data

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **2-4**





EXPLANATION

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 0.5 1 mi.

0 1 2 km

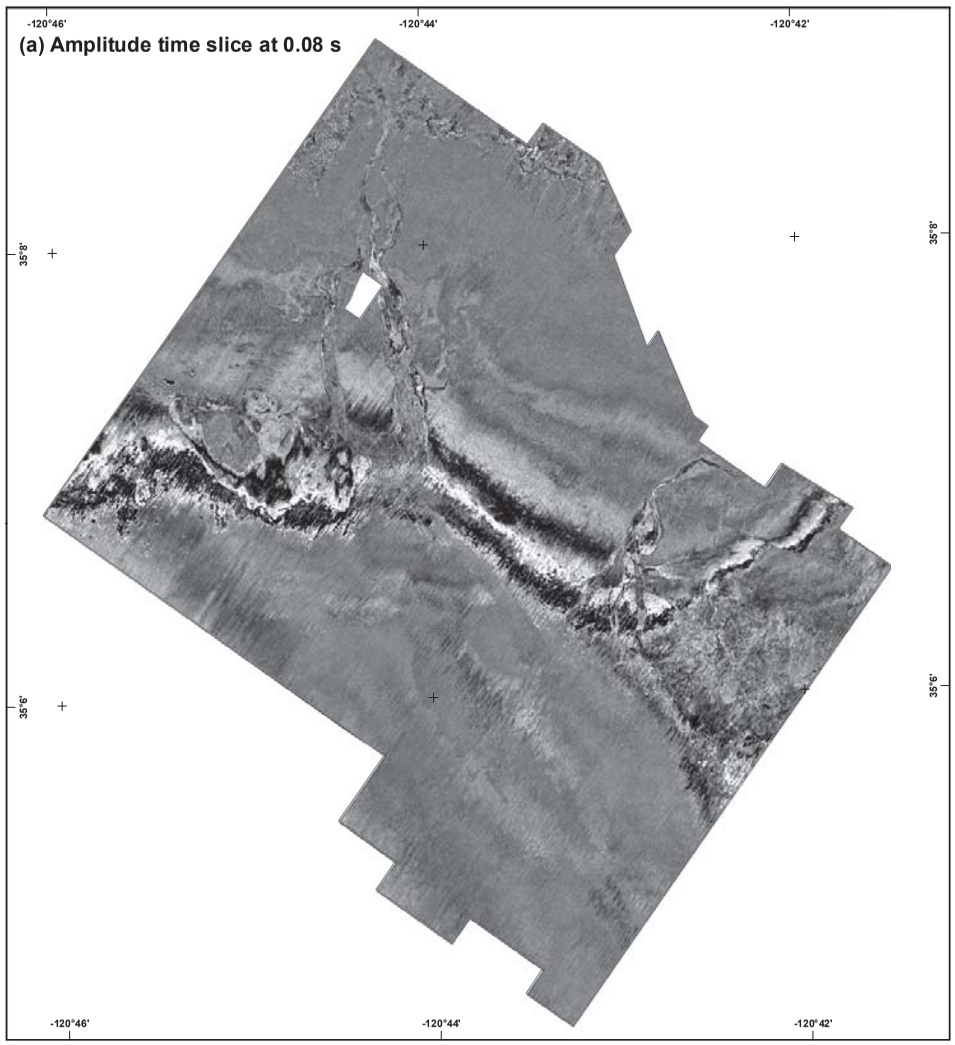
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

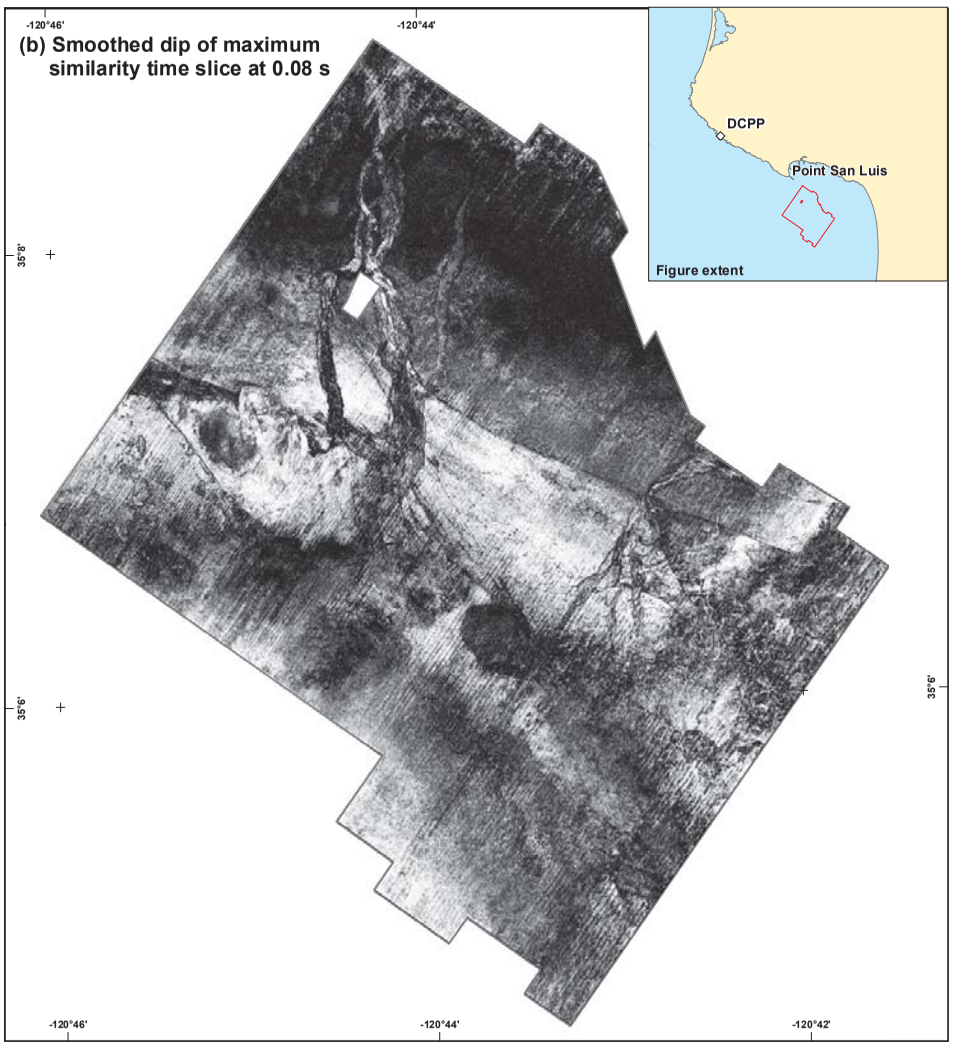
Comparison Plot of Seismic Amplitude and Smoothed Similarity Time Slices at 0.08 s TWTT

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **2-5**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_2-5_Similarity_Comparison.mxd; Date: 7/15/2014; User: R. Dame, Fugro; Rev. 3





EXPLANATION

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 0.5 1 mi.

0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

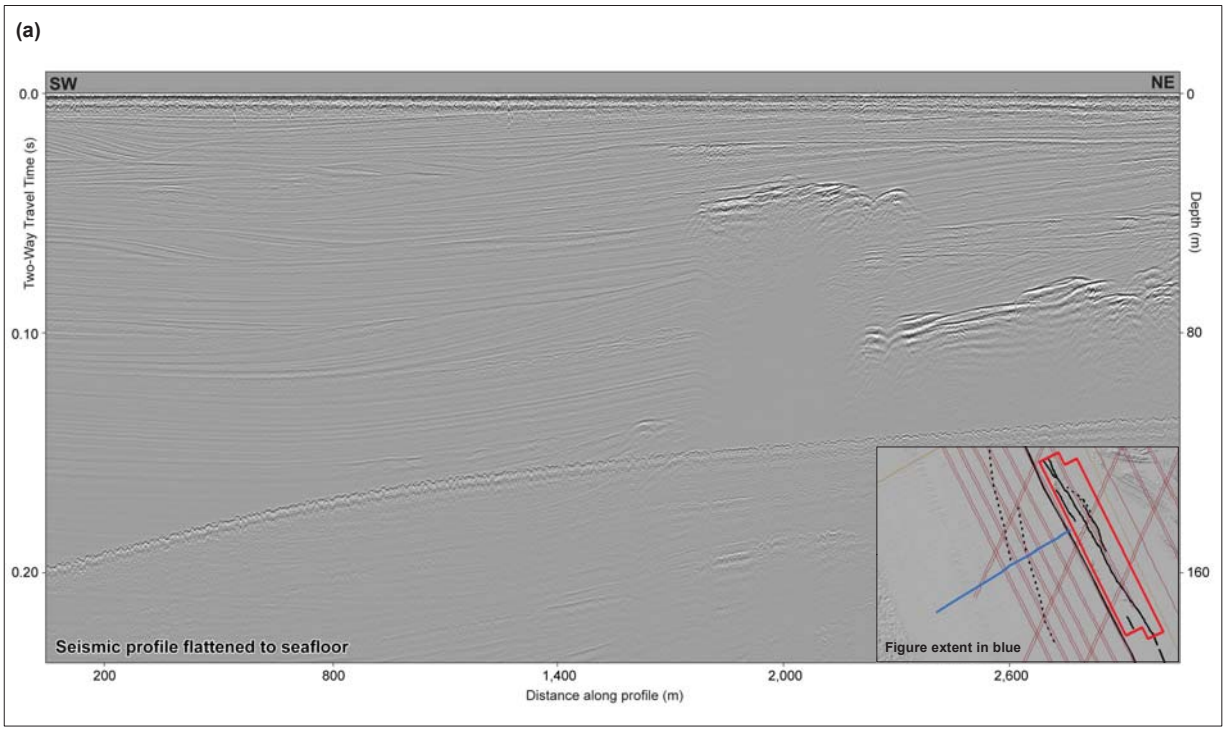
Comparison Plot of Seismic Amplitude and Smoothed Dip of Maximum Similarity Time Slices at 0.08 s TWTT

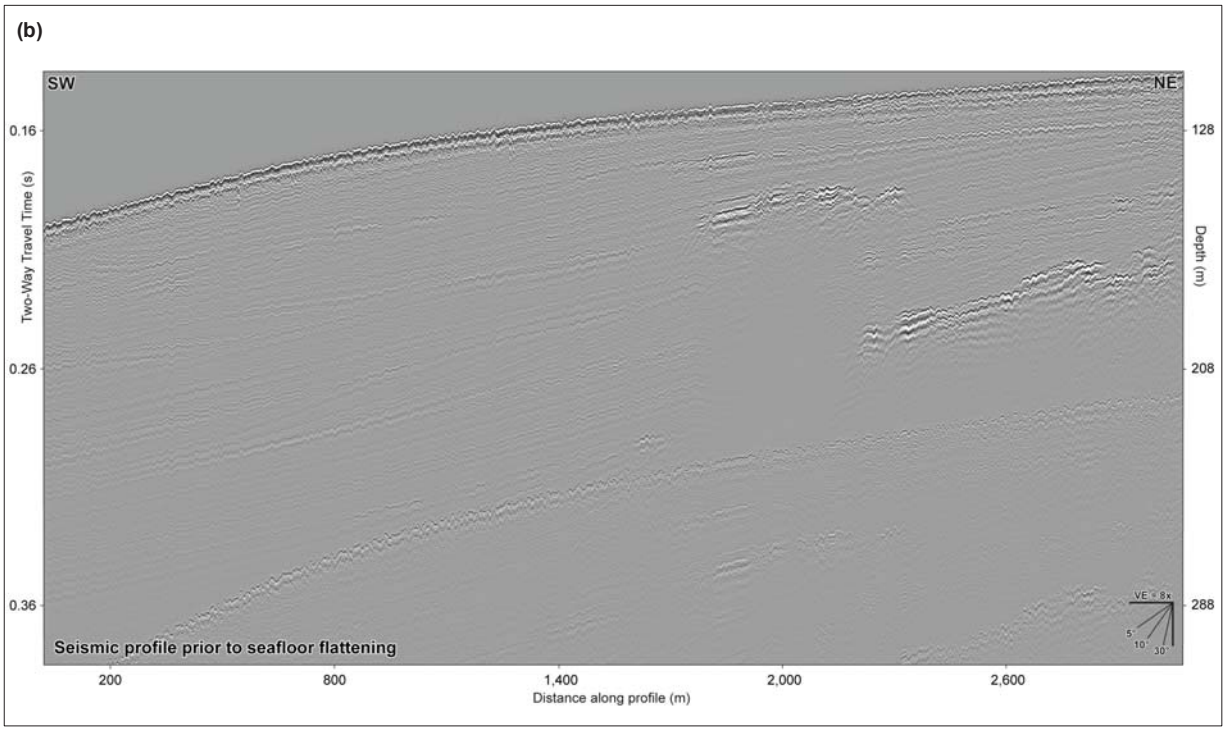
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **2-6**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_2-6_Dip_Similarity_Comparison.mxd; Date: 7/15/2014; User: R.Darne, Fugro; Rev. 3





EXPLANATION

- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. Faults in location map described on Plate 1a.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Fugro 2D and 3D seismic-reflection data (2012).

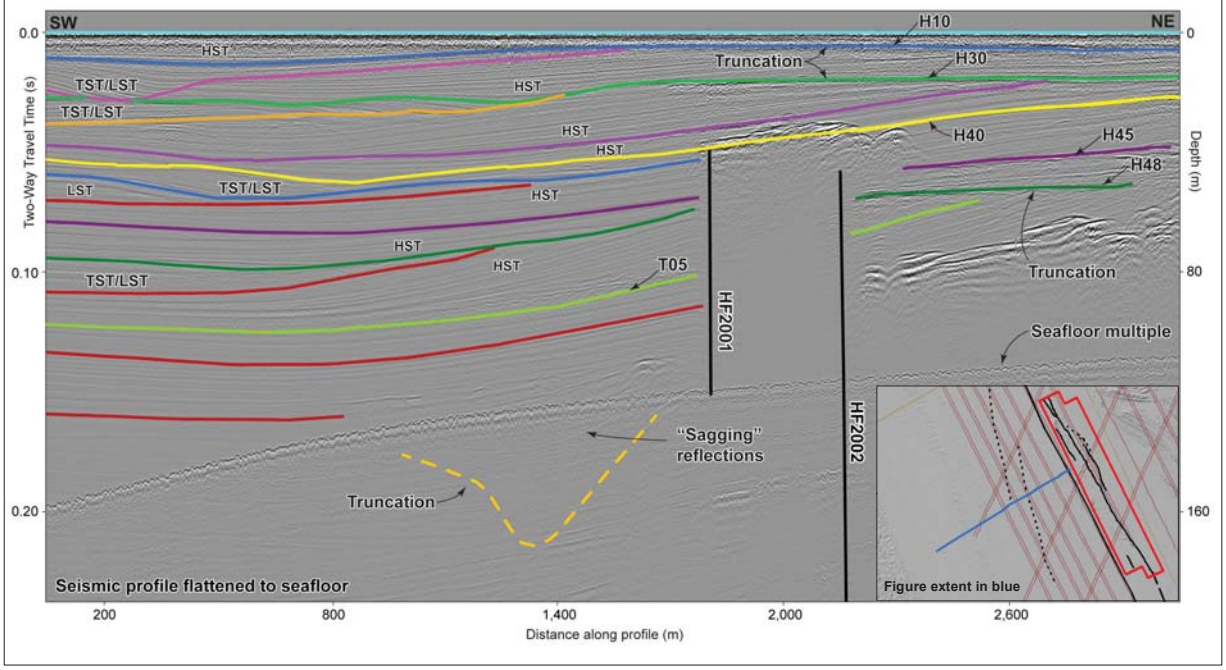
Excerpt of Profile PBS-36 Showing Transition from Continental Slope to Continental Shelf Environment

OFFSHORE LESS STUDIES

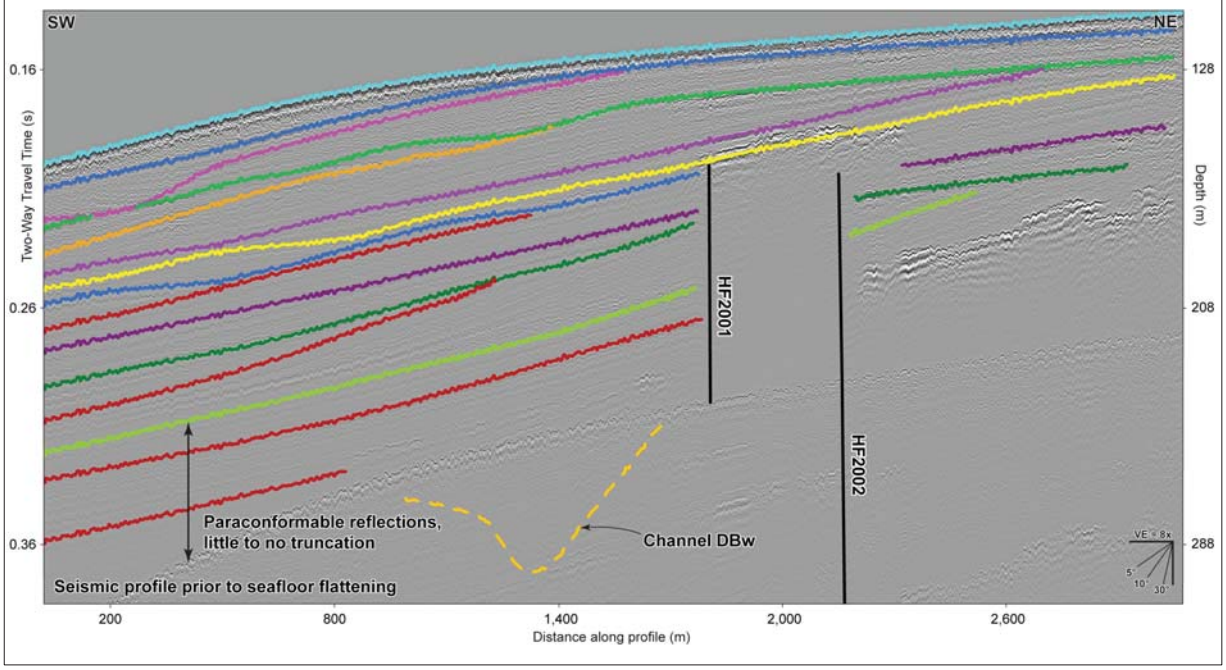
Pacific Gas and Electric Company | Figure **6-1a**

File path: S:\11005\033\GIS\Figures\Figure_06-01a.mxd; Date: 07/11/2014; User: Alex Remar; LCI; Rev.1

(c)



(d)



EXPLANATION

- Seafloor
- Unconformity H10
- Unconformity H20
- Unconformity H30
- Unconformity H32
- Unconformity H35
- Unconformity H40
- Unconformity H42
- Unconformity H45
- Unconformity H48
- Unconformity T05
- Other unconformities
- Channel DBw

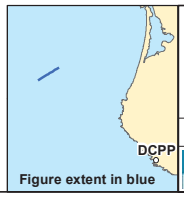
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.

HST = Highstand systems tract
TST = Transgressive systems tract
LST = Lowstand systems tract

- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Unconformity T05 marks a transition in style of sedimentation. Below unconformity T05, parallel reflectors record relatively uniform sedimentation in a continental slope environment. Above unconformity T05, a succession of unconformable sequences records episodic deposition and erosion, consistent with deposition in or near a continental shelf environment during periods of repeated sea-level fluctuations.
3. Depth values on seismic profile assume a velocity of 1,600 m/s.
4. Faults in location map described on Plate 1a.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Fugro 2D and 3D seismic-reflection data (2012).

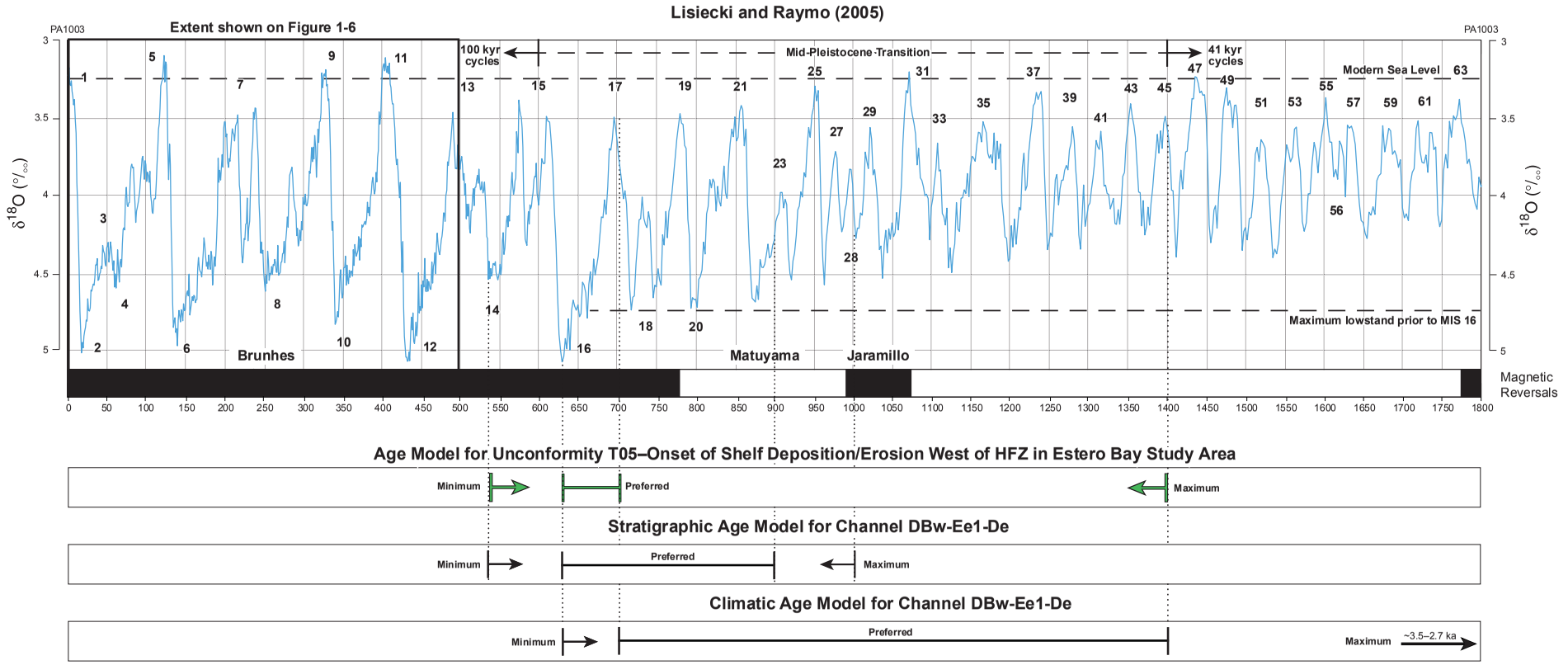


Excerpt of Profile PBS-36 Showing Transition from Continental Slope to Continental Shelf Environment

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-1b**

File path: S:\1005\033\GIS\Figures\Figure_06-01b.mxd; Date: 07/11/2014; User: Alex Remar; LCI; Rev.1



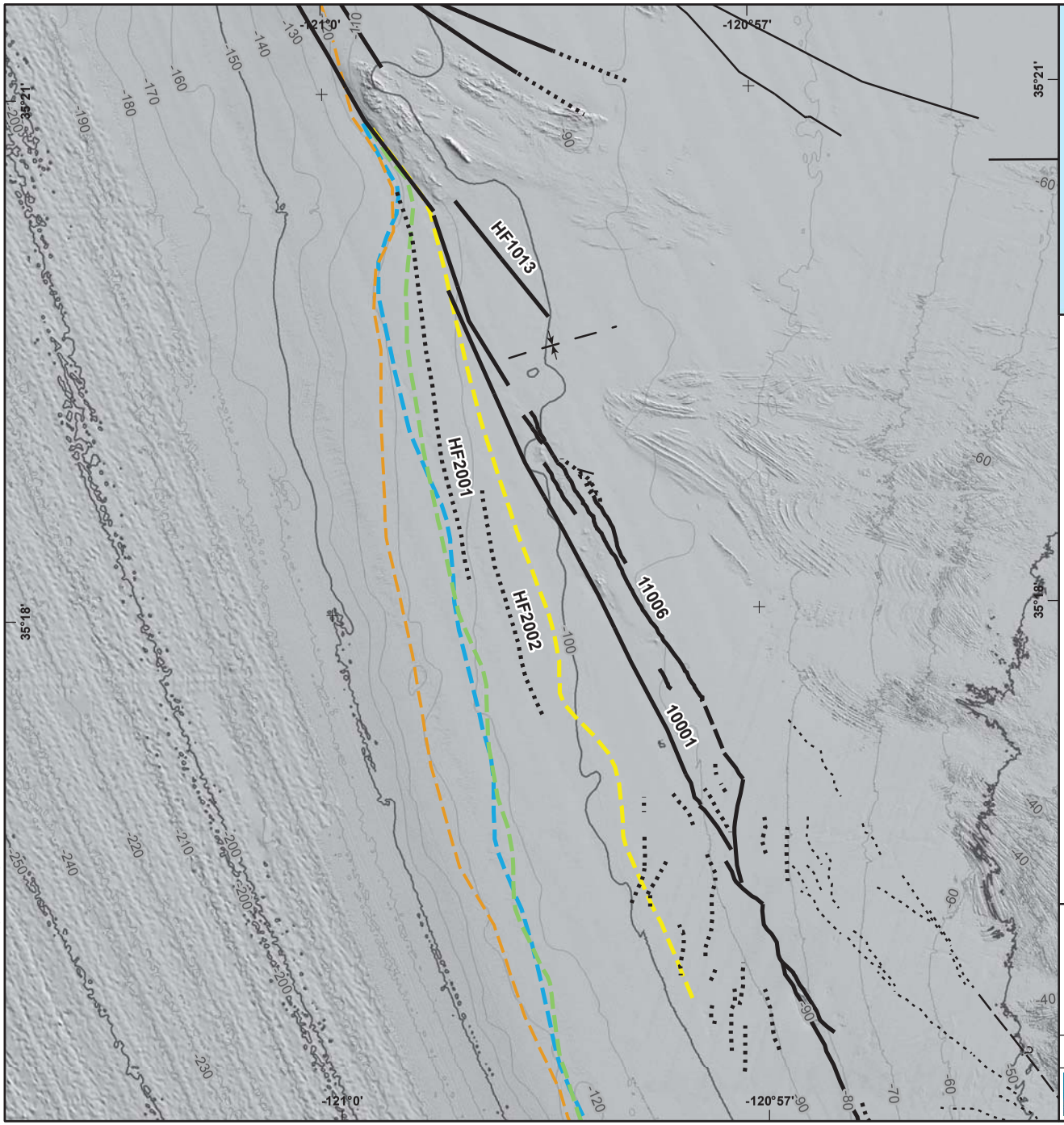
Notes:

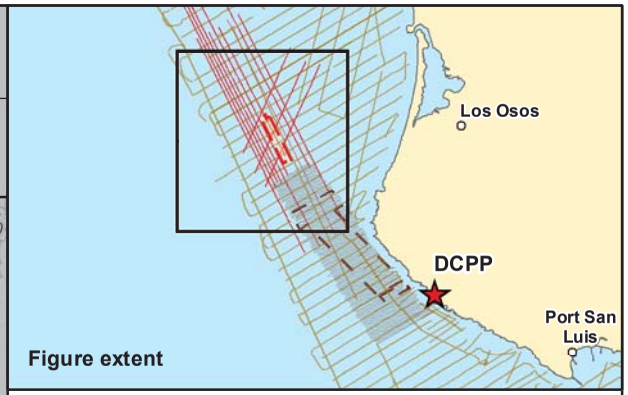
1. Lisiecki and Raymo (2005) use 57 globally distributed $\delta^{18}O$ records to compile a 5.3 Myr record of sea-level fluctuations.
2. Timing of mid-Pleistocene transition from Bintanja and van de Wal (2008).
3. Age models for piercing points are discussed in Section 6.

Age Model for Unconformity T05 and Channel DBw-Ee1-De

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-2**





EXPLANATION

Hosgri fault zone traces: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence is uncertain.

Other Quaternary fault: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence is uncertain.

Modern shelf break

H10 shelf break, ~20 ka

H30 shelf break, ~135 ka

H40 shelf break, ~240 ka

Notes:
1. See Figure 1-1 for location of study area.
2. Bathymetric contour interval is 10 m. Heavy contours are 50 m isobaths.
3. Refer to Plate 1 for explanation of tracklines.

Sources:
- Project DEM compilation v2013.07.
- Traces of Point Buchon fault from PG&E (2012).

N

0 1 2 mi.

0 1 2 km

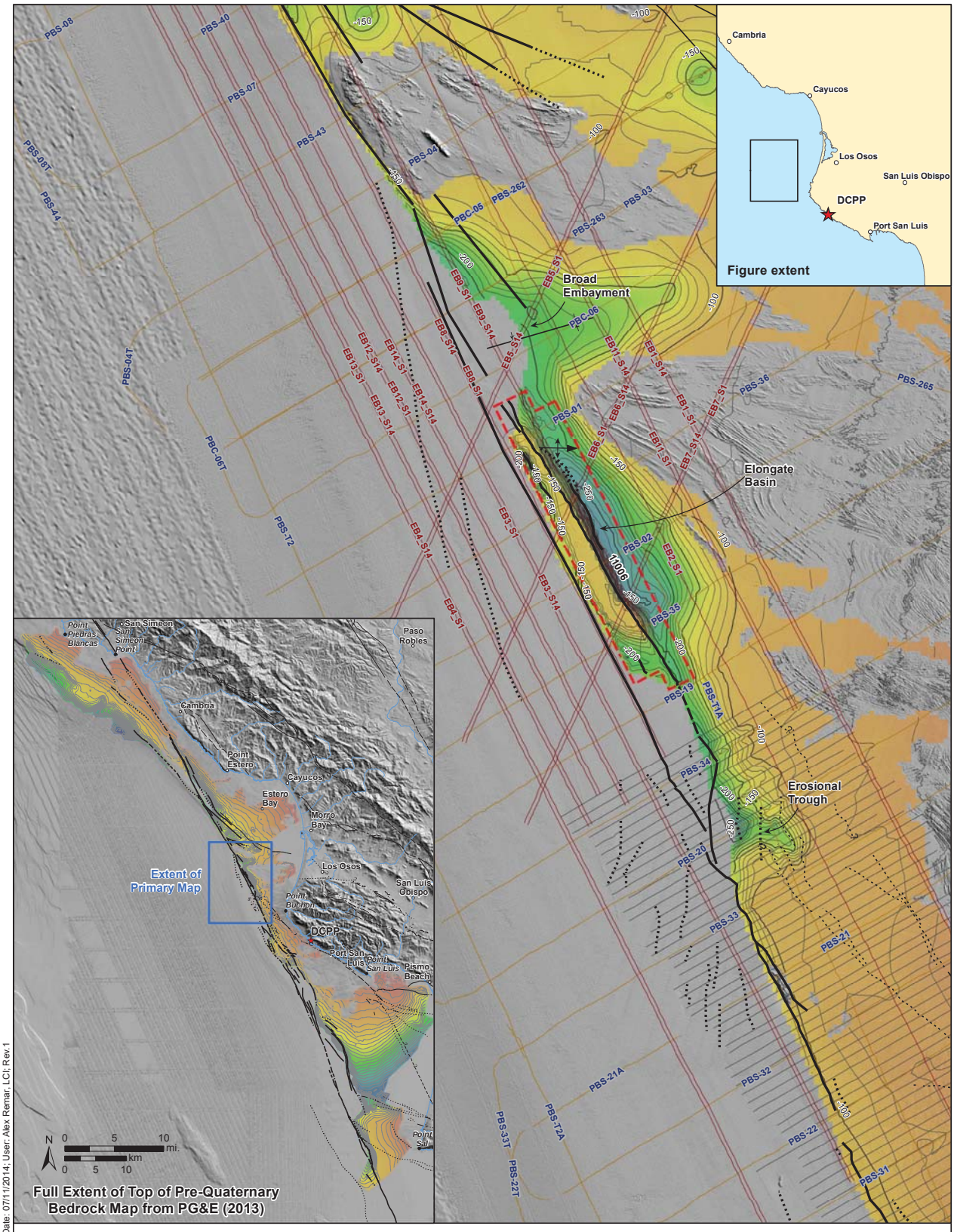
Map projection and scale: WGS 84 / UTM 10N, 1:65,000

Migration of the Shelf Break Through Time

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-3**

File path: S:\1005\033\GIS\Figures\Figure_06-03.mxd; Date: 07/08/2014; User: Alex Remar, LCI; Rev.1



EXPLANATION

Quaternary fault: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence uncertain. Heavy lines are traces of the Hosgri fault zone.

Top of Pre-Quaternary Rock Depth Below Sea Level

High : - 15 m

Low : -350 m

Sources:
-Project DEM compilation v2013.07.
-Traces of Point Buchon fault from PG&E (2012).
-USGS seismic-reflection data (Sliter et al., 2009).
-Fugro 2D and 3D seismic-reflection data (2012).

Extent of 2012 3D seismic survey

2008/2009 seismic survey navigation lines

2012 Estero Bay 2D tracklines

Point Buchon 2D survey tracklines

Notes:
1. Where they meet, bathymetric contours do not align with interpreted contours on the top of pre-Quaternary rock because the seismic data are not depth-migrated, and depths of structure contours were estimated using an assumed seismic velocity of 1,600 m/s. Therefore, the general shape of the structure contours is accurate, but the actual depths are an approximation.
2. A 10 m structure contour interval is shown, heavy contours are 50 m. Bathymetric contours are used in regions where bedrock is exposed at the seafloor.

N 0 0.5 1 mi. / 0 0.5 1 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

Structure Contour Map of the Top of Pre-Quaternary Bedrock

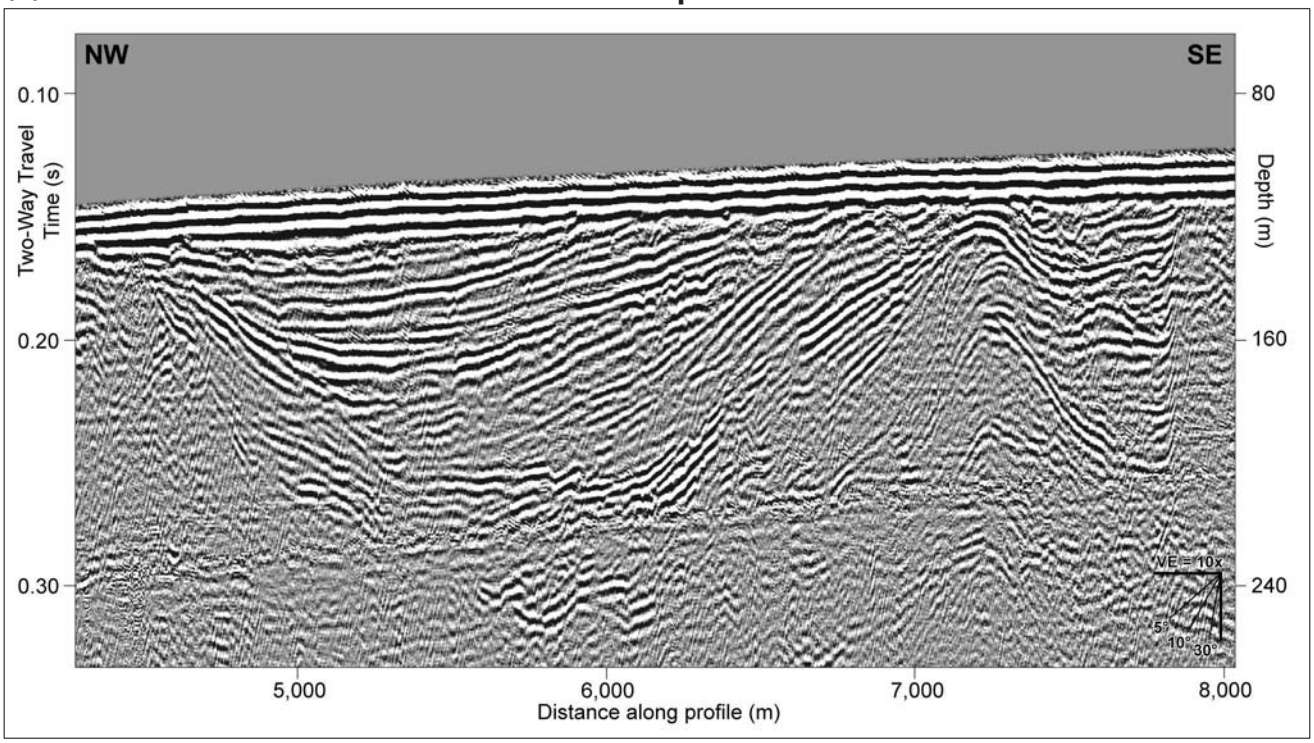
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

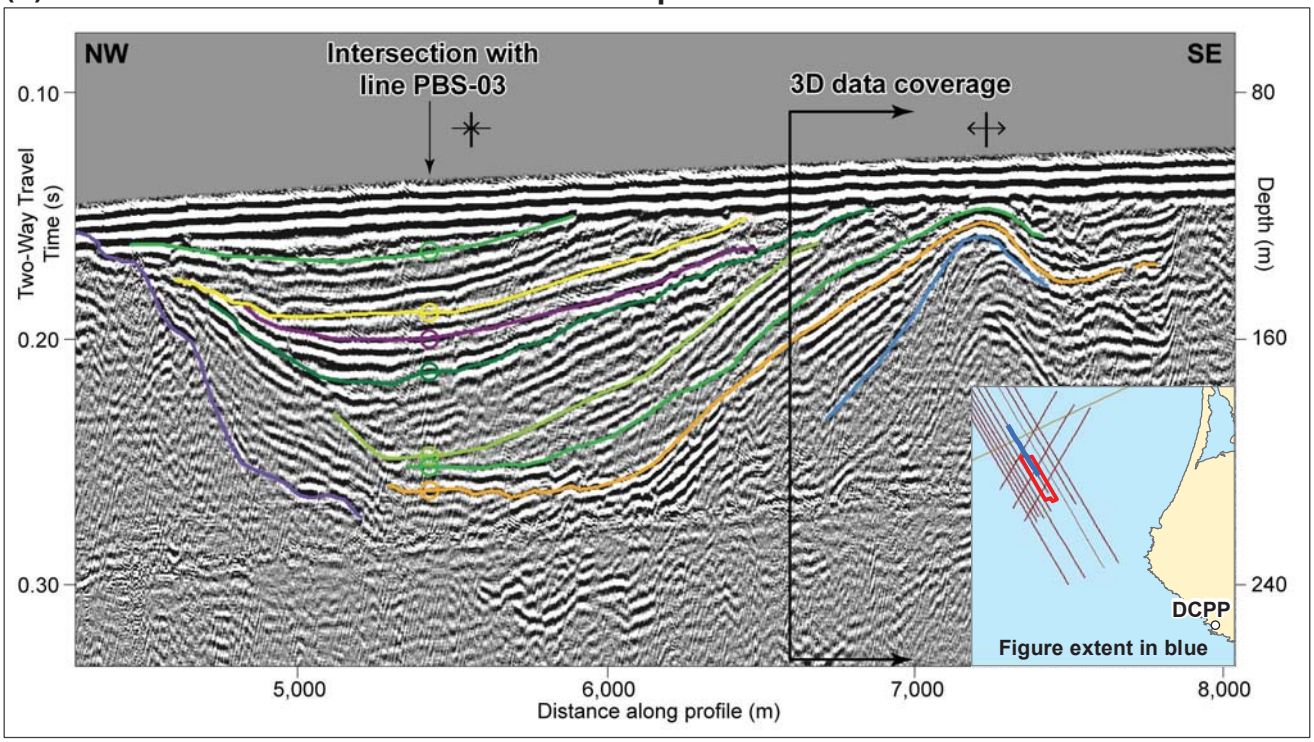
Figure **6-4**

File path: S:\1005\033\GIS\Figures\Figure_06-04.mxd; Date: 07/11/2014; User: Alex Remar, LCI; Rev.1

(a) Uninterpreted



(b) Interpreted



EXPLANATION

- Unconformity H30
- Unconformity H40
- Unconformity H45
- Unconformity H48
- Unconformity T05
- Unconformity T10
- Unconformity T30
- Unconformity T50
- Top of pre-Quaternary rock
- Tie with unconformity mapped on intersecting line
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.

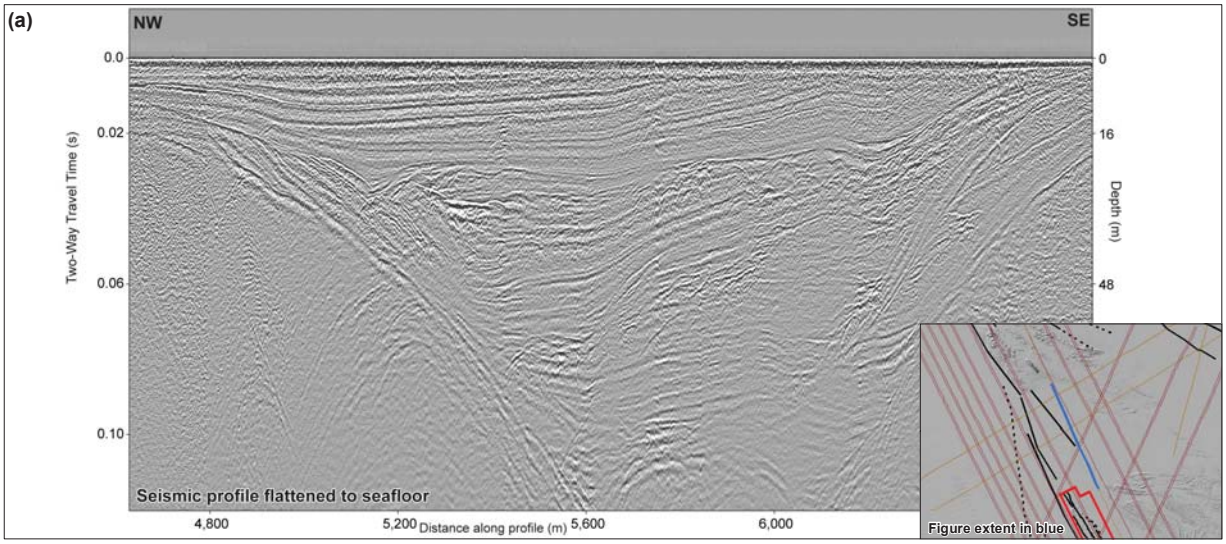
Sources:
- Fugro 2D and 3D seismic-reflection data (2012).
- USGS seismic-reflection data (Sliter et al., 2009).

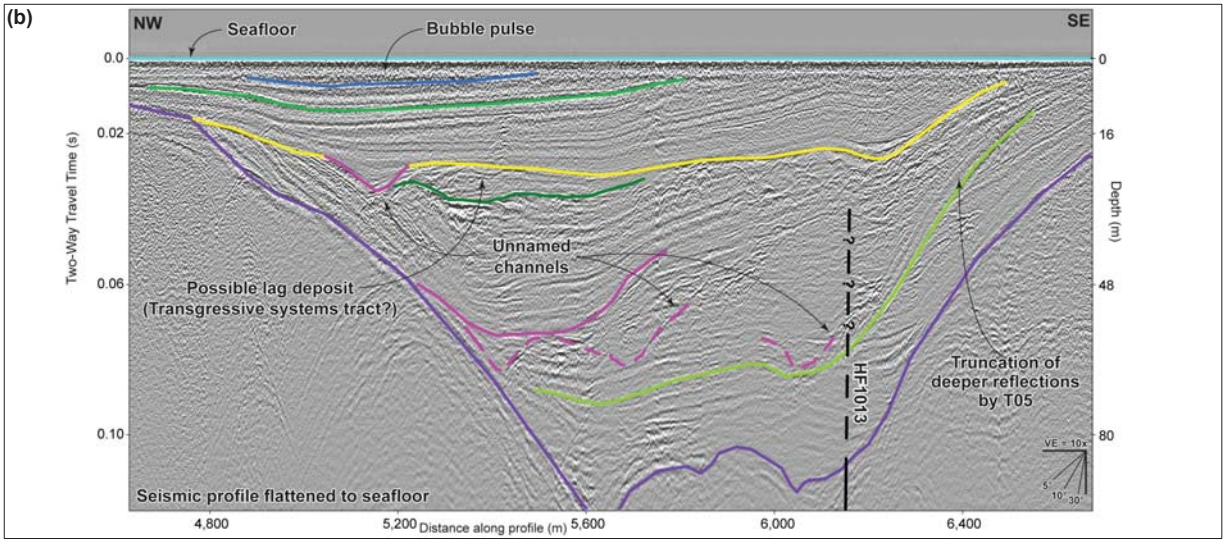
Excerpt of Profile EB9-S14 Showing Relationship Between Regional Unconformities and Reflections in 3D Volume East of the HFZ

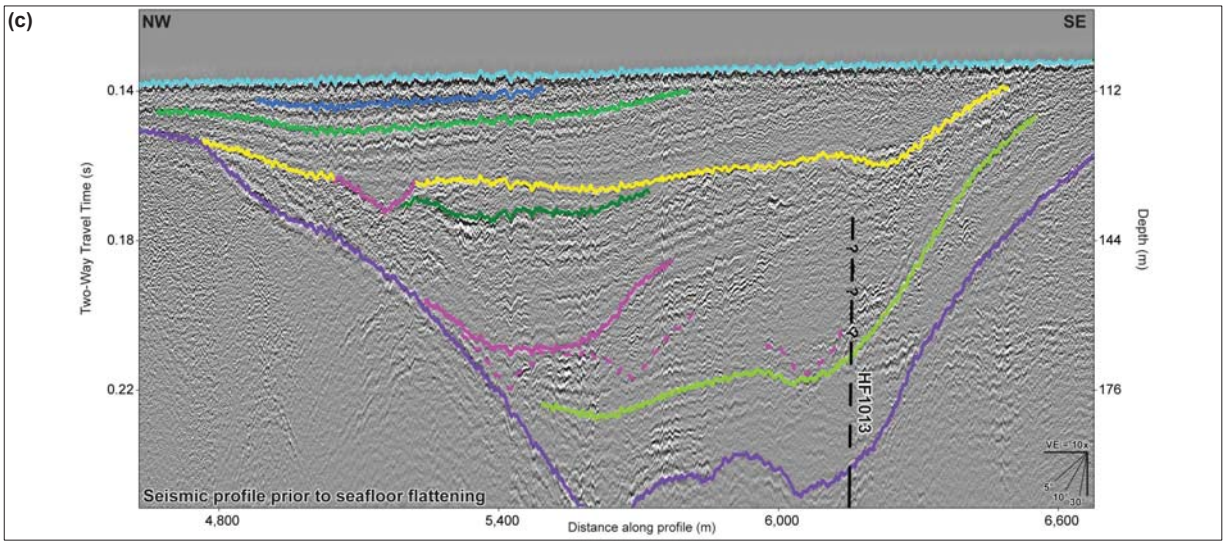
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-5**

File path: S:\1005\033\GIS\Figures\Figure_06-05.mxd; Date: 04/25/2014; User: Jeremie Chandler, LCI; Rev.1





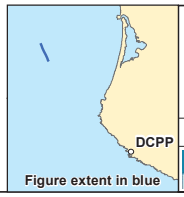


EXPLANATION

- Seafloor
- Unconformity H10
- Unconformity H30
- Unconformity H40
- Unconformity H48
- Unconformity T05
- Top of pre-Quaternary rock
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline
- Location of seismic profile

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.
3. Faults in location map described on Plate 1a.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Fugro 3D and 2D seismic-reflection data (2012).

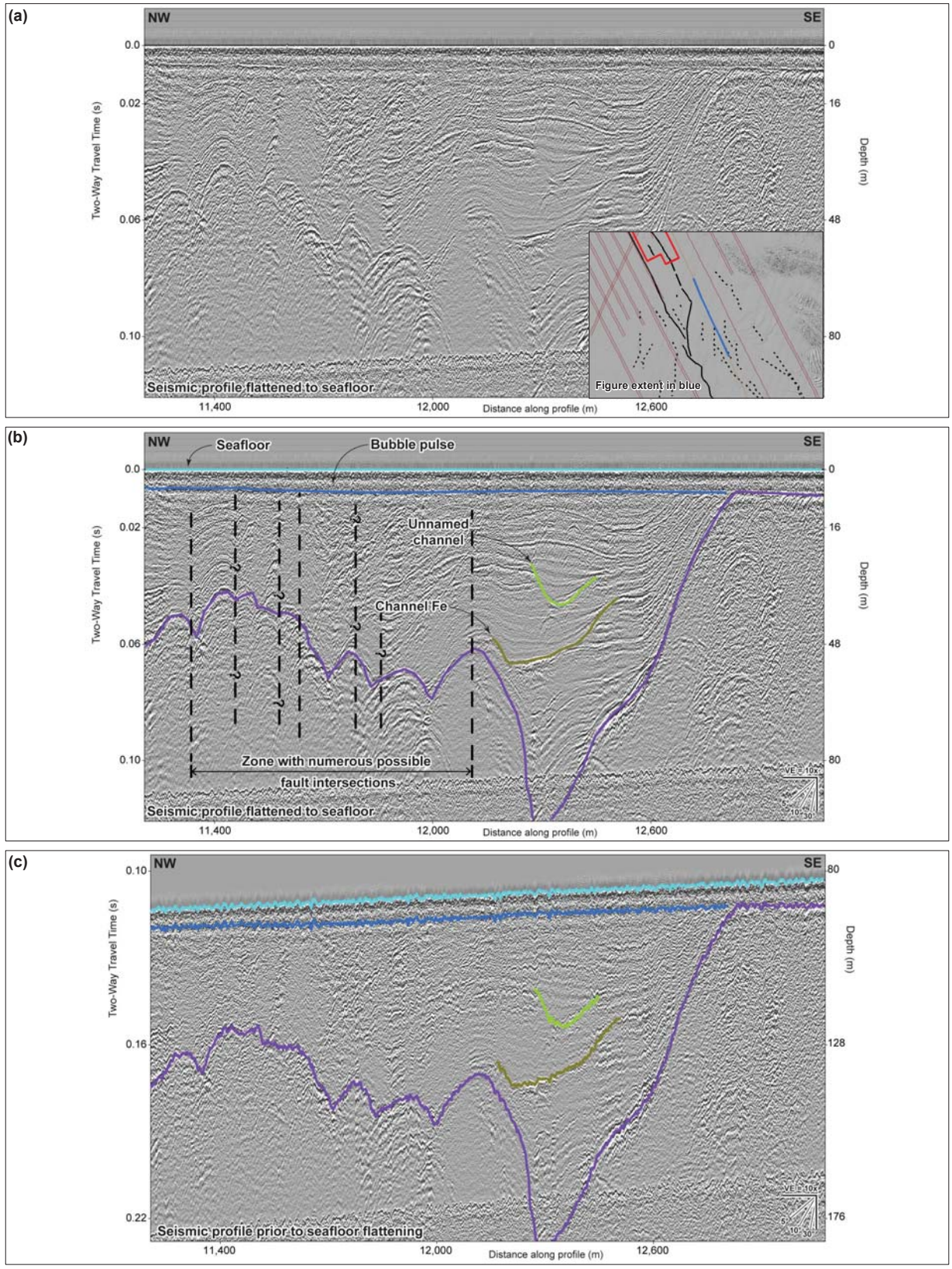


Excerpt of Line PBS-T1A Showing Channels in Embayment North of 3D Volume

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-6**

File path: S:\1005\033\GIS\Figures\Figure_06-06.mxd; Date: 04/25/2014; User: Alex Remar, LCI; Rev.1

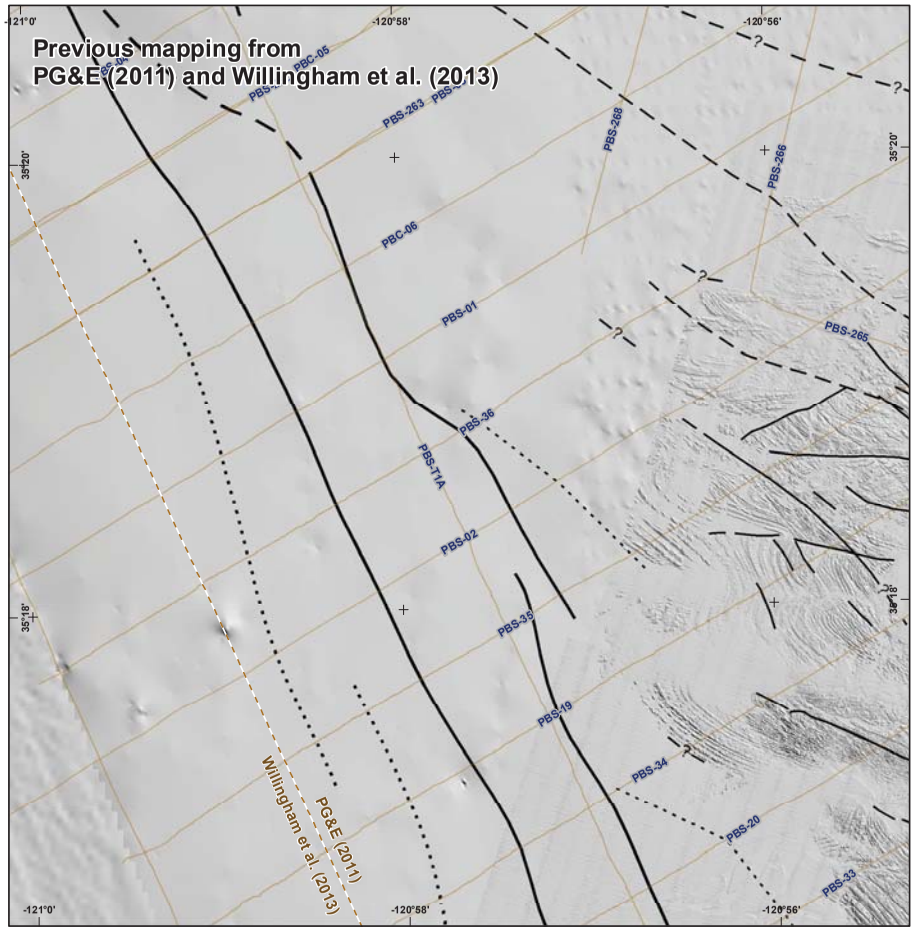


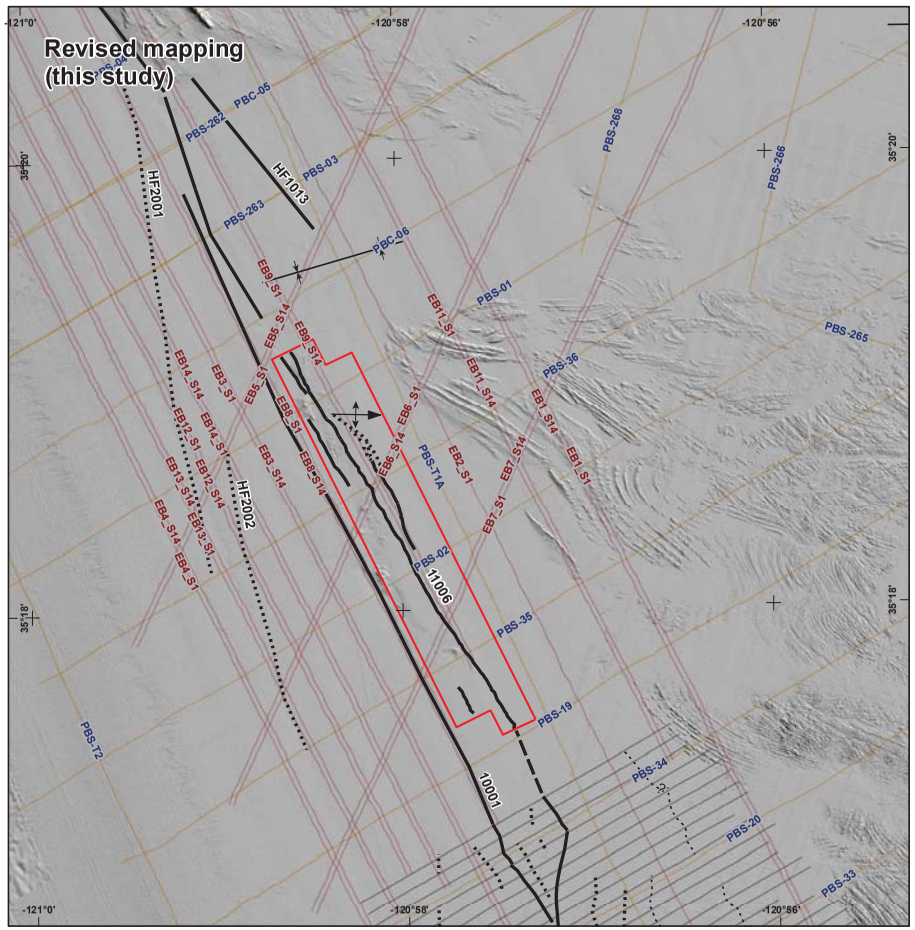
Excerpt of Line PBS-T1A Showing Channel Fe

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-7**

File path: S:\1005\033\GIS\Figures\Figure_06-07.mxd; Date: 07/11/2014; User: Alex Remar, LCI; Rev.1





EXPLANATION

Hosgri fault zone traces: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence is uncertain.

Other Quaternary fault: solid where well located, dashed where approximately located, dotted where concealed, short dashed where inferred, queried where existence is uncertain.

Fugro 3D survey extent

Fugro 2D survey trackline

USGS survey trackline

Antidine, arrow on axis indicates direction of plunge

Syndine

Notes:
1. See Figure 1-1 for location of study area.
2. Faults in left panel mostly from PG&E (2011). Faults from Willingham et al. (2013) shown outside map boundary of PG&E (2011) (brown and white line).
3. Project DEM compilation v6 from PG&E (2011) shown on left panel.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Fugro 2D and 3D seismic-reflection data (2012).
- Project DEM compilation v2013.07.

N

0 0.5 1 mi.

0 1 2 km

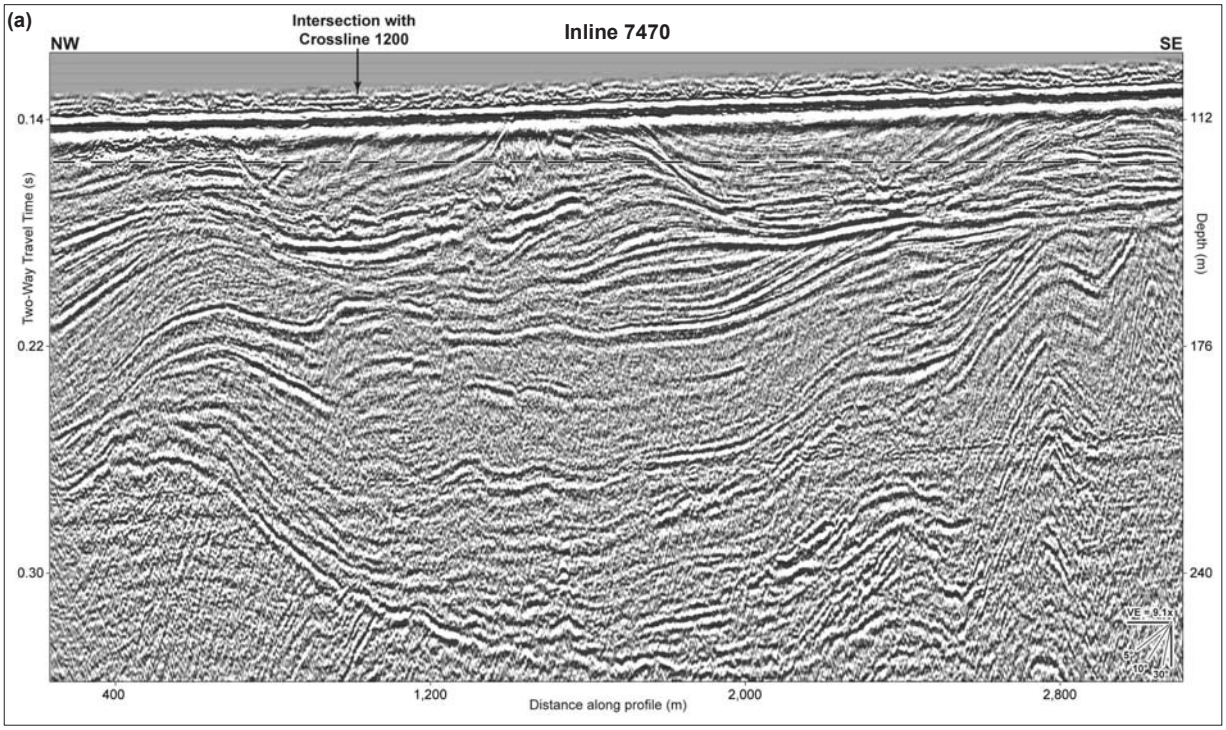
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

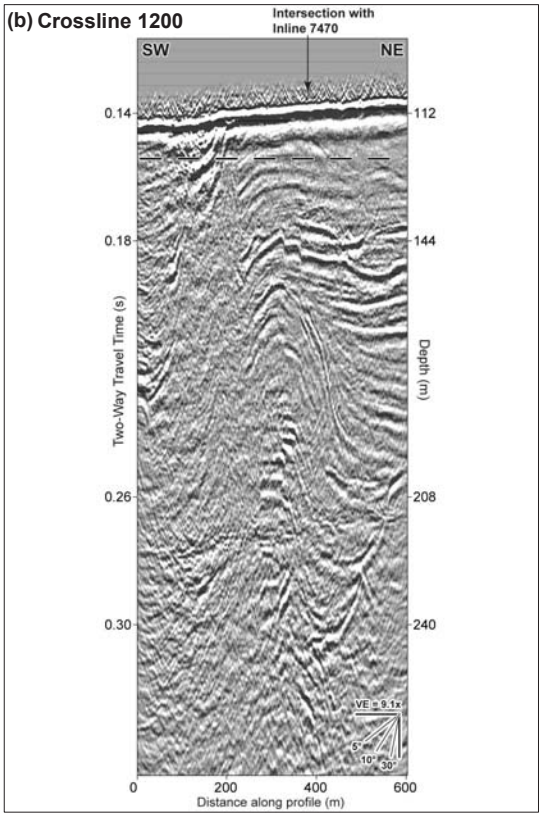
Fault Map Comparison

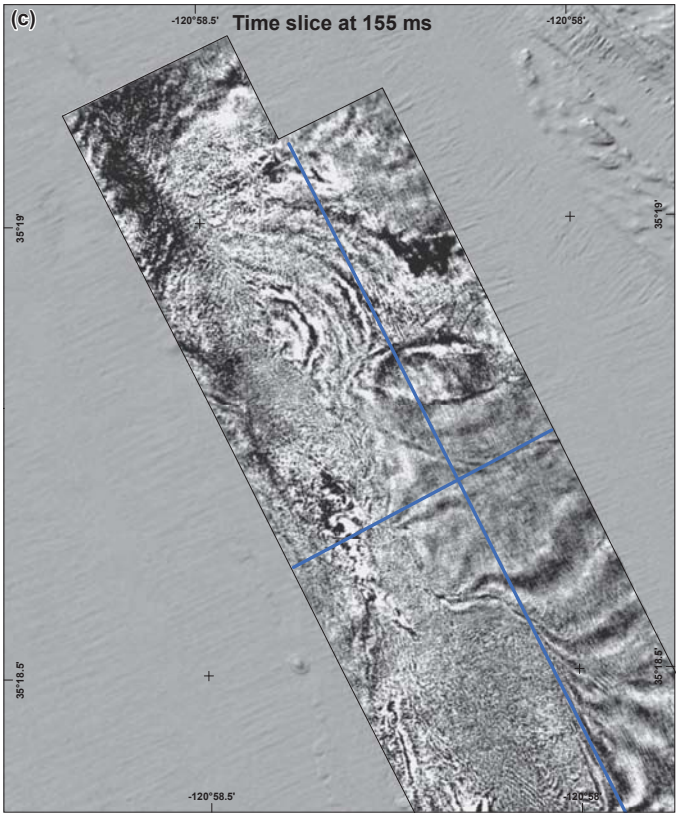
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-8**

File path: S:\10050\033\GIS\Figures\Figure_06-08.mxd; Date: 04/25/2014; User: Alex Remar, LCI; Rev.1







EXPLANATION

- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline
- Location of seismic profile

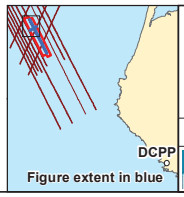
Notes:

1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.
3. Folded reflectors on the northwest side of the profile in panel (a) are also imaged in plan view on the time slice in panel (c). Reflectors on panel (c) are folded adjacent to the east trace of the Hosgri fault zone, centered around a minor (approximately 30 m wide) double left bend in the fault trace. Closure of channel margins in the same image indicates the channels are also folded adjacent to the fault.

Sources:
- 3D seismic reflection data from Fugro (2013).
- Project DEM compilation v2013.07.

N 0 1,000 2,000 ft.
0 200 400 m

Map projection and scale: WGS 84 / UTM Zone 10N, 1:10,000

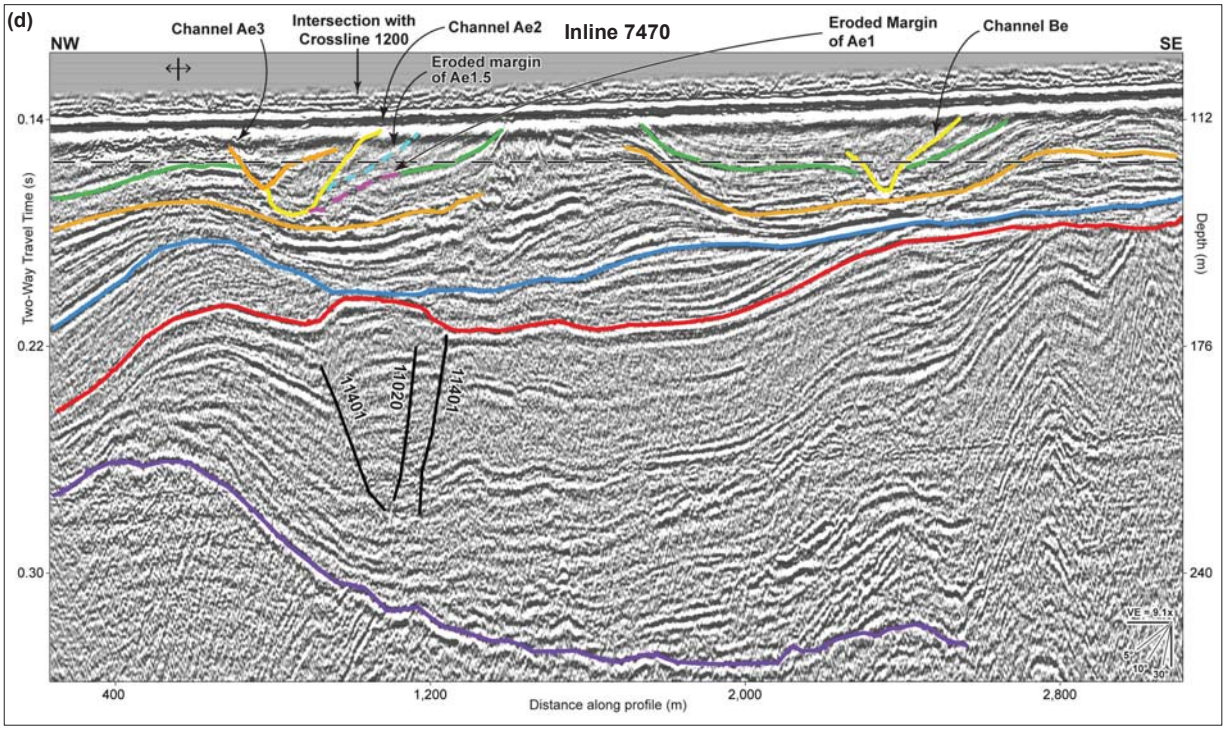


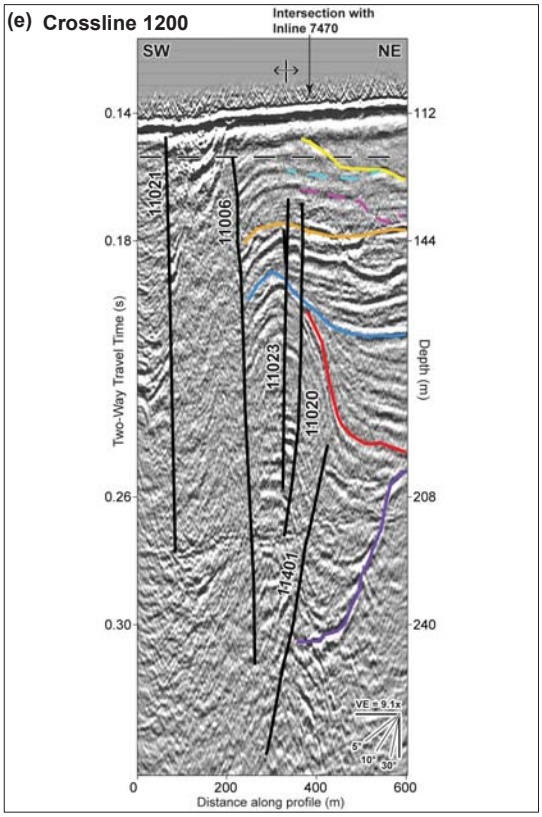
Uninterpreted Profiles and Time Slice at 155 ms Showing Localization of Folding Adjacent to Minor Bend in Eastern Trace of HFZ

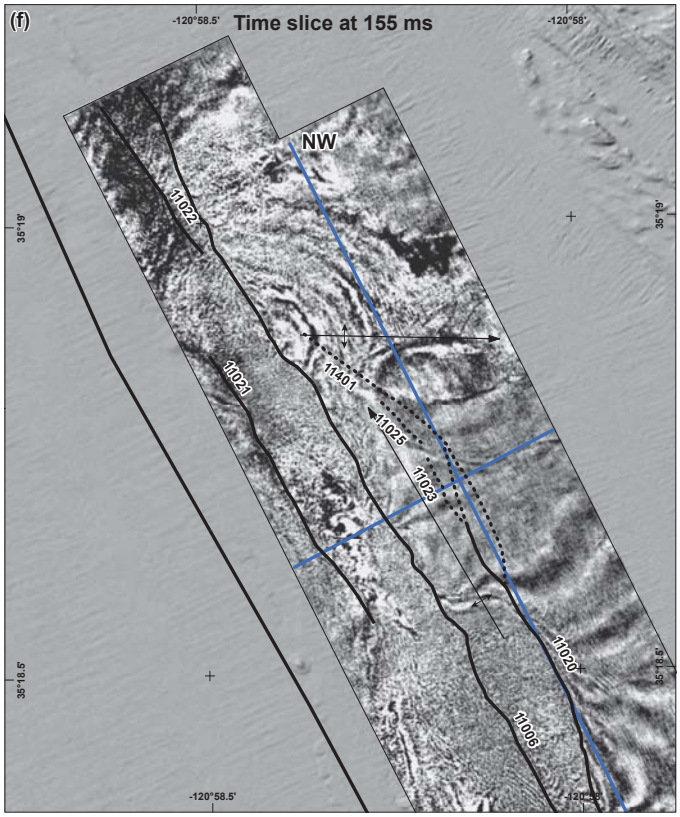
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-9a**

File path: S:\1005\033\GIS\Figures\Figure_06-09a.mxd; Date: 07/11/2014; User: Jereme Chandler, LCI; Rev.1







EXPLANATION

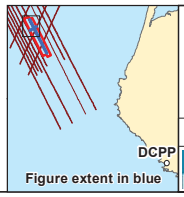
- Unconformity T10
- Unconformity T30
- Unconformity T50
- Unconformity T70
- Top of pre-Quaternary rock
- Anticline
- Depth of time slice
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Anticline, arrow on axis indicates direction of plunge
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Sources:
- 3D seismic reflection data from Fugro (2013).
- Project DEM compilation v2013.07.

N
0 1,000 2,000 ft.
0 200 400 m

Map projection and scale: WGS 84 / UTM Zone 10N, 1:10,000

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.
3. Folded reflections on the northwest side of the profile in panel (a) are also imaged in plan view on the time slice in panel (c). Reflections on panel (c) are folded adjacent to the east trace of the Hosgri fault zone, centered around a minor (approximately 30 m wide) double left bend in the fault trace. Closure of channel margins in the same image indicates the channels are also folded adjacent to the fault.

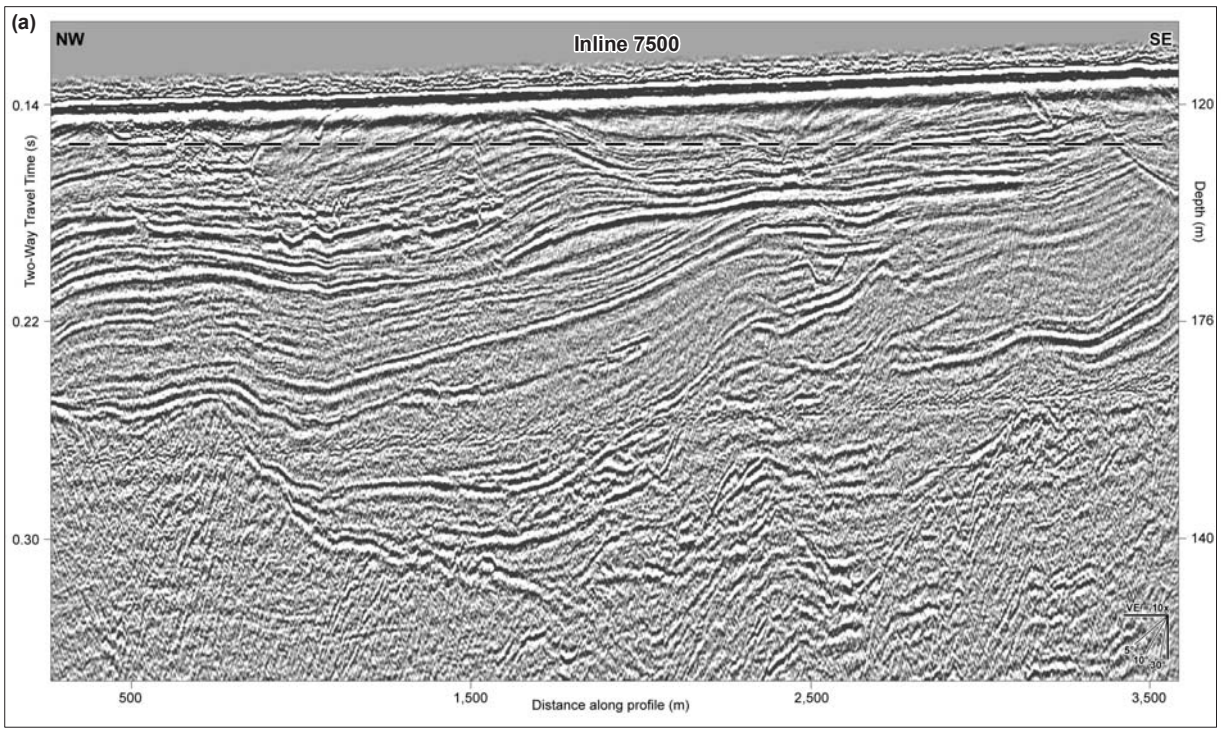


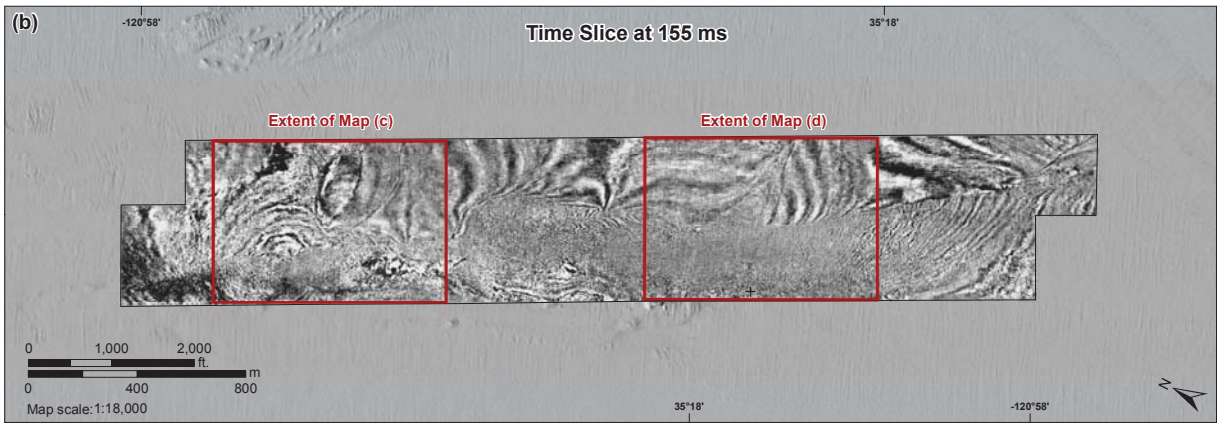
Interpreted Profiles and Time Slice at 155 ms Showing Localization of Folding Adjacent to Minor Bend in Eastern Trace of HFZ

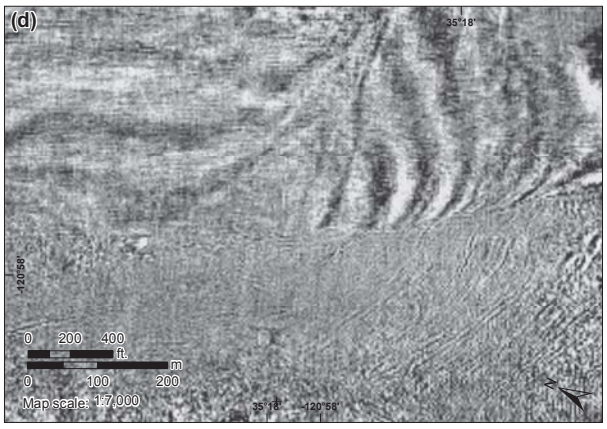
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-9b**

File path: S:\1005\033\GIS\Figures\Figure_06-09b.mxd; Date: 07/11/2014; User: Jereme Chandler_LCI; Rev.1







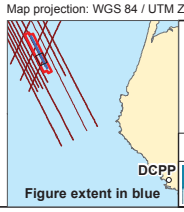
EXPLANATION

- Unconformity T10
- Unconformity T30
- Unconformity T50
- Unconformity T70
- Top of pre-Quaternary rock
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Location of seismic profile
- Depth of time slice
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.
3. Faults are shown where they intersect the 150 ms time slice.
4. Channels are incised into deformed strata east of Hosgri fault zone. They are buried by a thin layer of sediment that was likely deposited during or after the most recent transgression and is obscured by the bubble pulse.
5. Channels Ae2 and Ae1 are folded adjacent to the Hosgri fault zone.
6. Channel Be is truncated by the primary eastern strand of the Hosgri fault zone.

Sources:
- 3D seismic reflection data from Fugro (2013).
- Project DEM compilation v2013.07.

Map projection: WGS 84 / UTM Zone 10N

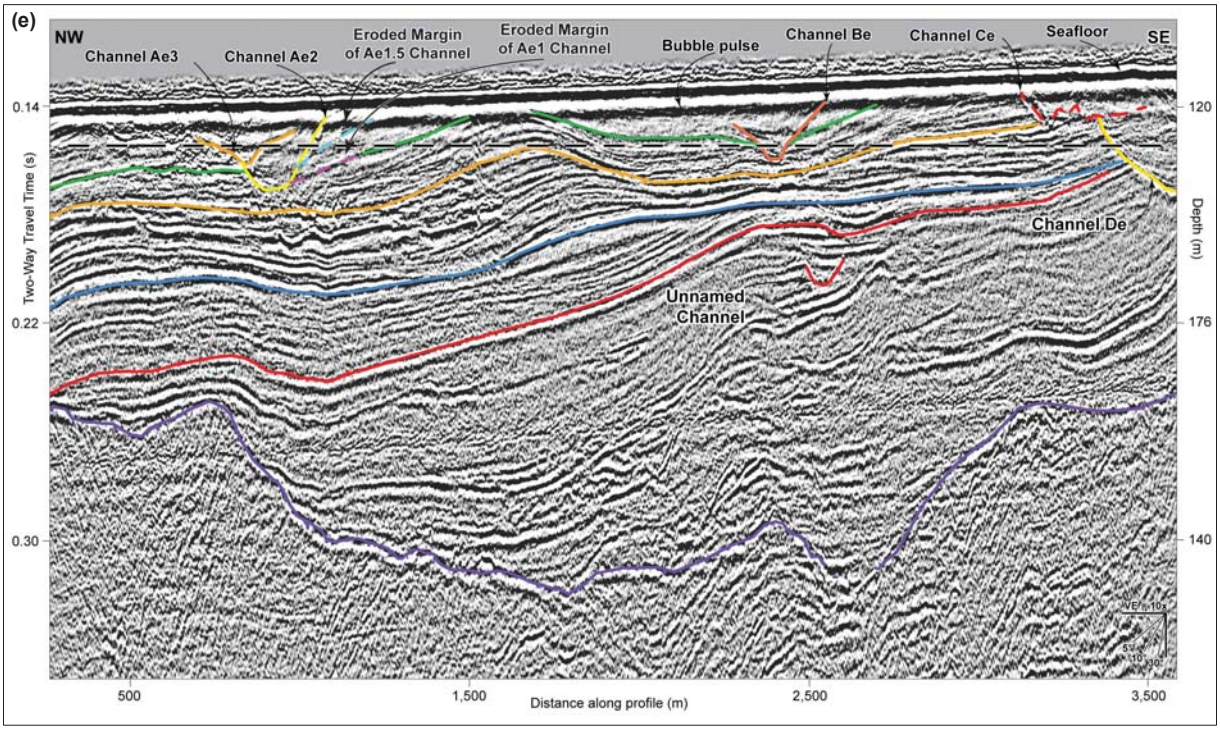


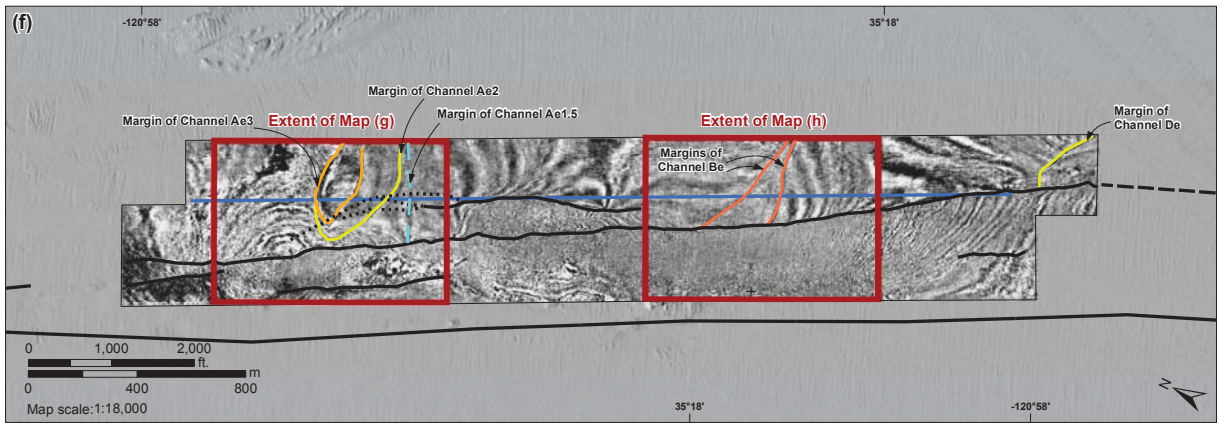
Uninterpreted Time Slice at 155 ms and Inline 7500 Showing Shallow Channels East of HFZ

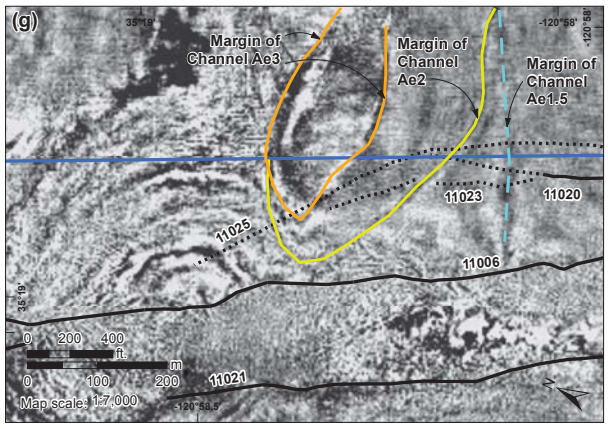
OFFSHORE LESS STUDIES

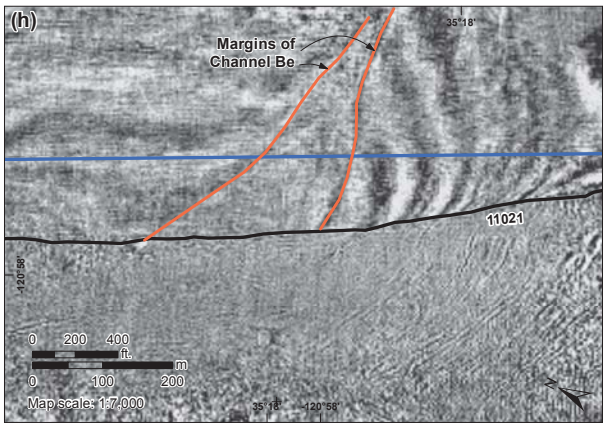
Pacific Gas and Electric Company | Figure **6-10a**

File path: S:\1005\033\GIS\Figures\Figure_06-10a.mxd; Date: 04/28/2014; User: Jereme Chandler, LCI; Rev.1









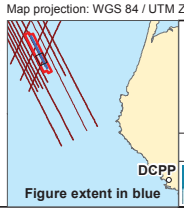
EXPLANATION

- Unconformity T10
- Unconformity T30
- Unconformity T50
- Unconformity T70
- Top of pre-Quaternary rock
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Location of seismic profile
- Depth of time slice
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.
3. Faults are shown where they intersect the 155 ms time slice.
4. Channels are incised into deformed strata east of Hosgri fault zone. They are buried by a thin layer of sediment that was likely deposited during or after the most recent transgression and is obscured by the bubble pulse.
5. Channels Ae2 and Ae1 are folded adjacent to the Hosgri fault zone.
6. Channel Be is truncated by fault 11006, the primary eastern strand of the Hosgri fault zone.

Sources:
- 3D seismic reflection data from Fugro (2013).
- Project DEM compilation v2013.07.

Map projection: WGS 84 / UTM Zone 10N



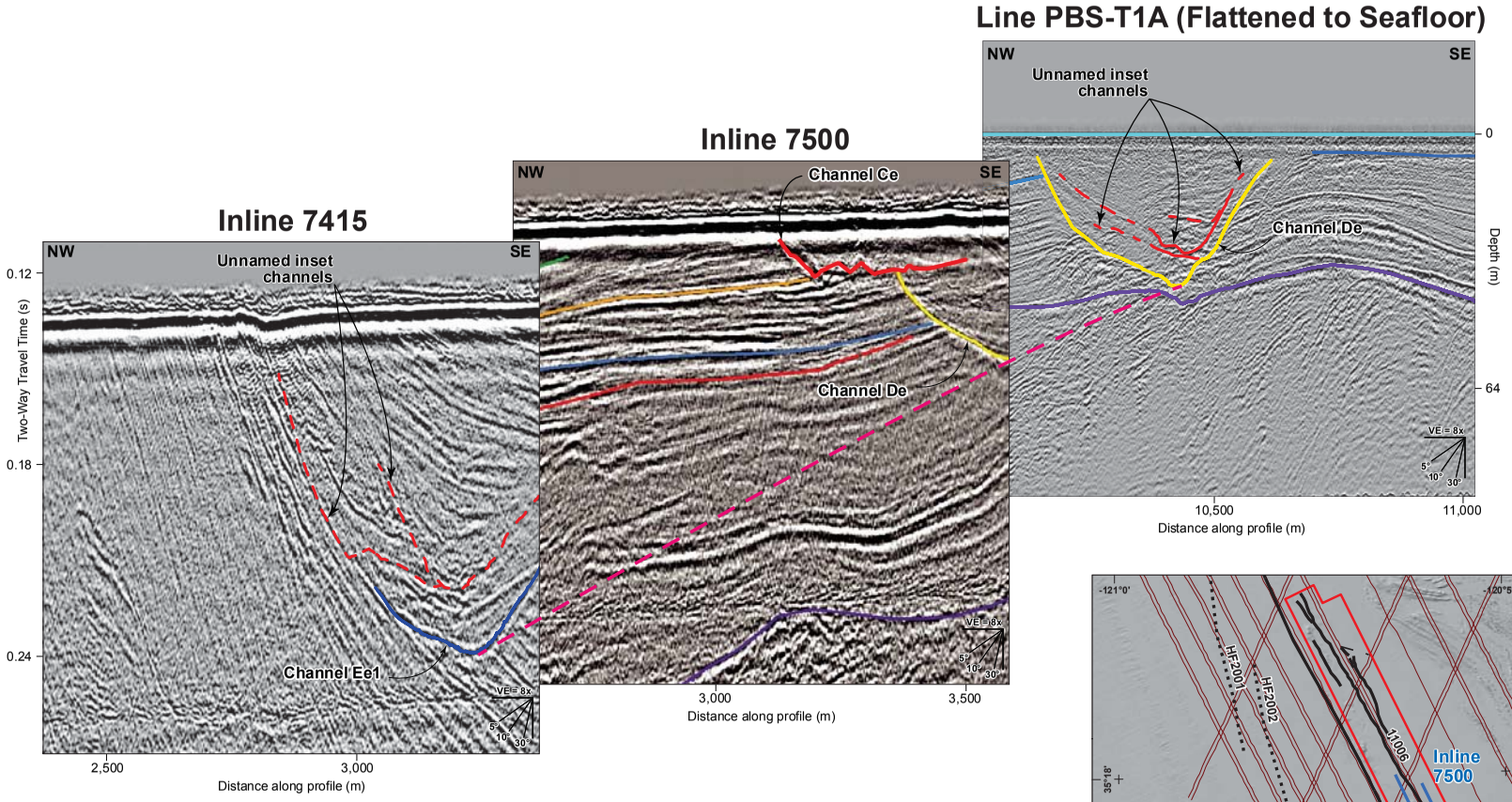
Interpreted Time Slice at 155 ms and Inline 7500 Showing Shallow Channels East of the HFZ

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **6-10b**

File path: S:\1005\033\GIS\Figures\Figure_06-10b.mxd; Date: 07/11/2014; User: Jereme Chandler, LCI; Rev.1



EXPLANATION

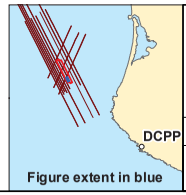
- Seafloor
- Unconformity H10
- Unconformity T30
- Unconformity T50
- Unconformity T70
- Top of pre-Quaternary rock
- Channel Ee
- Channel De
- Unnamed inset channels
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline
- Channel thalweg correlation

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. Unnamed inset channels are local features that are not correlated between the three profiles illustrated due to gaps in data coverage.
4. All profiles displayed at 8x vertical exaggeration.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Project DEM compilation v2013.07.
- 3D seismic-reflection data from Fugro (2012).
- Traces of Point Buchon fault from PG&E (2012).

N
0 0.5 1 mi.
0 1 2 km

Map scale: 1:54,000
Map projection: WGS 84 / UTM Zone 10N

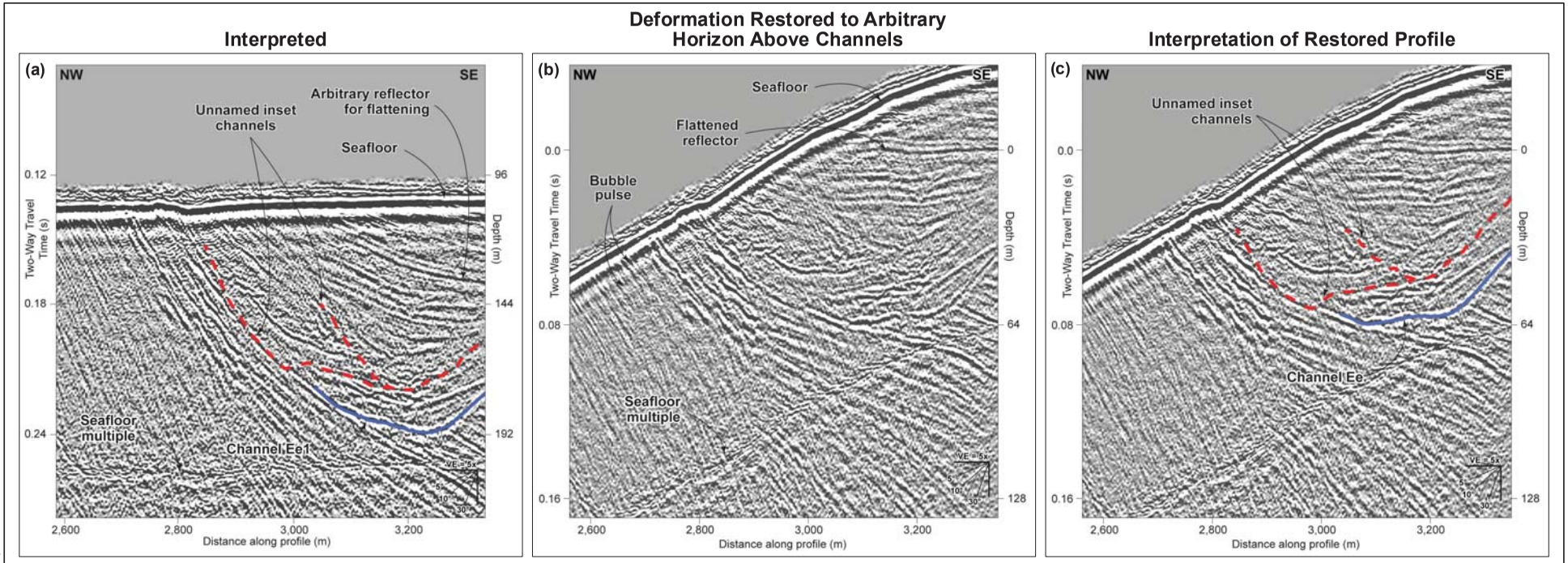


Fence Diagram Showing Correlation of Channels De and Ee

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-11**

File path: S:\10050033\GIS\Figures\Figure_06-11.ai; Date: 04/21/2014; User: LCI; Rev.1



EXPLANATION

- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- Unnamed inset channels
- Antidline
- Syndine

Notes:
1. See Figure 1-1 for location of study area.
2. Unnamed inset channels are recognized only locally.
3. Depth values on seismic profile assume a seismic velocity of 1,600 m/s.

Sources:
- 2D and 3D seismic-reflection data from Fugro (2012).
- Project DEM compilation v2013.07. Bathymetric contour interval is 10 m. Heavy contours are 50 m isobaths.

N

0 0.5 1 mi.
0 1 2 km

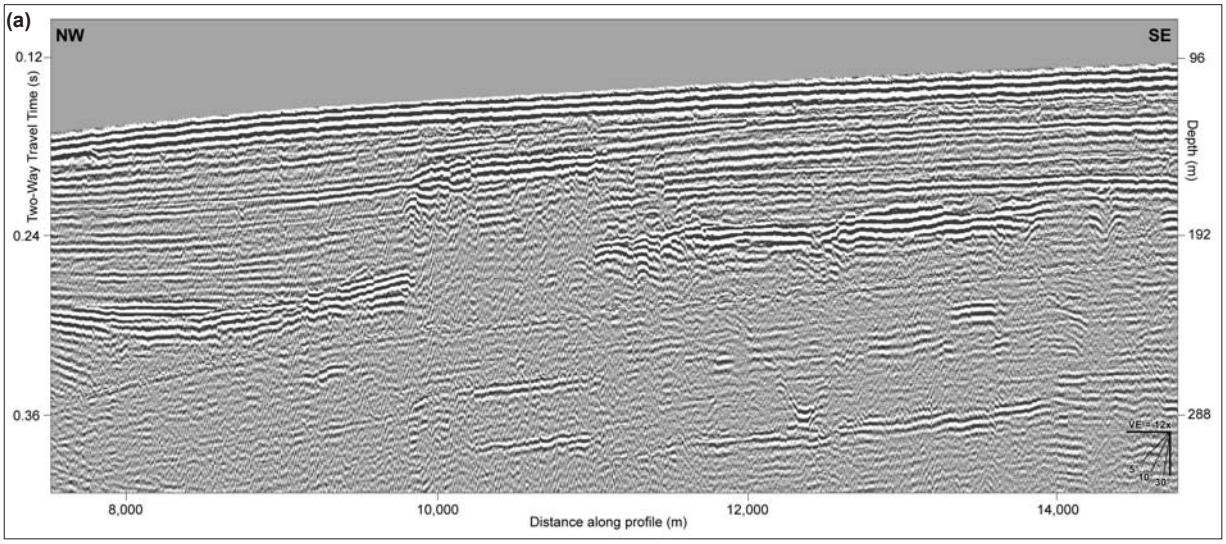
Map projection and scale: WGS 84 / UTM Zone 10N, 1:50,000

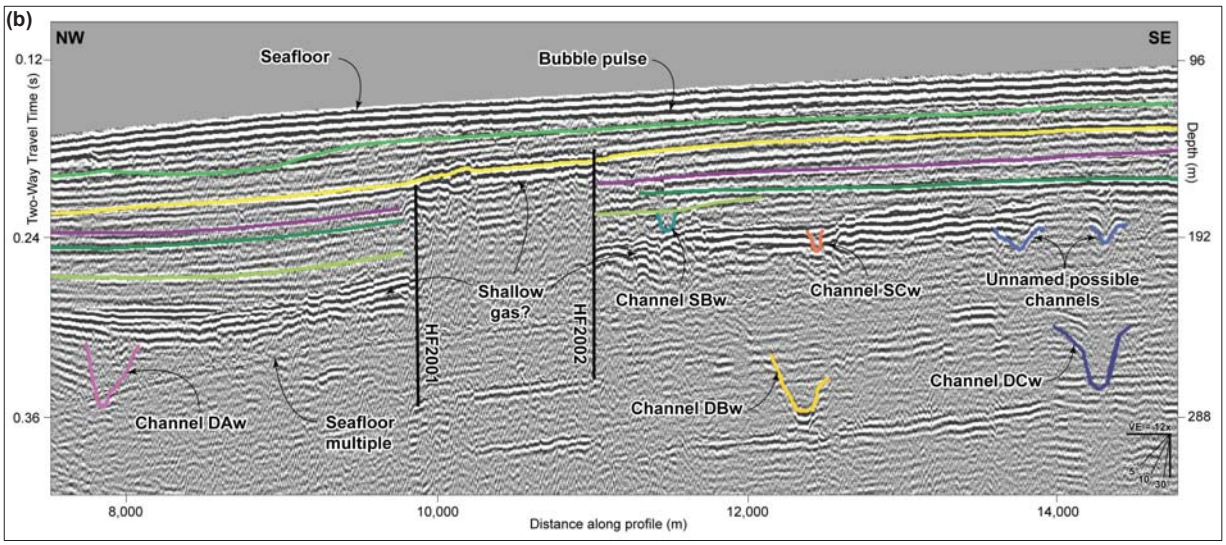
Excerpt of Inline 7415 Showing Deformed Channel Sequence Ee Between Strands of the HFZ

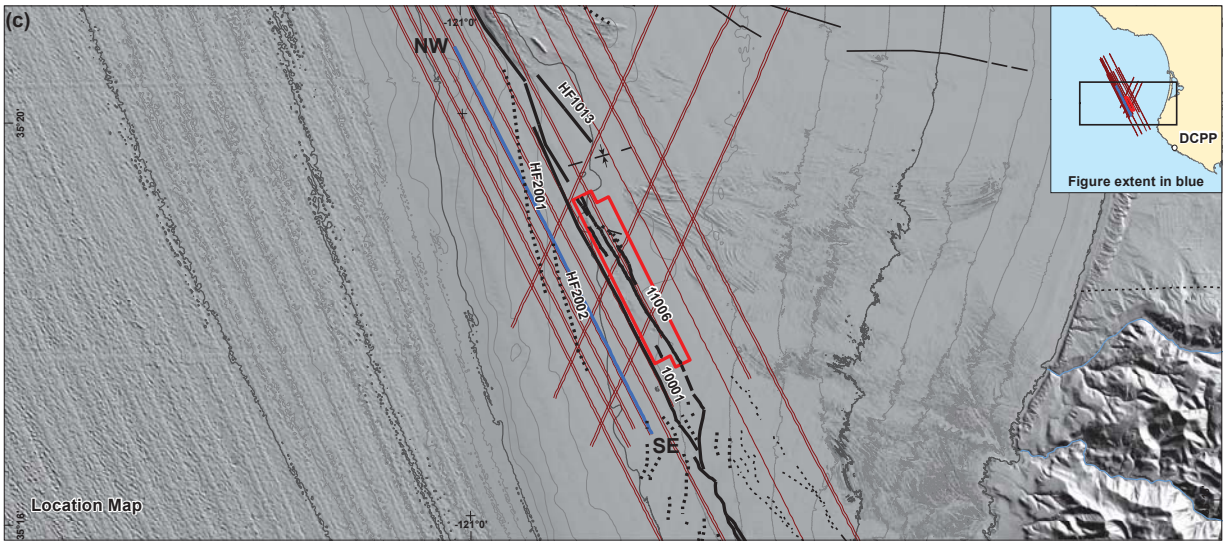
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-12**

File path: S:\1005\033\GIS\Figures\Figure_06-12.mxd, Date: 07/11/2014, User: Jeremie Chandler, LCI, Rev.1







EXPLANATION

- Unconformity H30
- Unconformity H40
- Unconformity H45
- Unconformity H48
- Unconformity T05
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. Unnamed possible channels are local features that are not observed on adjacent seismic lines.

Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- 2D and 3D seismic-reflection data from Fugro (2012).
- Project DEM compilation v2013.01. Bathymetric contour interval is 10 m. Heavy contours are 50 m isobaths.
- Traces of Point Buchon fault from PG&E (2012).

N

0 1 2 mi.
0 2 4 km

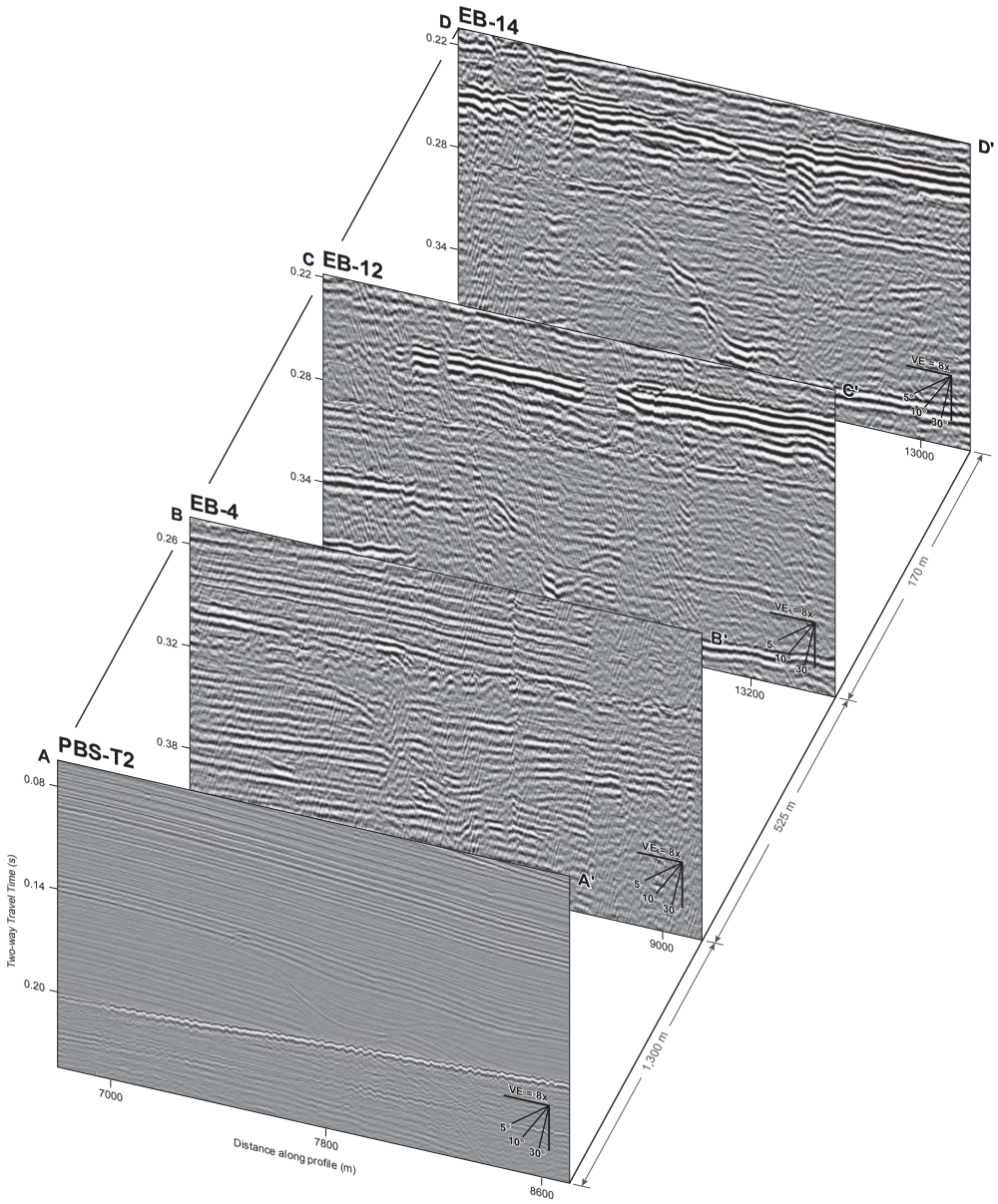
Map projection and scale: WGS 84 / UTM Zone 10N, 1:90,000

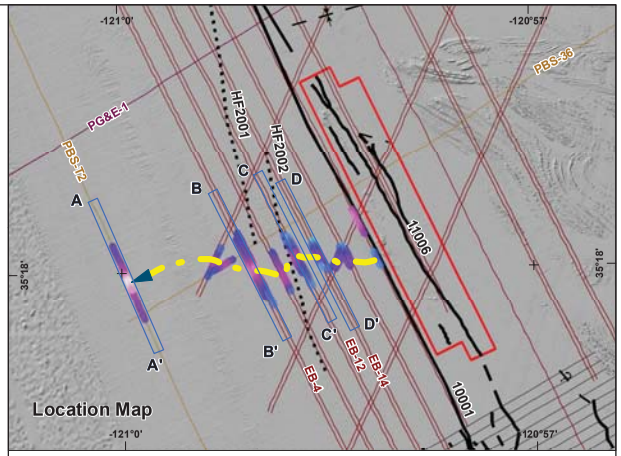
Excerpt of 2D Profile EB14-S14 Showing Stratigraphic Context of Possible Channels West of the HFZ

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-13**

File path: S:\11005\033\GIS\Figures\Figure_06-13.mxd; Date: 07/11/2014; User: Jereme Chandler, LCI; Rev.1





EXPLANATION

- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Slope channel thalweg mapped from seismic-reflection data
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline
- PG&E survey trackline

Channel Depth

130 ms (~100 m)

440 ms (~350 m)

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. USGS profile PBS-T2 is shown flattened to seafloor.
4. All profiles displayed at 8x vertical exaggeration.
5. The early-late Pliocene unconformity mapped regionally by Willingham et al. (2013). It is mapped onto USGS 2D profile PBS-T2 based on the direct intersection with line PGE-1, which was the basis for section C-C' in Willingham et al. (2013).

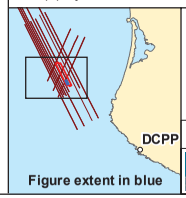
Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Project DEM compilation v2013.07.
- Fugro 3D seismic-reflection data (2012).
- Traces of Point Buchon fault from PG&E (2012).

N

0 0.5 1 mi.

0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N,1:54,000



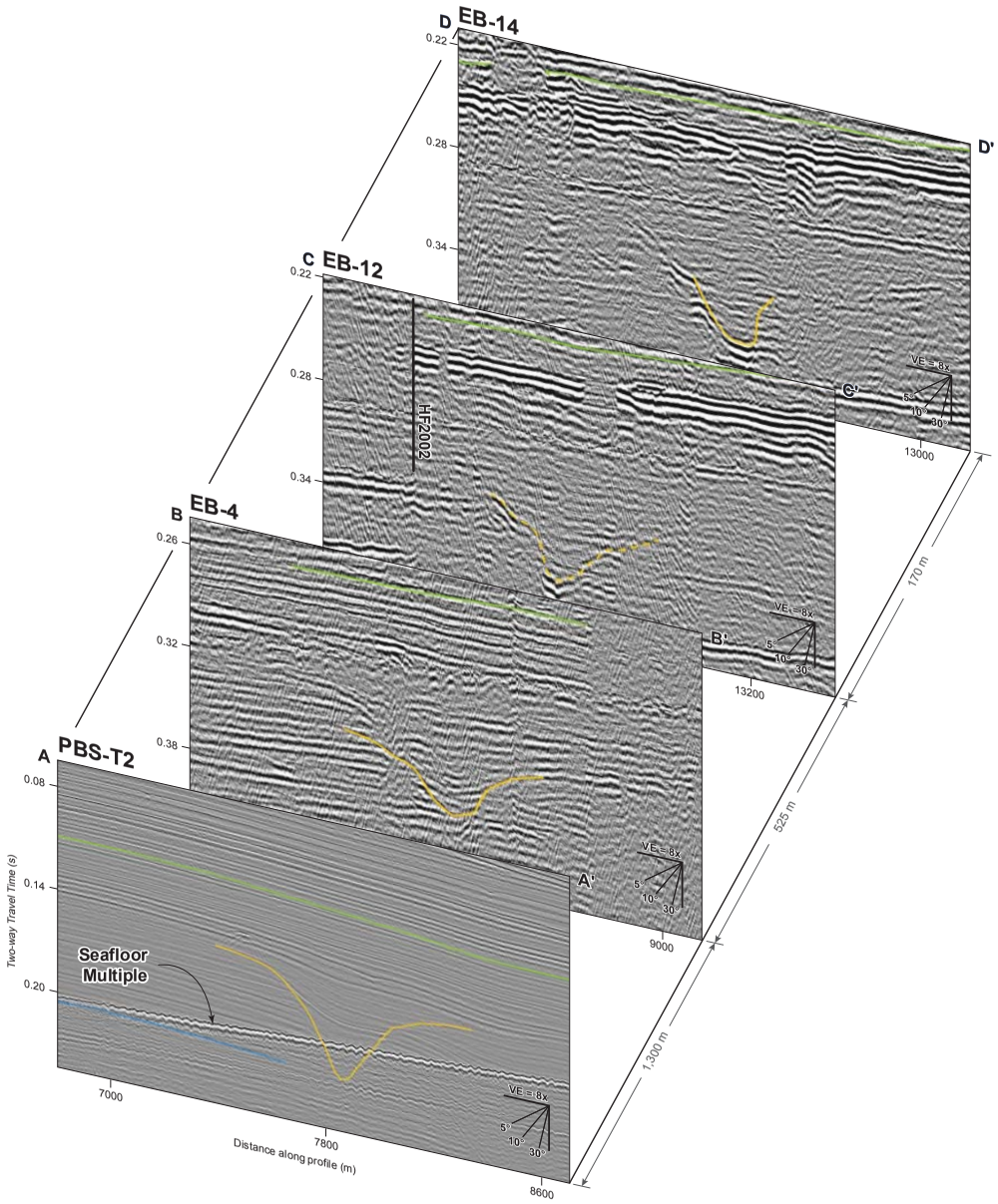
Uninterpreted Fence Diagram Showing Channel DBw West of the HFZ

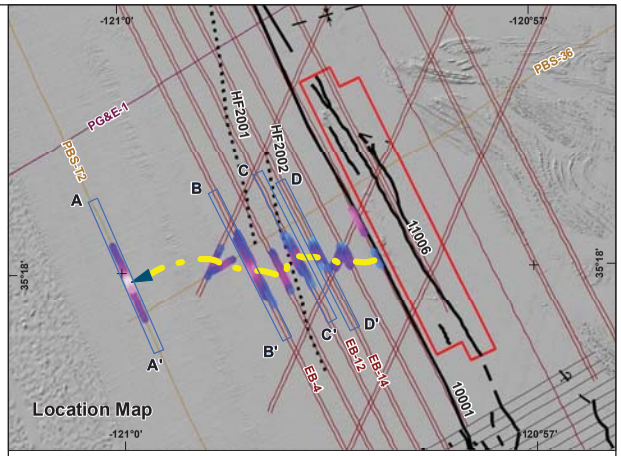
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **6-14a**

File path: S:\10050\033\GIS\Figures\Figure_06-14a.ai; Date: 04/21/2014; User: Jereme Chandler, LCI; Rev.1





EXPLANATION

- Unconformity T05
- Unconformity ELP
- Channel DBw
- Location of seismic profile
- Fugro 3D survey extent
- Fugro 2D survey trackline
- USGS survey trackline
- PG&E survey trackline
- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Slope channel thalweg mapped from seismic-reflection data

Channel Depth

130 ms (~100 m)

440 ms (~350 m)

Notes:
1. See Figure 1-1 for location of study area.
2. Depth values on seismic profile assume a velocity of 1,600 m/s.
3. USGS profile PBS-T2 is shown flattened to seafloor.
4. All profiles displayed at 8x vertical exaggeration.
5. The early-late Pliocene unconformity mapped regionally by Willingham et al. (2013). It is mapped onto USGS 2D profile PBS-T2 based on the direct intersection with line PGE-1, which was the basis for section C-C' in Willingham et al. (2013).

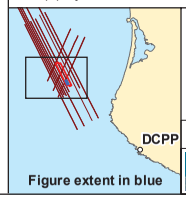
Sources:
- USGS seismic-reflection data (Sliter et al., 2009).
- Project DEM compilation v2013.07.
- 3D seismic-reflection data from Fugro (2012).
- Traces of Point Buchon fault from PG&E (2012).

N

0 0.5 1 mi.

0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:54,000



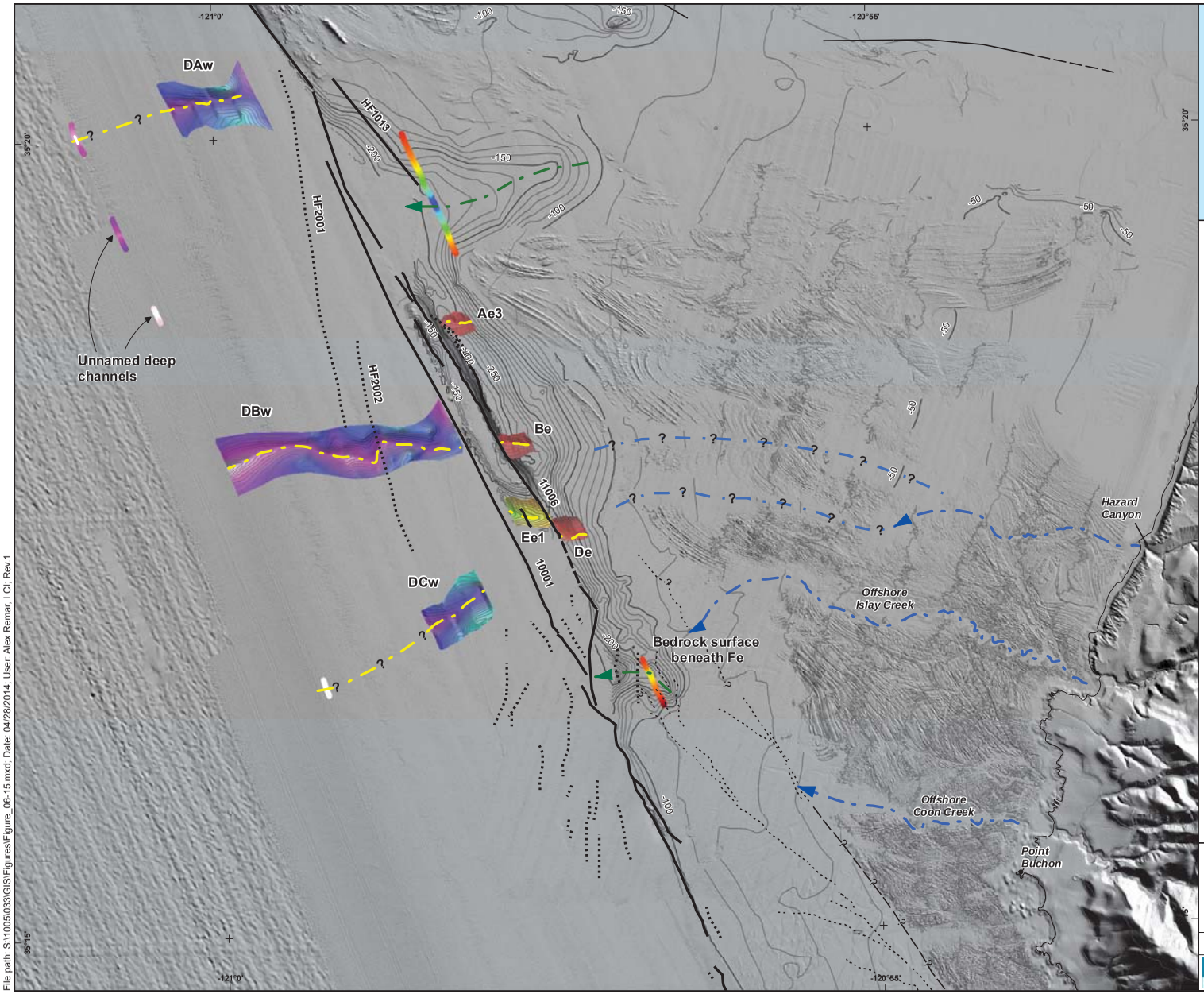
Interpreted Fence Diagram Showing Channel DBw West of the HFZ

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **6-14b**

File path: S:\10050033\GIS\Figures\Figure_06-14b.ai; Date: 04/21/2014; User: Jereme Chandler, LCI; Rev.1



EXPLANATION

Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.

Slope channel thalweg mapped from seismic-reflection data

Shelf channel or flow pathway mapped from bathymetry

Approximate direction of slope channel inferred from contours on top of pre-Quaternary rock

Structure contours on top of pre-Quaternary rock; 10 m contour interval, heavy contours are 50 m.

Channel Depth

130 ms (~100 m)

440 ms (~350 m)

Notes:
1. See Figure 1-1 for location of study area.
2. Contours within channels mapped from seismic data are on 5 ms intervals.
3. Refer to Plate 3 for source of channel mapping.

Sources:
-Project DEM compilation v2013.07.
-Traces of Point Buchon fault from PG&E (2012).

N

0 0.5 1 mi.
0 1 2 km

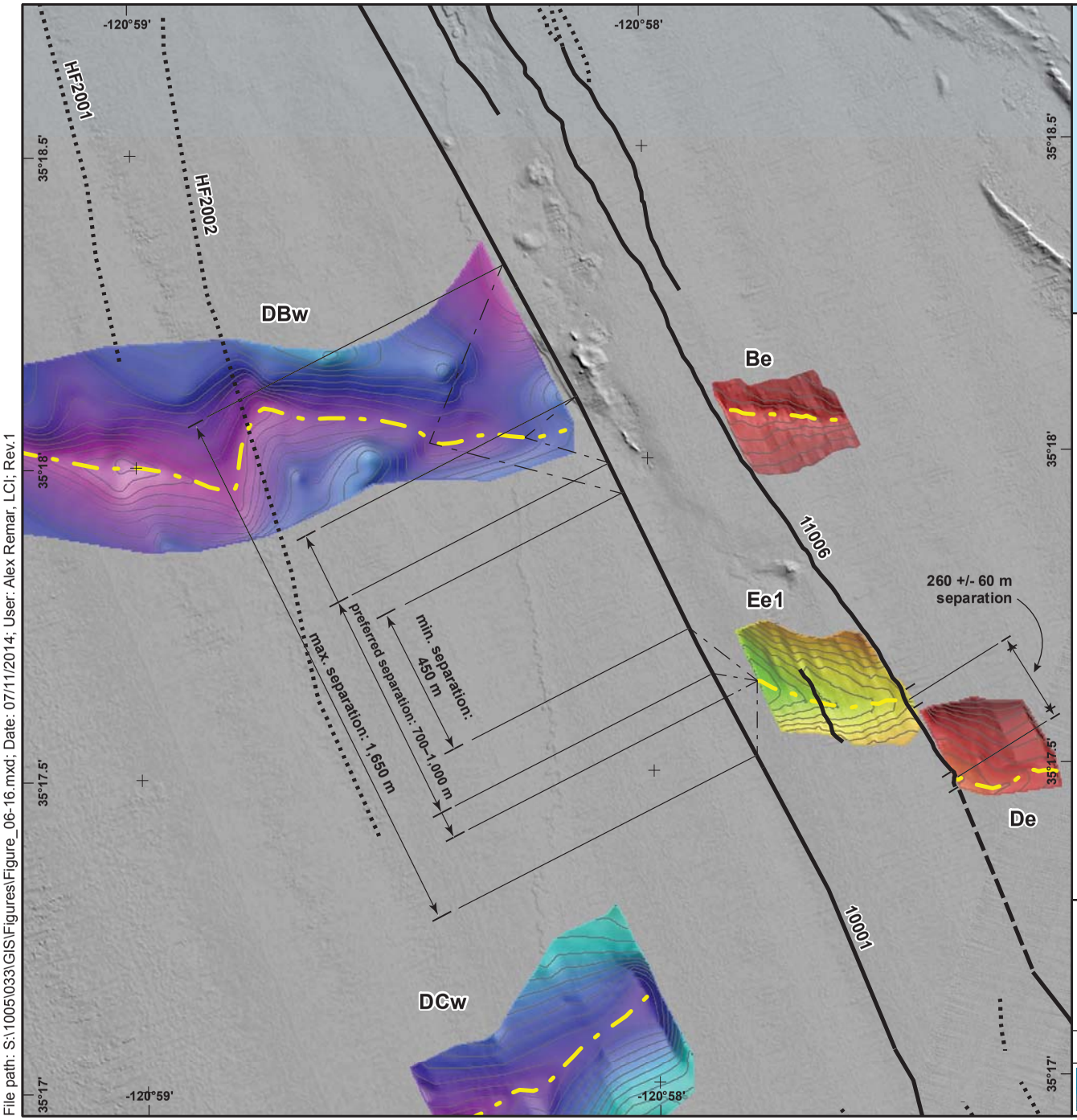
Map projection and scale: WGS 84 / UTM Zone 10N, 1:45,000

Map of Channels, Flow Pathways, and Potential Sediment Sources on Shelf

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-15**

File path: S:\10050303\GIS\Figures\Figure_06-15.mxd; Date: 04/28/2014; User: Alex Remar, LCI; Rev.1



EXPLANATION

Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.

Interpreted Thalwegs

Slope channel thalweg mapped from seismic–reflection data

Alternative thalweg projection

Channel Depth

130 ms (~100 m)

440 ms (~350 m)

Notes:
1. See Figure 1-1 for location of study area.
2. Contours within channels mapped from seismic data are on 5 ms intervals.
3. Refer to Plate 2 for source of mapping.

Source: Project DEM compilation v2013.07.

N

0 1,000 2,000 ft.

0 400 800 m

Map projection and scale: WGS 84 / UTM 10N, 1:18,000

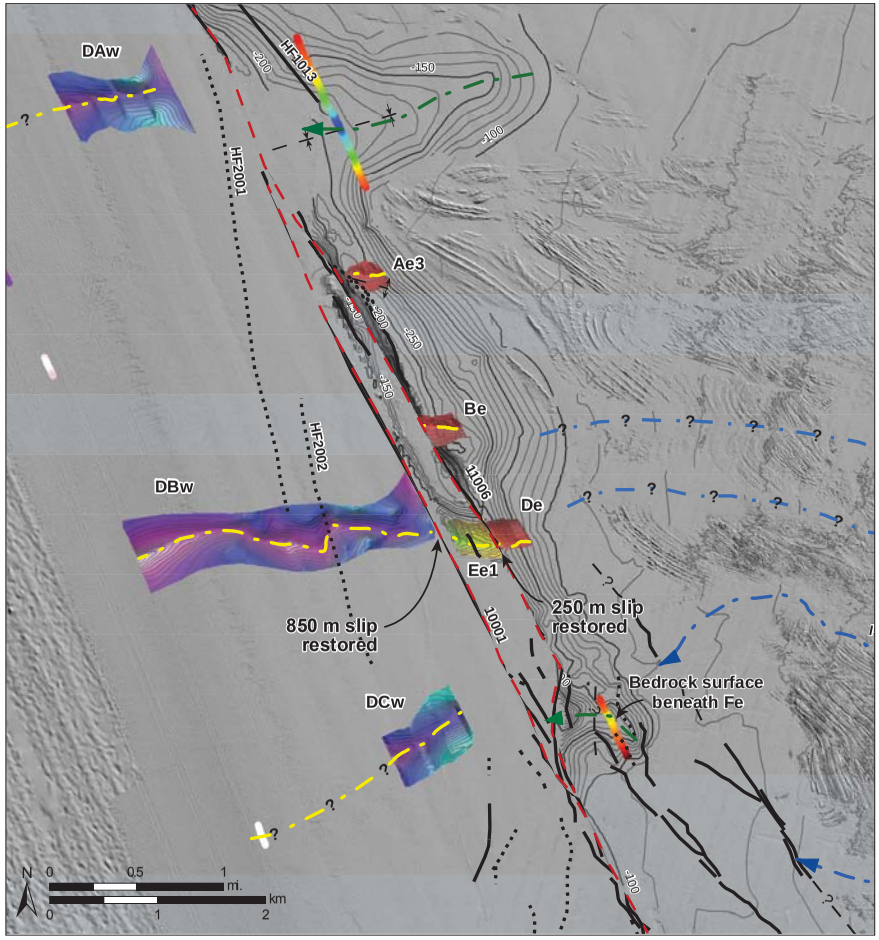
Piercing Point DBw-Ee1-De Separation and Uncertainty

OFFSHORE LESS STUDIES

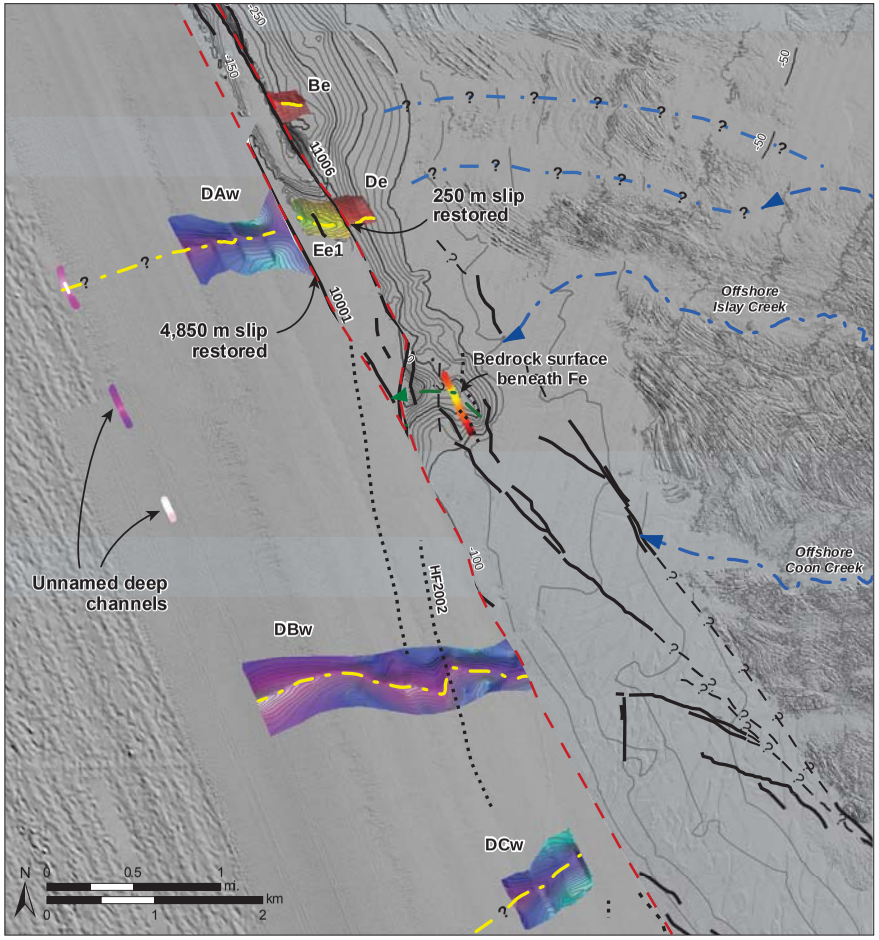
Pacific Gas and Electric Company | Figure **6-16**

File path: S:\1005\033\GIS\Figures\Figure_06-16.mxd; Date: 07/11/2014; User: Alex Remar, LCI; Rev.1

Correlation A: DBw-Ee1-De–Cumulative 1.1 km Slip Restored



Correlation B: DAw-Ee1-De–Cumulative 5.1 km Slip Restored



EXPLANATION

- Fault, solid where well located, dashed where approximately located, dotted where inferred, queried where existence uncertain.
- Slope channel thalweg mapped from seismic-reflection data
- Shelf channel or flow pathway mapped from bathymetry
- Approximate direction of slope channel inferred from contours on top of pre-Quaternary rock.
- Block boundary for palinspastic restoration.
- Structure contours on top of pre-Quaternary rock; 10 m contour interval, heavy contours are 50 m.

Channel Depth

130 ms (~100 m)

440 ms (~350 m)

Sources:
-Project DEM compilation v2013.07.
-Traces of Point Buchon fault from PG&E (2012).

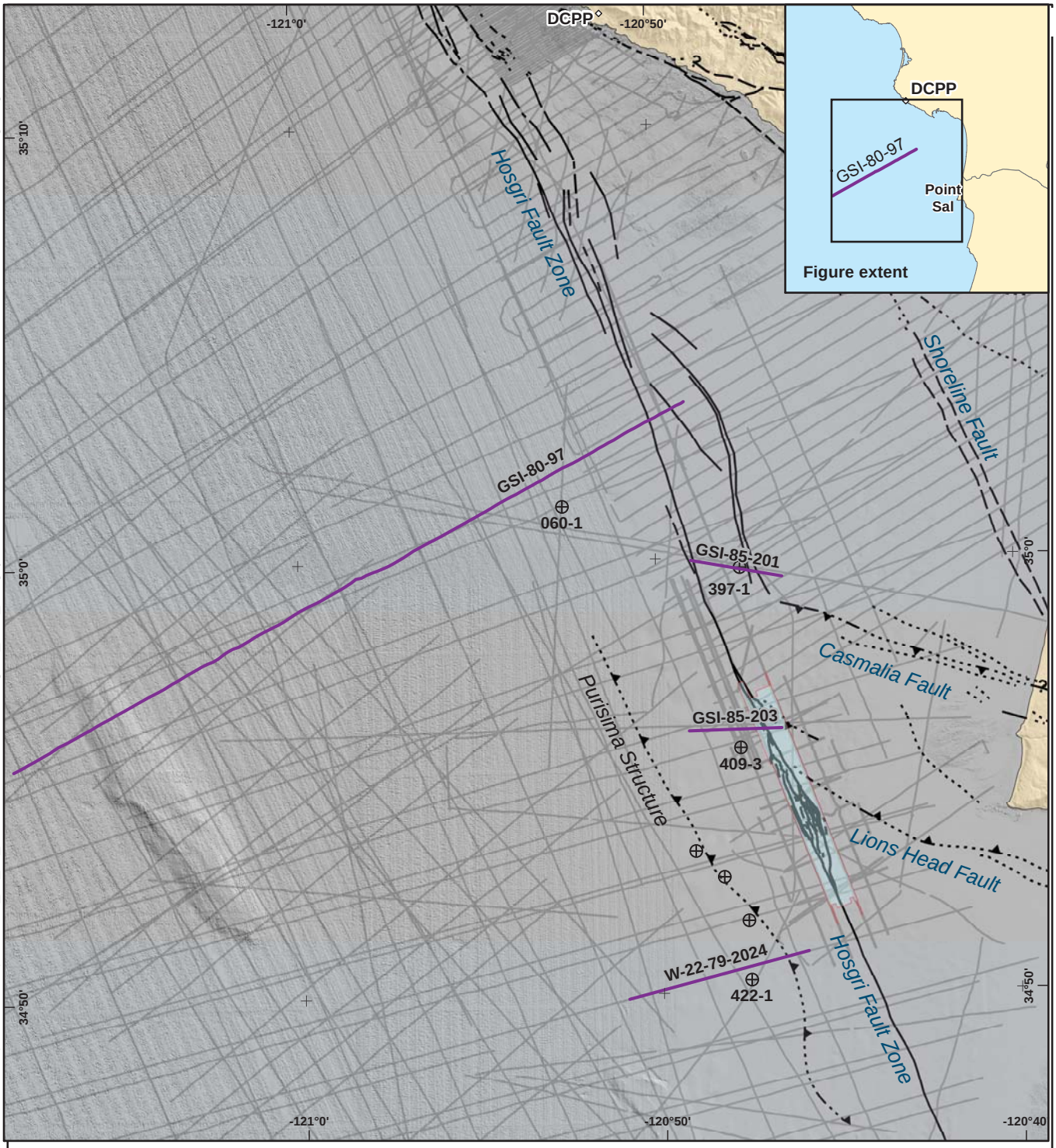
Notes:
1. See Figure 1-1 for location of study area.
2. Contours within channels mapped from seismic data are on 5 ms intervals.
3. Where they meet, bathymetric contours do not align with interpreted contours on the top of pre-Quaternary because the USGS seismic profiles are not depth-migrated, and depths of structure contours interpreted from the seismic reflection data were estimated using an assumed seismic velocity of 1,600 m/s. Therefore, the general shape of the structure contours is accurate, but the actual depths are an approximation.
4. Alternative channel correlations across the HFZ are tested by palinspastic restoration of slip along dominant strands of the HFZ.
5. Refer to Plate 2 for source of mapping.

Map projection and scale: WGS 84 / UTM Zone 10N, 1:45,000

Palinspastic Restoration Illustrating Alternative Channel Correlations Across the HFZ

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-17**



EXPLANATION

- 397-1 Legacy archive well tie line
- Exploratory well location and number
- 2012 Point Sal 3D high-resolution survey extent
- Legacy archive line

N

0 4 8 mi.

0 6 12 km

Map projection and scale: WGS 84 / UTM Zone 10N,1:250,000

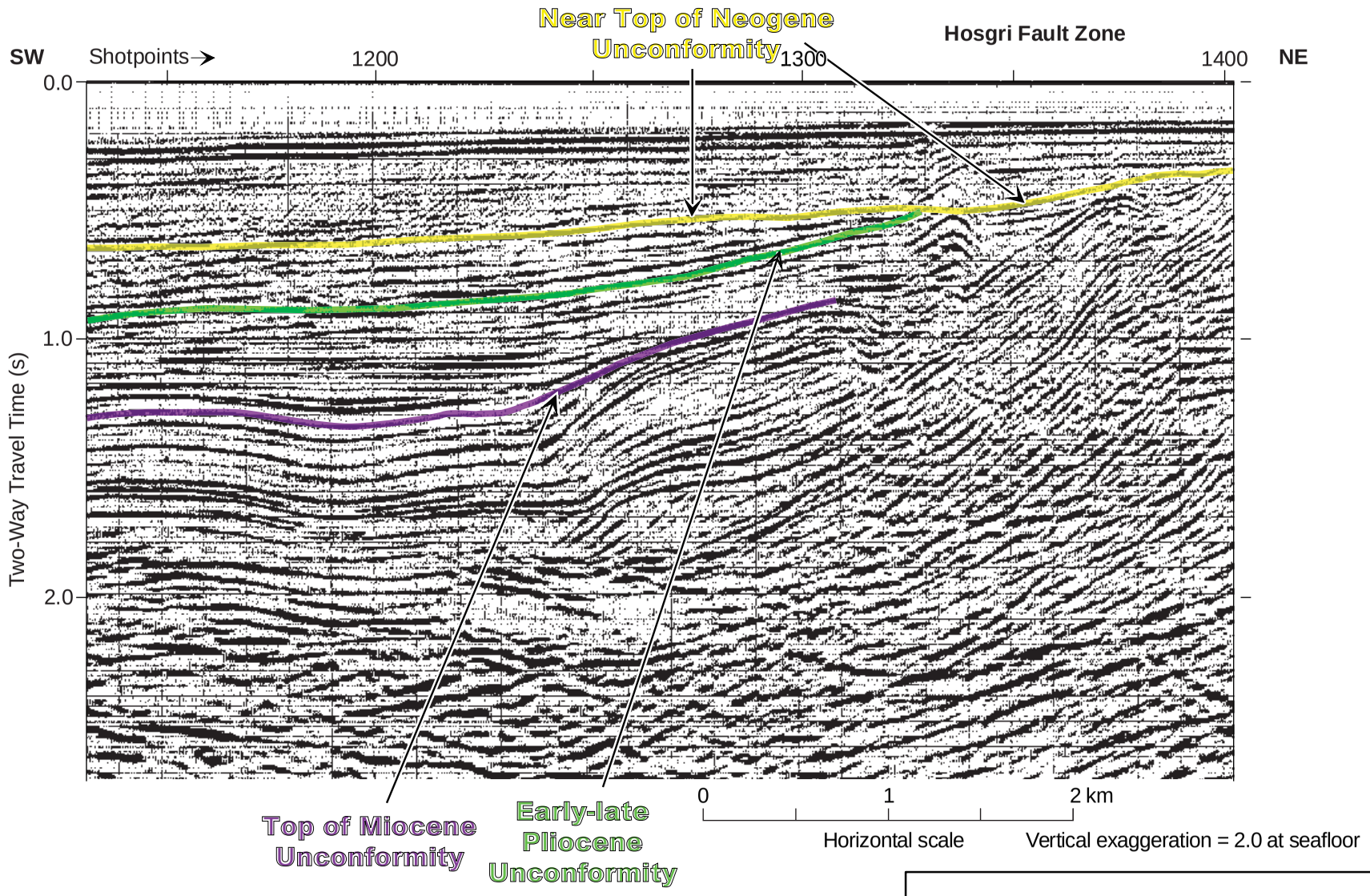
Sources:
-Well locations from Willingham et al. (2013).
-Project DEM compilation v2013.01.

Legacy Archive Well Tie Lines, Offshore Point Sal

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-18**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-18_LeagcyArchiveWellTieLinesPointSal; Date: 6/9/2014; User: Ranon Dulberg, Fugro; Rev. 3



Notes:
1. Migrated seismic reflection GSI Line 97 showing three major unconformities in this study: (1) Top of Miocene unconformity, (2) early–late Pliocene unconformity, and (3) near top of Neogene unconformity.
2. The data are from a seismic reflection line that crosses the Hosgri fault zone in the west-central part of San Luis Obispo Bay (Line GSI-97). Note the onlap of younger sediments onto the early–late Pliocene unconformity and the near top of Neogene unconformity.
3. See Figure 6-18 for line location.

Source: Modified from Willingham et al. (2013, Figure 7).

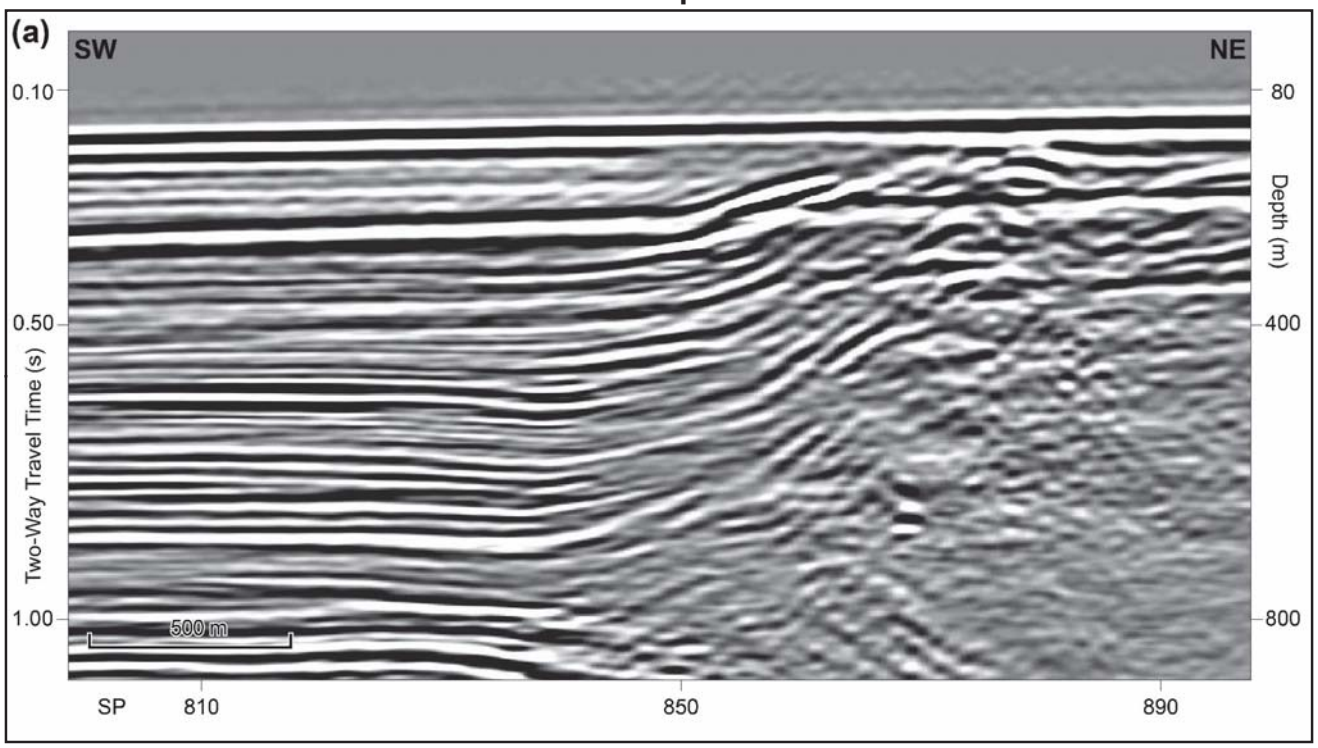
Migrated Seismic Reflection Record Showing Near Top of Neogene Unconformity Mapped in This Study

OFFSHORE LESS STUDIES

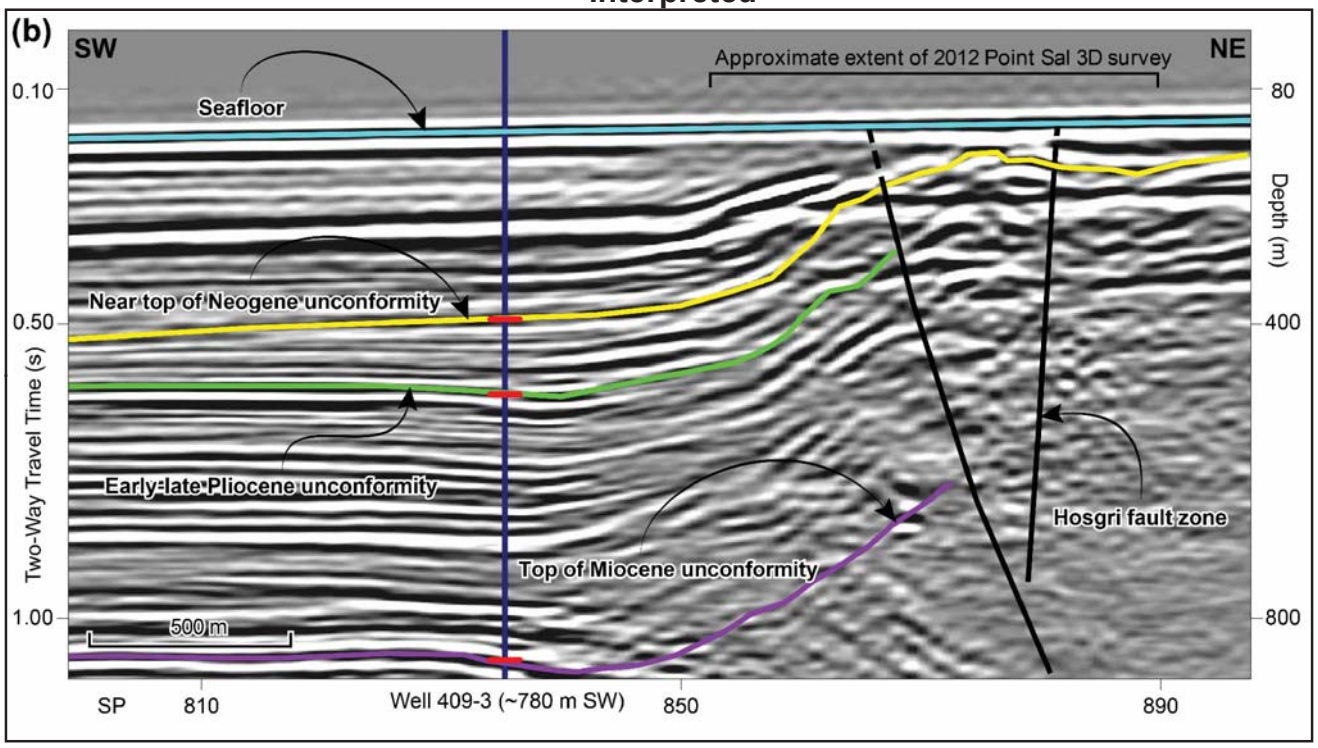
Pacific Gas and Electric Company

Figure **6-19**

Uninterpreted



Interpreted



EXPLANATION

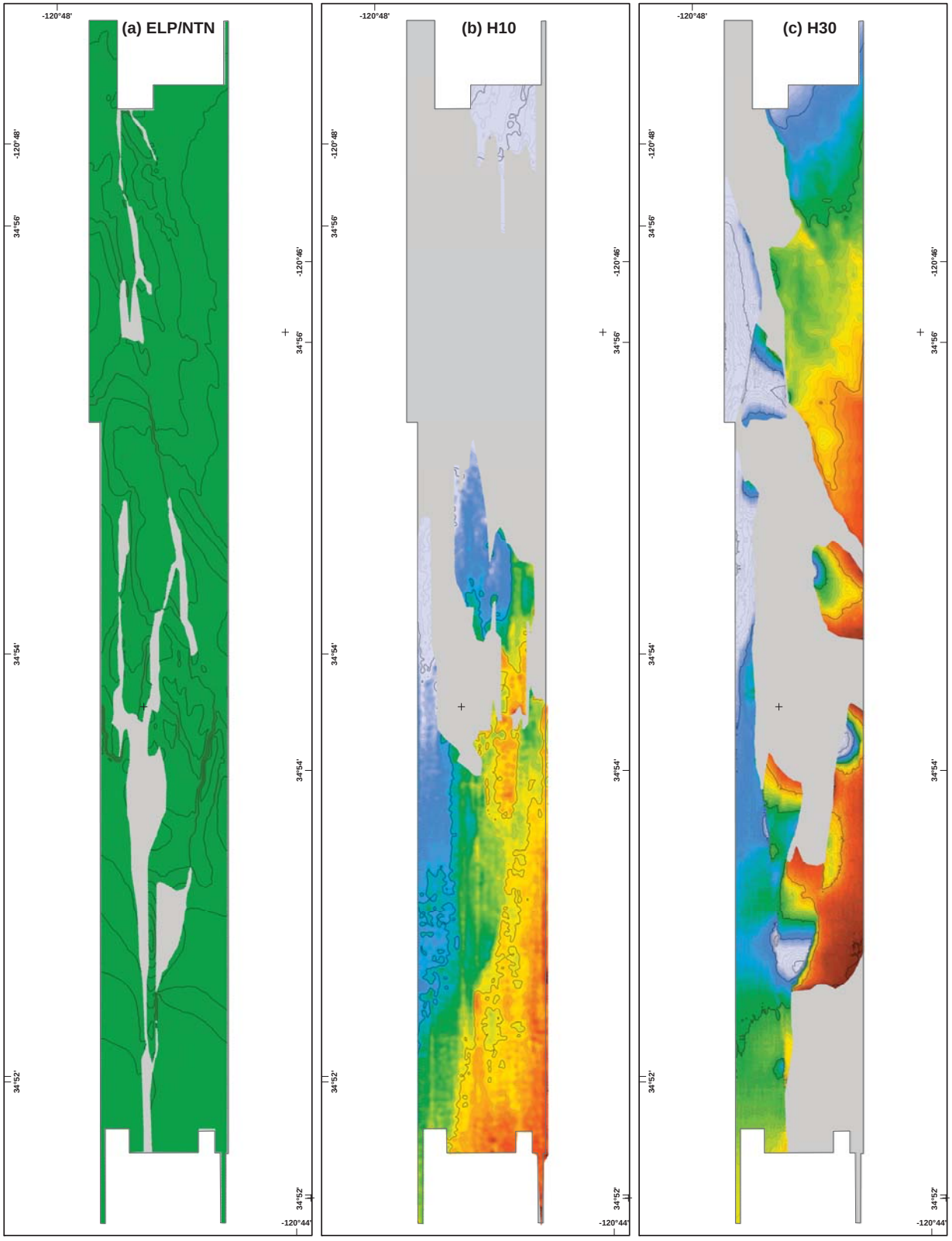
- Seafloor
- Hosgri fault
- Stratigraphic well pick
- Near top of Neogene unconformity
- Early-late Pliocene unconformity
- Top of Miocene unconformity

GSI Line 203 (1985)

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-20**

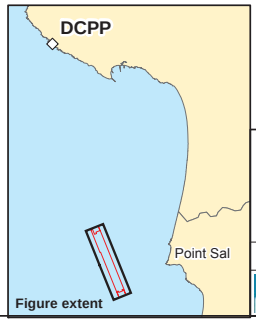
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-20_GSILine_1985_203.mxd; Date: 7/18/2014; User: Bryan Bergkamp, Fugro; Rev.3



EXPLANATION

2012 Point Sal 3D high-resolution survey extent

Notes:
1. Maps are rotated 22 degrees to the northeast.
2. Gray areas are where the unconformity or horizon are not mapped.
3. Contour interval for early-late Pliocene / near top of Neogene (ELP/NTN) unconformity is 0.01 seconds for minor contours and 0.05 for major contours.
4. Contour interval for H10 and H30 horizons is 0.001 seconds for minor contours and 0.005 for major contours.



0 0.5 1 mi.
0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:35,000

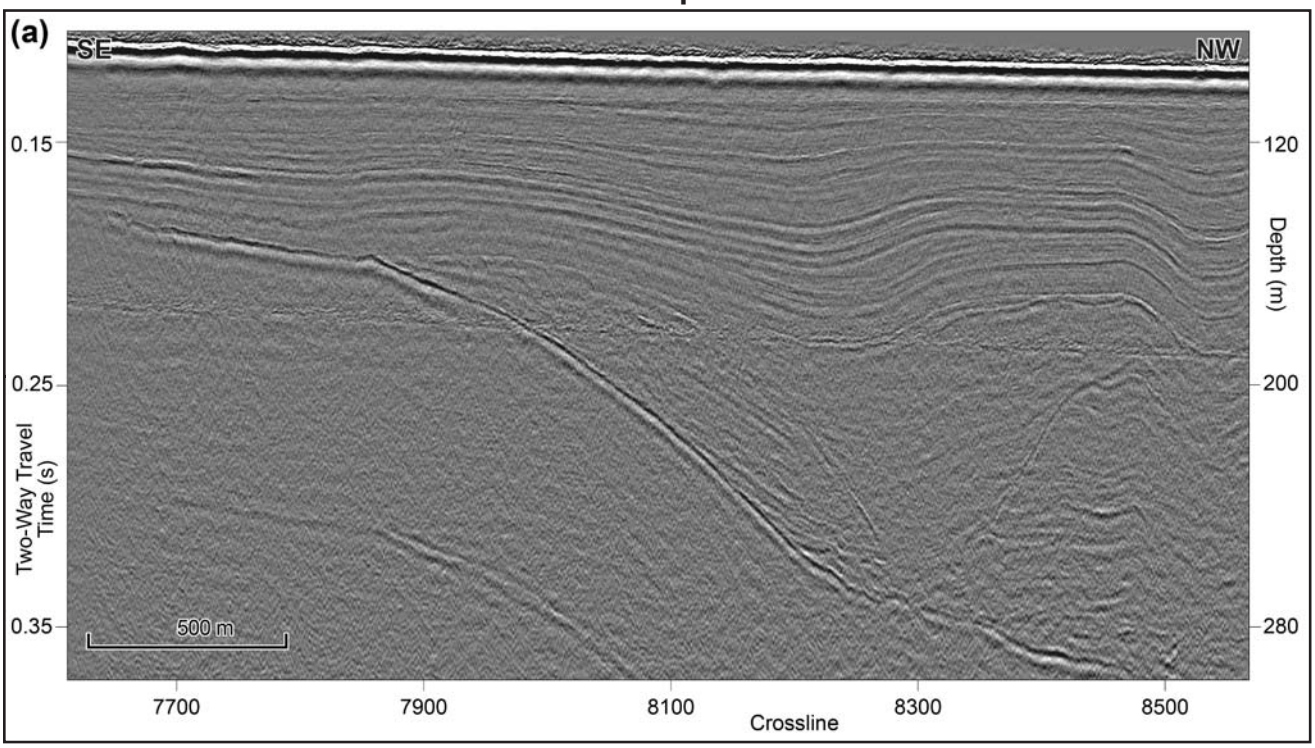
Distribution of Mapped ELP/NTN Unconformity and H10 and H30 Horizons, Point Sal

OFFSHORE LESS STUDIES

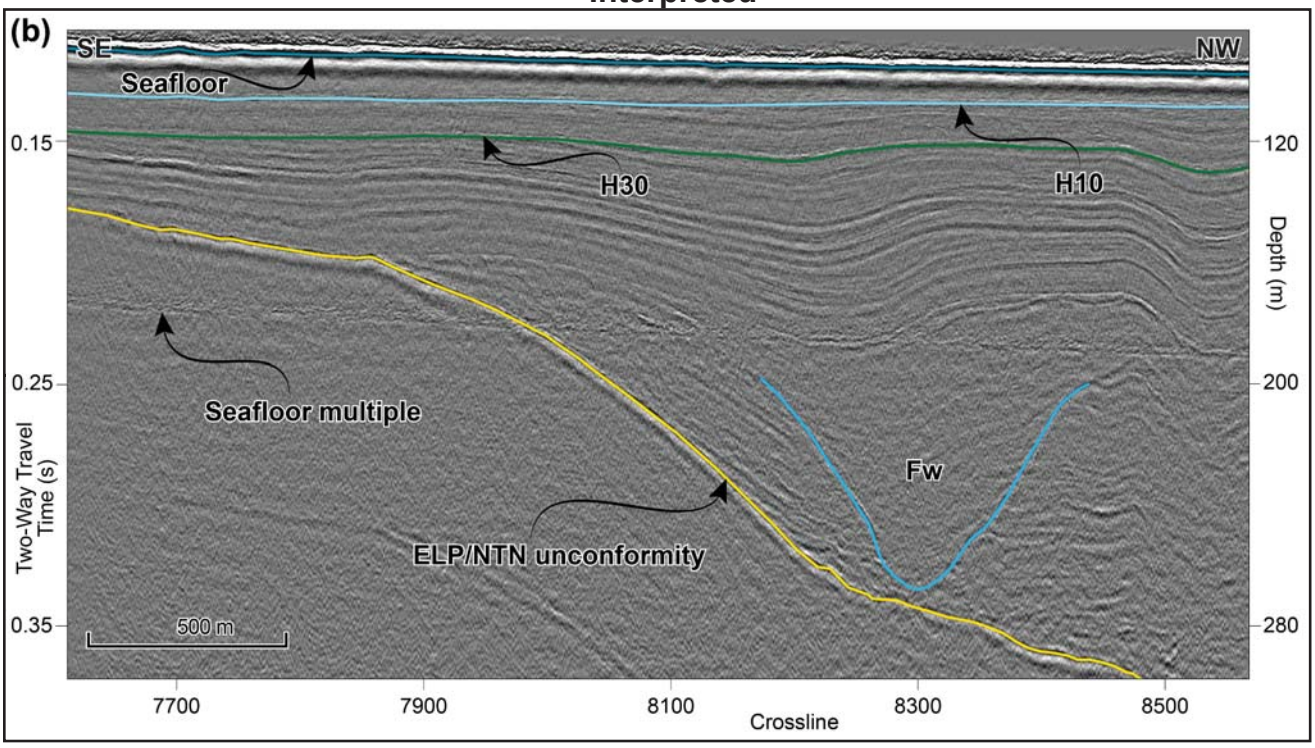
Pacific Gas and Electric Company | Figure **6-21**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-21_DistributionMappedHoriz.mxd; Date: 4/29/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



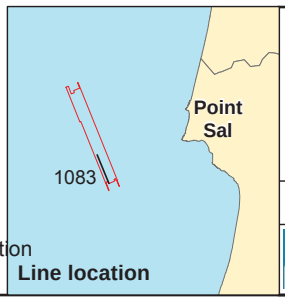
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/ near top of Neogene unconformity (ELP/NTN)
- Channel F margin
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.

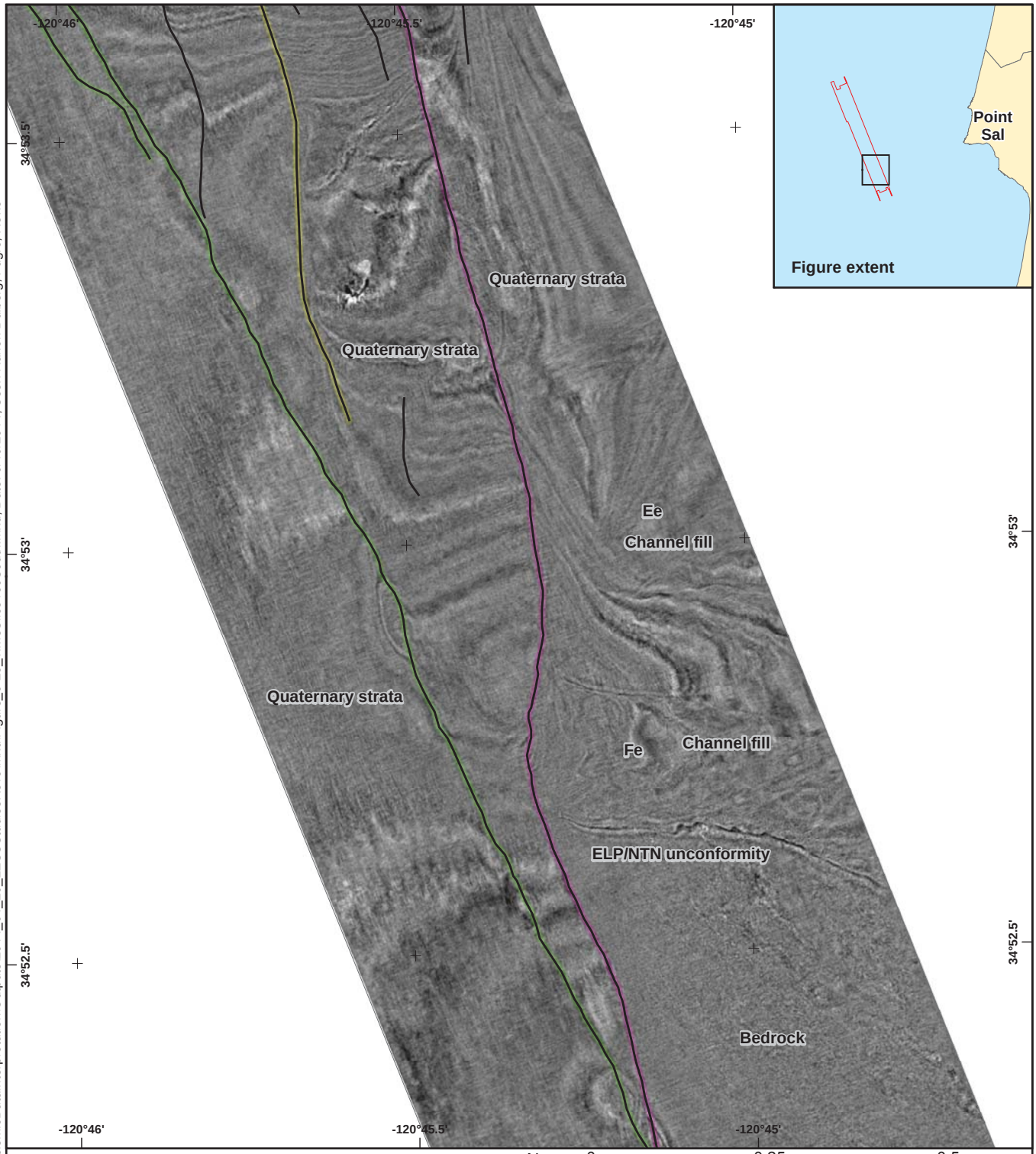


Line 1083, West of HFZ
Showing ELP/NTN Unconformity and H10 and H30 Horizons

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-22**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-22_Line1083.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand
- 2012 Point Sal 3D high-resolution survey extent

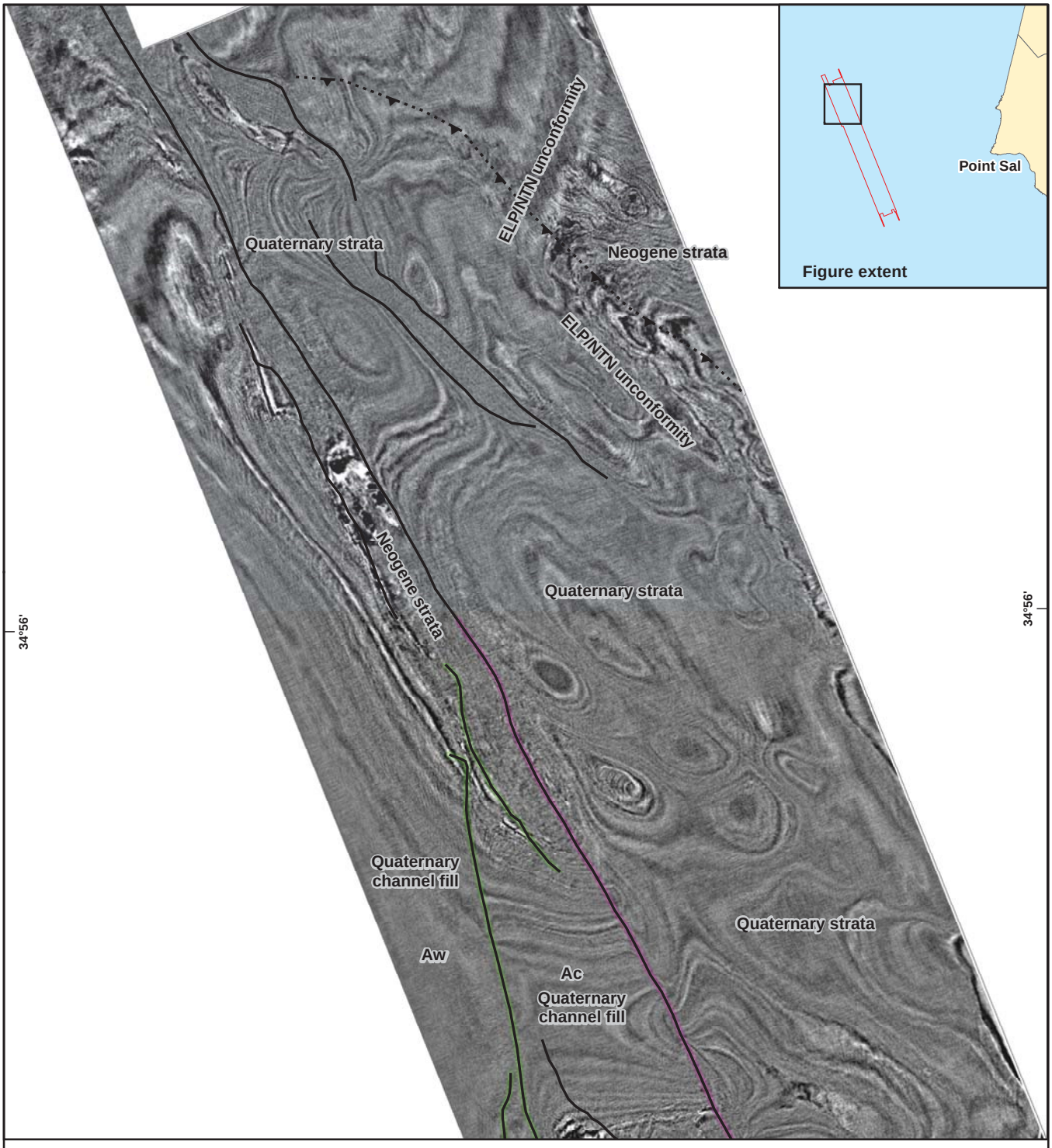
Map projection and scale: WGS 84 / UTM Zone 10N, 1:13,000

Time Slice at 150 ms in Southern Part of Point Sal Study Area

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-23**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-23_TimeSlice150South.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-24_TimeSlice180LionsHeadN.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3

EXPLANATION

- Fault
- Reverse fault concealed
- Hosgri eastern strand
- Hosgri western strand
- 2012 Point Sal 3D high-resolution survey extent

N

0 0.25 0.5 mi.

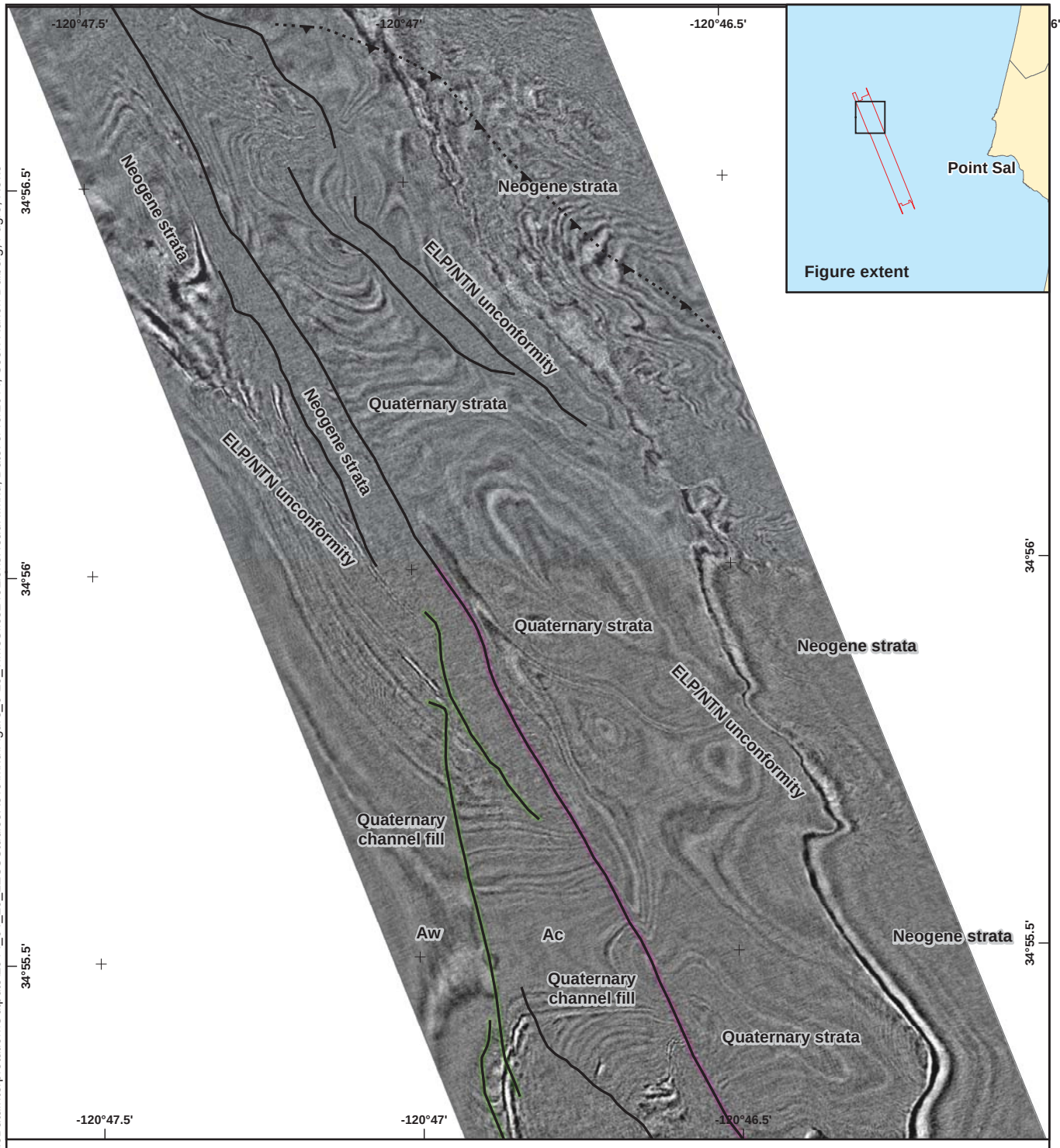
0 0.5 1 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:14,000

Time Slice at 180 ms in Northern Part of Point Sal Study Area

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-24**



EXPLANATION

- Fault
- Reverse fault concealed
- Hosgri eastern strand
- Hosgri western strand
- 2012 Point Sal 3D high-resolution survey extent

N

0 0.25 0.5 mi.

0 0.5 1 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:14,000

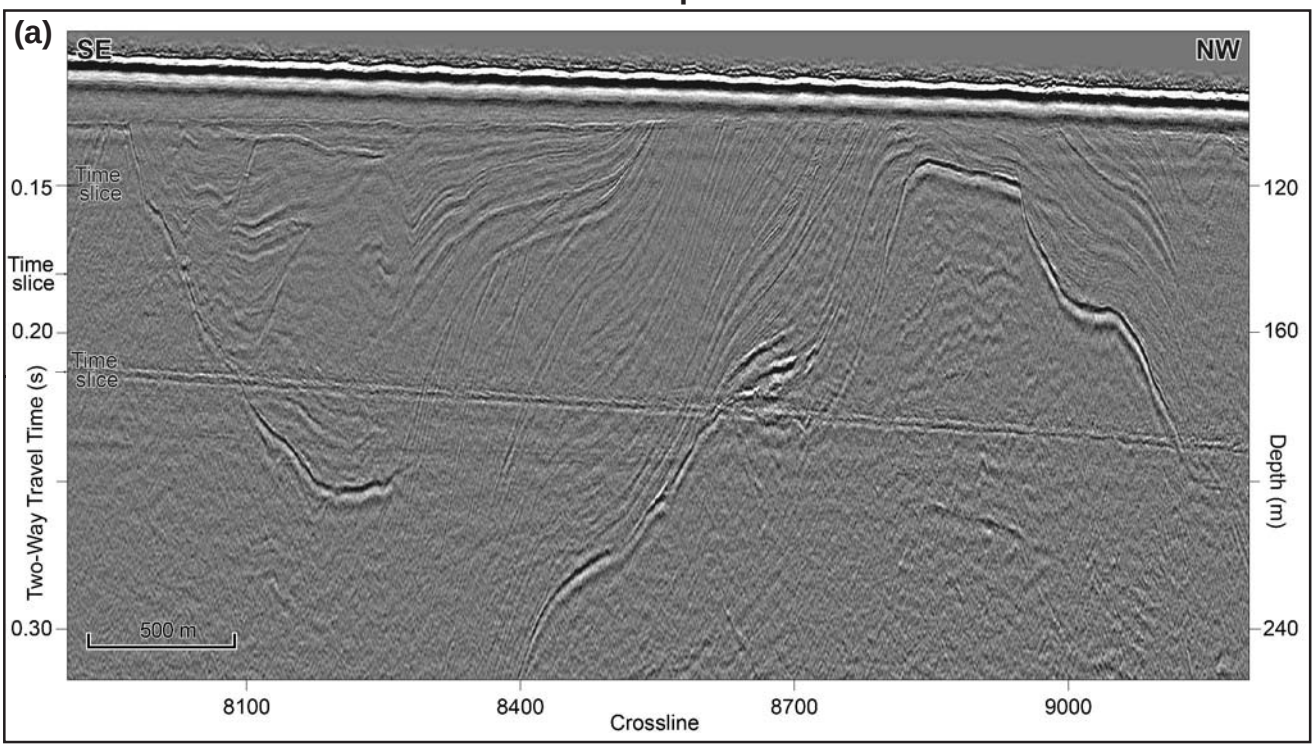
Time Slice at 213 ms in Northern Part of Point Sal Study Area

OFFSHORE LESS STUDIES

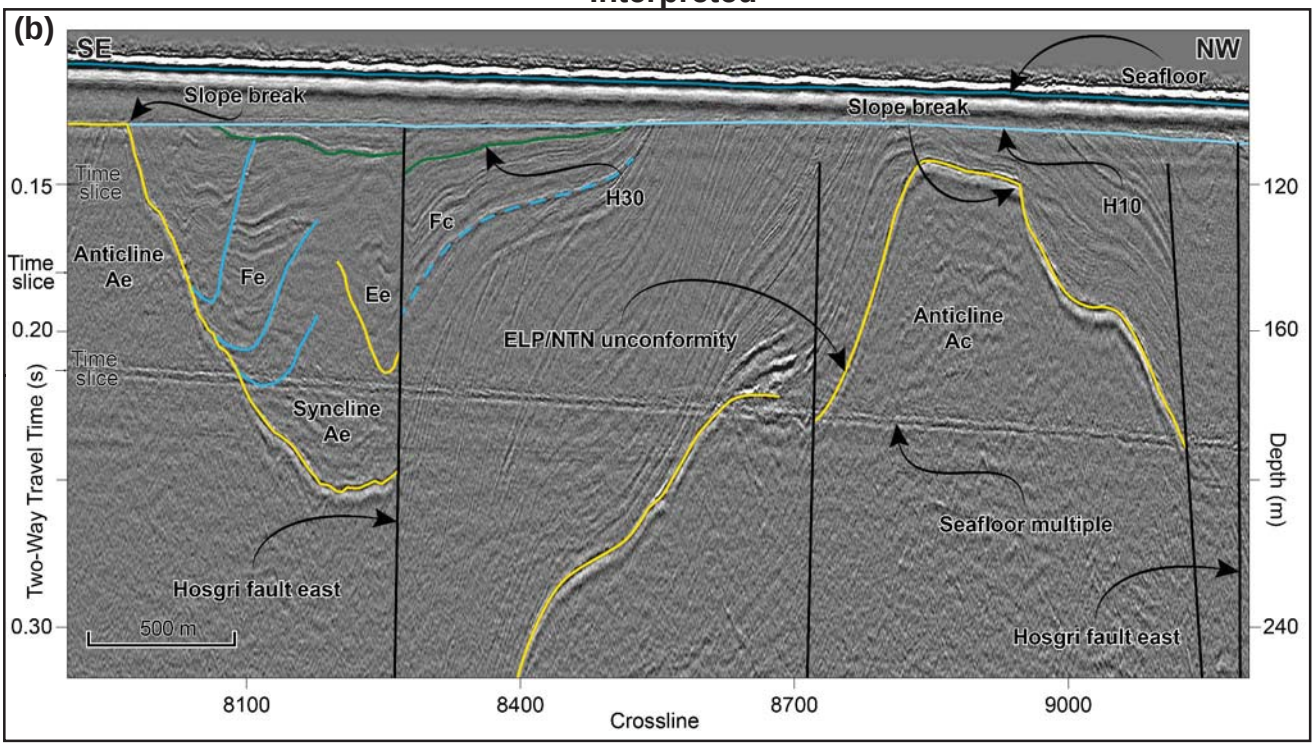
Pacific Gas and Electric Company | Figure **6-25**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-25_TimeSlice213LionsHeadN.mxd; Date: 5/16/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



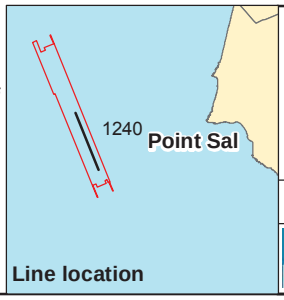
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/ near top of Neogene unconf. (ELP/NTN)
- Channel E margins
- Channel F margins
- Fault
- Point Sal 3D high-resolution survey extent 2012

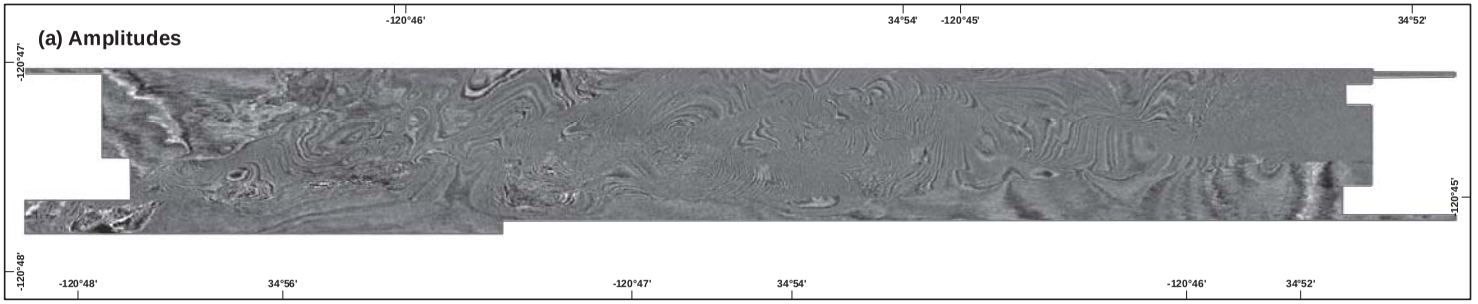
Note: See Figure 6-27 for line location.

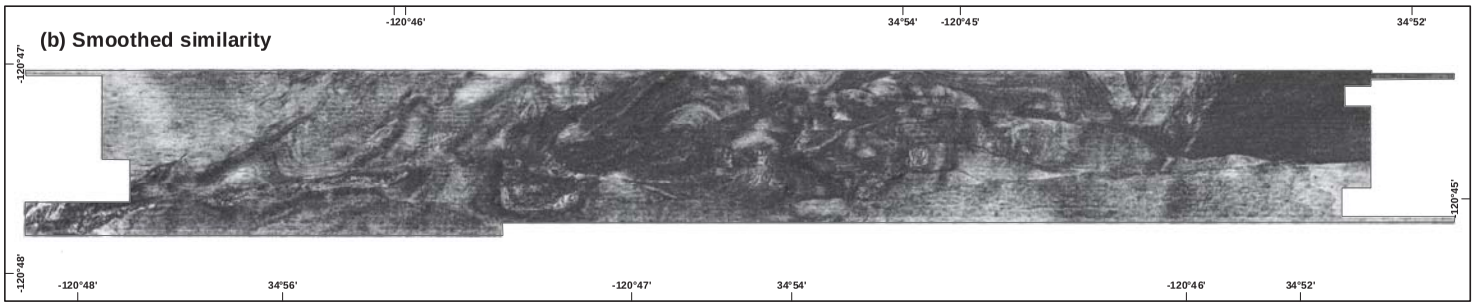


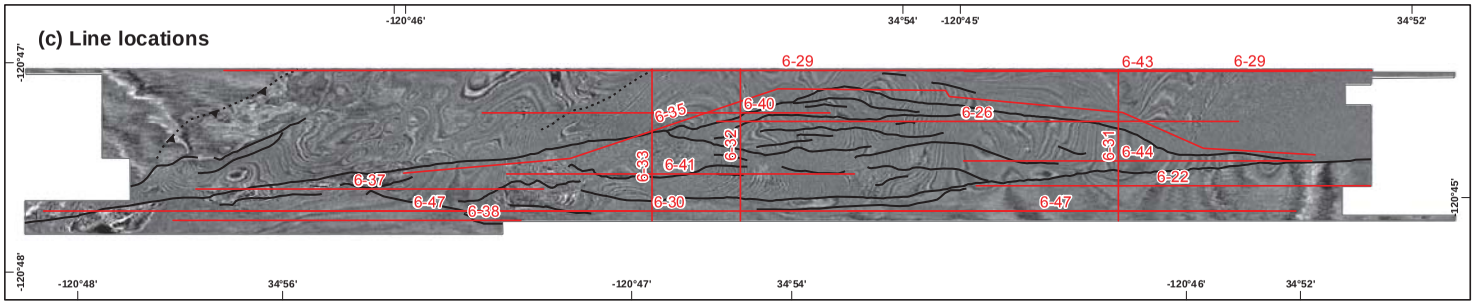
Line 1240 Showing ELP/NTN and H10 and H30 Unconformities and Channel Deposits

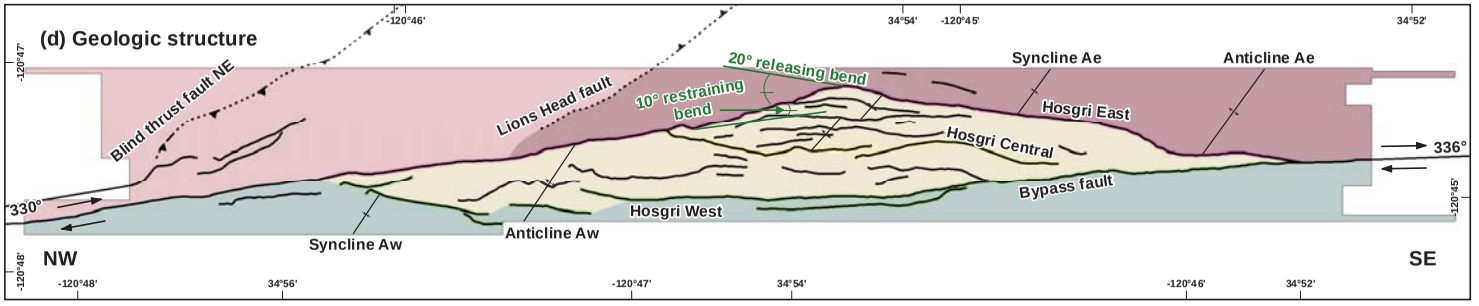
OFFSHORE LESS STUDIES

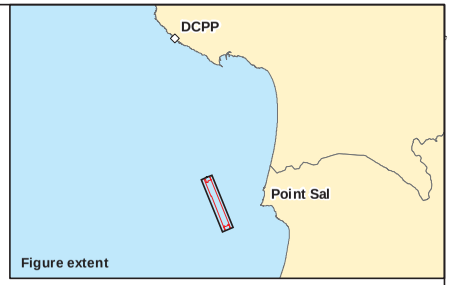
Pacific Gas and Electric Company | Figure **6-26**







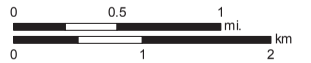




EXPLANATION

- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand
- 6-37 Line location and figure number
- Central block
- Eastern block south
- Eastern block north
- Western block (Santa Maria Basin)
- 2012 Point Sal 3D high-resolution survey extent

Note: Maps are rotated 68.02 degrees to the northwest.



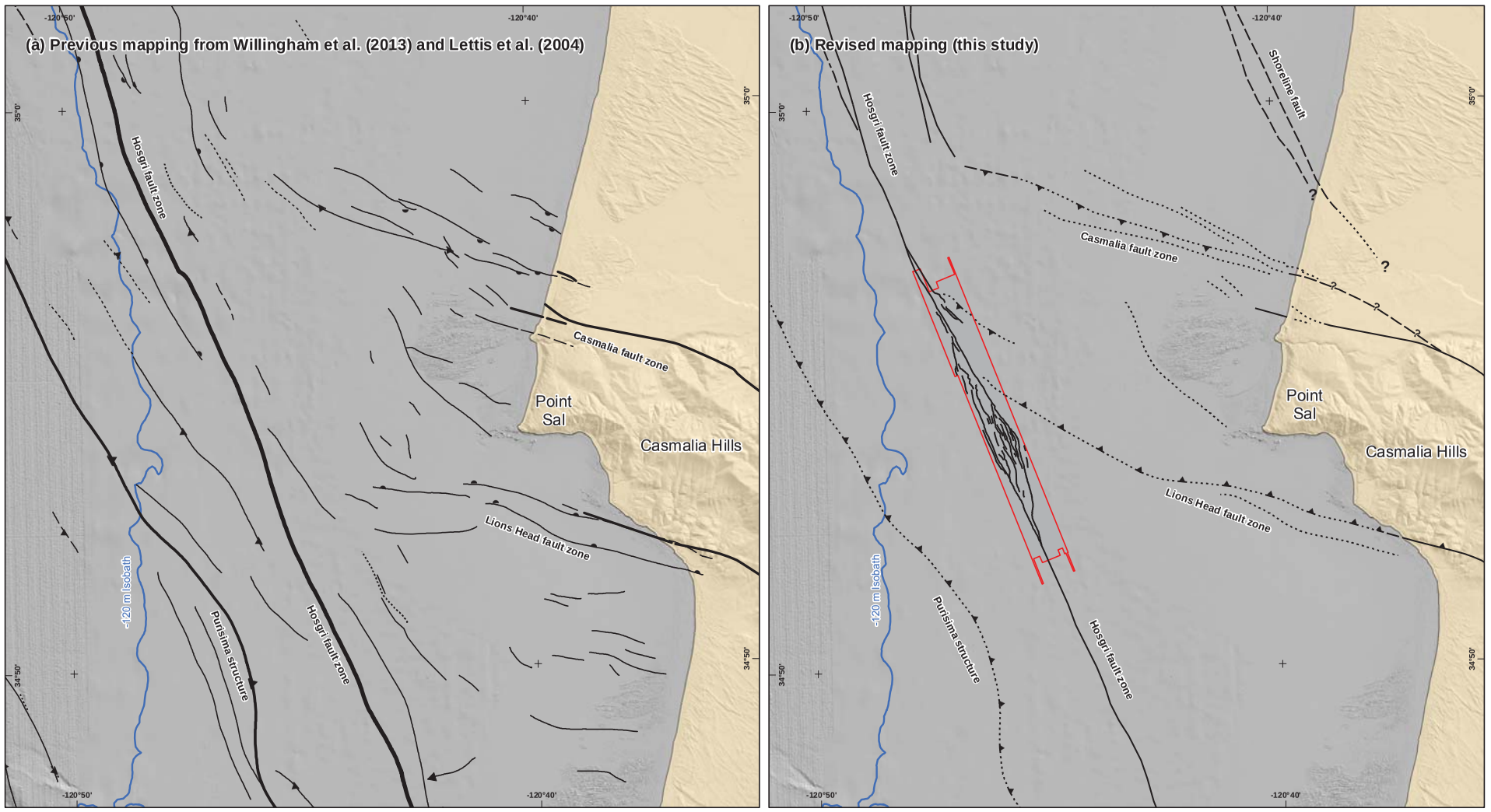
Map projection and scale: WGS 84 / UTM Zone 10N, 1:38,000

Amplitude and Similarity Time Slices at 160 ms, Point Sal

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-27**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-27_PS_TimeSlices.mxd; Date: 7/17/2014; User: Ranon Dulberg, Fugro, Rev 3



EXPLANATION

- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- -120 m isobath
- 2012 Point Sal 3D high-resolution survey extent

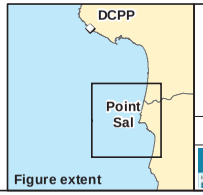
N

0 2 4 mi.
0 3 6 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:125,000

Source: PG&E DEM compilation v2013.07.

Note: Only faults exhibiting inferred Quaternary activity are mapped on panel (b) for this study.



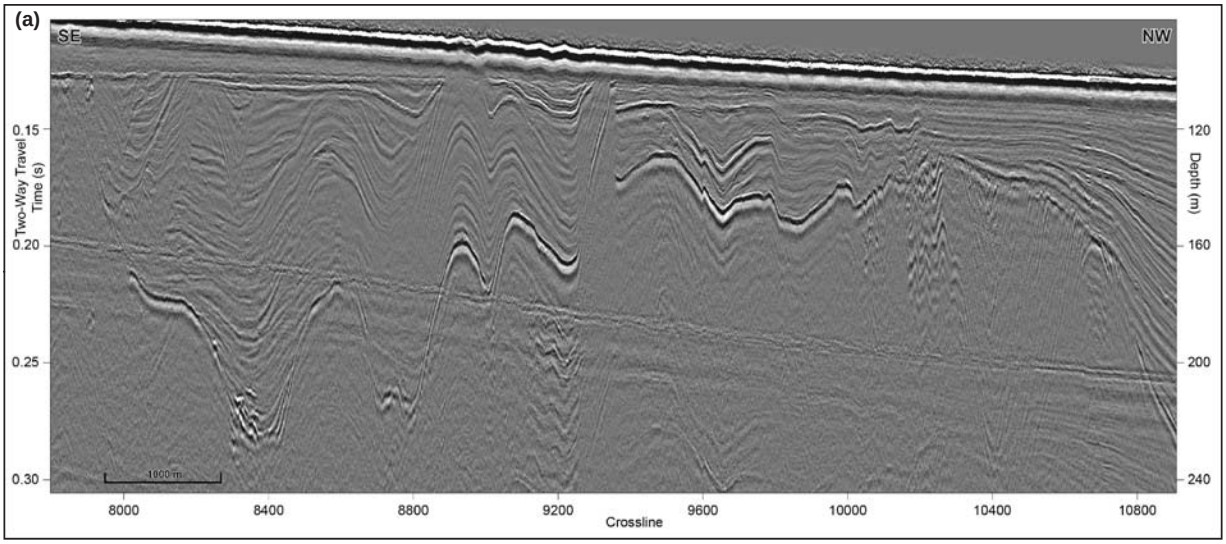
Point Sal Fault Map Comparison

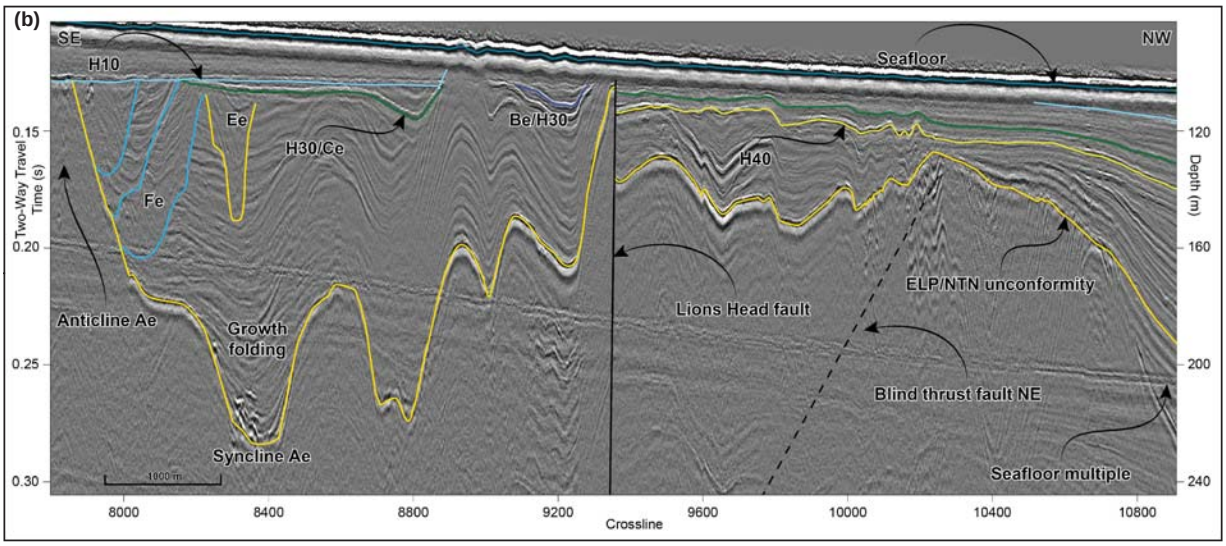
OFFSHORE LESS STUDIES

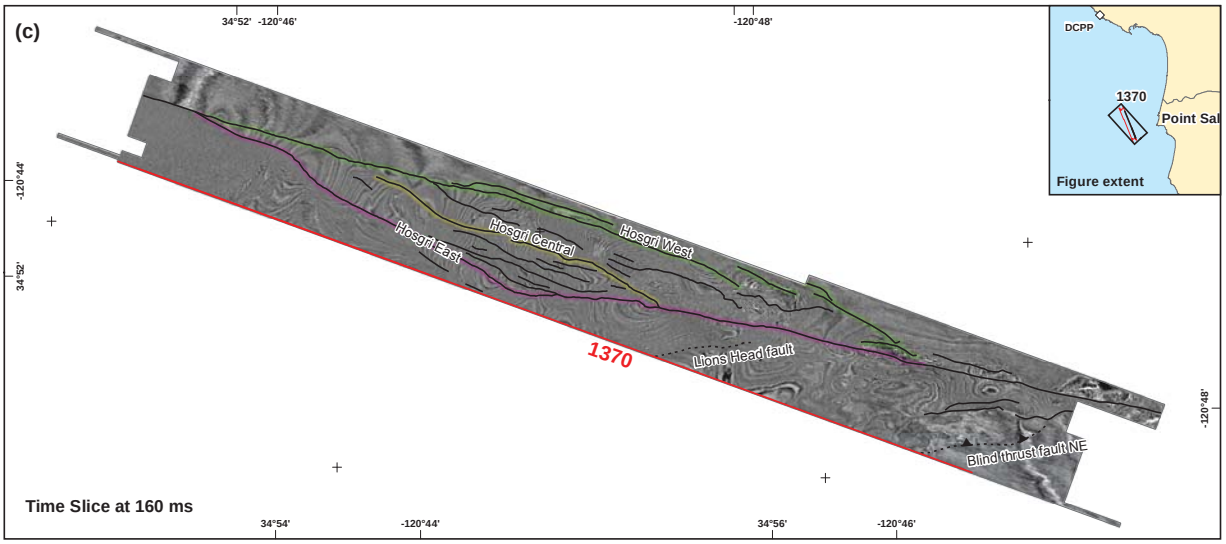
Pacific Gas and Electric Company

Figure **6-28**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-28_PS_Fault_Map_Comparison.mxd; Date: 7/17/2014; User: Ranon Dulberg, Fugro; Rev.3







EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- H40 unconformity
- Early-late Pliocene/ near top Neogene unconformity (ELP/NTN)
- Inline 1370
- Channel B margin
- Channel C margin
- Channel E margin
- Channel F margin
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

Notes:
1. Map is rotated 132 degrees to the northeast.
2. See Figure 6-27 for line location.

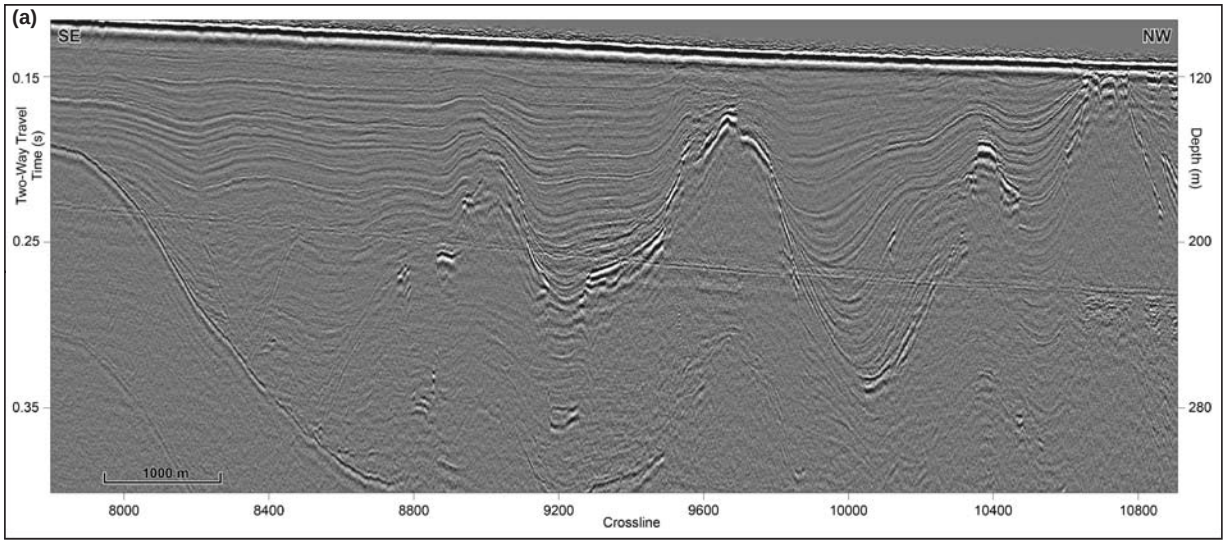
0 0.5 1 mi.
0 0.5 1 km

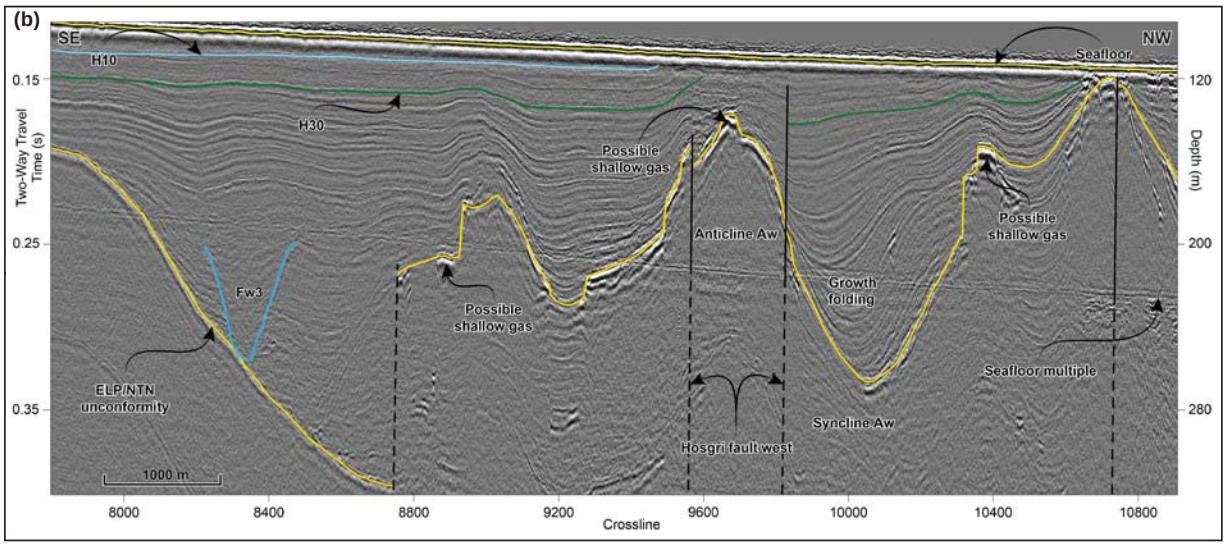
Map projection and scale: WGS 84 / UTM Zone 10N, 1:48,000

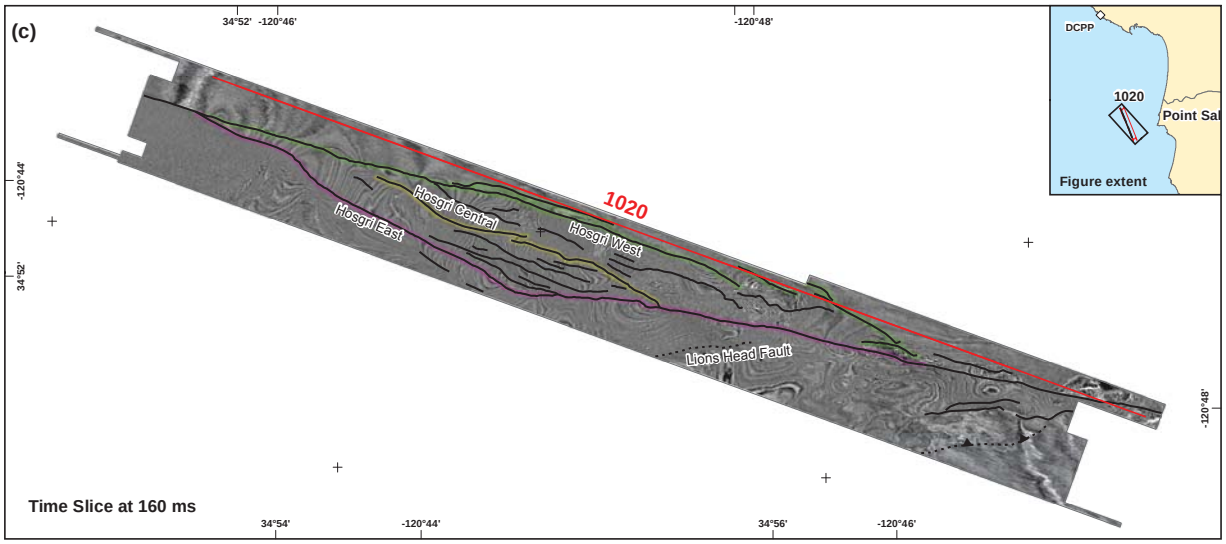
Inline 1370 East of the HFZ, Uninterpreted and Interpreted Showing ELP/ NTN Unconformity, Point Sal

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-29**







EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/ near top of Neogene unconformity (ELP/NTN)
- Channel F margins
- Inline 1020
- 2012 Point Sal 3D high-resolution survey extent
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand

Notes:
1. Map is rotated 132 degrees to the northeast.
2. See Figure 6-27 for line location.

0 0.5 1 mi.
0 0.5 1 km

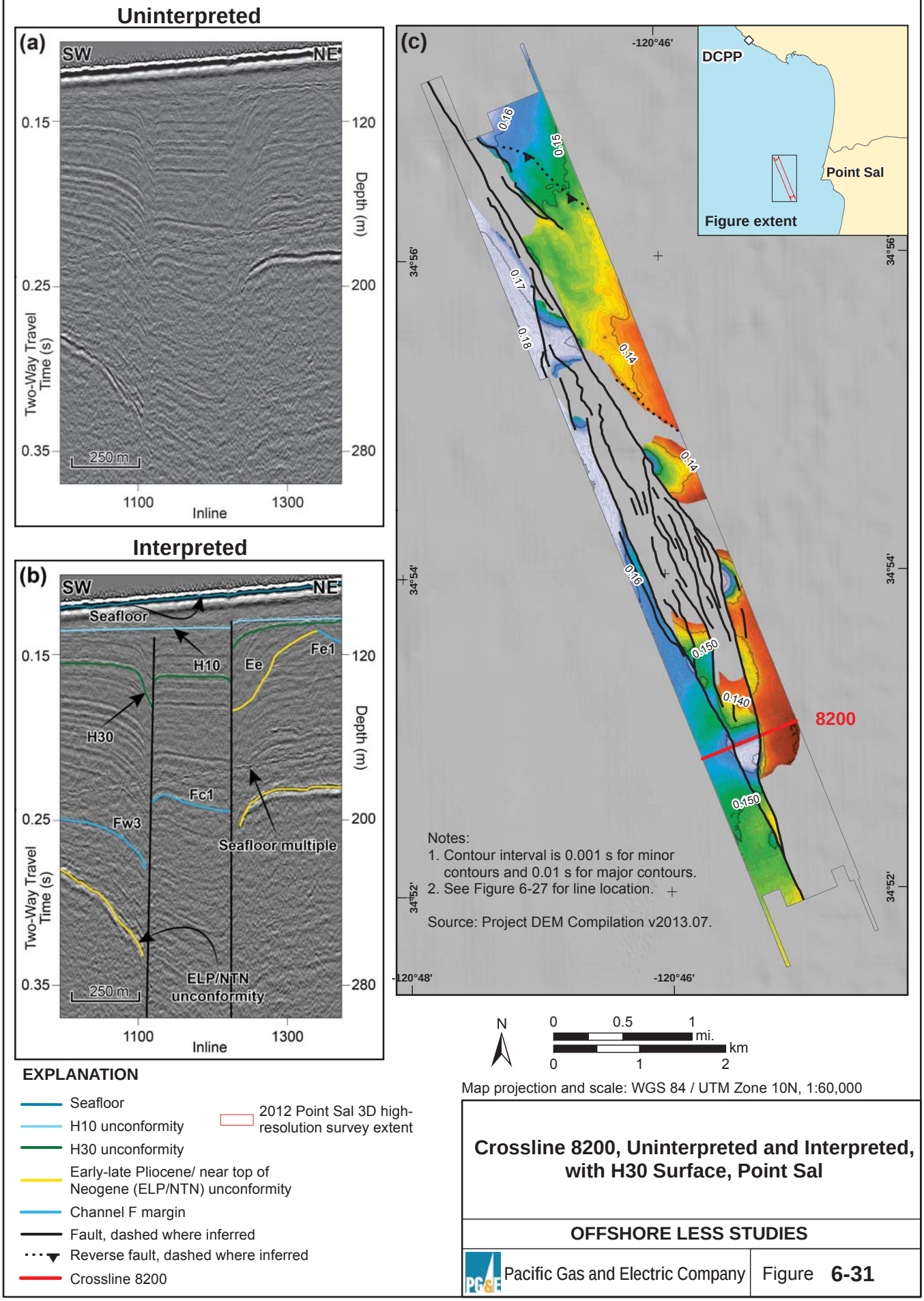
Map projection and scale: WGS 84 / UTM Zone 10N, 1:48,000

Inline 1020 West of the HFZ, Uninterpreted and Interpreted, Showing ELP/NTN Unconformity and Faults

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-30**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-30_Line1020.mxd; Date: 7/17/2014; User: Ranon Dulberg, Fugro; Rev.3



Map projection and scale: WGS 84 / UTM Zone 10N, 1:60,000

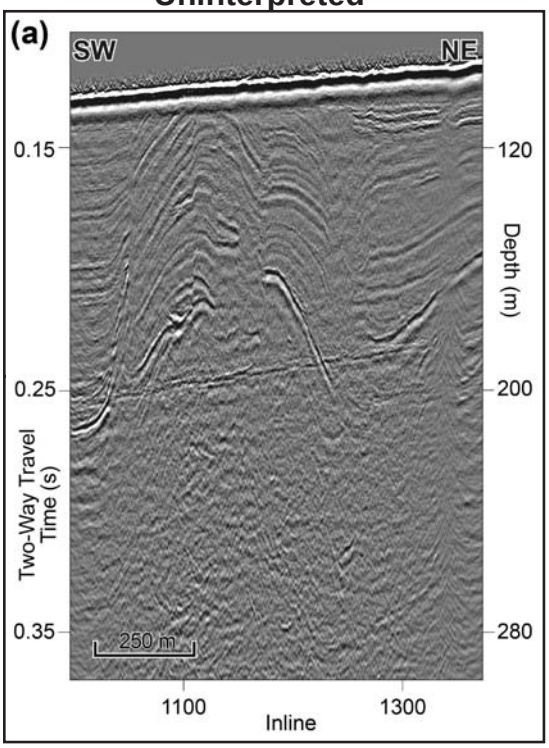
Crossline 8200, Uninterpreted and Interpreted, with H30 Surface, Point Sal

OFFSHORE LESS STUDIES

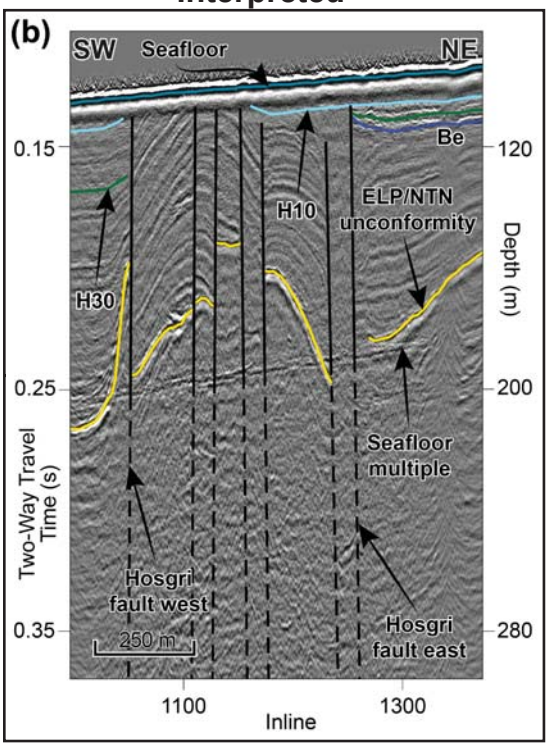
Pacific Gas and Electric Company | Figure **6-31**

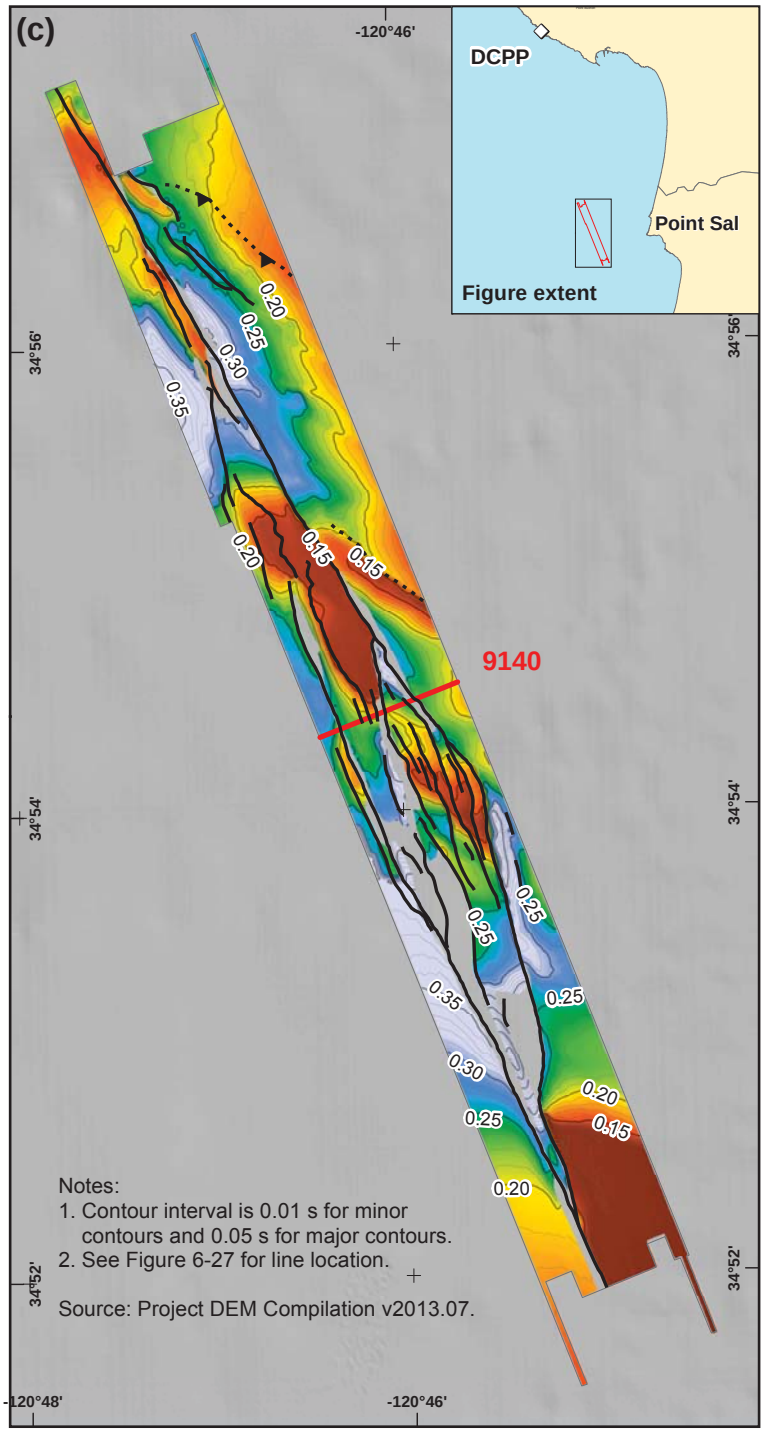
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-31_Crossline8200.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



Interpreted





N

0 0.5 1 mi.

0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:60,000

EXPLANATION

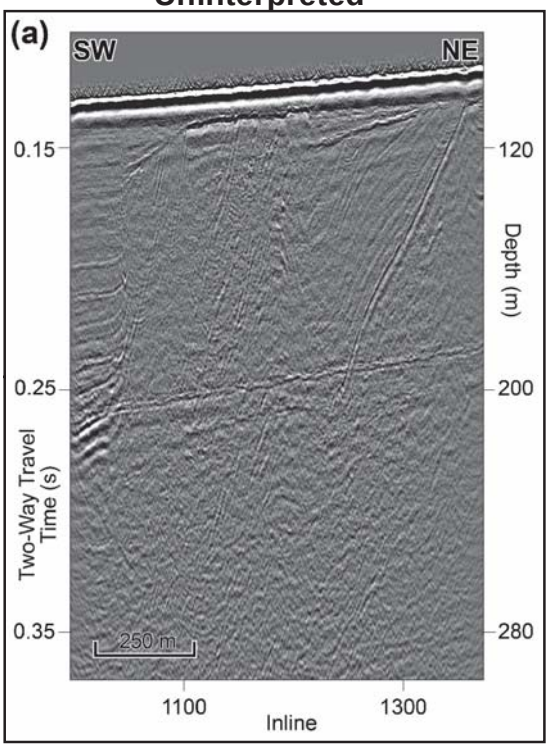
- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/ near top of Neogene (ELP/NTN) unconformity
- Channel B margin
- Fault, dashed where inferred
- Reverse fault, dashed where inferred
- Crossline 9140
- 2012 Point Sal 3D high-resolution survey extent

Crossline 9140, Uninterpreted and Interpreted, with ELP/NTN Unconformity Surface, Point Sal

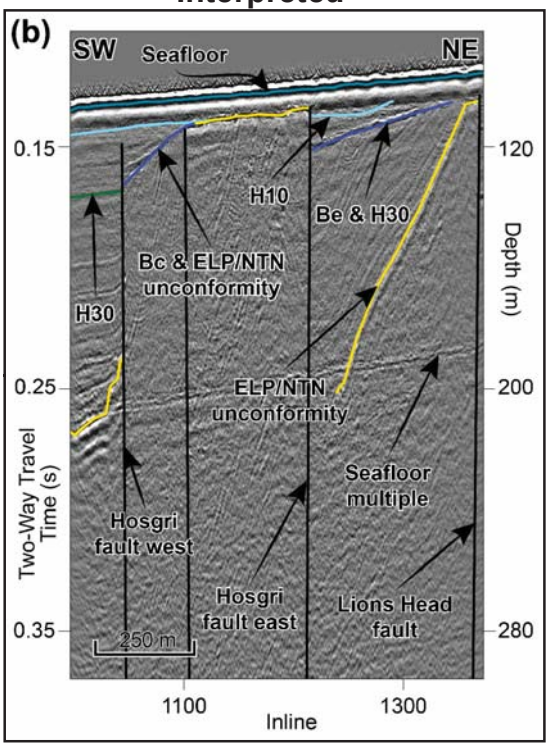
OFFSHORE LESS STUDIES

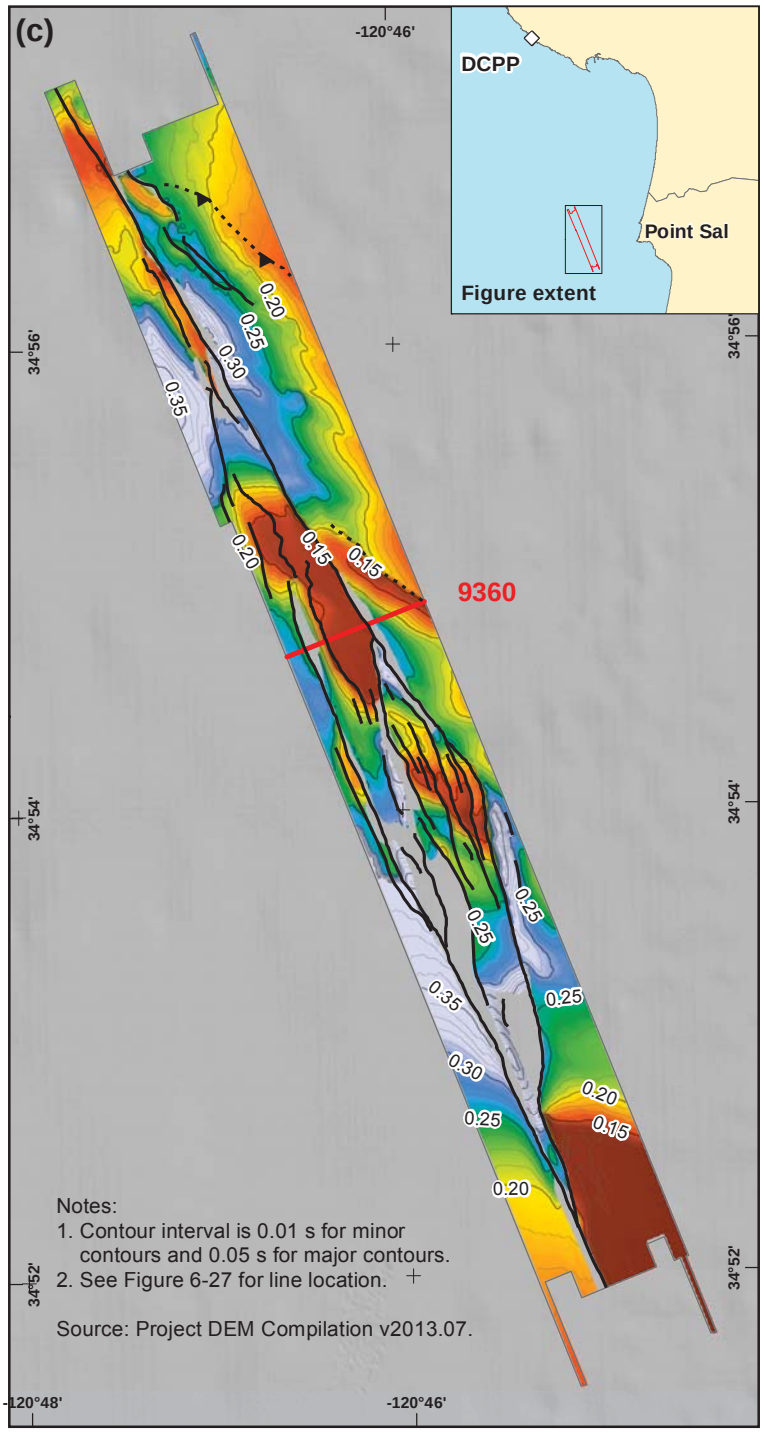
Pacific Gas and Electric Company | Figure **6-32**

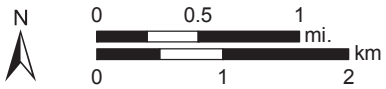
Uninterpreted



Interpreted







Map projection and scale: WGS 84 / UTM Zone 10N, 1:60,000

EXPLANATION

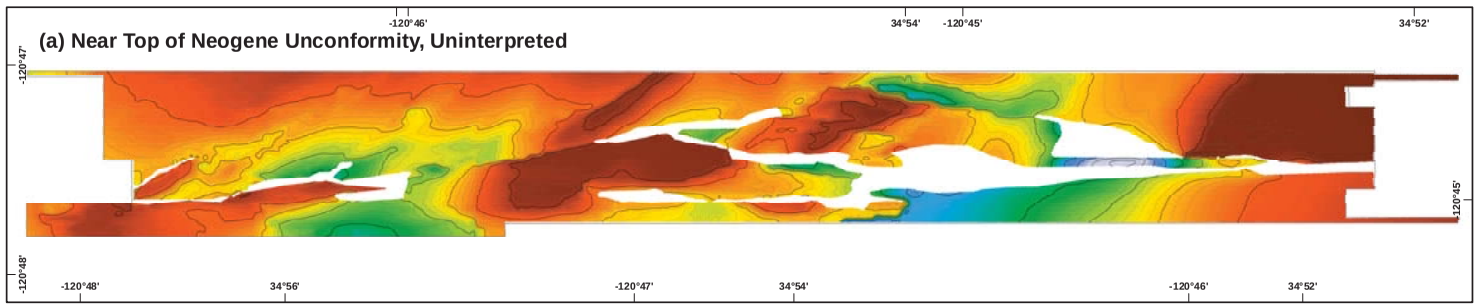
- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene/ near top of Neogene (ELP/NTN) unconformity
- Channel B margin
- Fault, dashed where inferred
- Reverse fault, dashed where inferred
- Crossline 9360
- 2012 Point Sal 3D high-resolution survey extent

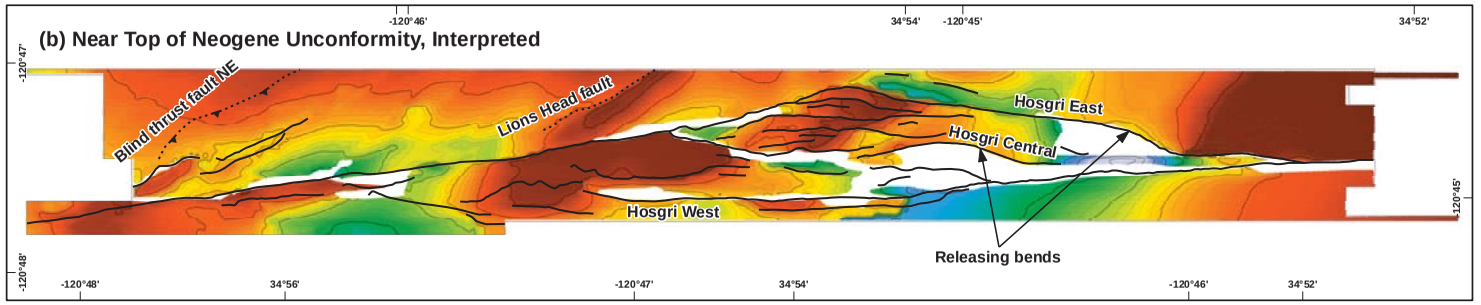
Crossline 9360, Uninterpreted and Interpreted, with ELP/NTN Unconformity Surface, Point Sal

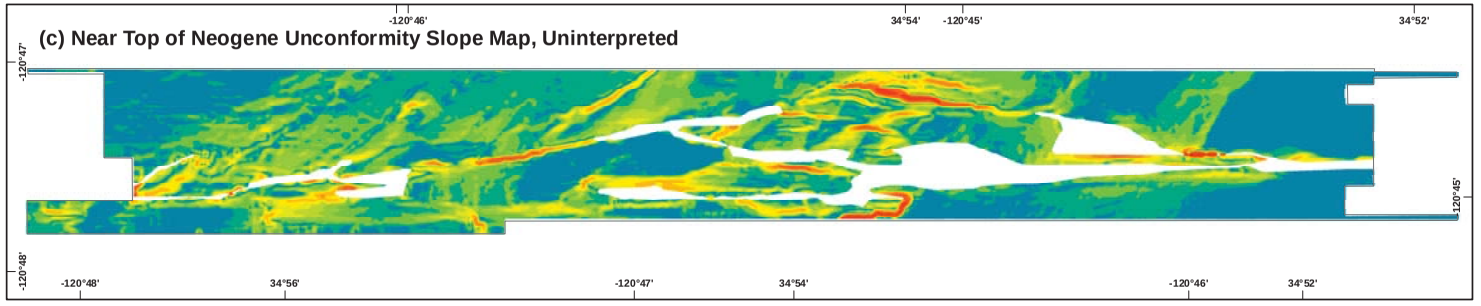
OFFSHORE LESS STUDIES

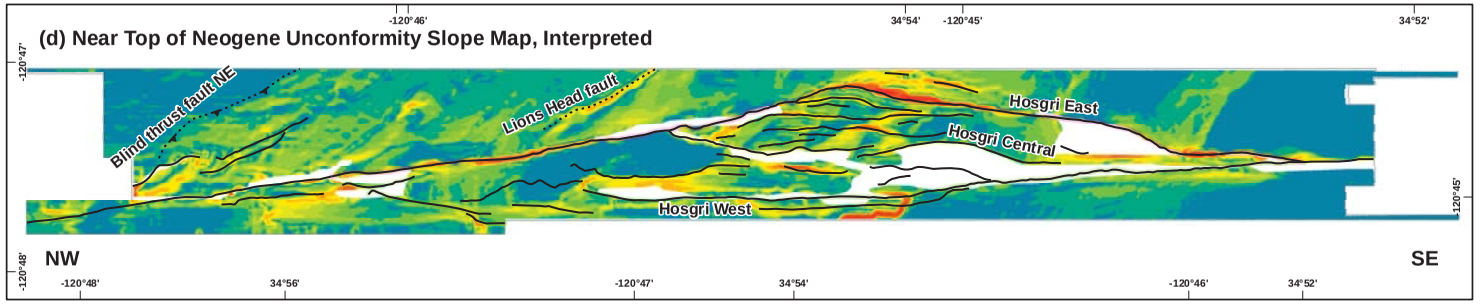
Pacific Gas and Electric Company | Figure **6-33**

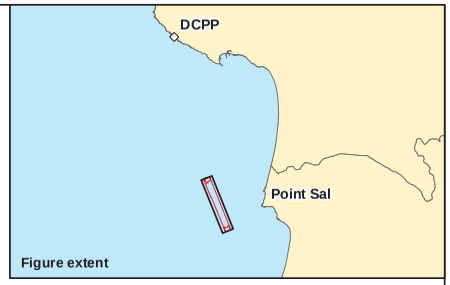
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-33_Crossline9360.mxd; Date: 7/17/2014; User: Ranon Dulberg, Fugro; Rev.3











EXPLANATION

- Fault, dashed where inferred
- Reverse fault, dashed where inferred
- 2012 Point Sal 3D high-resolution survey extent

Two-way Travel Time (seconds)

0.12 (s)

0.56 (s)

Neogene Slope (degrees)

0–5	30–40
5–10	40–50
10–15	50–60
15–20	60–70
20–25	70–80
25–30	80–90

Notes:
1. Contour interval is 0.01 ms for minor contours and 0.05 ms for major contours.
2. Maps are rotated 68.02 degrees to the northwest.

0 0.5 1 mi.
0 1 2 km

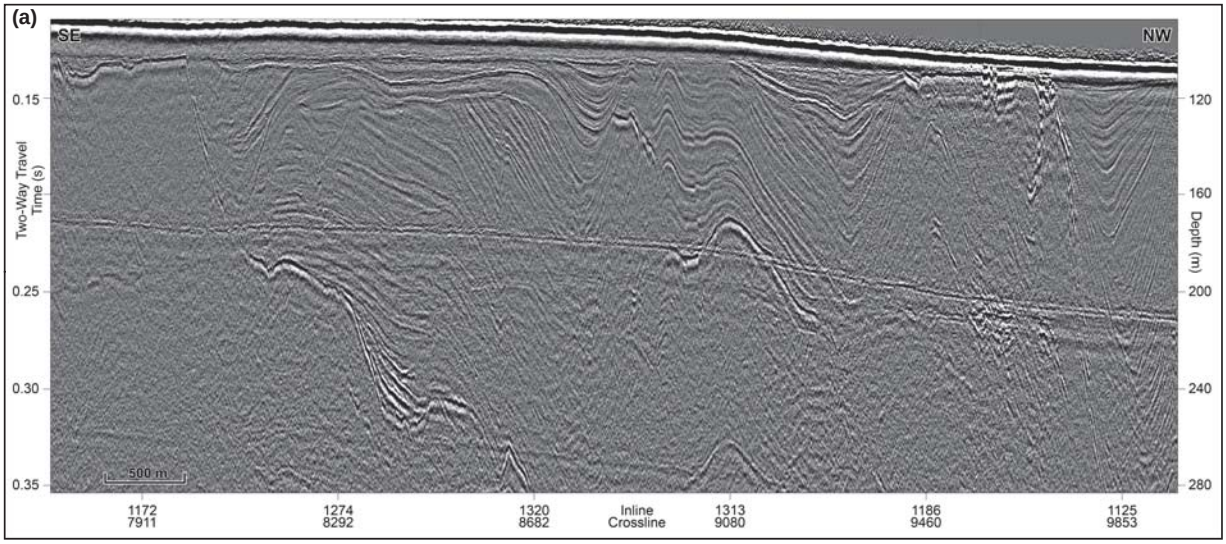
Map projection and scale: WGS 84 / UTM Zone 10N, 1:38,000

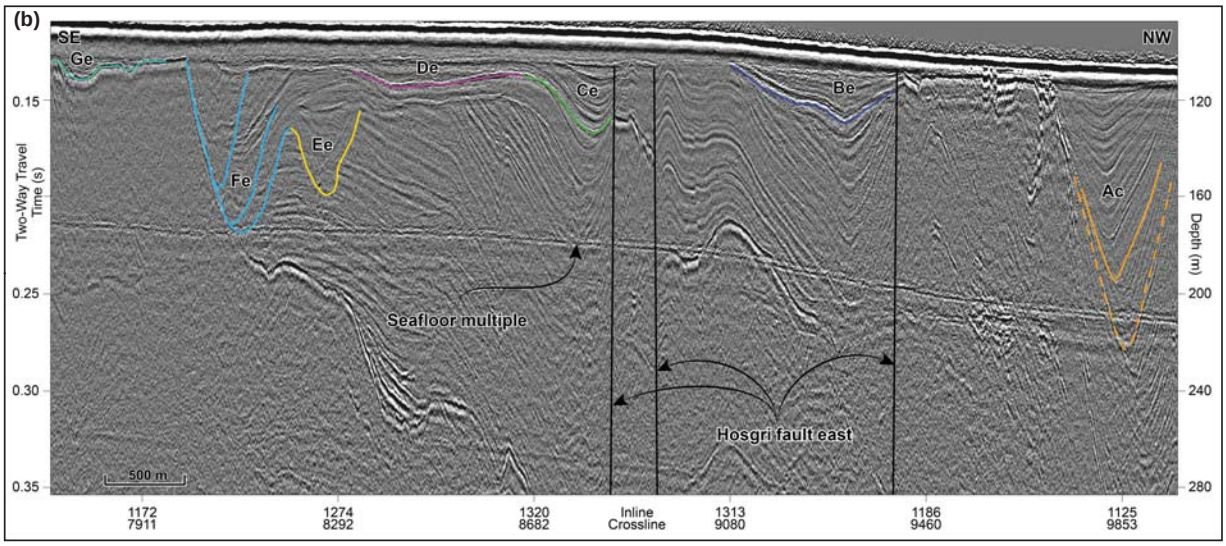
Near Top of Neogene Unconformity Contoured in Time and Slope Map, Uninterpreted and Interpreted, Point Sal

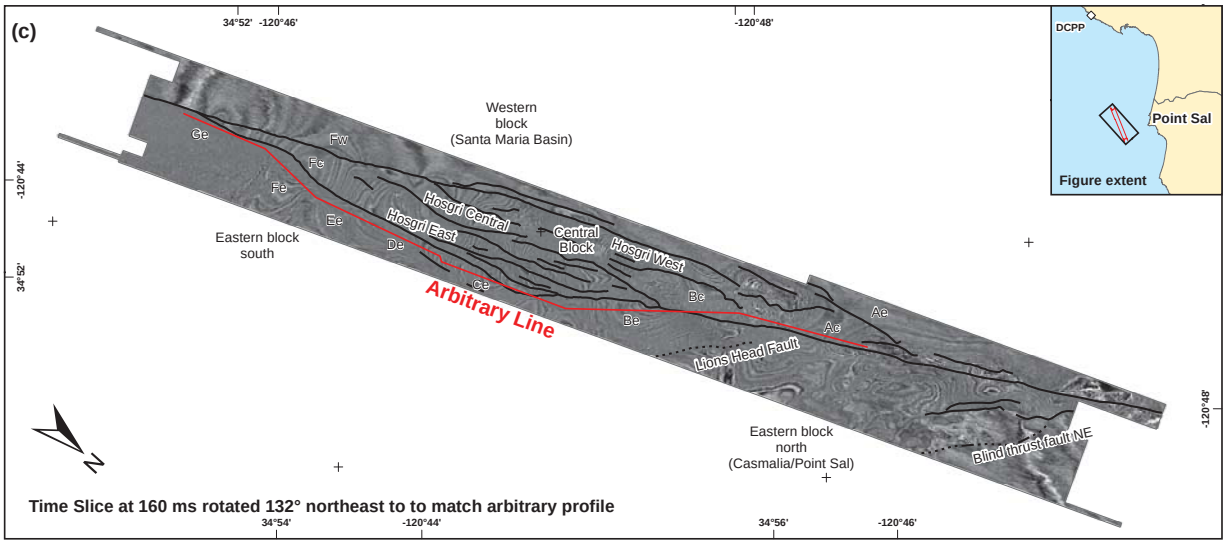
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-34**

File Path: N:\Projects\04_20130\4_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-34_PS_NTN; Date: 05/15/2014; User: Bryan Bergkamp, Fugro; Rev. 3







EXPLANATION

- Seafloor
- Channel A margin
- Channel B margin
- Channel C margin
- Channel D margin
- Channel E margin
- Channel F margin
- Channel G margin
- Fault, dashed where inferred
- Reverse fault, dashed where inferred
- Arbitrary Line
- 2012 Point Sal 3D high-resolution survey extent

Notes:
1. Map is rotated 132 degrees to the northeast to best match arbitrary profile.
2. See Figure 6-27 for line location.

0 0.5 1 mi.
0 0.5 1 km

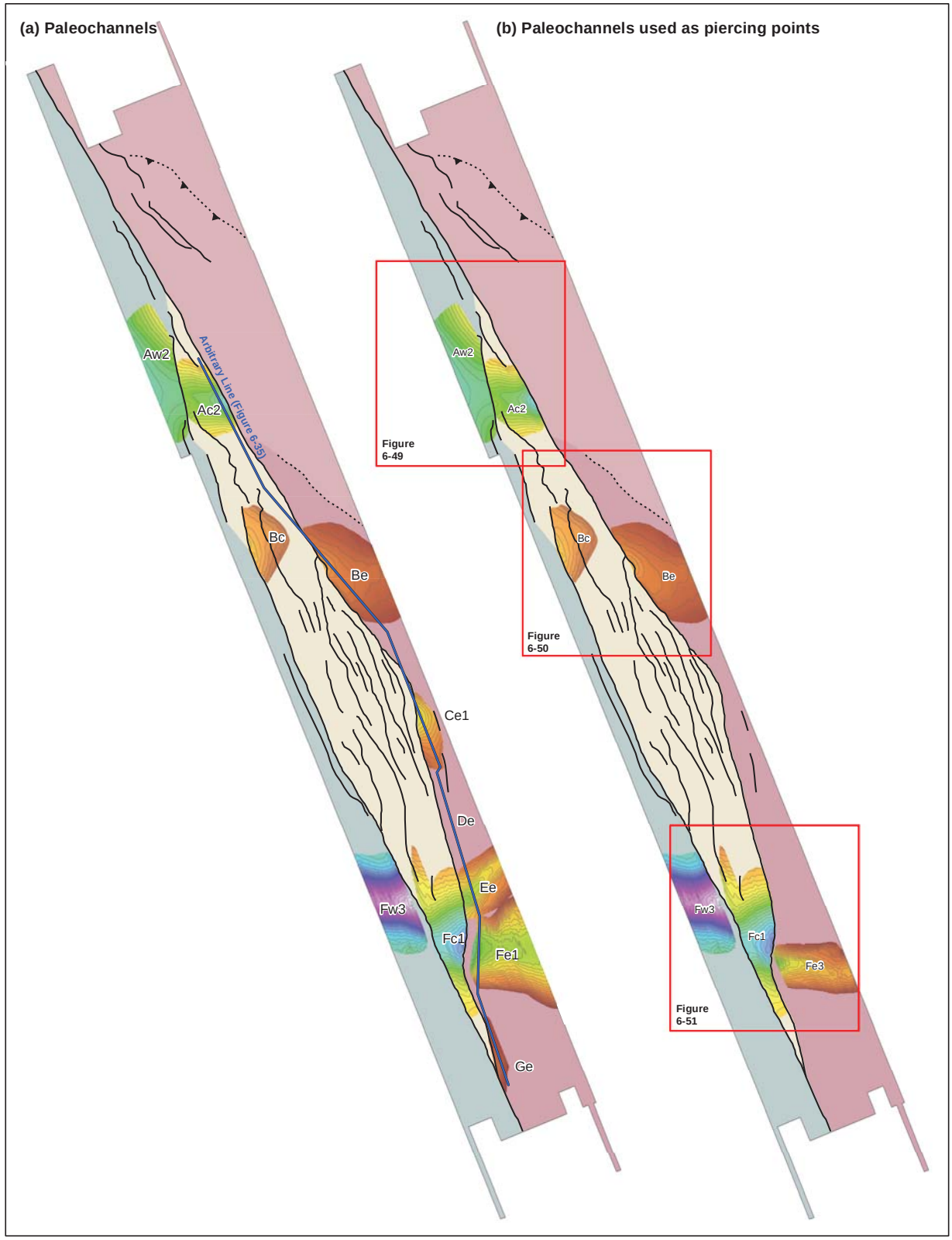
Map projection and scale: WGS 84 / UTM Zone 10N, 1:48,000

Arbitrary Amplitude Section Showing Channels A–G, Uninterpreted and Interpreted, with Labeled Channels

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-35**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-35_ArbitraryLine.mxd; Date: 7/16/2014; User: R. Dame, Fugro; Rev.3



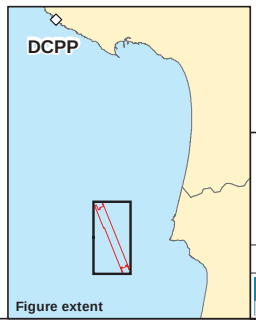
EXPLANATION

- Fault, dashed where inferred
- Reverse fault, dashed where inferred
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand
- Arbitrary line
- Western block
- Central block
- Eastern block north (Point Sal block)
- Eastern block south
- 2012 Point Sal 3D high-resolution survey extent

Channel Depth

116 ms (~93 m)

Source: Project DEM compilation v2013.01.



N

0 0.5 1 mi.

0 1 2 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:34,000

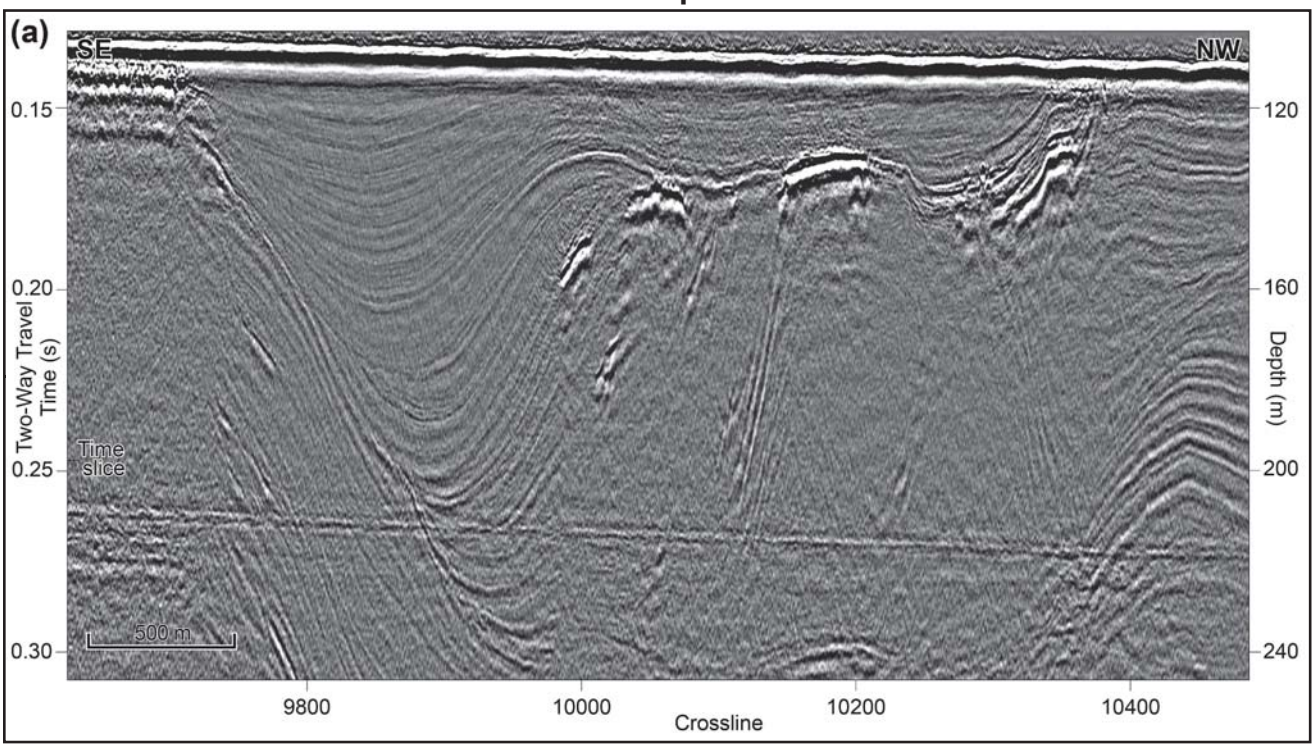
Gridded (Time) Paleochannels with Piercing Point Figure Locations

OFFSHORE LESS STUDIES

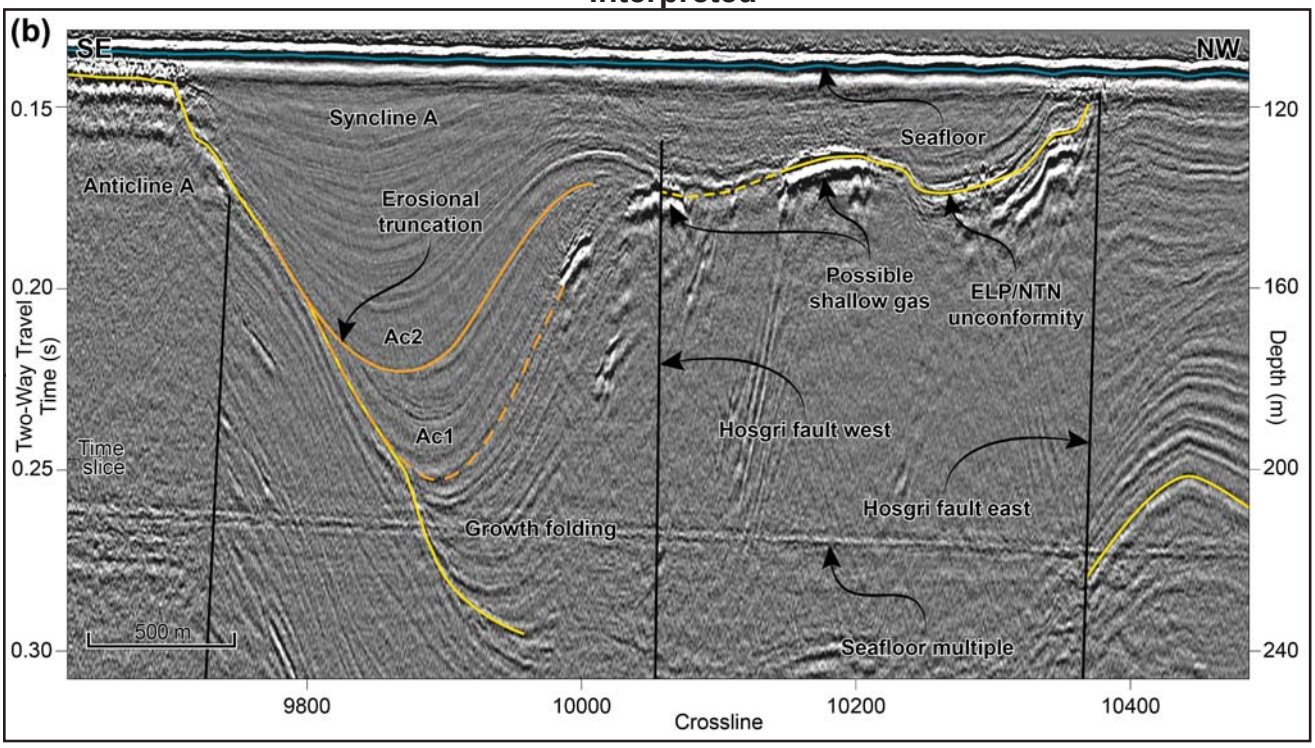
Pacific Gas and Electric Company | Figure **6-36**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-36_GriddedPChan.mxd; Date: 7/17/2014; User: Ranon Dulberg, Fugro; Rev. 3

Uninterpreted



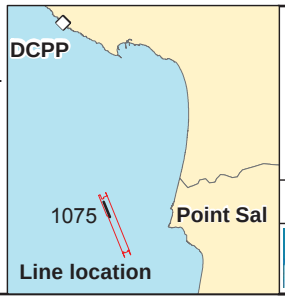
Interpreted



EXPLANATION

- Seafloor
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- Channel A margin
- Fault
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.



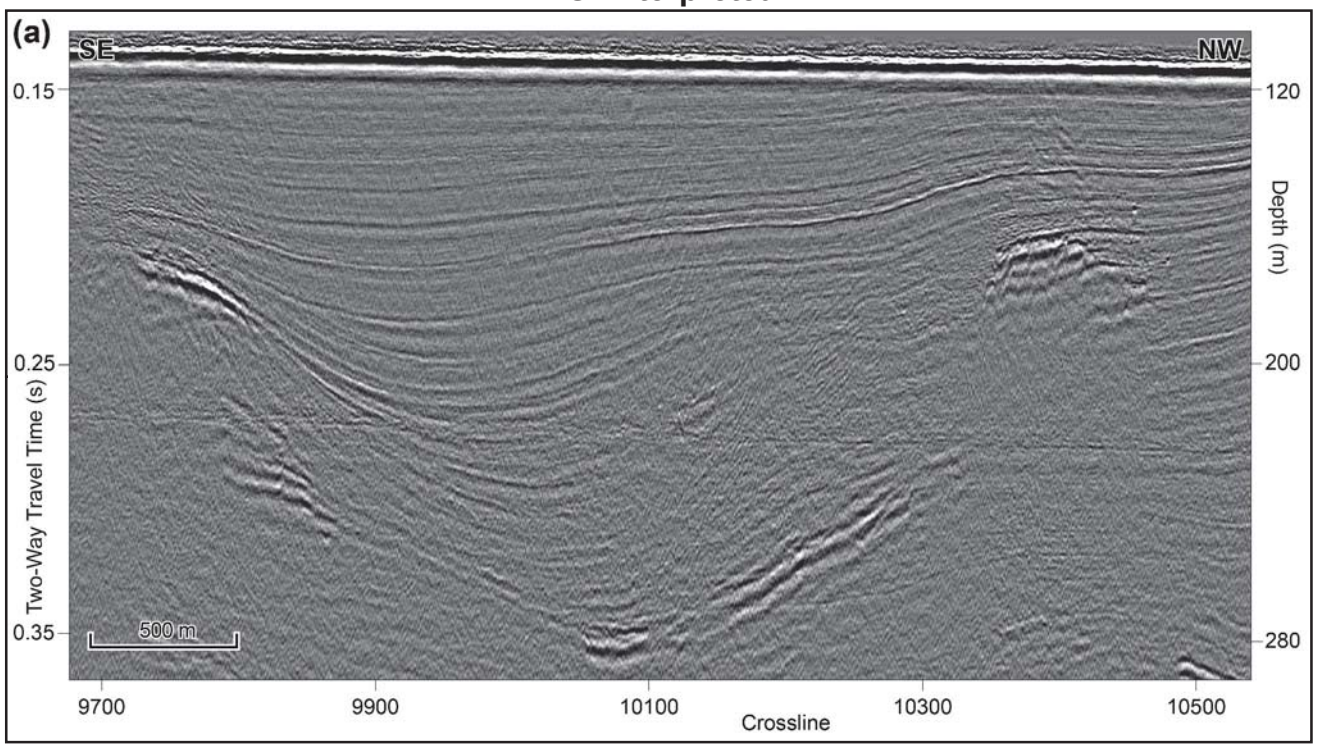
Line 1075 Syncline/Channel A Amplitude Section Central Block of Hosgri, Uninterpreted and Interpreted, with Labeled Channels

OFFSHORE LESS STUDIES

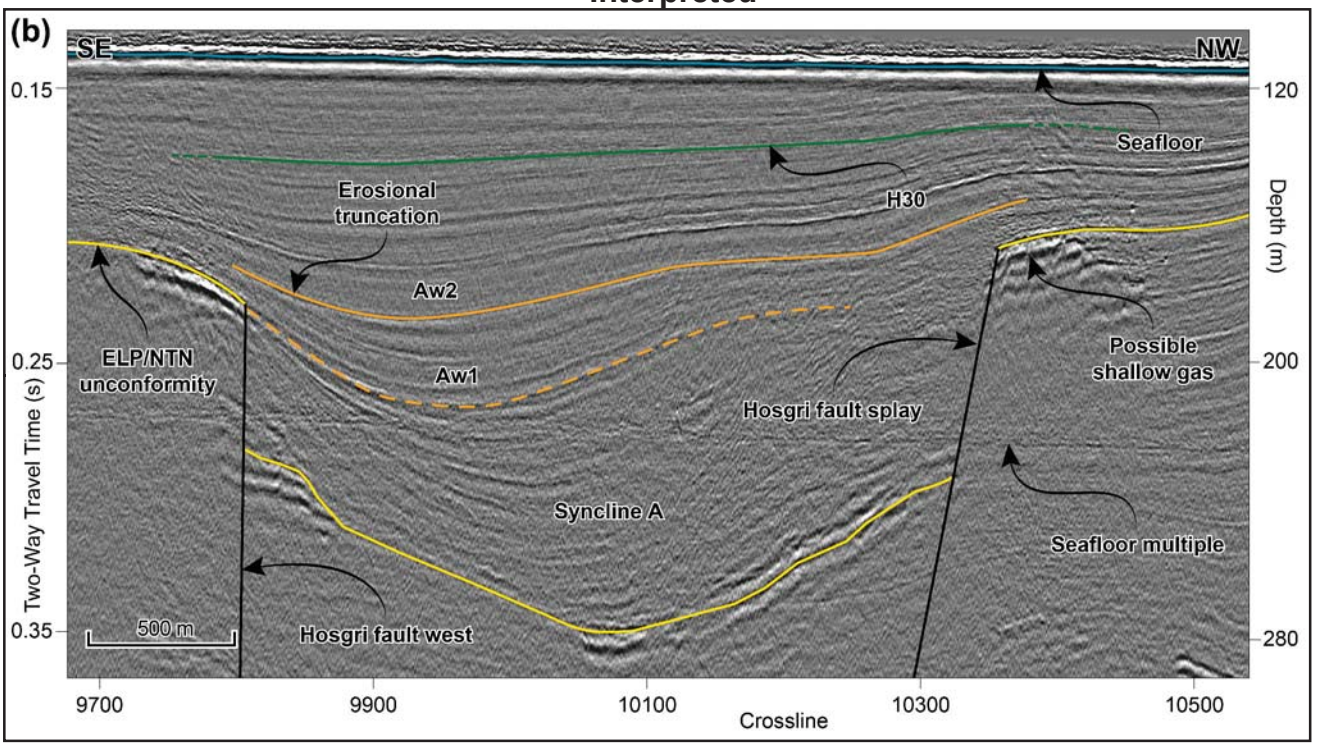
Pacific Gas and Electric Company | Figure **6-37**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-37_Line1075.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



Interpreted



EXPLANATION

- Seafloor
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- H30
- Channel A margin
- Fault
- Point Sal 3D high-resolution survey extent (2012)

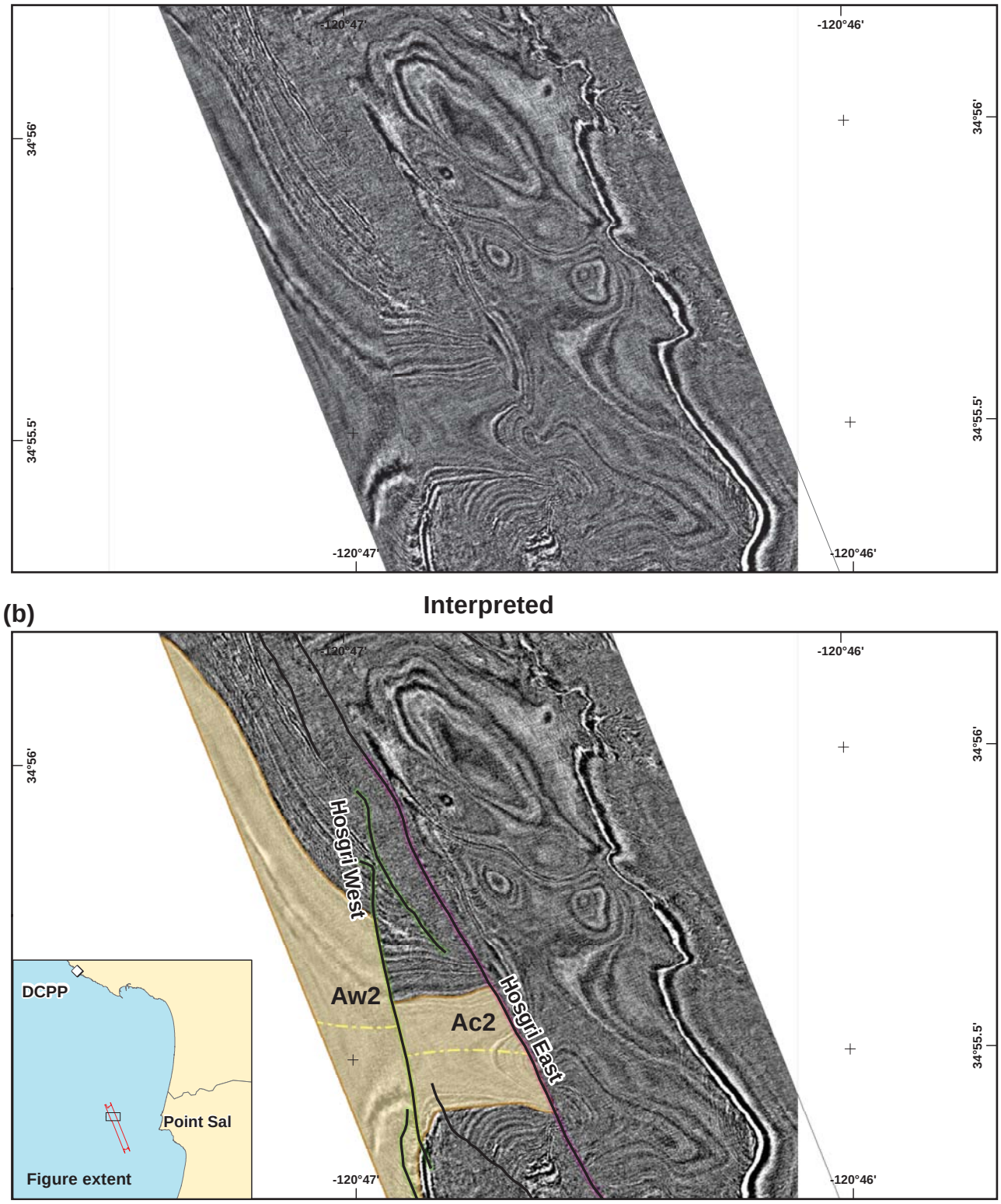
Note: See Figure 6-27 for line location.

Line 997 Syncline/Channel A Amplitude Section, West of HFZ, Uninterpreted and Interpreted, with Labeled Channels

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-38**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-38_Line997.mxd; Date: 7/18/2014; User: Bryan Bergkamp, Fugro; Rev.3



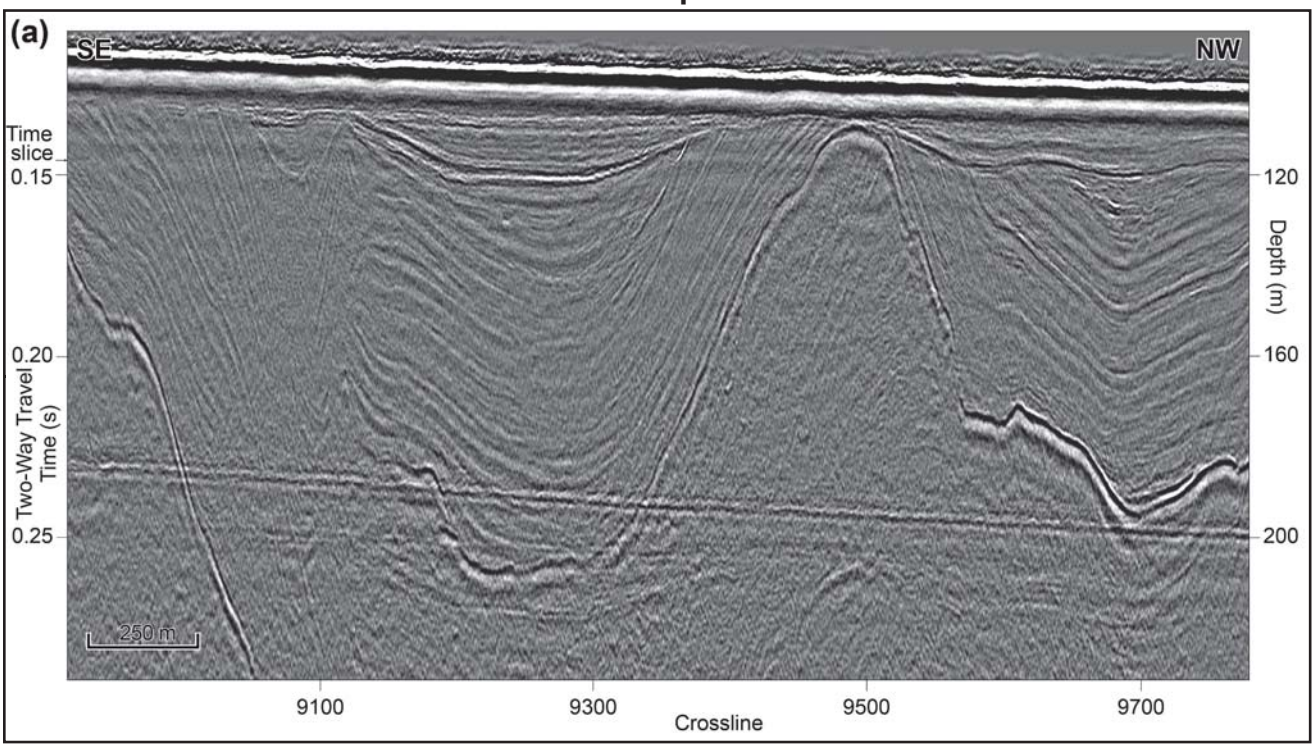
Channel A Time Slice at 247 ms West of HFZ Uninterpreted and Interpreted, with Labeled Channels

OFFSHORE LESS STUDIES

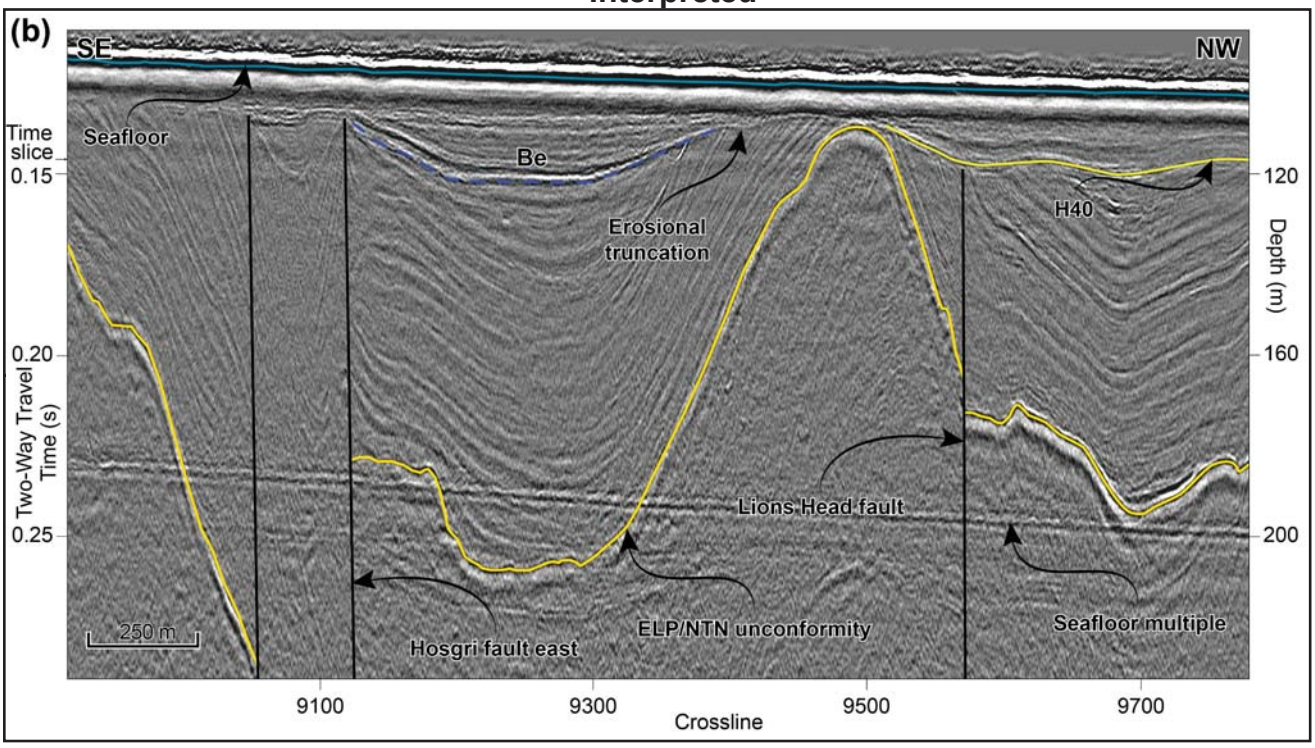
Pacific Gas and Electric Company | Figure **6-39**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-39_TimeSlice_0247.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



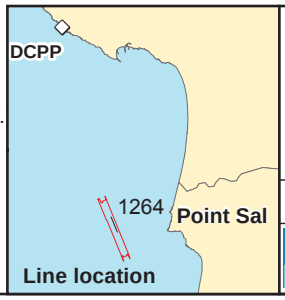
Interpreted



EXPLANATION

- Seafloor
- H40 unconformity
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- Channel B margin
- Fault
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.



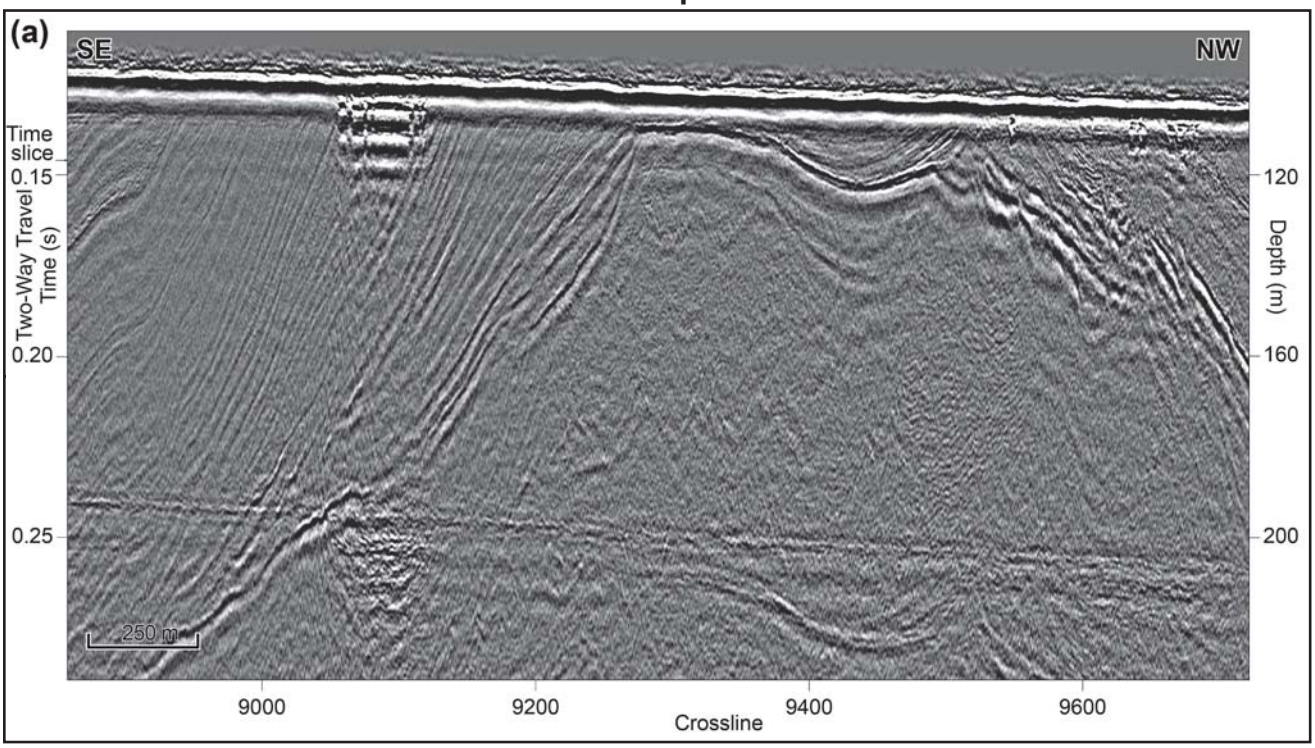
Line 1264 Channel B Amplitude Section East of the HFZ, Uninterpreted and Interpreted. with Labeled Channel

OFFSHORE LESS STUDIES

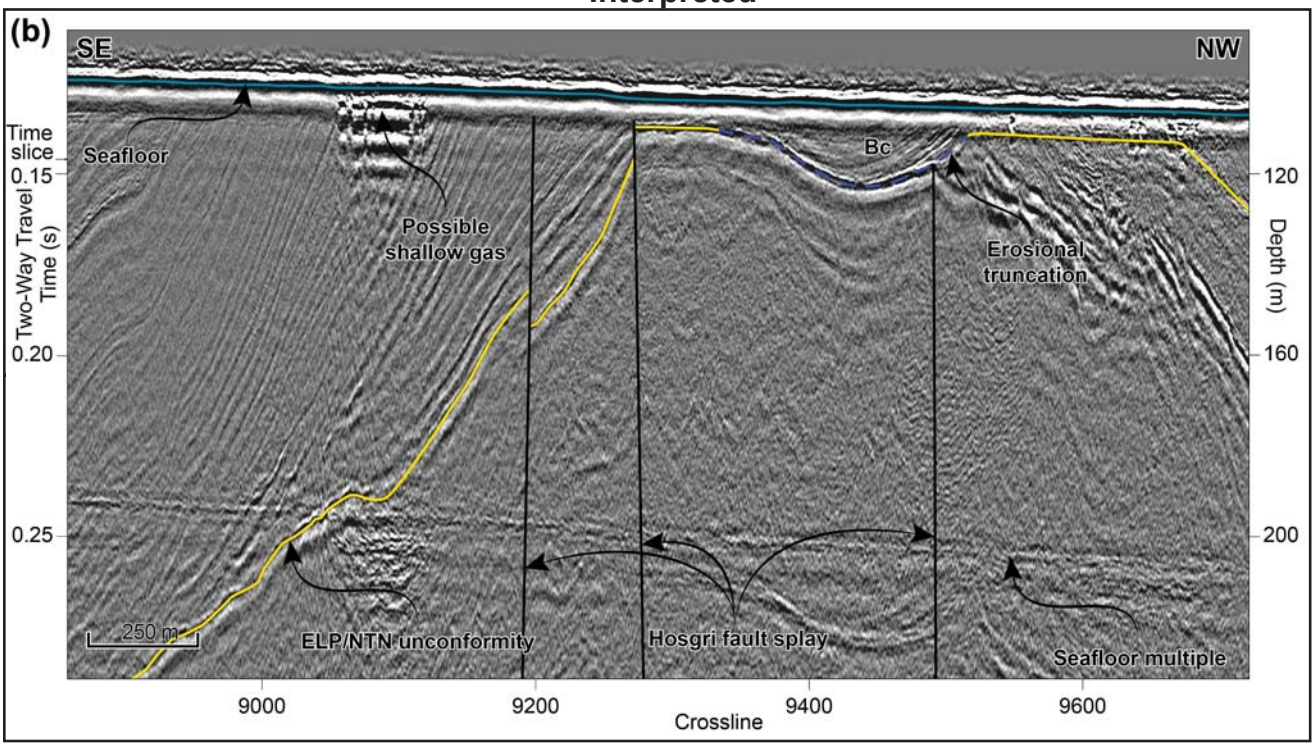
Pacific Gas and Electric Company | Figure **6-40**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-40_Line1264.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev. 3

Uninterpreted



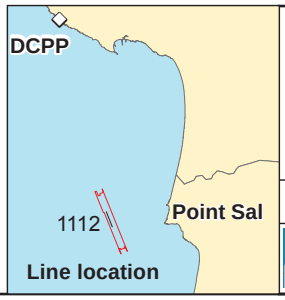
Interpreted



EXPLANATION

- Seafloor
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- Channel B margin
- Fault
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.

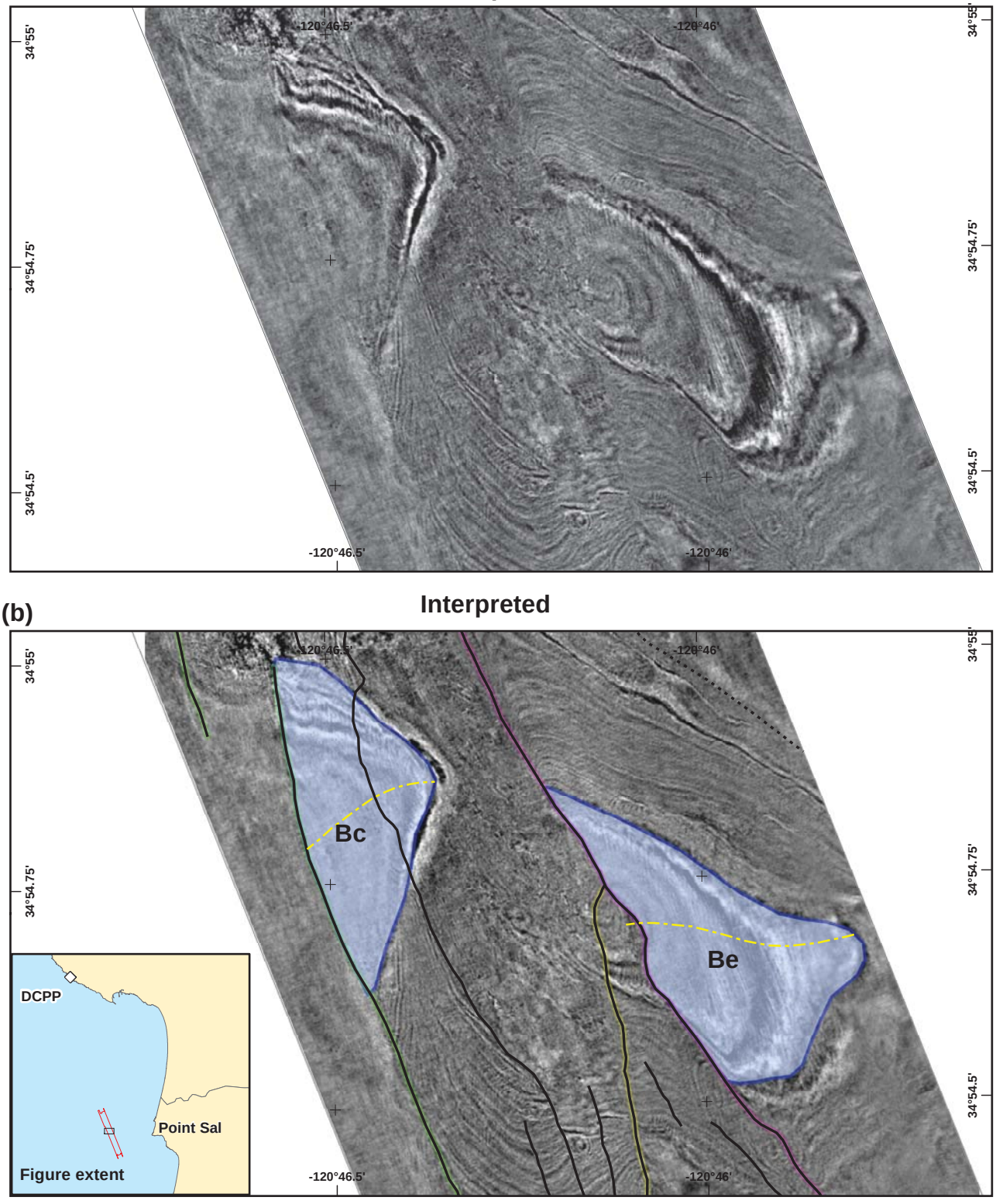


Line 1112 Channel B Amplitude Section Central Block, Uninterpreted and Interpreted, with Labeled Channel

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-41**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-41_Line1112.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



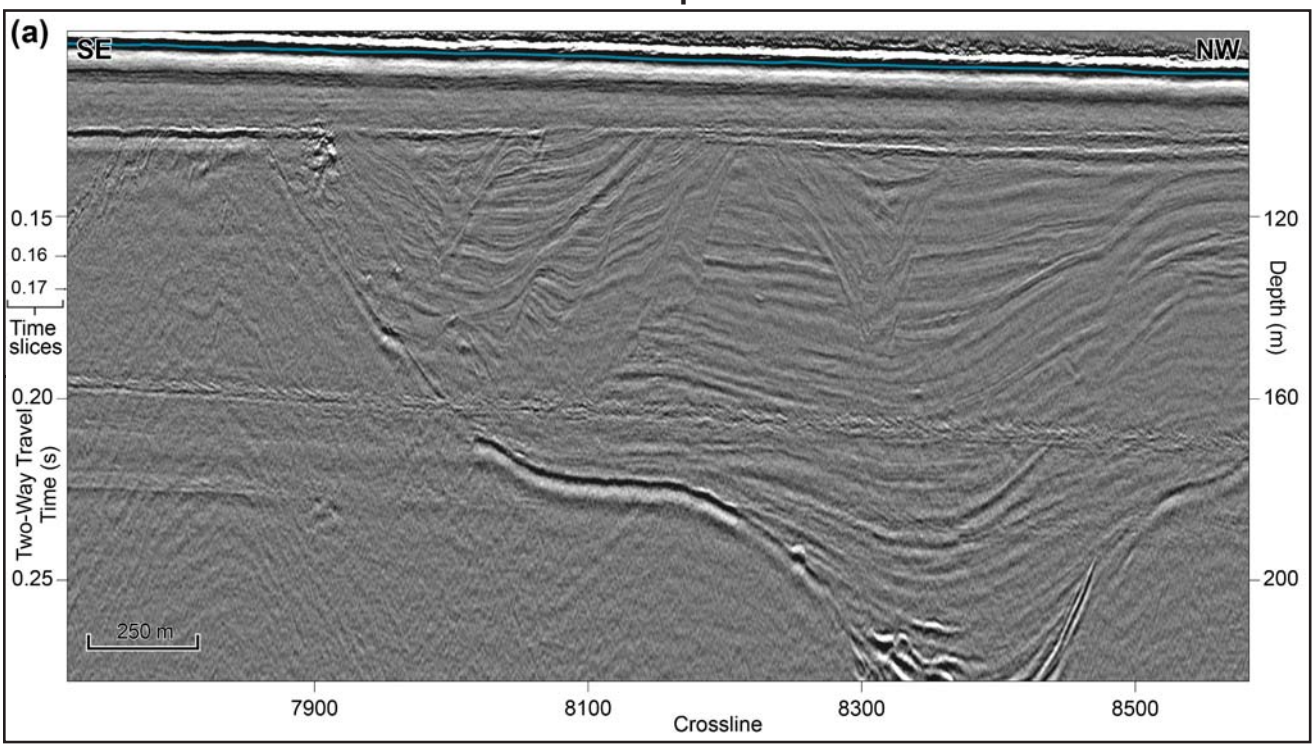
Channel B Time Slice at 146 ms Central Block, Uninterpreted and Interpreted, with Labeled Channels

OFFSHORE LESS STUDIES

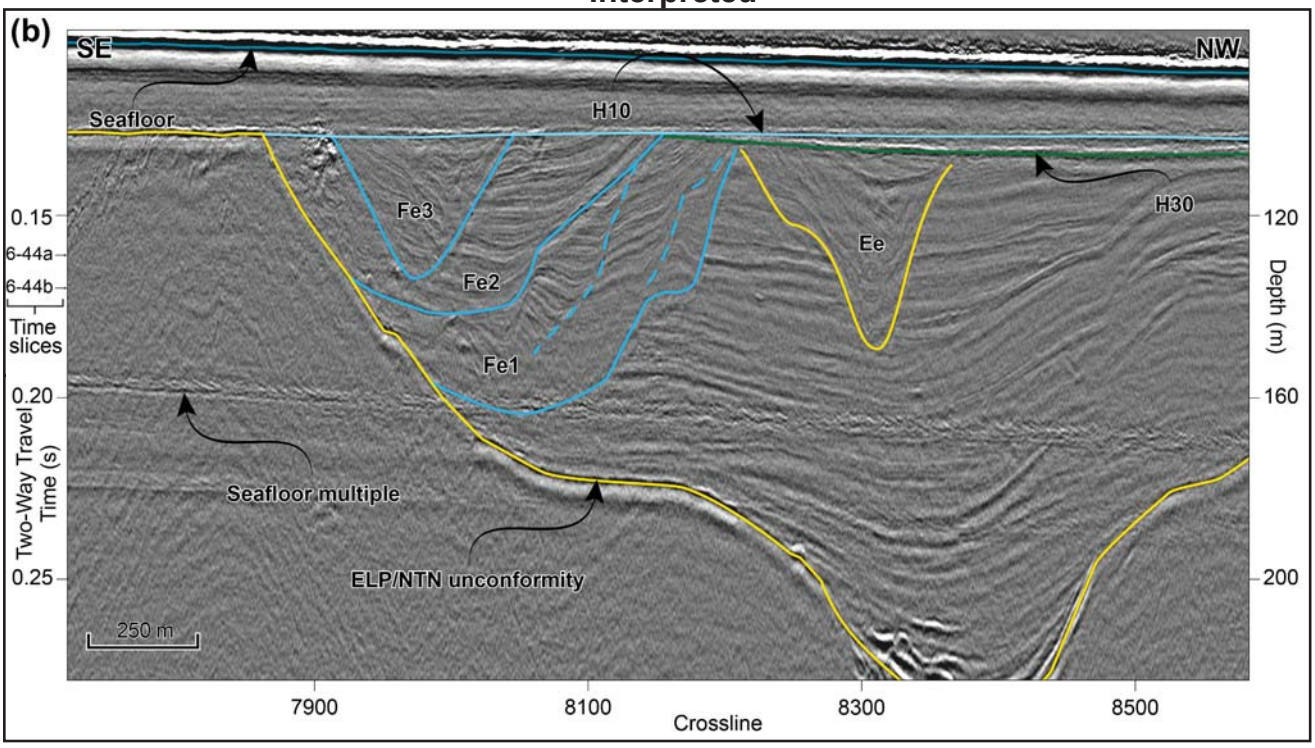
Pacific Gas and Electric Company | Figure **6-42**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-42_TimeSlice_0146.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



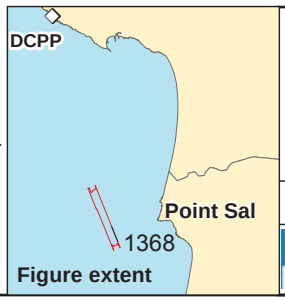
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- Channel E margin
- Channel F margin
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.

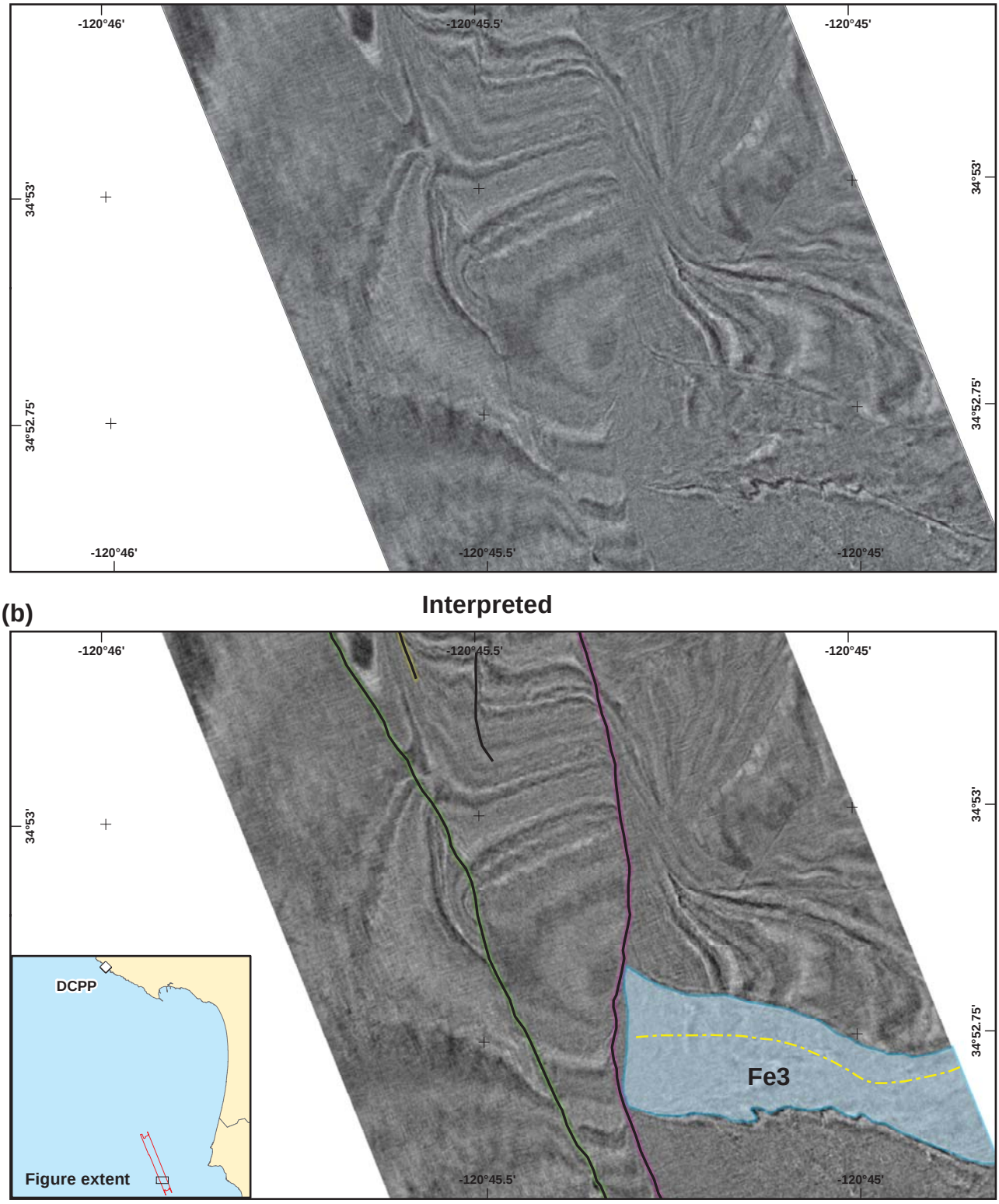


Line 1368 Channel F Amplitude Section East of HFZ, Uninterpreted and Interpreted, with Labeled Channel Fe1-3

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-43**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-43_Line1368.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

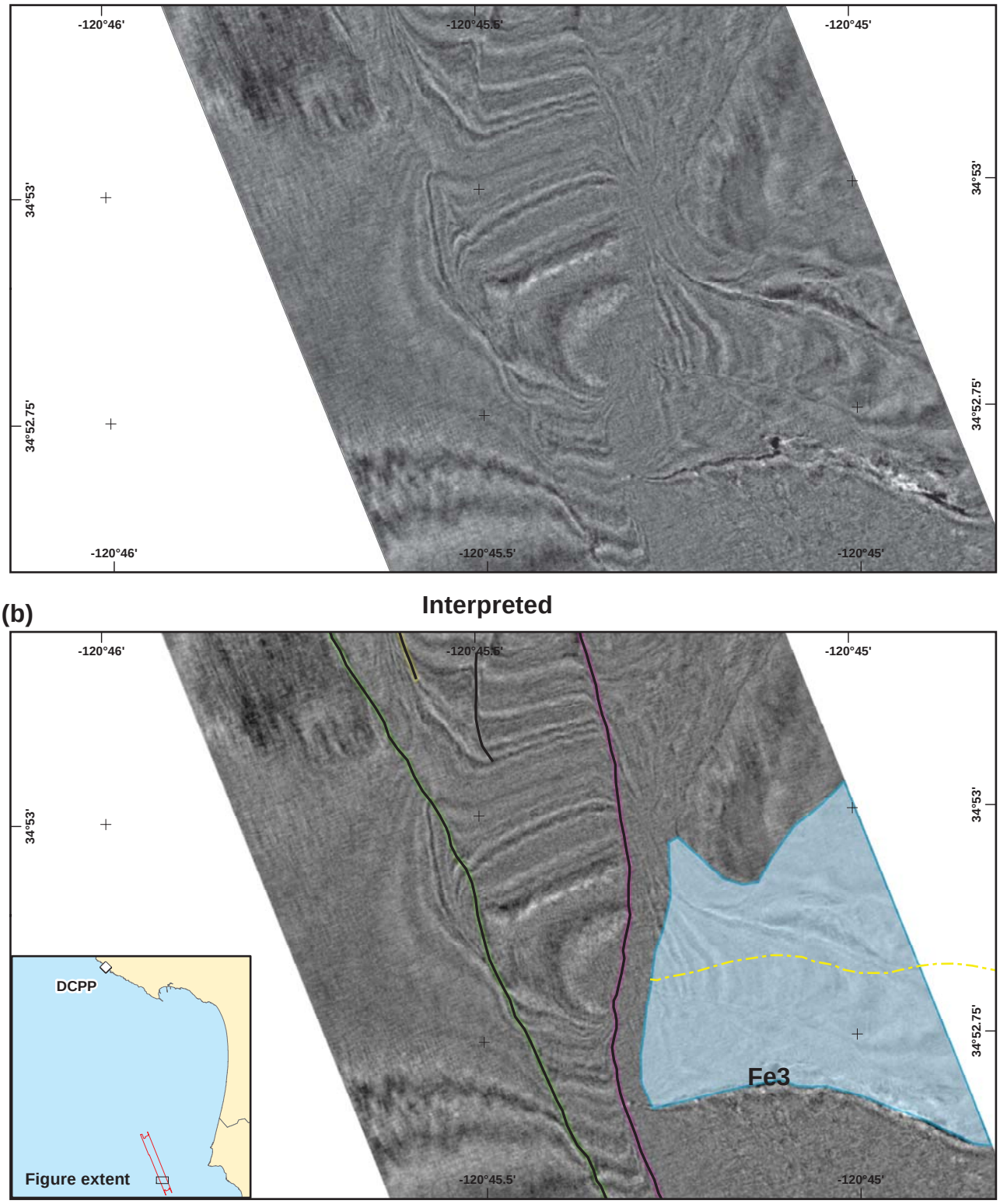


File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-44a_TimeSlice_0160.mxd; Date: 6/11/14; User: Ranon Dulberg, Fugro; Rev.3

Channel F Time Slice at 160 ms East of the HFZ, Uninterpreted and Interpreted, with Labeled Channel

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-44a**



File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-44b_TimeSlice_0170.mxd; Date: 6/11/14; User: Ranon Dulberg, Fugro; Rev.3

Channel F Time Slice at 170 ms East of the HFZ, Uninterpreted and Interpreted, with Labeled Channel

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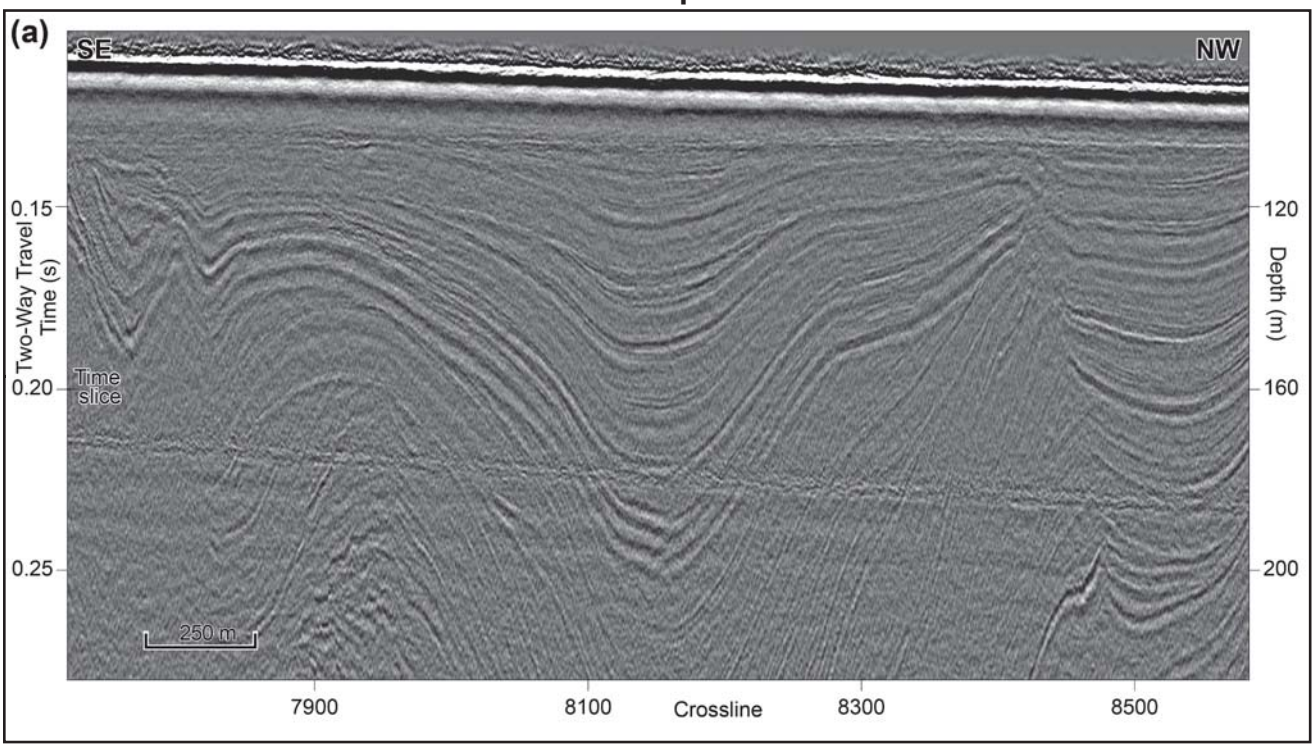
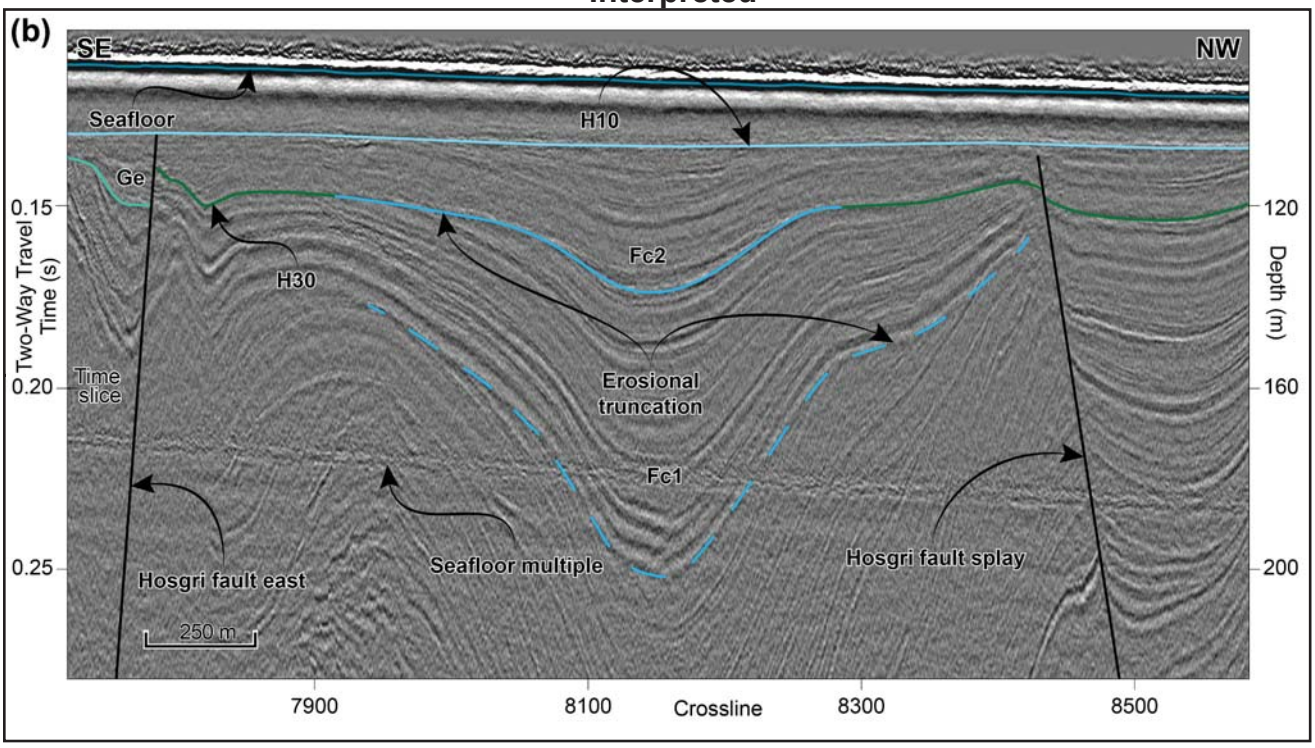
Pacific Gas and Electric Company | Figure **6-44b**

Uninterpreted



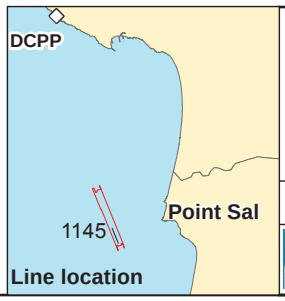
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Channel F margin
- Channel G margin
- Fault
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.



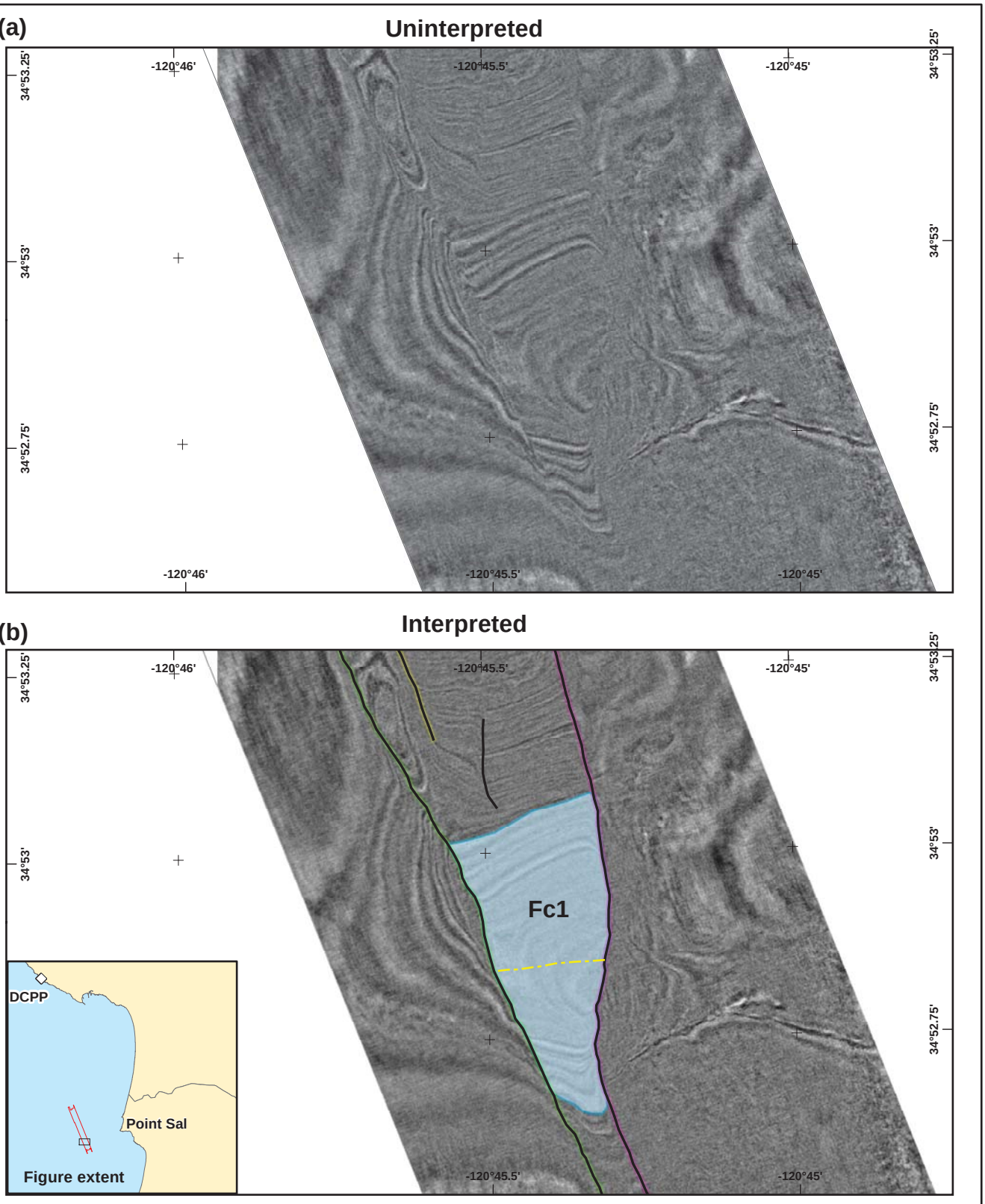
Line 1145 Channel F Amplitude Section, Central Block, Uninterpreted and Interpreted, with Labeled Channel Fc1 and Fc2

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **6-45**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-45_Line1145.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



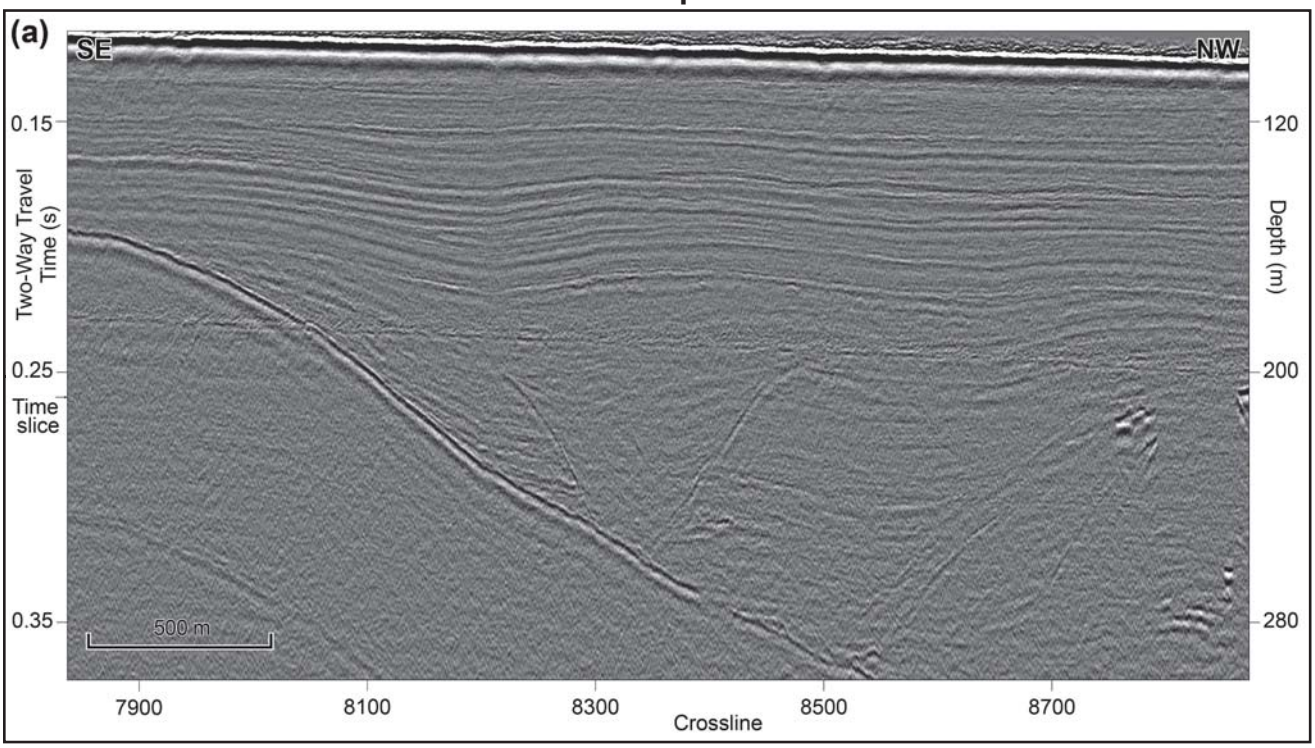
Channel F Time Slice at 200 ms, Central Block, Uninterpreted and Interpreted, with Labeled Channel

OFFSHORE LESS STUDIES

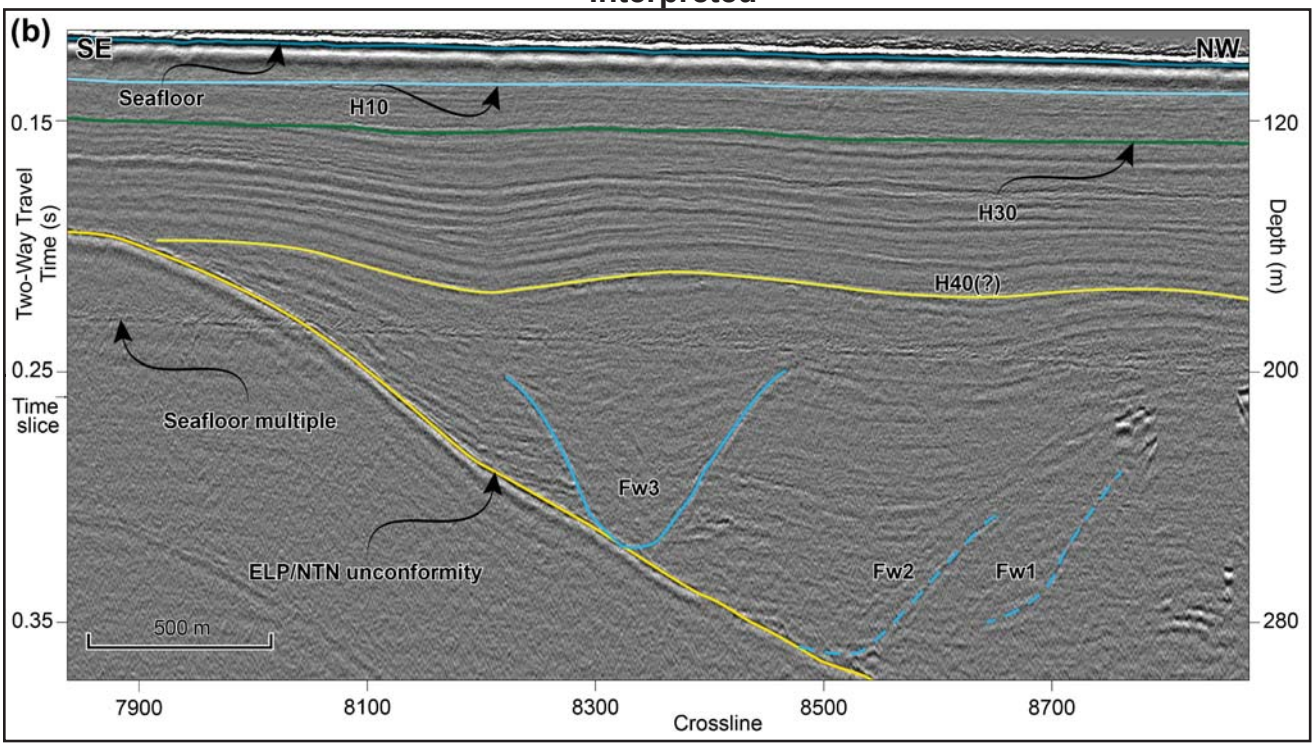
Pacific Gas and Electric Company | Figure **6-46**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-46_TimeSlice_0200.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3

Uninterpreted



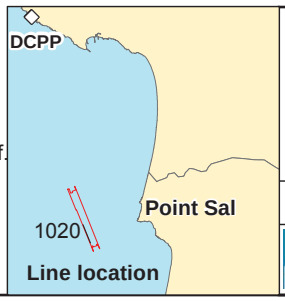
Interpreted



EXPLANATION

- Seafloor
- H10 unconformity
- H30 unconformity
- Early-late Pliocene / near top of Neogene (ELP/NTN) unconf.
- Channel F margin
- 2012 Point Sal 3D high-resolution survey extent

Note: See Figure 6-27 for line location.

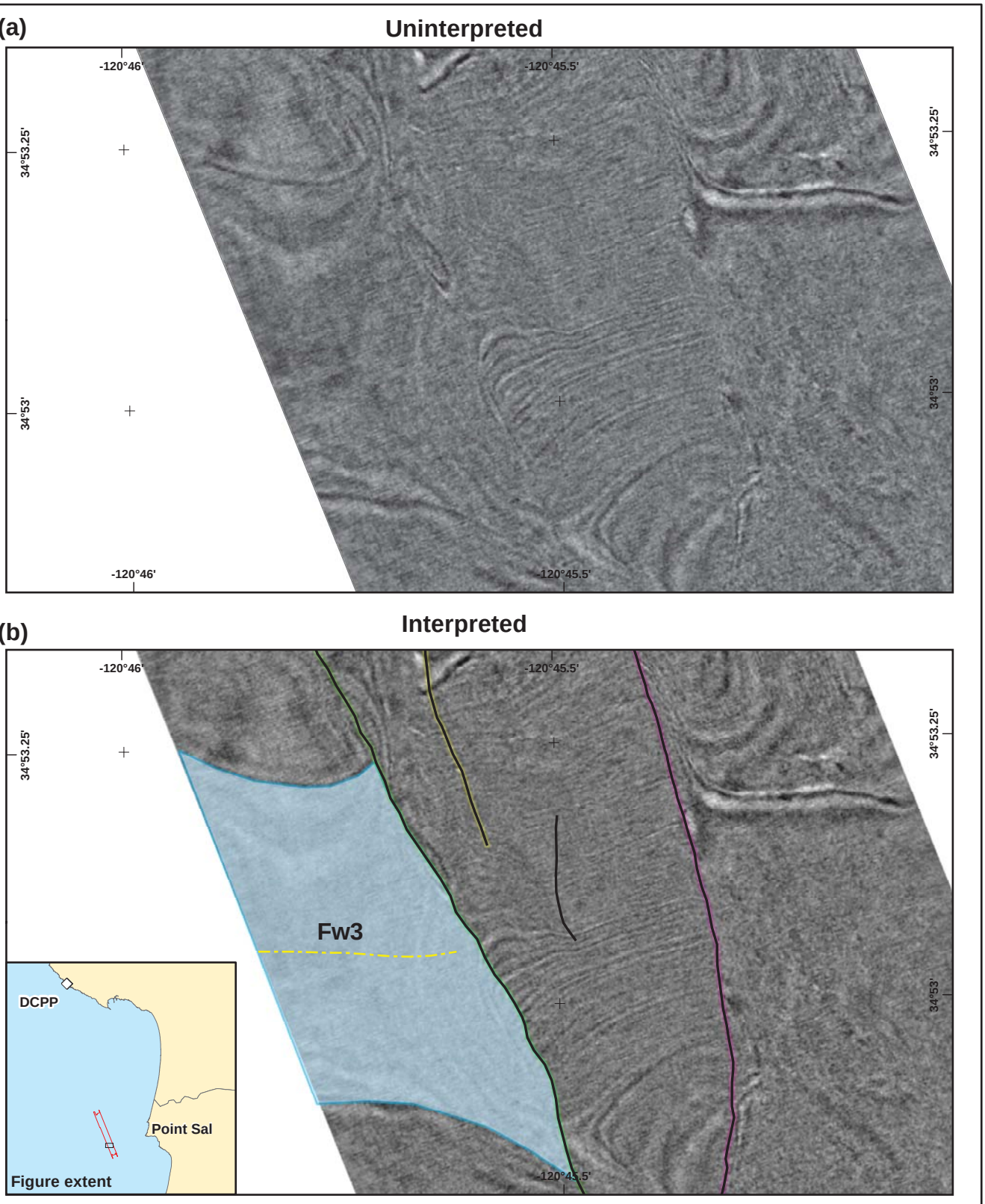


Line 1020 Channel F Amplitude Section West of Hosgri, Uninterpreted and Interpreted with Labeled Channel Fw1-3

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-47**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-47_Line1020.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

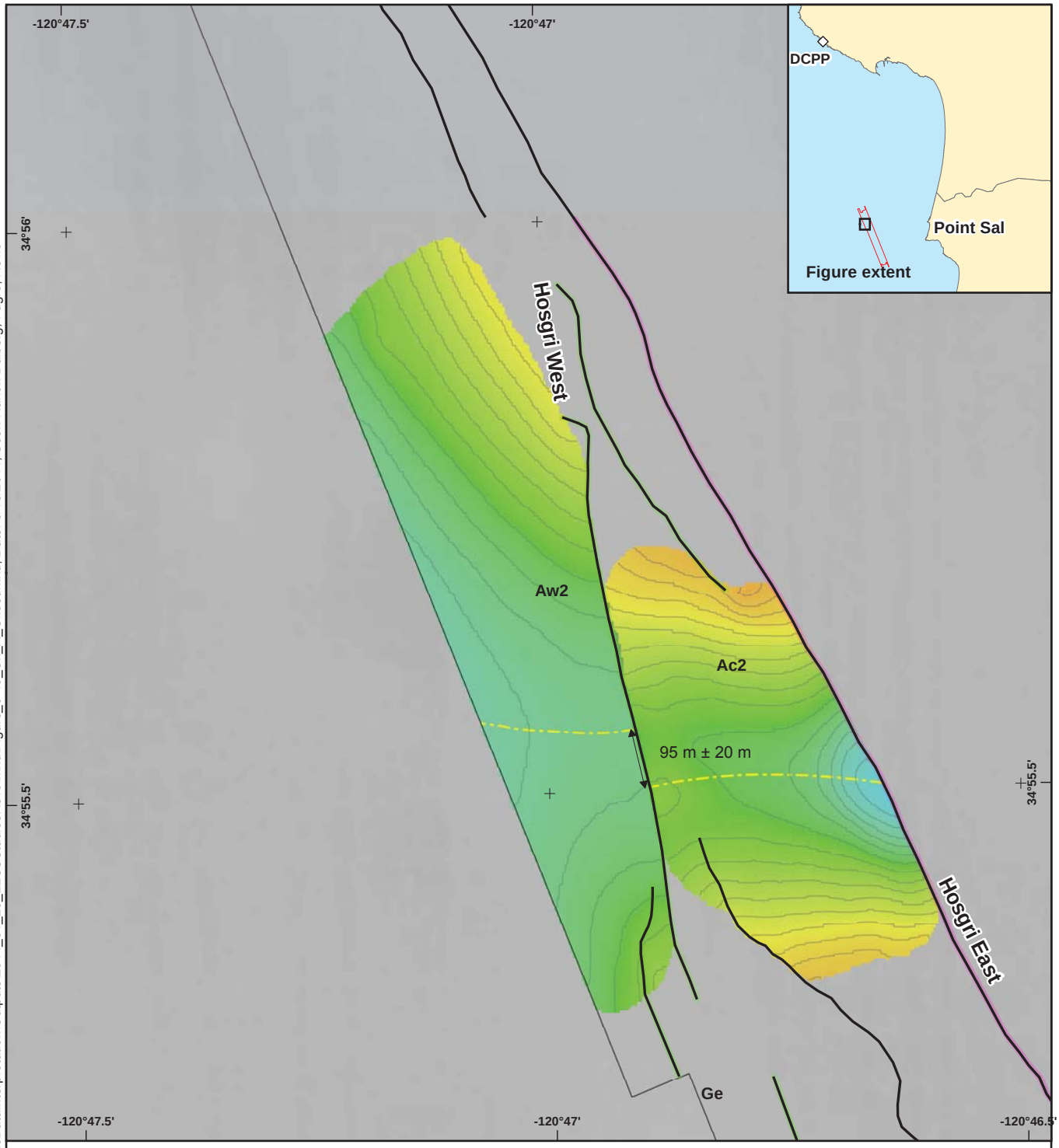


Channel F Time Slice at 260 ms West of the HFZ, Uninterpreted and Interpreted, with Labeled Channel

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-48**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-48_TimeSlice_0260.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault
- Channel thalweg mapped from seismic-reflection data
- Hosgri eastern strand
- Hosgri western strand
- 2012 Point Sal 3D high-resolution survey extent

Channel Depth

116 ms (~93 m)

340 ms (~272 m)

N

0 0.15 0.3 mi.

0 0.25 0.5 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:9,500

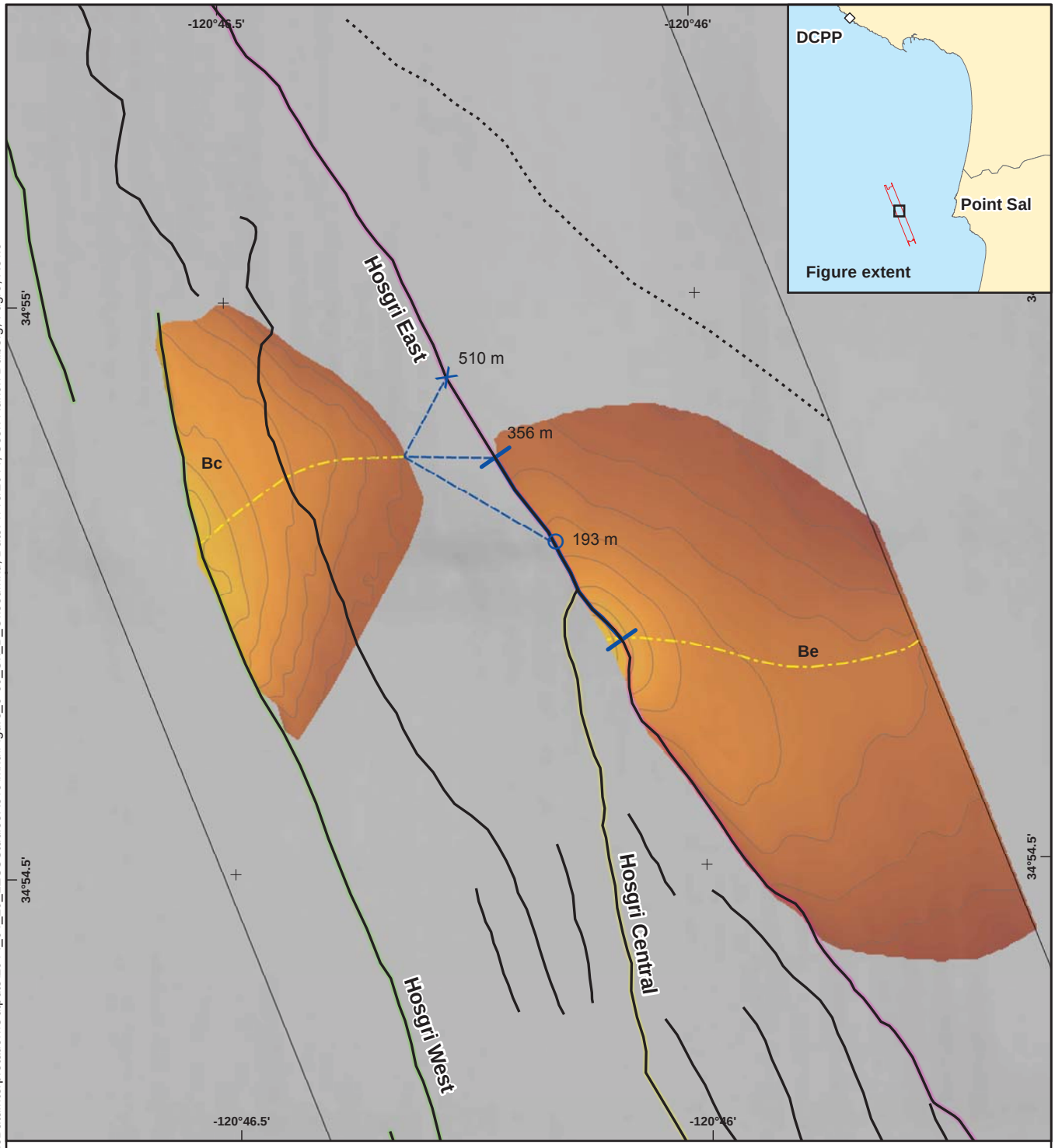
Source: Project DEM compilation v2013.07.

Channel A Offset and Uncertainty, HFZ East and West Strands

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-49**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-49_Ch_A_Offset.mxd; Date: 5/16/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault, dashed where inferred
- Channel thalweg mapped from seismic-reflection data
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand

Horizontal Offset Measurements

- Preferred
- Maximum
- Minimum

Channel Depth

116 ms (~93 m)

340 ms (~272 m)

2012 Point Sal 3D high-resolution survey extent

Source: Project DEM compilation v2013.07.

N

0 0.15 0.3 mi.

0 0.25 0.5 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:9,500

Channel B Offset and Uncertainty, HFZ East and West Strands

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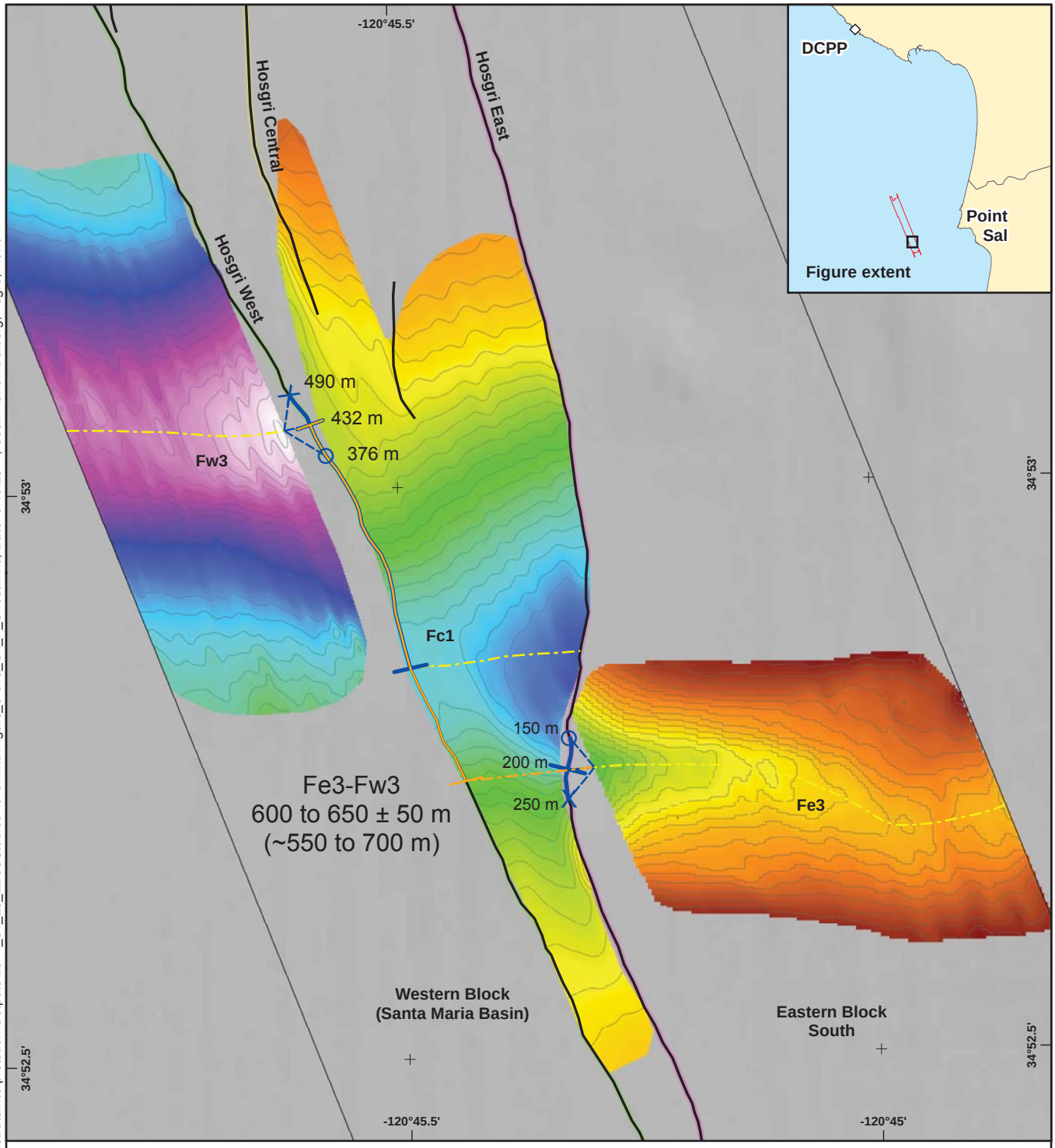
Pacific Gas and Electric Company

Figure **6-50**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-50_Ch_B_Offset.mxd; Date: 7/16/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault
- Channel thalweg mapped from seismic-reflection data
- Channel thalweg projected across Hosgri fault splays
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand

Horizontal Offset Measurements

- Preferred
- Maximum
- Minimum

Channel Depth

126 ms (~101 m)

340 ms (~272 m)

2012 Point Sal 3D high-resolution survey extent

Source: Project DEM compilation v2013.07.

N

0 0.15 0.3 mi.

0 0.25 0.5 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:9,500

Preferred Channel F Offset and Uncertainty, HFZ East and West Strands

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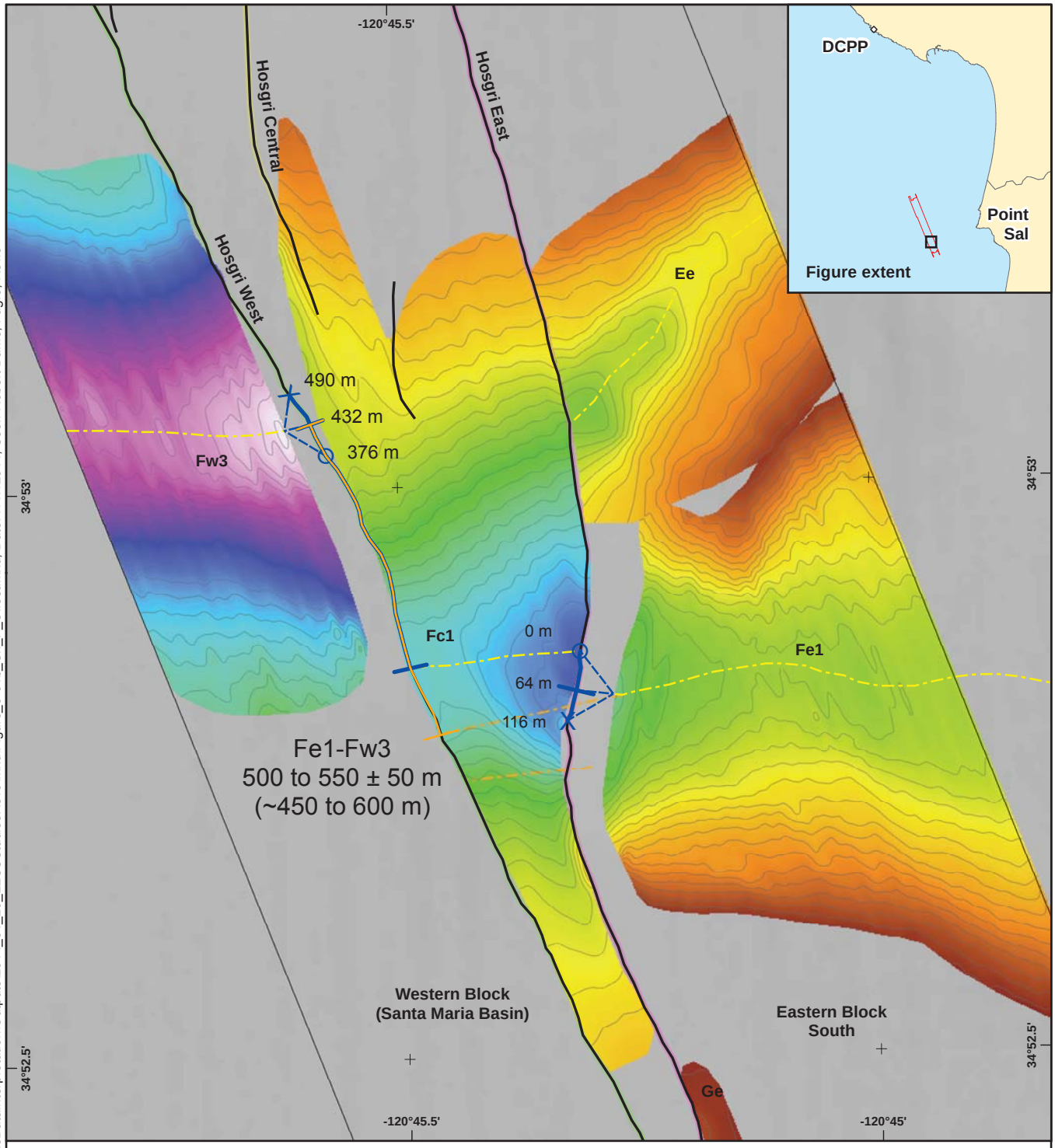
Pacific Gas and Electric Company

Figure **6-51a**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-51a_Ch_F_Offset.mxd; Date: 6/10/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault
- Channel thalweg mapped from seismic-reflection data
- Channel thalweg projected across Hosgri fault splays
- Hosgri central strand
- Hosgri eastern strand
- Hosgri western strand

Horizontal Offset Measurements

- Preferred
- Maximum
- Minimum

Channel Depth

116 ms (~93 m)

340 ms (~272 m)

2012 Point Sal 3D high-resolution survey extent

Source: Project DEM compilation v2013.07.

N

0 0.15 0.3 mi.

0 0.25 0.5 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:9,500

Channel F Offset and Uncertainty, HFZ East and West

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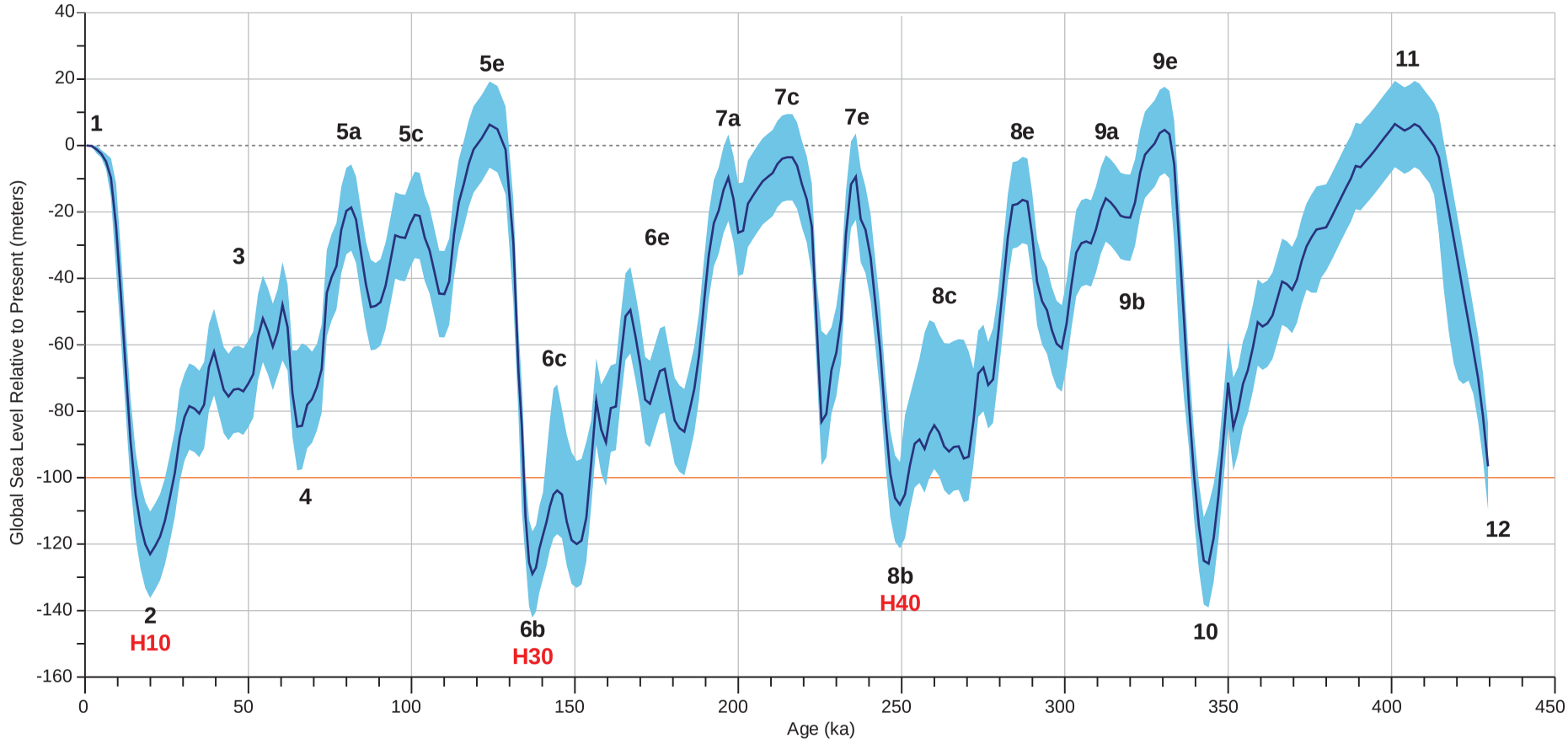
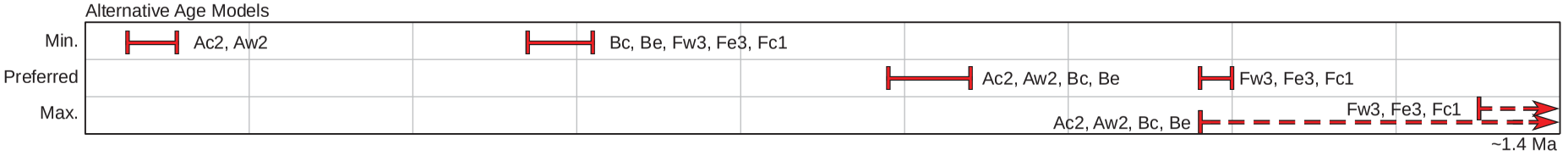
Pacific Gas and Electric Company

Figure **6-51b**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_6-51b_Ch_F_Offset.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev.3





EXPLANATION

- Sea-level curve
- Uncertainty
- 5a Marine isotope stage, substage
- Point Sal paleochannels

Notes:
1. See Figures 6-35 through 6-48 for illustrations of Point Sal paleochannels.
2. Sea-level curve modified from Waelbroeck et al. (2002).

Preferred Age Model for Paleochannels, Point Sal

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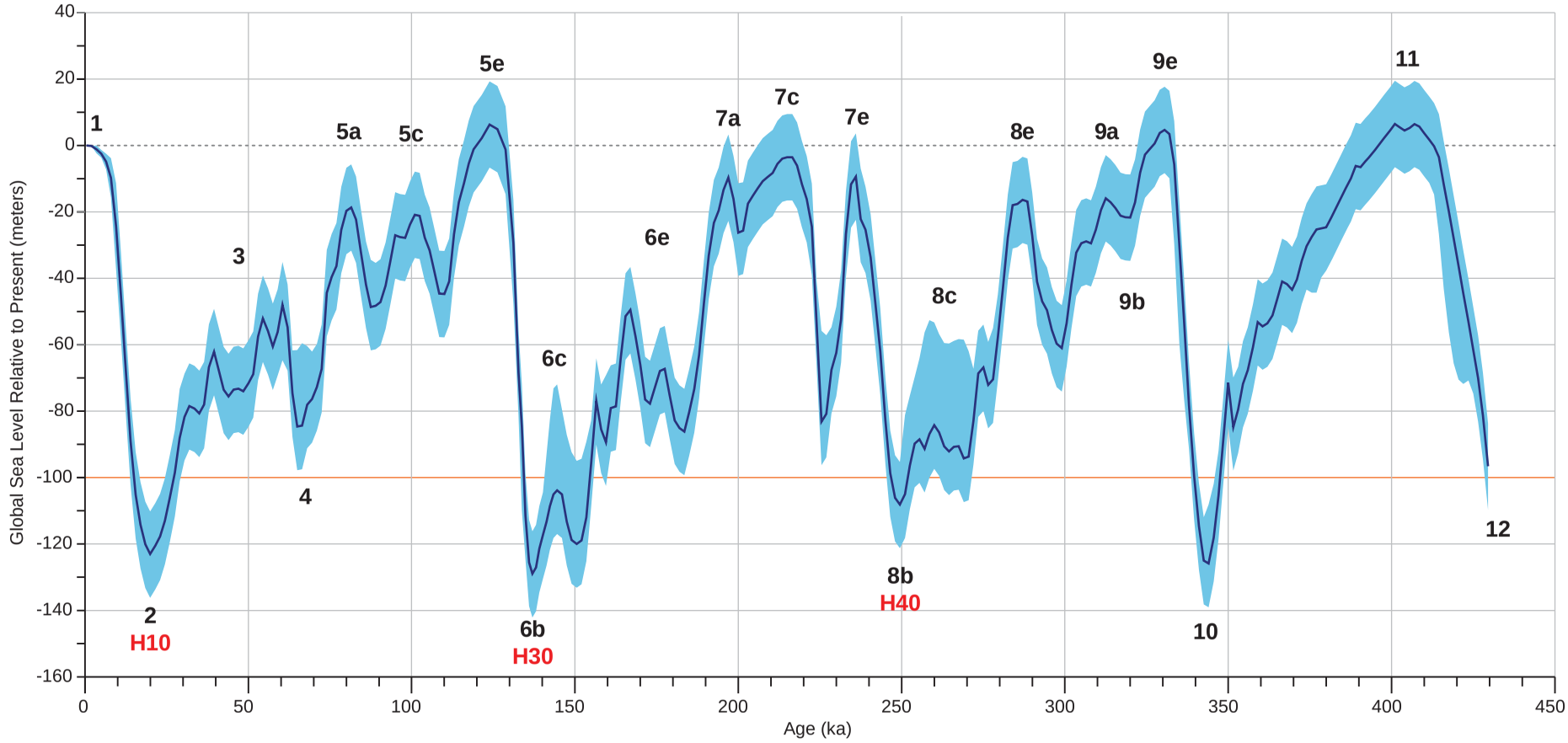
Pacific Gas and Electric Company | Figure **6-52a**



EXPLANATION

- Sea-level curve
- Uncertainty
- 5a Marine isotope stage, substage
- Point Sal paleochannels

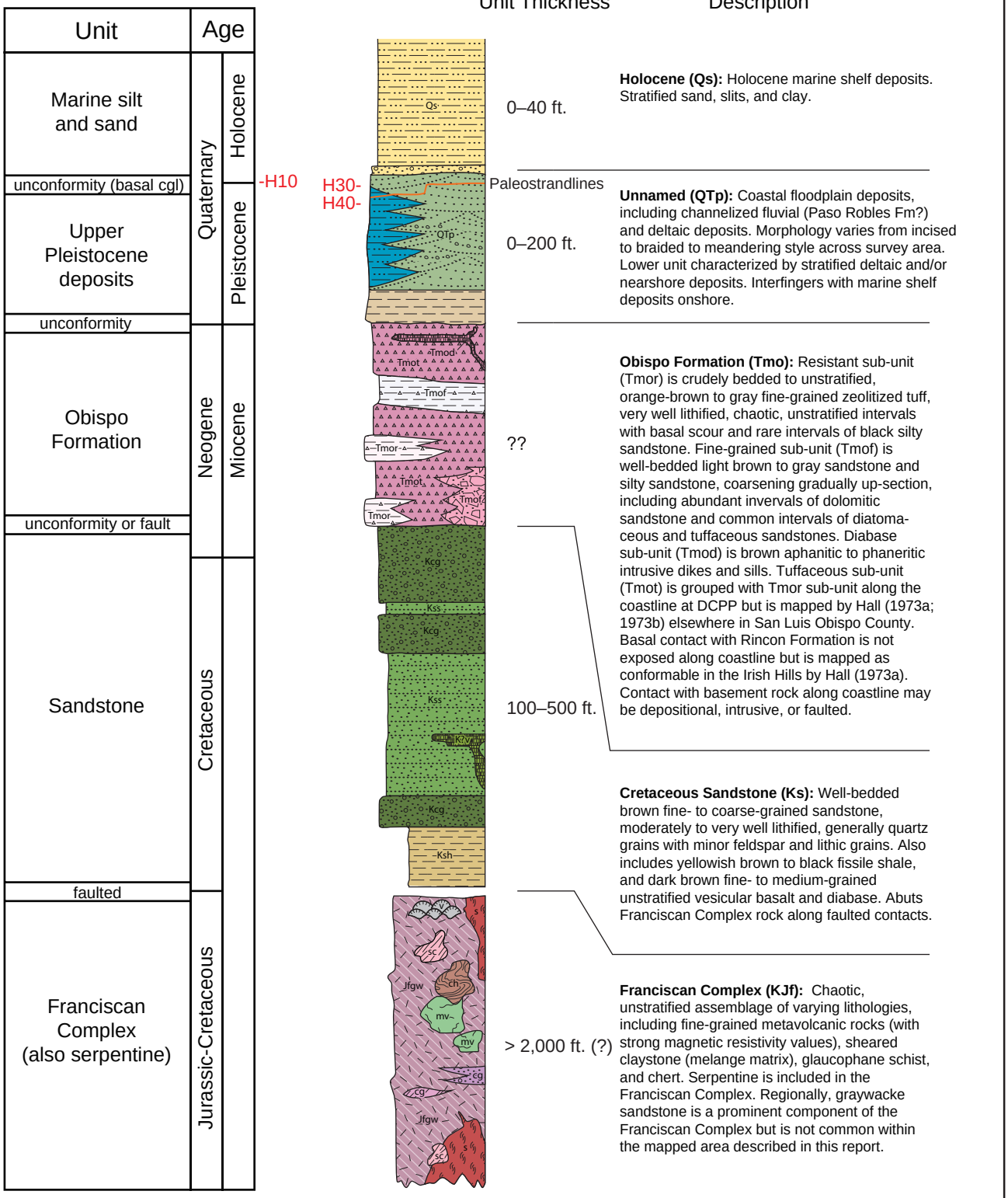
Notes:
1. See Figures 6-35 through 6-48 for illustrations of Point Sal paleochannels.
2. Sea-level curve modified from Waelbroeck et al. (2002).

Alternative Age Model for Paleochannels, Point Sal

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **6-52b**

Filepath: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\ai\Figure_6-52b_PaleochannelAgeModel.ai; Date: 07/23/2014; User: Bryan Bergkamp, Fugro; Rev.3



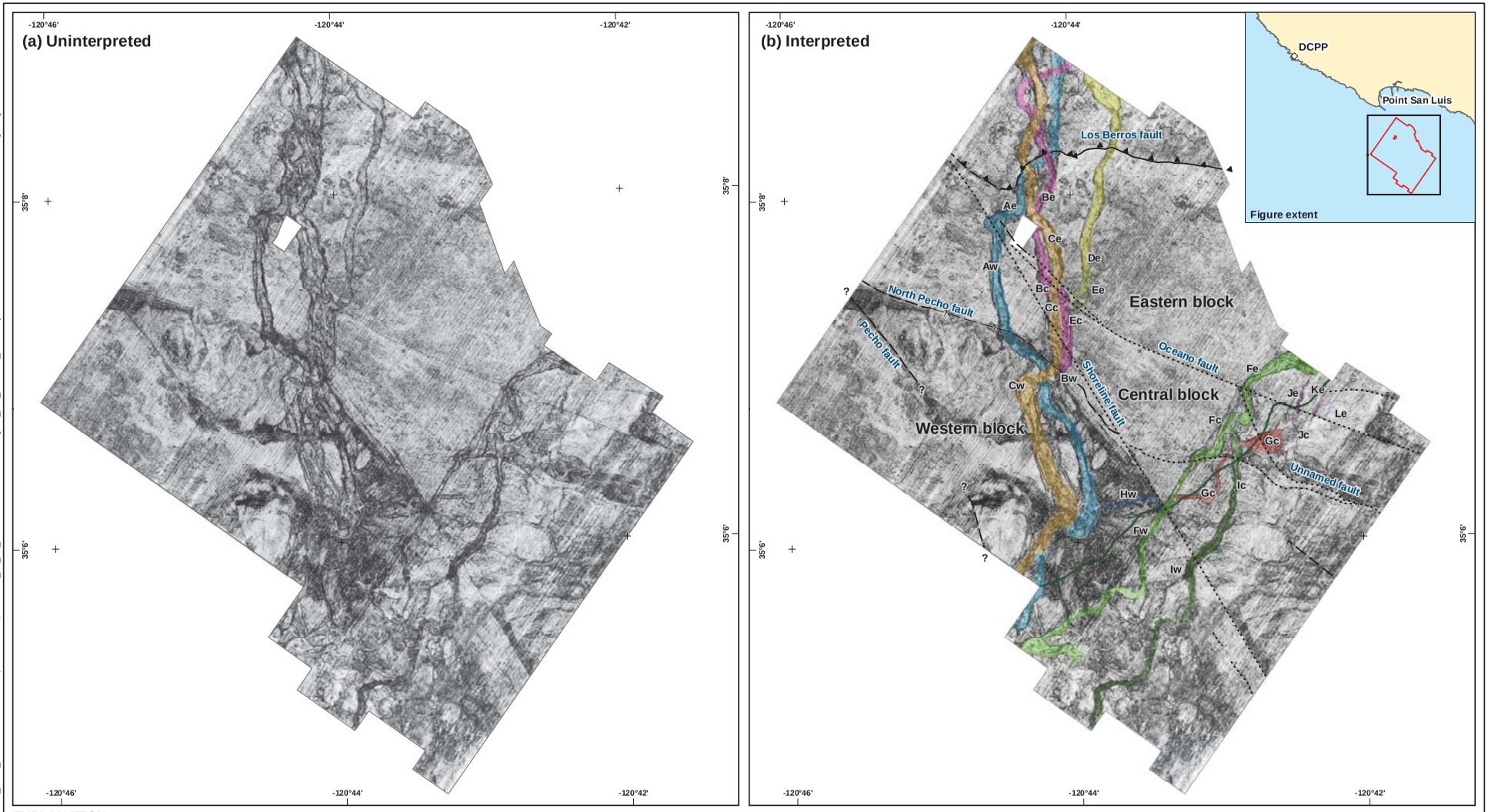
Source: Modified from Hall (1973).

Stratigraphy of the Northern San Luis Obispo Bay Area

OFFSHORE LESS STUDIES

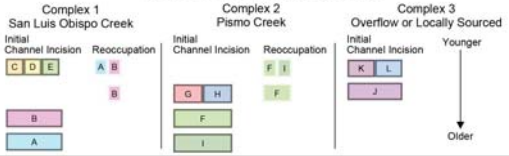
Pacific Gas and Electric Company | Figure **7-1**

File path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\ai\Figure_7-1_SLB_OffshoreStratColumn.ai; Date: 05/11/2014; User: Bryan Bergkamp, Fugro; Rev.3



EXPLANATION

Bedrock Source Channel Complexes



Fault

Onlap of Upper Pleistocene deposits onto bedrock surface

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Note: Smoothed similarity attribute calculated using a 10 ms window.

N

0 0.5 1 mi.

0 1 2 km

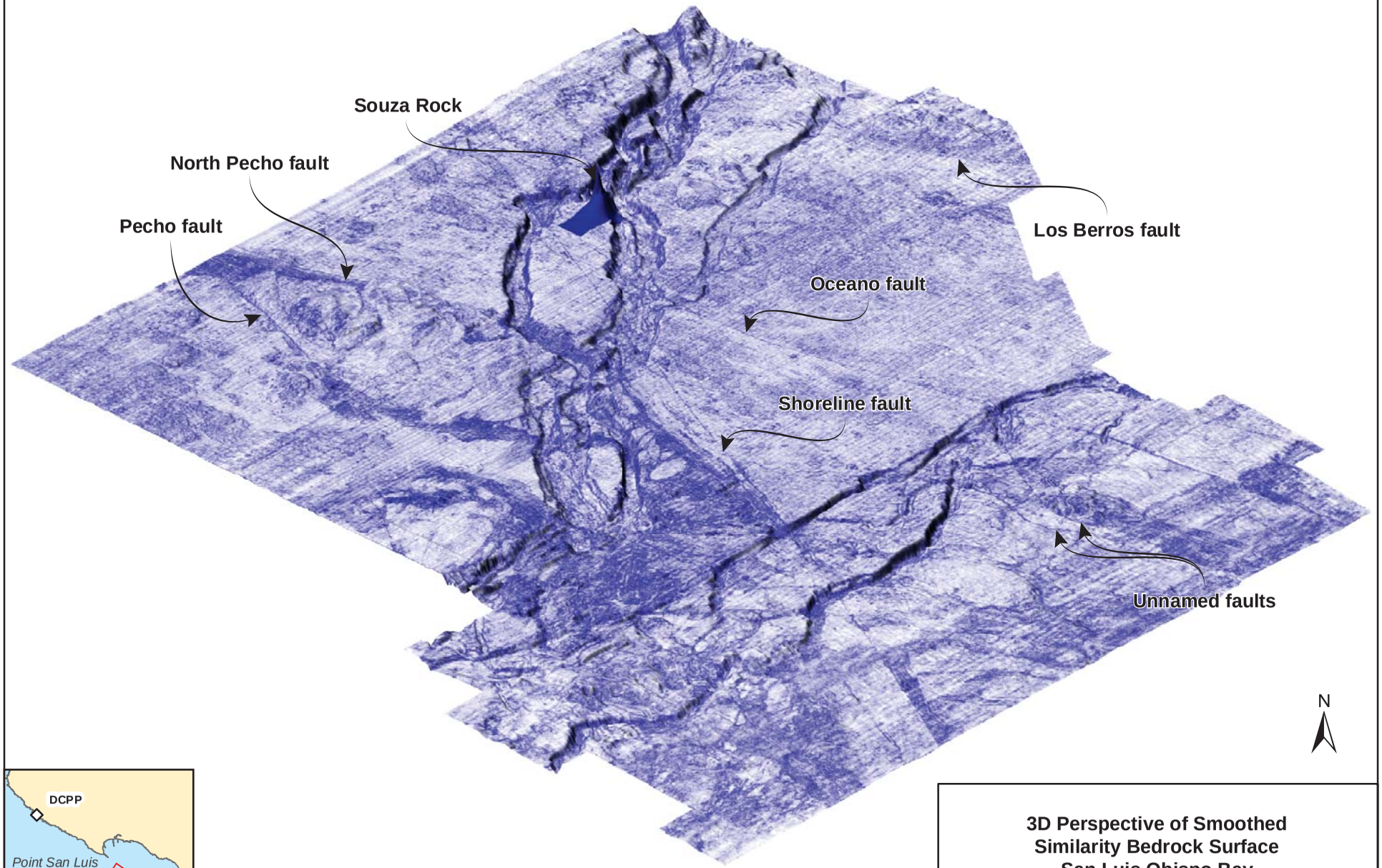
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

Smoothed Similarity Bedrock Surface, Uninterpreted and Interpreted, San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-2**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-2_Bedrock_Similarity.mxd; Date: 6/30/2014; User: Ranon Dulberg, Fugro; Rev.3



3D Perspective of Smoothed Similarity Bedrock Surface
San Luis Obispo Bay

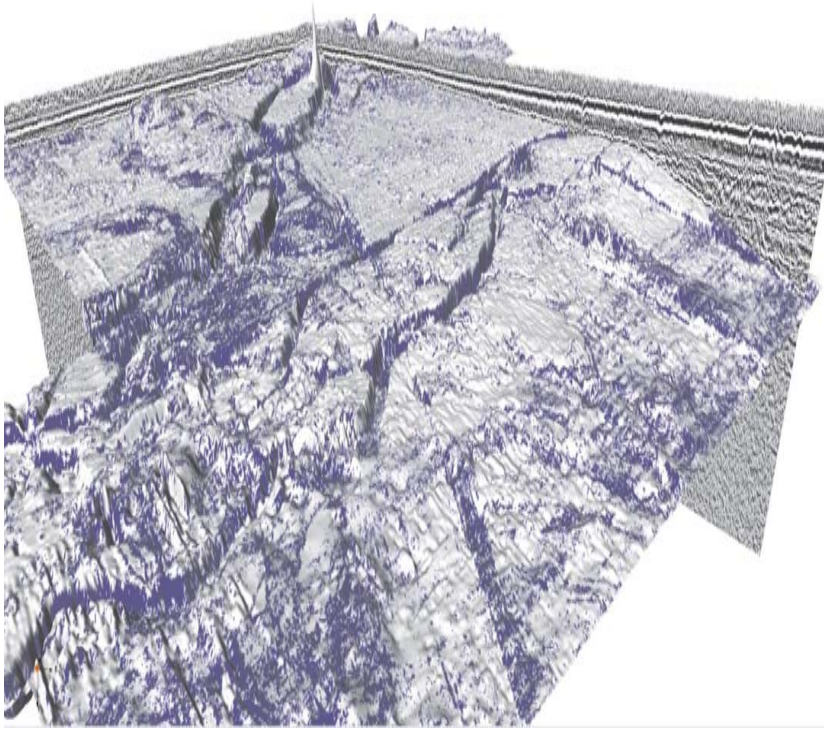
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-3**

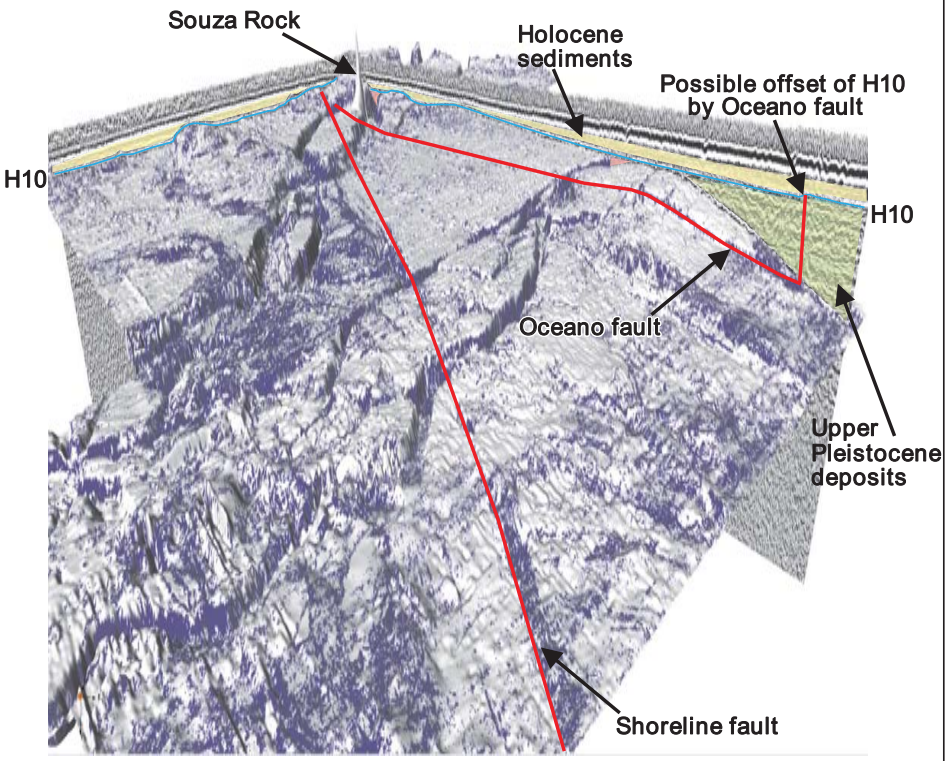
Ch3.GEO.DCPP.TR.14.02 R0

File path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\ai\Figure_7-3_3D_BedrockSimilarity.ai; Date: 05/11/2014; User: Bryan Bergkamp, Fugro; Rev.3

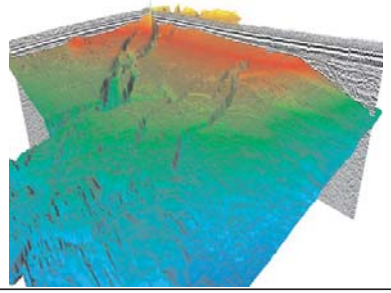
(a) Uninterpreted

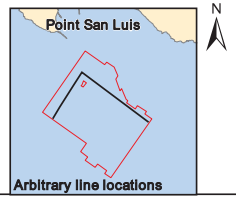


(b) Interpreted



(c) 3D perspective view of shaded-relief bedrock surface and arbitrary 2D seismic profile





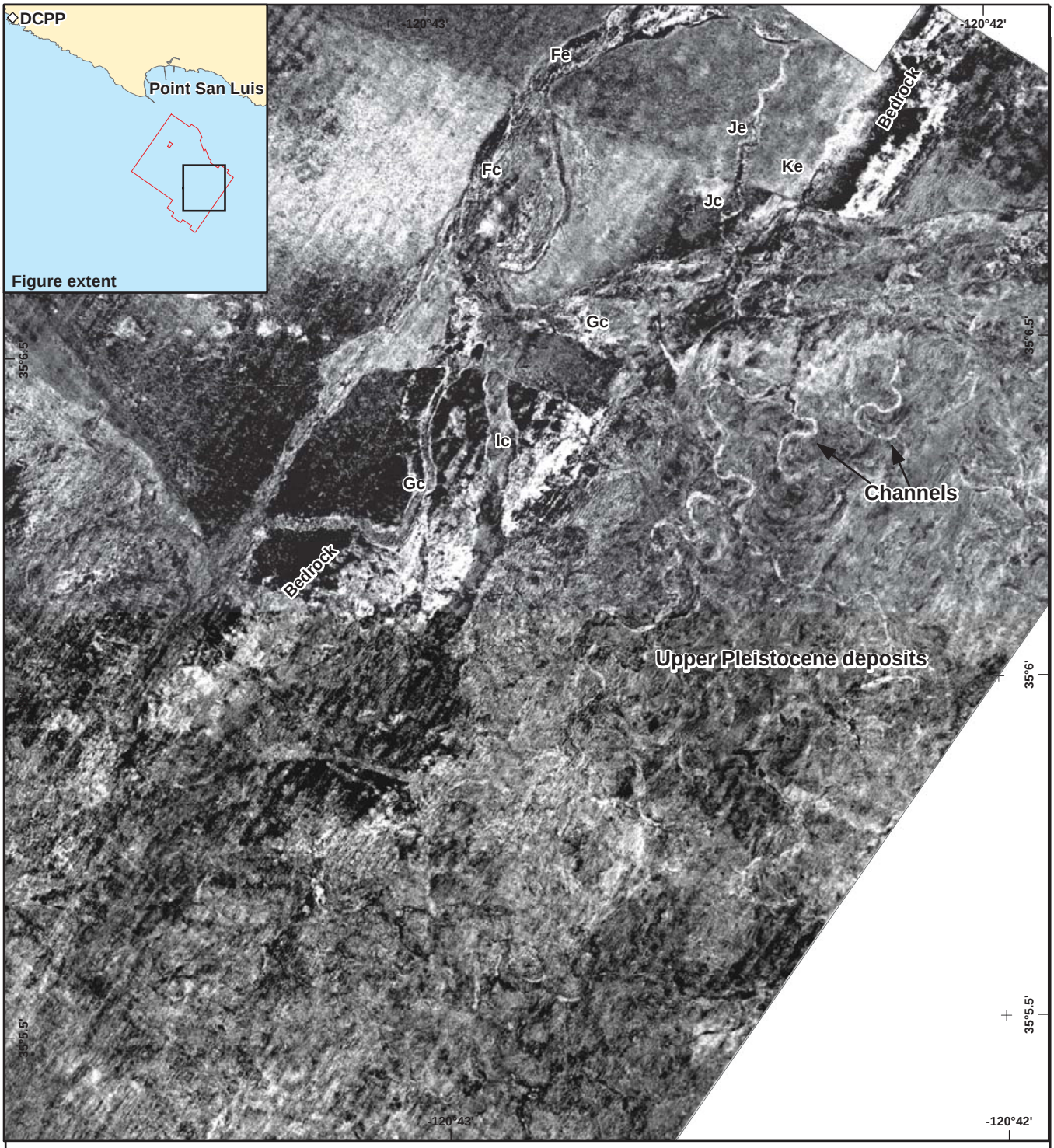
EXPLANATION

- Mapped fault splay
- Horizon H10
- Holocene sediments
- Paleochannel fill sediments
- Upper Pleistocene deposits
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

3D Perspective of Dip of Maximum Similarity Bedrock Surface Showing Regional Paleochannel and Fault Geometry in the San Luis Obispo Bay 3D Survey Area

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure 7-4



EXPLANATION

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 1,000 2,000 ft.

0 250 500 m

Map projection and scale: WGS 84 / UTM Zone 10N,1:16,000

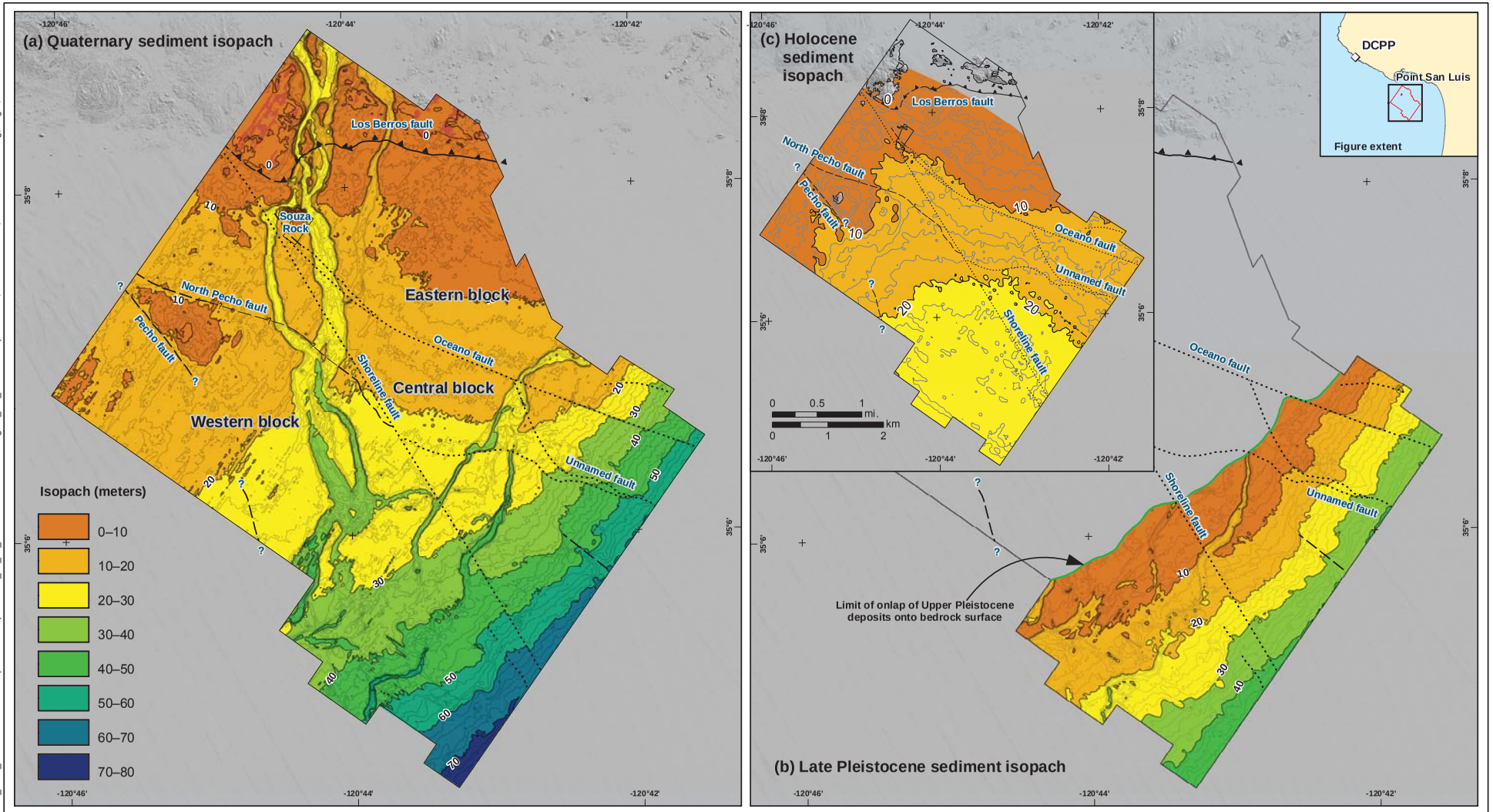
Inclined Amplitudes Time Slice Showing Pre-Holocene Channels in Upper Pleistocene Deposits

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **7-5**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-5_QuaternarySlice.mxd; Date: 6/30/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Fault
- Onlap of Upper Pleistocene deposits onto bedrock surface
- Bedrock exposures at seafloor
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Notes:
1. Isopach values on map assume a velocity of 1,600 m/s.
2. Contour interval is 2 m. Heavy contours are 10 m.
3. See Section 3 for interpretation methodology and fault nomenclature.
4. Souza Rock bedrock surface mapped from Seafloor Mapping Lab of California State University Monterey Bay bathymetry.

Source: Project DEM Compilation v2013.07.

N

0 0.5 1 mi.
0 1 2 km

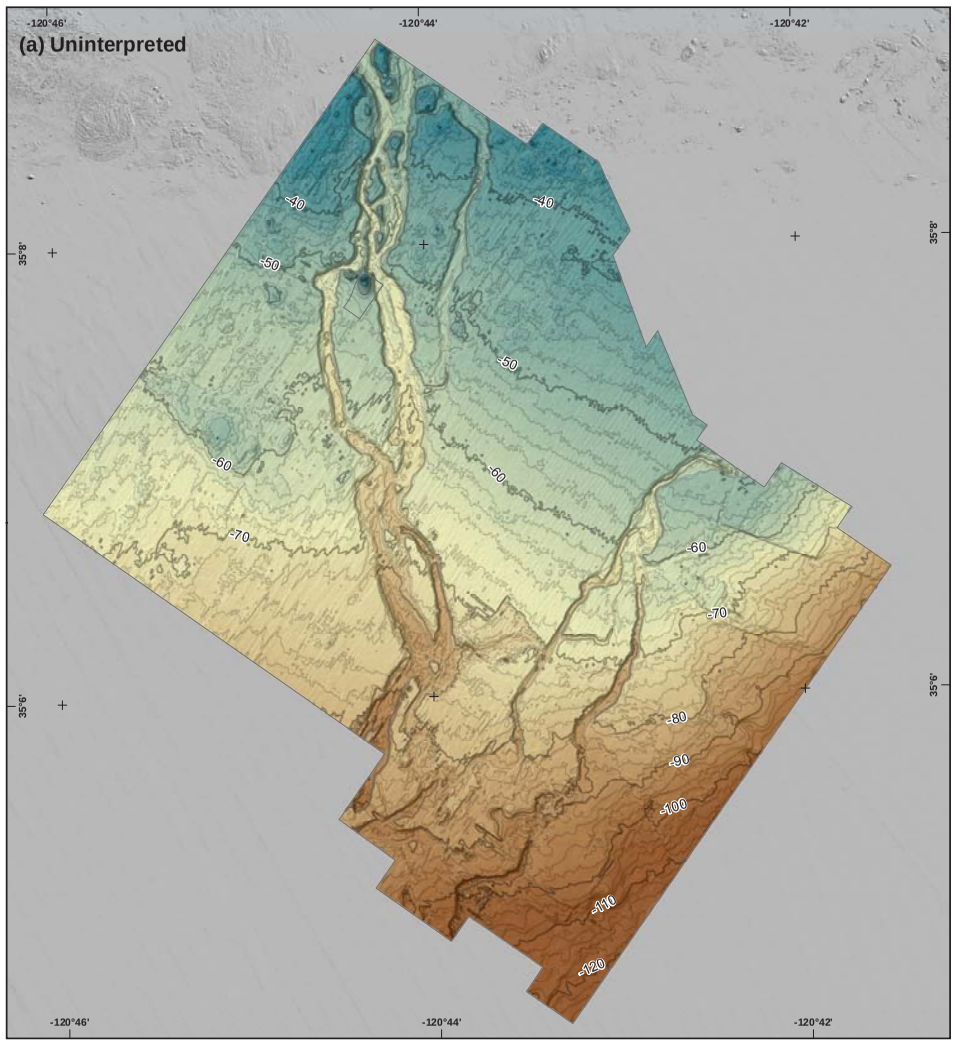
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

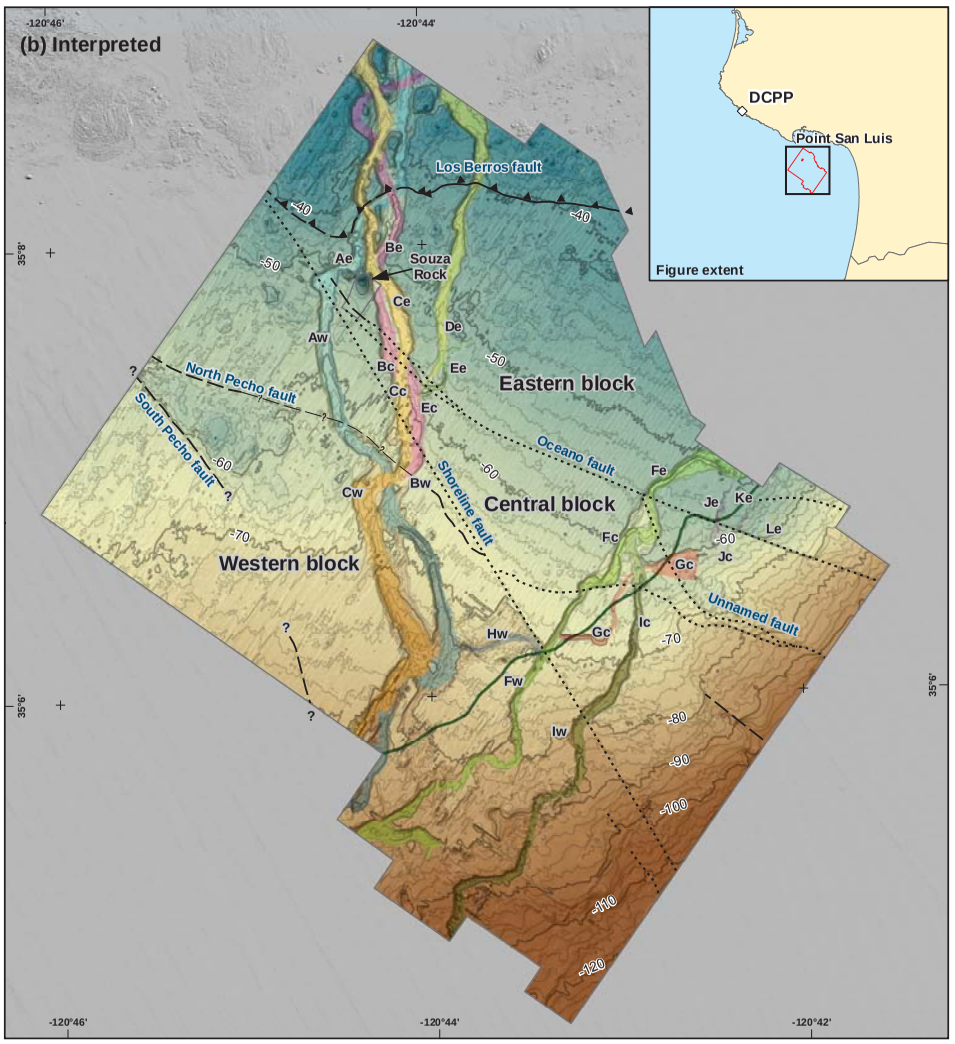
Sediment Isopachs
San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-6**

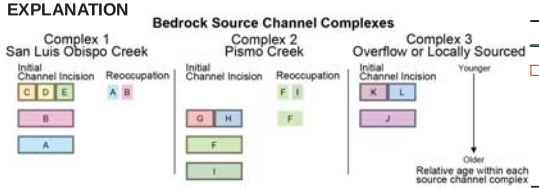
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-6_SedimentIsopachs.mxd; Date: 6/30/2014; User: Ranon Dulberg, Fugro; Rev.3





EXPLANATION

Bedrock Source Channel Complexes



Fault

Onlap of Upper Pleistocene deposits onto bedrock surface

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Notes: 1. Contour interval is 2 m. Heavy contours are 10 m.

2. Souza Rock bedrock surface mapped from Seafloor Mapping Lab of California State University Monterey Bay bathymetry.

N

0 0.5 1 mi.

0 1 2 km

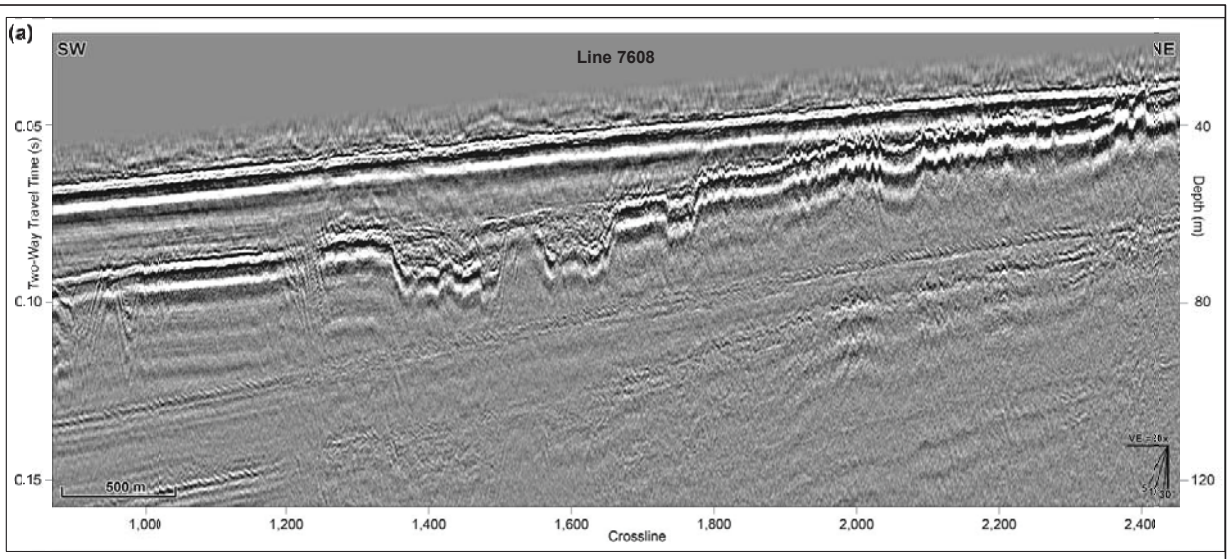
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

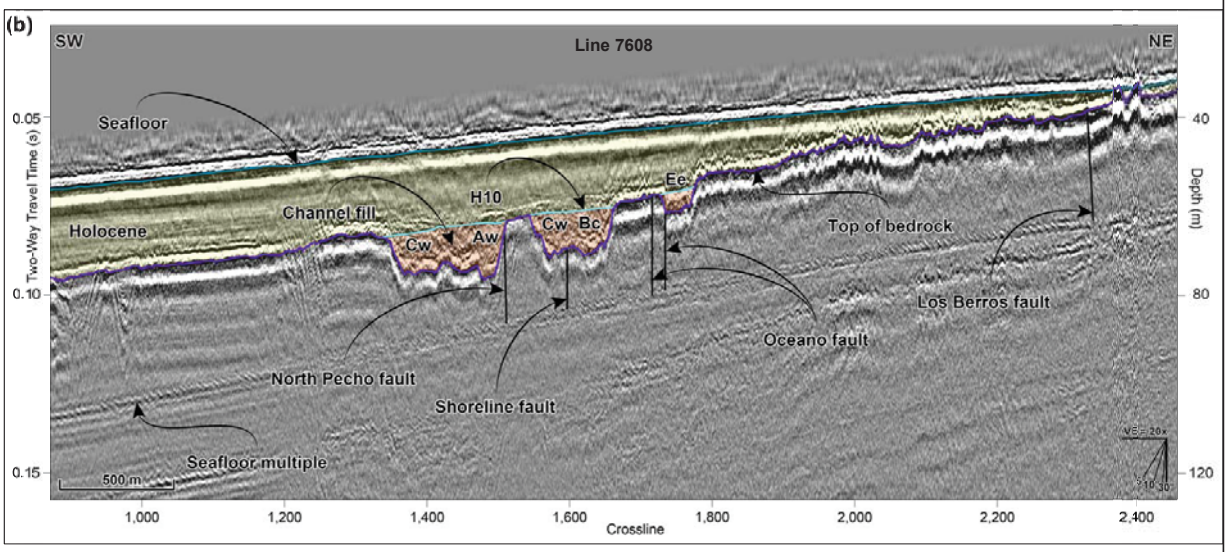
Top of Bedrock Surface Structural Contour Map, Interpreted and Uninterpreted, San Luis Obispo Bay

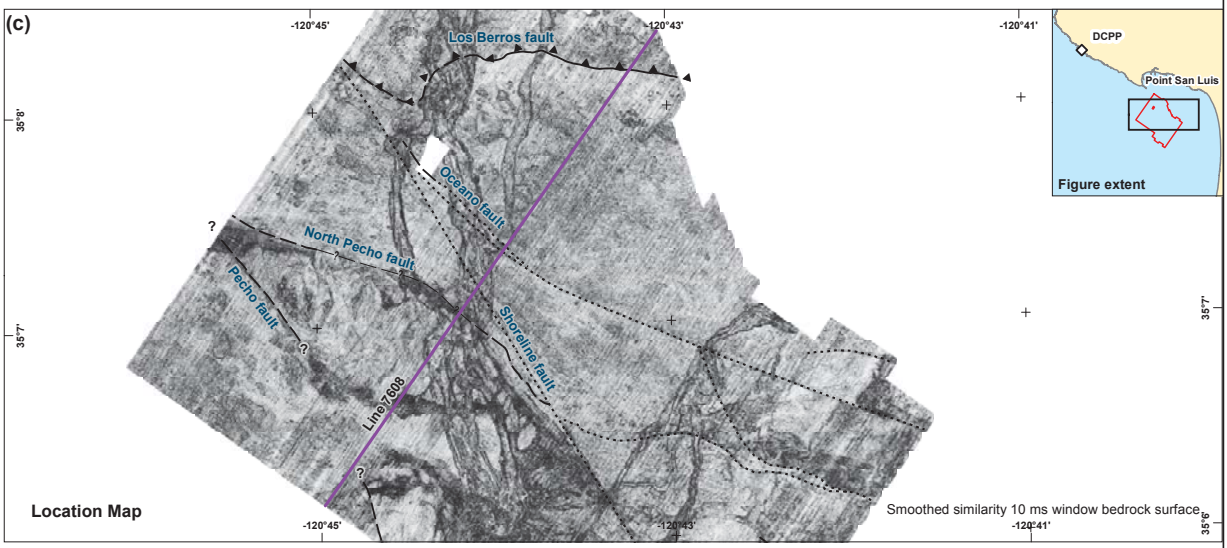
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-7**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-7_Bedrock_meters.mxd; Date: 6/30/2014; User: Ranon Dulberg, Fugro, Rev.3







EXPLANATION

- Seafloor
- Unconformity H10
- Top of bedrock
- Line 7608
- Holocene sediment
- Channel fill
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

Notes:
1. Depth values on seismic profile assume a velocity of 1,600 m/s.
2. Locations of paleochannels referenced can be found on Plate 5.

N

0 0.5 1 mi.
0 1 2 km

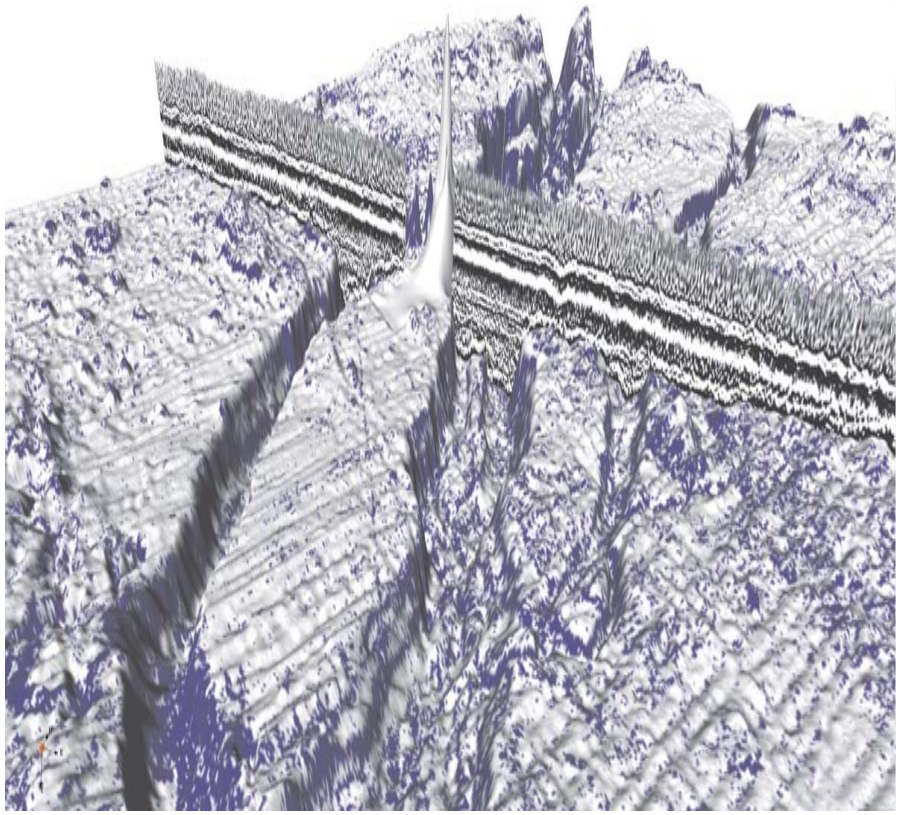
Map projection and scale: WGS 84 / UTM Zone 10N, 1:42,000

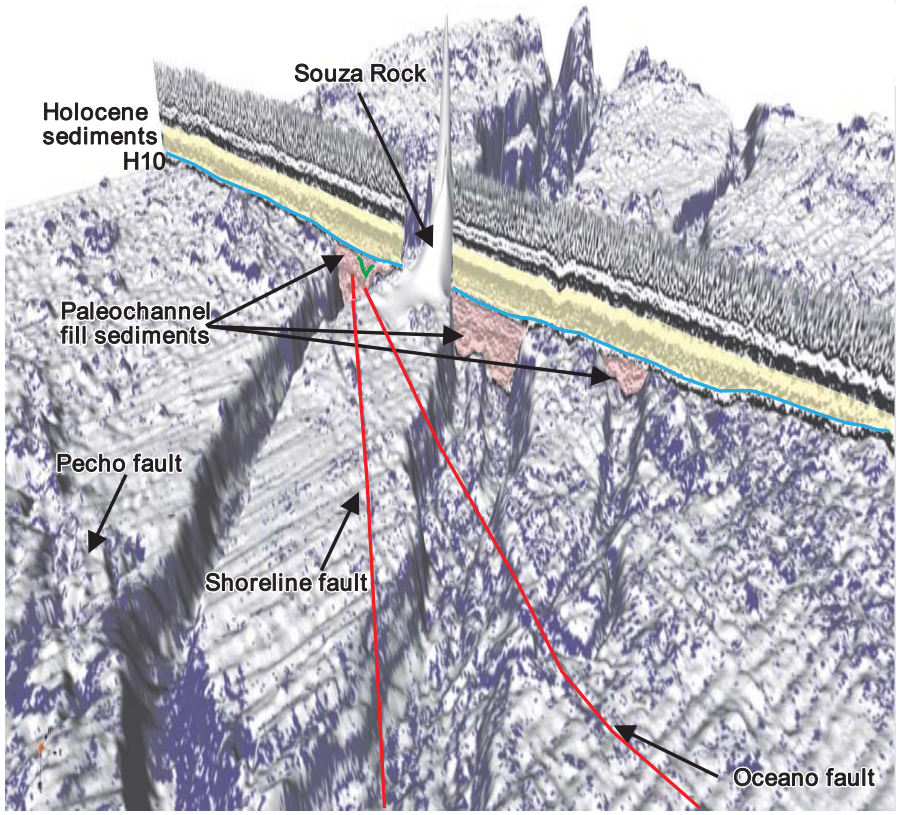
Representative Line 7608 with Smoothed Similarity Bedrock Surface

OFFSHORE LESS STUDIES

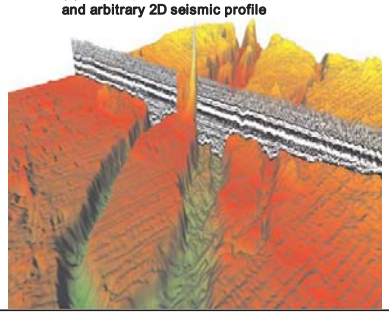
Pacific Gas and Electric Company | Figure **7-8**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-8_Line7608.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev.3



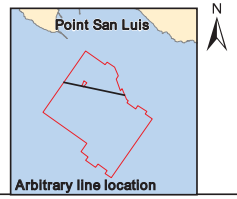


(c) 3D perspective view of shaded-relief bedrock surface and arbitrary 2D seismic profile



EXPLANATION

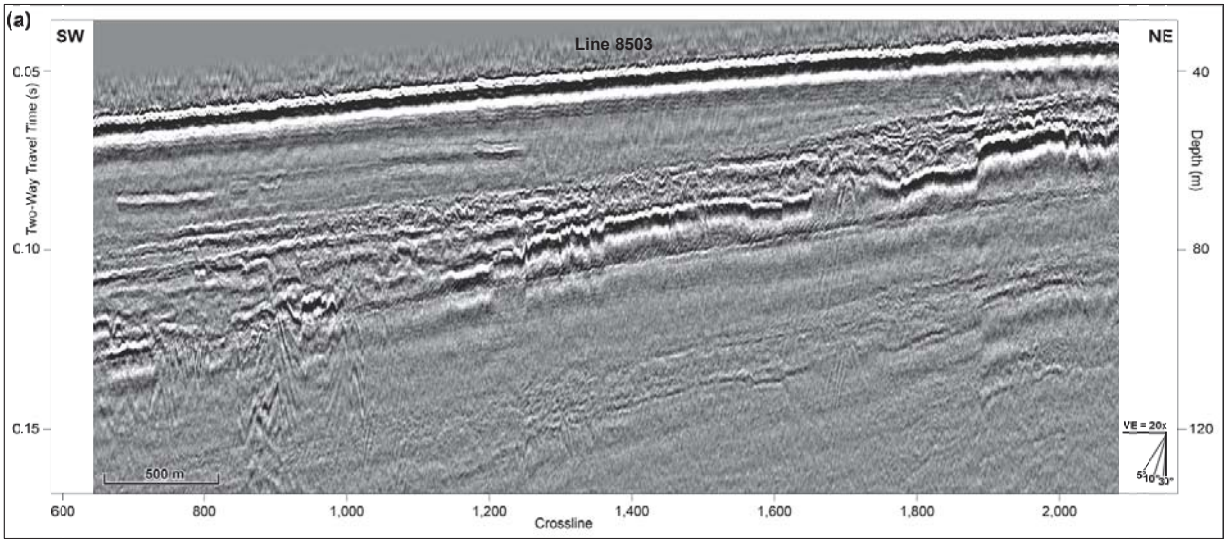
- Mapped fault splay
- Horizon H10
- Nested Paleochannel A
- Holocene sediments
- Paleochannel fill sediments
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

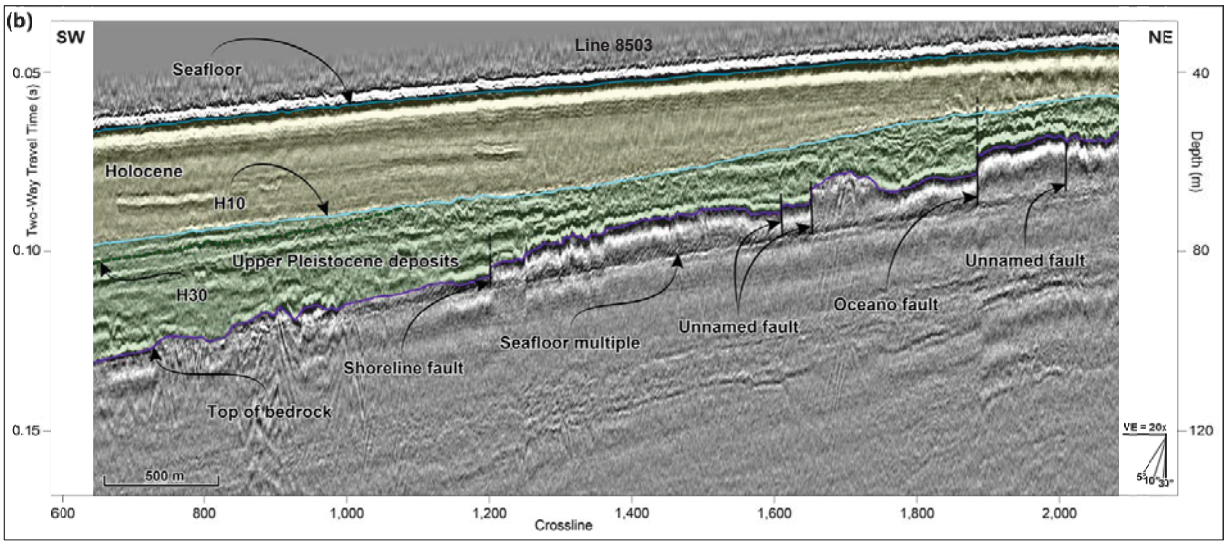


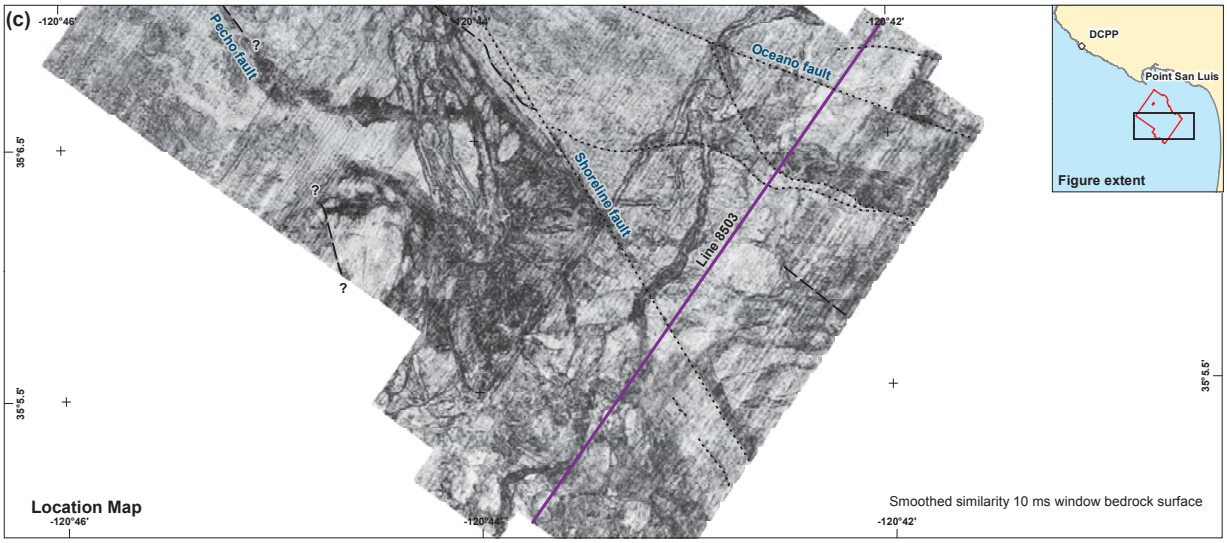
3D Perspective of Dip of Maximum Similarity Bedrock Surface Showing Shoreline and Oceano Fault Geometry near Piercing Point A

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure 7-9







EXPLANATION

- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent
- Seafloor
- Unconformity H10
- Unconformity H30
- Top of bedrock
- Line 8503
- Holocene sediment
- Upper Pleistocene deposits
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

Note: Depth values on seismic profile assume a velocity of 1,600 m/s.

Map projection and scale: WGS 84 / UTM Zone 10N, 1:36,000

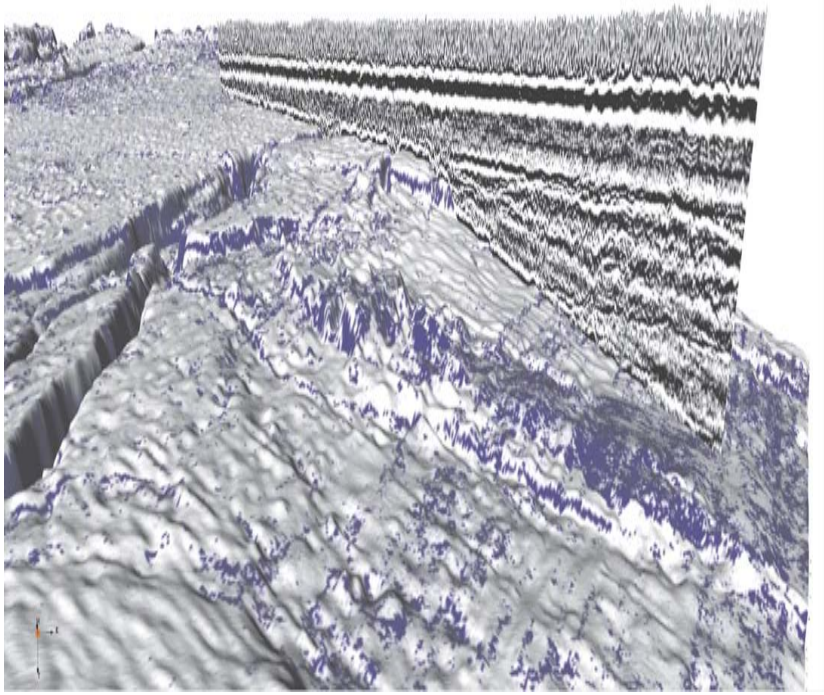
Line 8503 with Smoothed Similarity Bedrock Surface Showing Shallow Stratigraphy

OFFSHORE LESS STUDIES

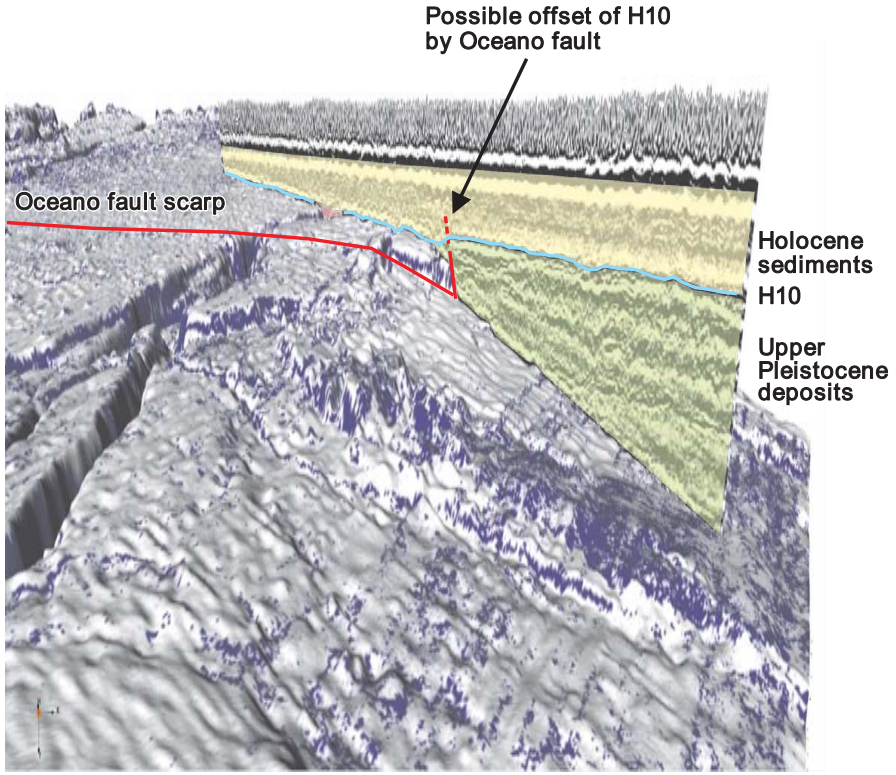
Pacific Gas and Electric Company | Figure **7-10**

File Path: N:\Projects\04_201304_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-10_Line8503.mxd; Date: 7/17/2014; User: Robert Dame; Fugro; Rev.3

(a) Uninterpreted



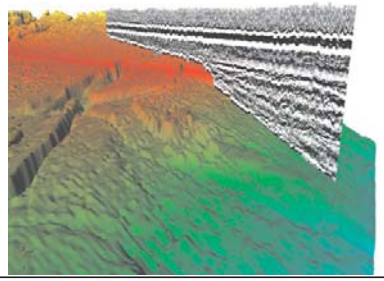
(b) Interpreted

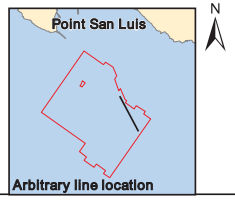


EXPLANATION

- Mapped fault splay
- Horizon H10
- Holocene sediments
- Paleochannel fill sediments
- Upper Pleistocene deposits
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

(c) 3D perspective view of shaded-relief bedrock surface and arbitrary 2D seismic profile



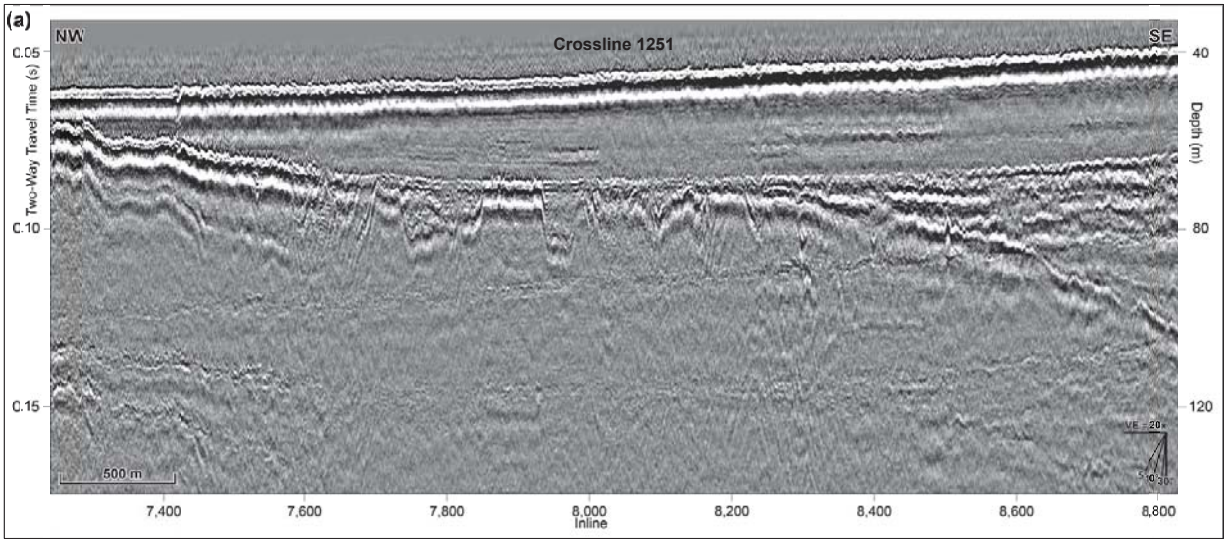


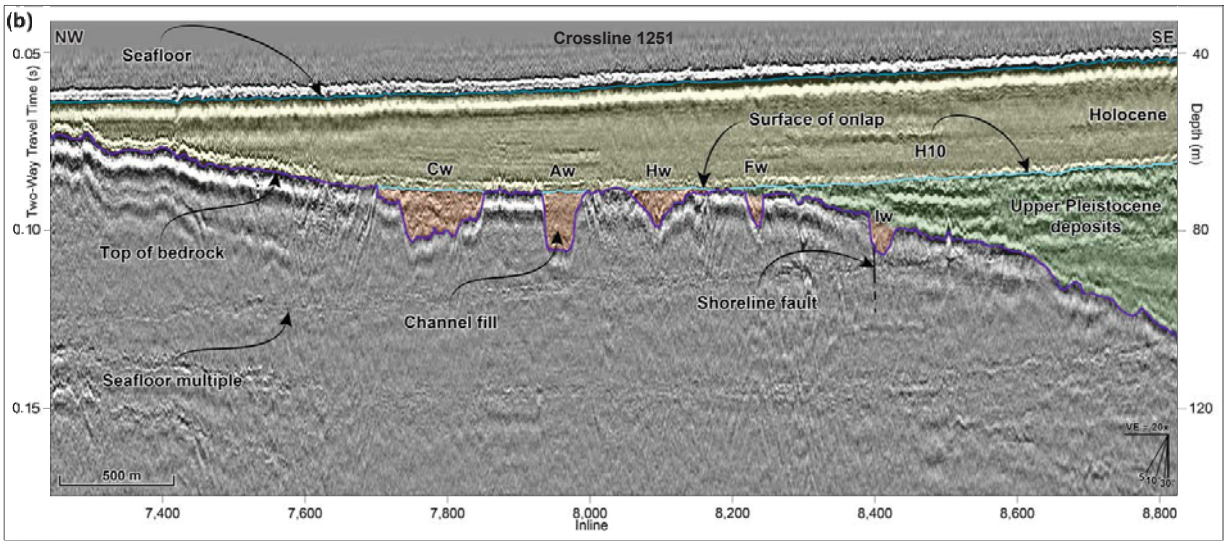
3D Perspective of Dip of Maximum Similarity Bedrock Surface Showing Oceano Fault and Quaternary Sediment Geometry in the Eastern San Luis Bay 3D Survey Area

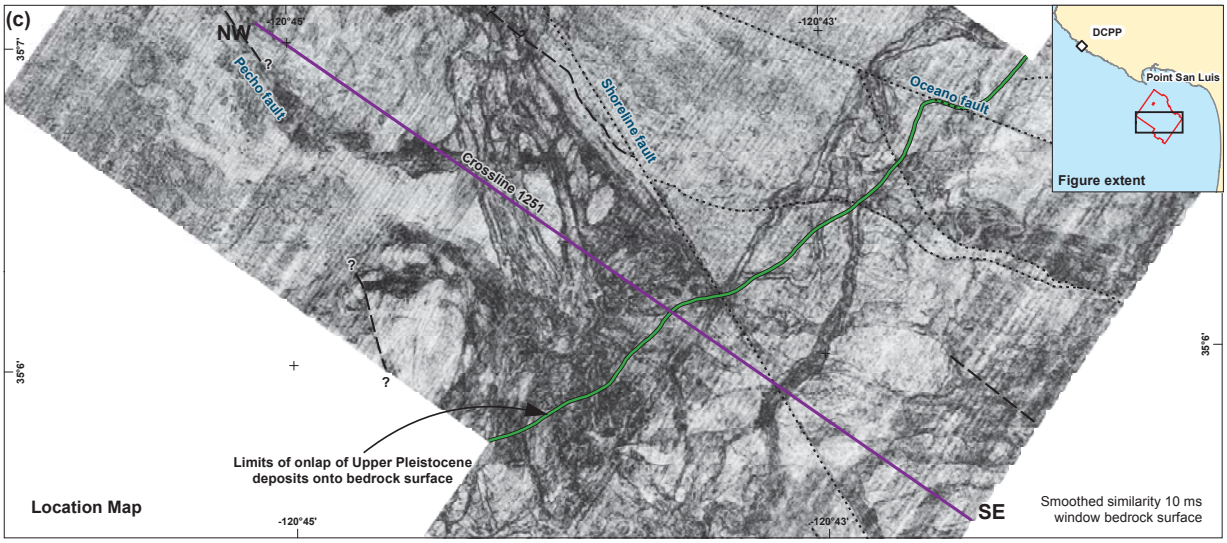
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure 7-11

Ch3.GEO.DCPP.TR.14.02 R0







EXPLANATION

- Seafloor
- Unconformity H10
- Top of bedrock
- Holocene sediment
- Channel fill
- Upper Pleistocene deposits
- Onlap of Upper Pleistocene deposits onto bedrock surface
- Crossline 1251

Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Notes:
1. Depth values on seismic profile assume a velocity of 1,600 m/s.
2. Locations of paleochannels referenced can be found on Plate 5.

N

0 0.5 1 mi.
0 0.5 1 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:28,000

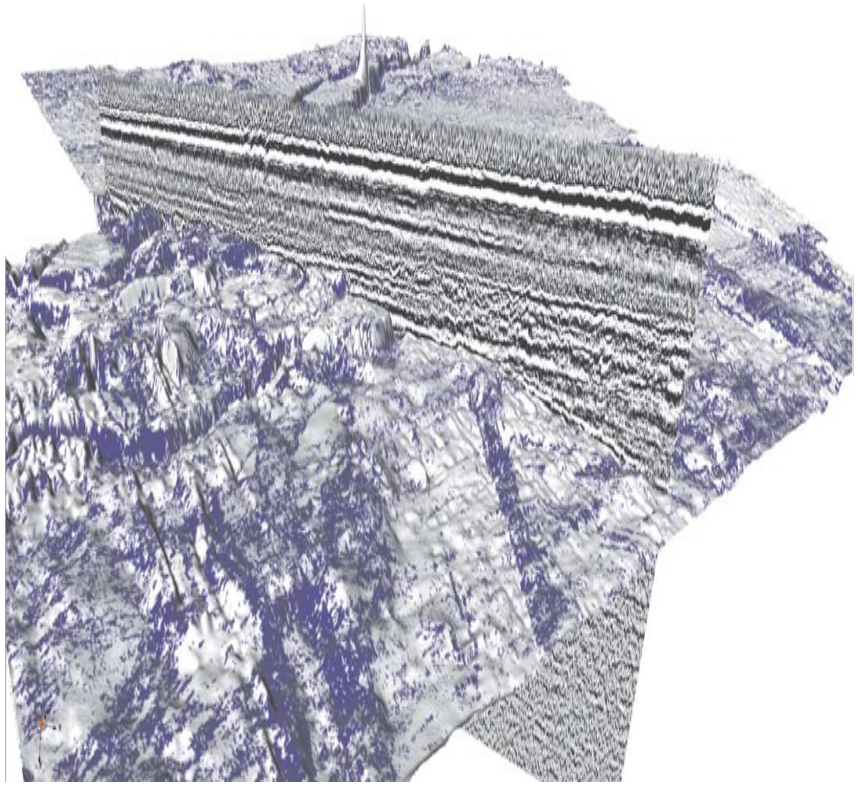
Representative Crossline 1251 with Smoothed Similarity Bedrock Surface

OFFSHORE LESS STUDIES

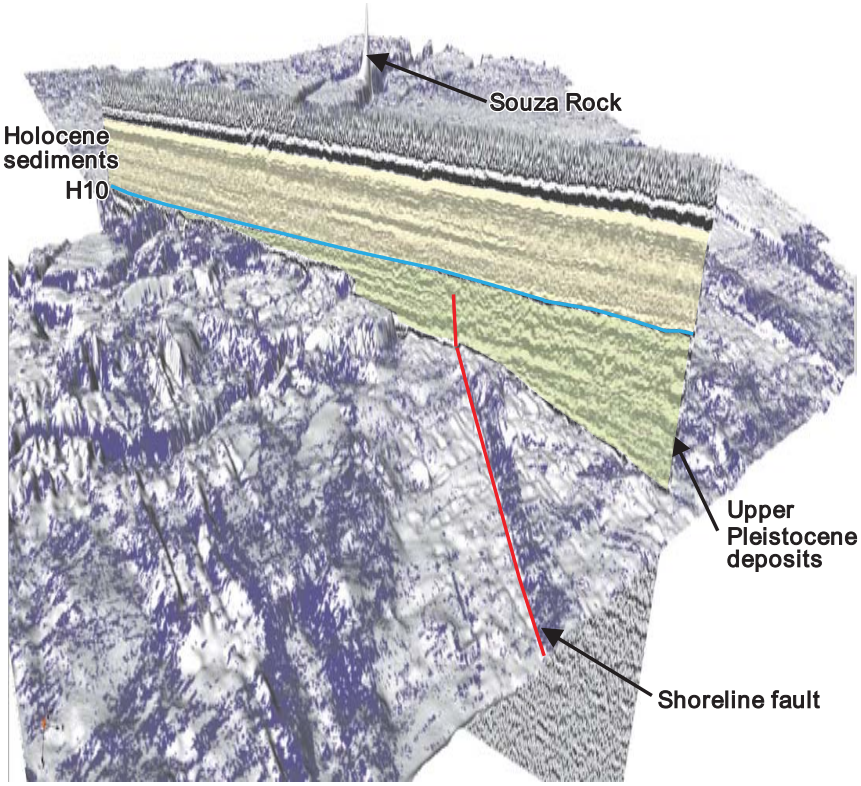
Pacific Gas and Electric Company | Figure **7-12**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-12_Crossline1251.mxd; Date: 7/17/2014; User: R.Dame, Fugro, Rev.3

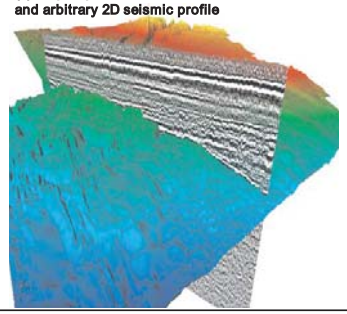
(a) Uninterpreted



(b) Interpreted

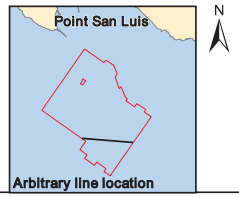


(c) 3D perspective view of shaded-relief bedrock surface and arbitrary 2D seismic profile



EXPLANATION

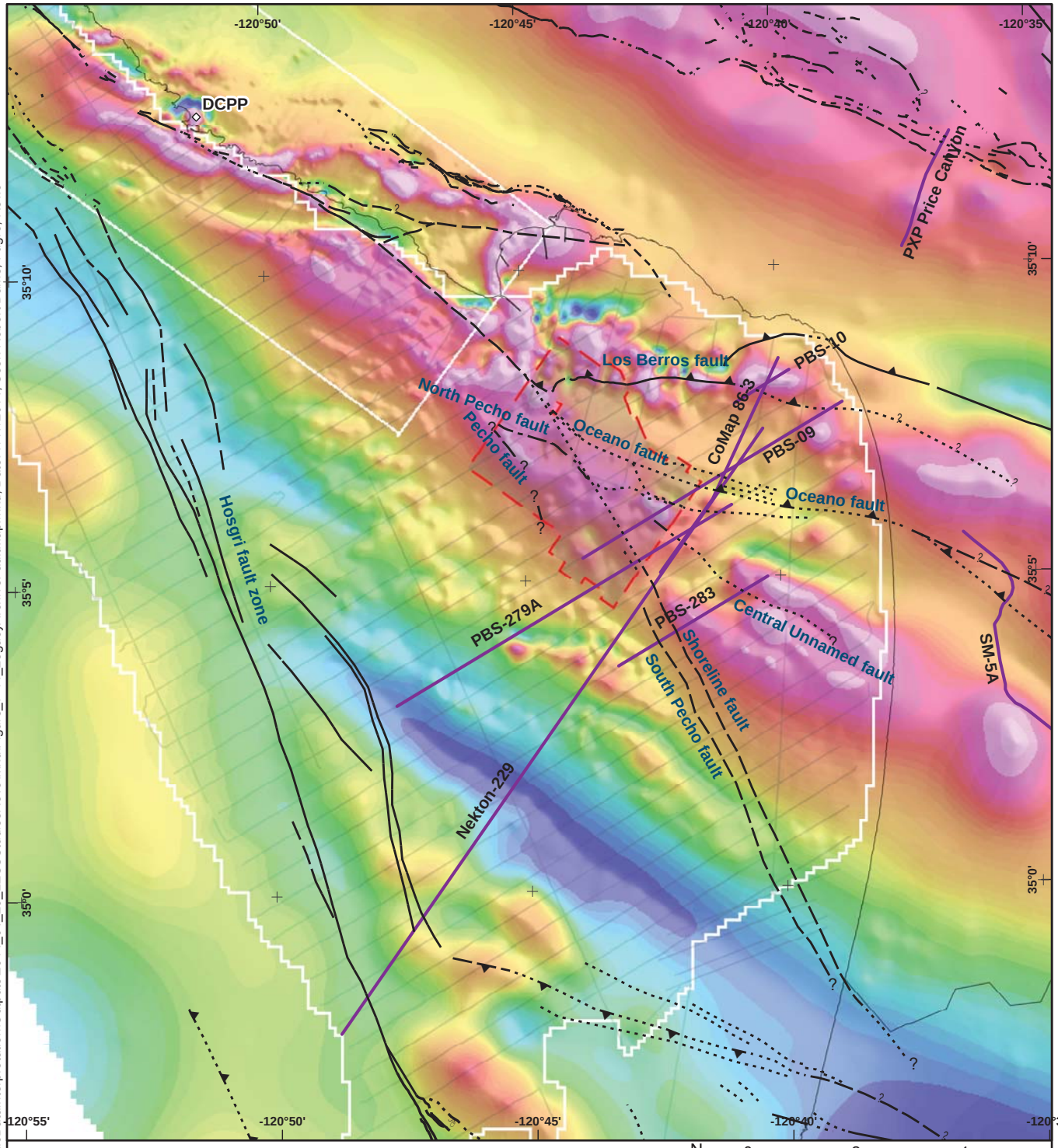
- Mapped fault splay
- Horizon H10
- Holocene sediments
- Paleochannel fill sediments
- Upper Pleistocene deposits
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent



3D Perspective of Dip of Maximum Similarity Bedrock Surface Showing Shoreline Fault Geometry near Quaternary Paleoshorelines in Southern San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure 7-13



EXPLANATION

- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent
- Legacy archive figure line
- Legacy archive line
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

N

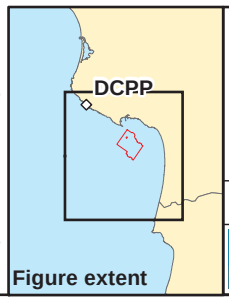
0 2 4 mi.

0 4 8 km

Map projection: WGS 84 / UTM Zone 10N

Map scale: 1:175,000

Source: PG&E DEM compilation v2013.07.

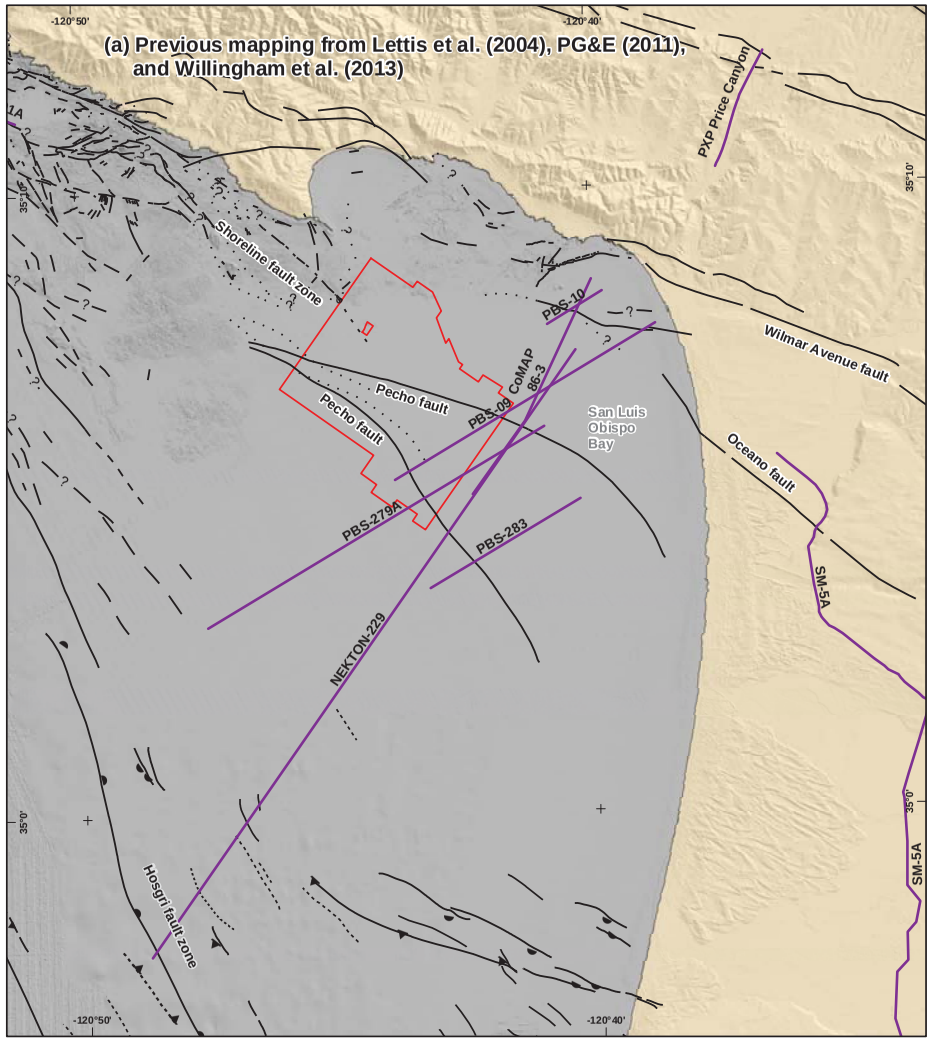


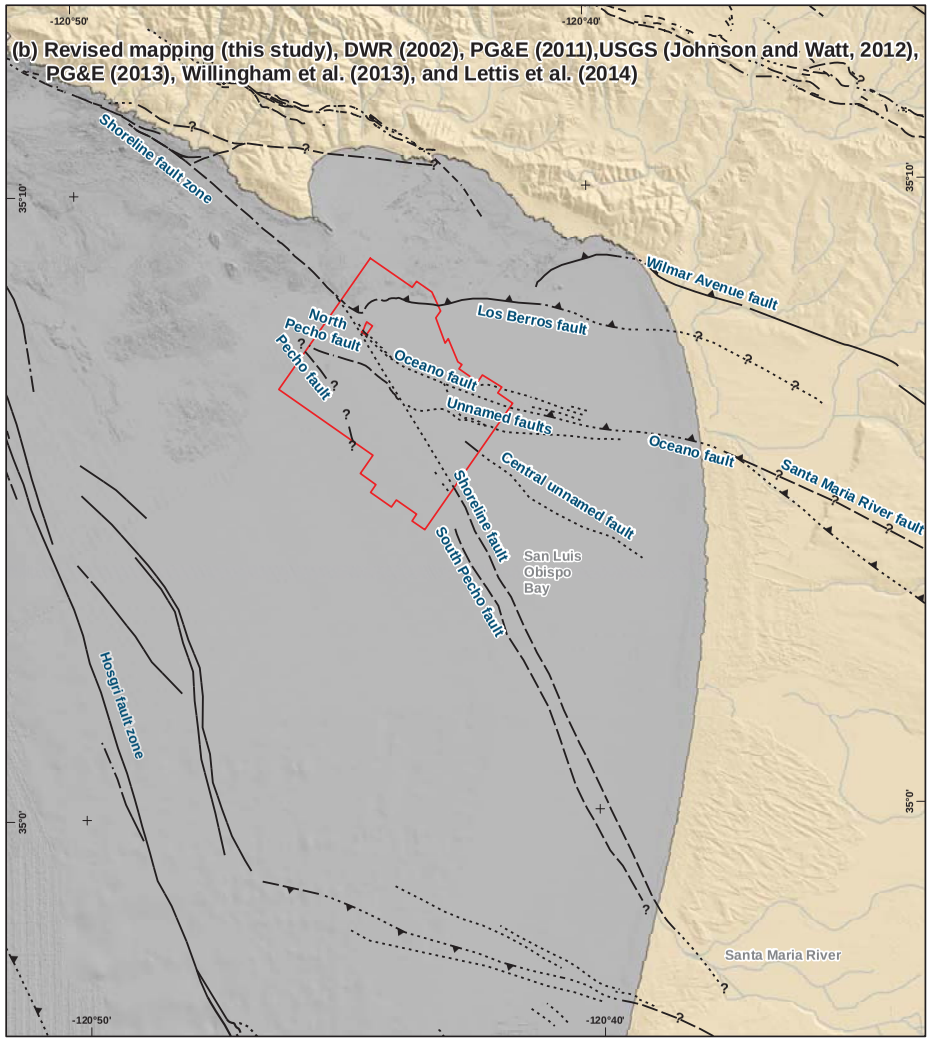
San Luis Obispo Bay Fault Map with Magnetic Data

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-14**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-14_LegacyArchiveFaultMap.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev.3





EXPLANATION

- 3D high-resolution survey boundary 2011/2012
- Seismic line shown in this report
- Quaternary fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain
- Reverse fault; solid where well located, long dashed where approximately located, short dashed where inferred, dotted where concealed, queried where existence uncertain

Notes:
1. In frame (b): Inside San Luis Obispo Bay 3D high-resolution survey boundary fault mapping from previous studies not displayed.
2. Onshore faults not mapped as part of this study.

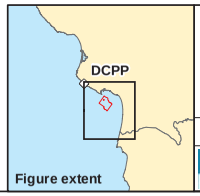
N

0 1 2 mi.

0 2 4 km

Sources:
- PG&E DEM compilation v2013.07.
-Quaternary faults based on results of this and previous studies. Fault traces modified from California Division of Oil, Gas, and Geothermal Resources (1992), Department of Water Resources (2002), Lettis et al. (2004), Shoreline Fault Report (PG&E, 2011), Johnson and Watt (2012), Seismic Stratigraphy Report (PG&E, 2013), Willingham et al. (2013), and Onshore Geologic Mapping Study (PG&E, 2014).

Map projection and scale: WGS 84 / UTM Zone 10N, 1:45,000



San Luis Obispo Bay Fault Map Comparison

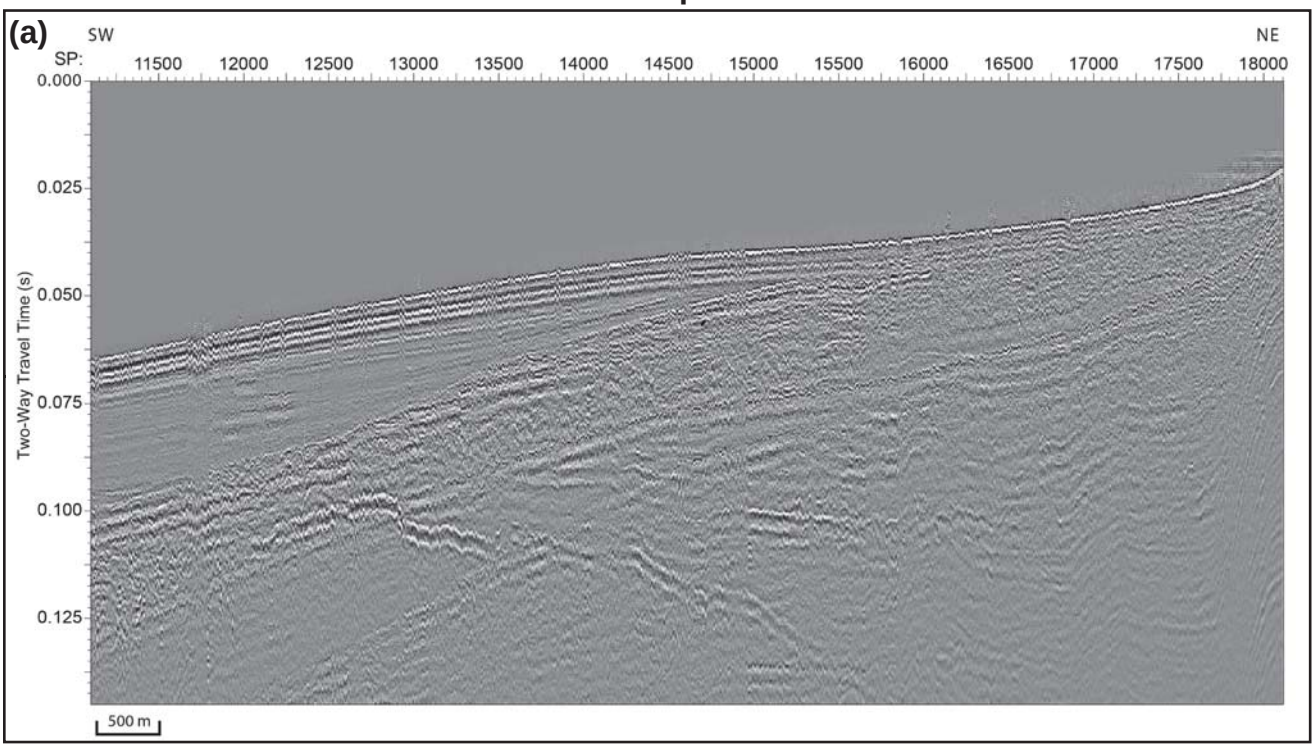
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

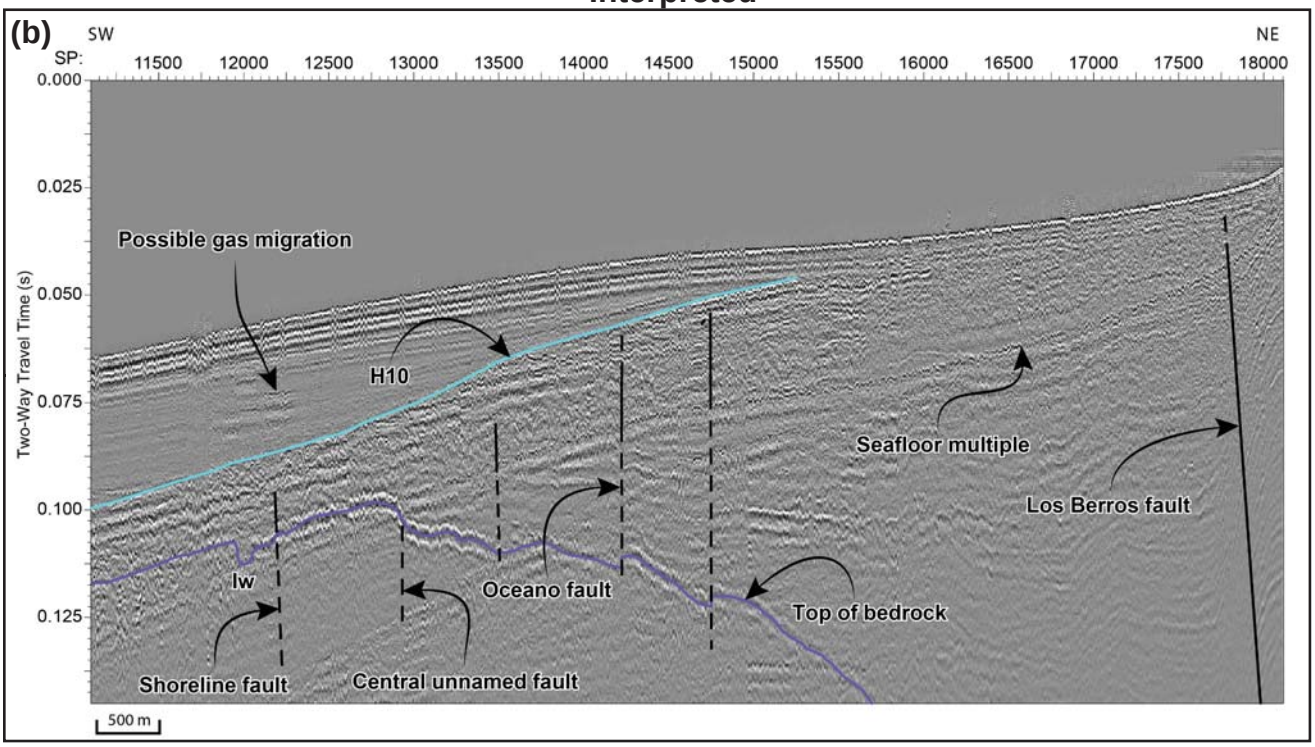
Figure 7-15

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-15_SLB_Fault_Map_Comparison.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev:3

Uninterpreted



Interpreted

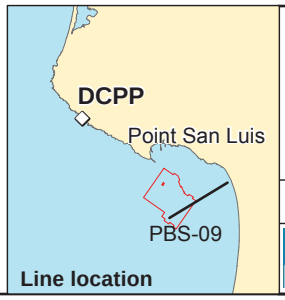


EXPLANATION

- H10
- Fault, dashed where inferred
- Top of bedrock
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Note: See Figure 7-14 for seismic section location.

Source: PG&E legacy data archive.



Line PBS-09

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-16**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-16_PBS-09.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

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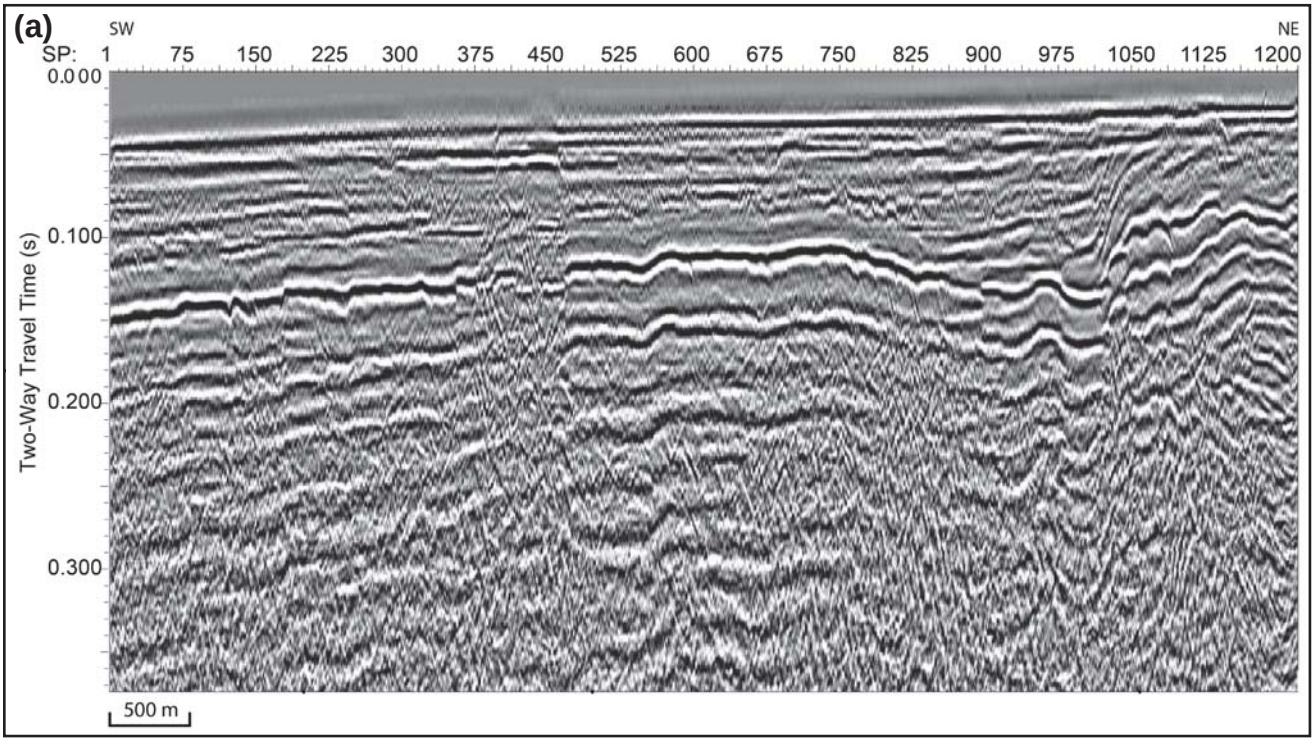
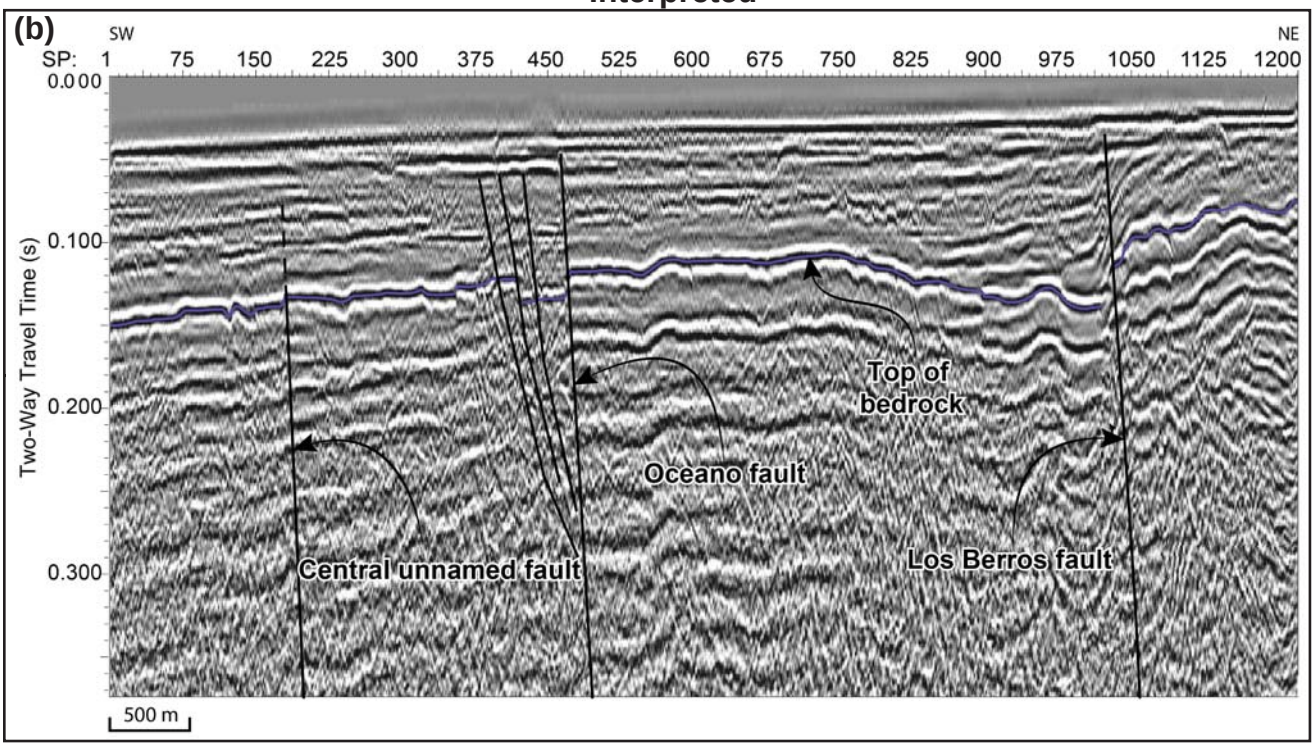


Interpreted

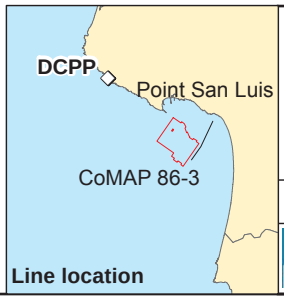


EXPLANATION

- Fault
- Top of bedrock
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Note: See Figure 7-14 for seismic section location.

Source: PG&E legacy data archive.



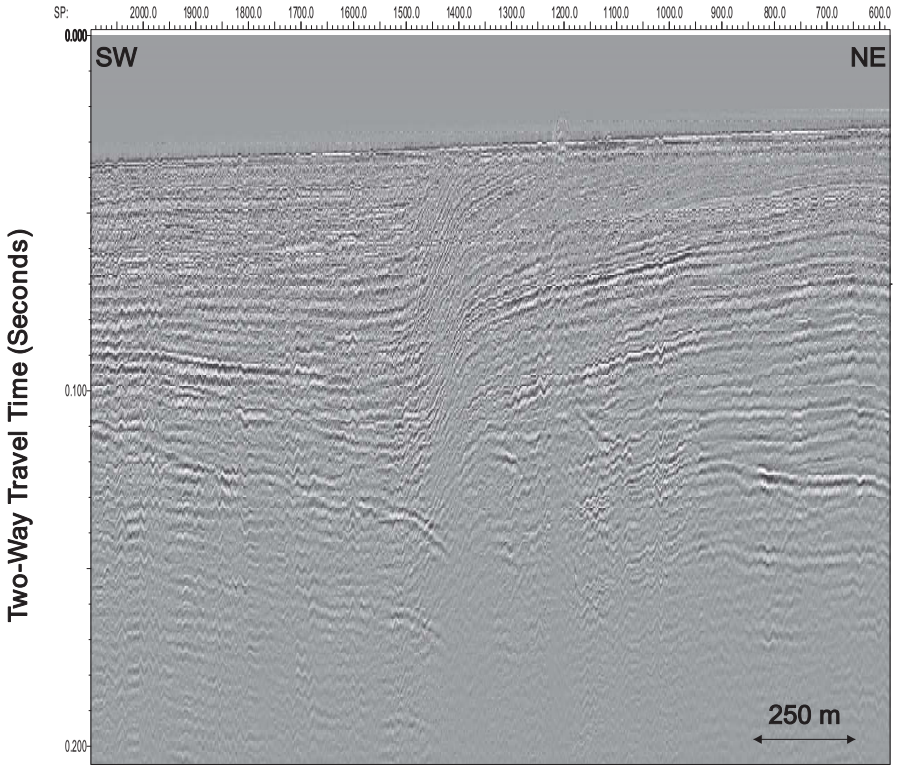
Line CoMAP 86-3

OFFSHORE LESS STUDIES

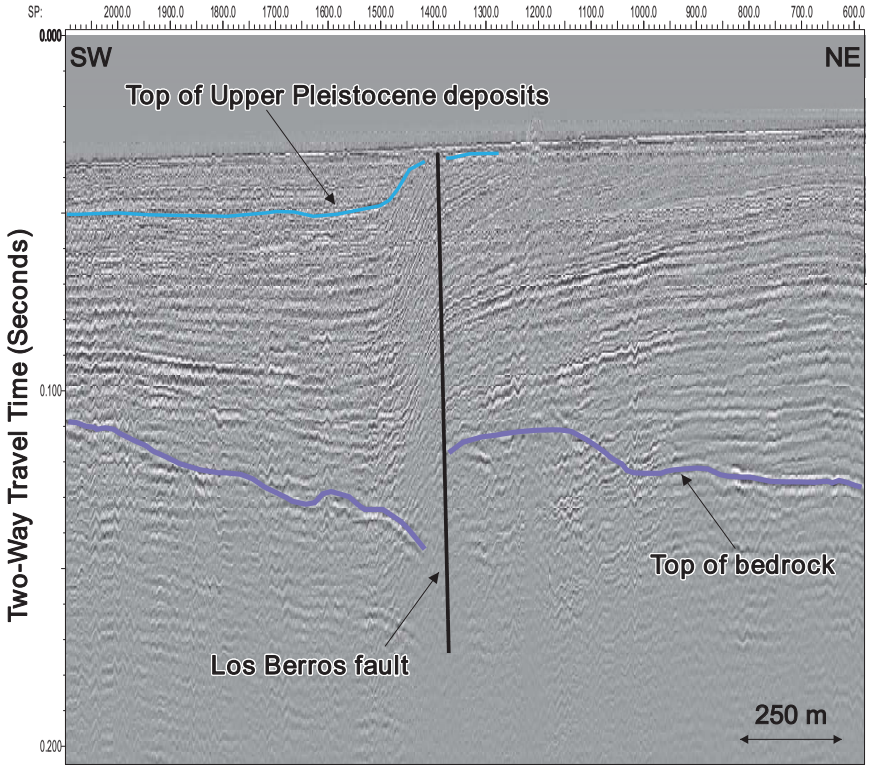
Pacific Gas and Electric Company | Figure **7-17**

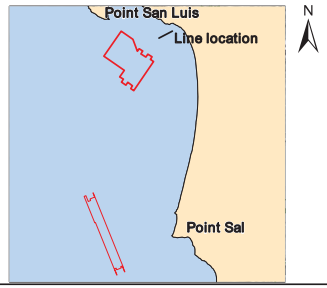
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-17_CoMap_83-3.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

(a) Uninterpreted



(b) Interpreted





EXPLANATION

- Mapped fault splay
- Top of Upper Pleistocene deposits
- Top of bedrock
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

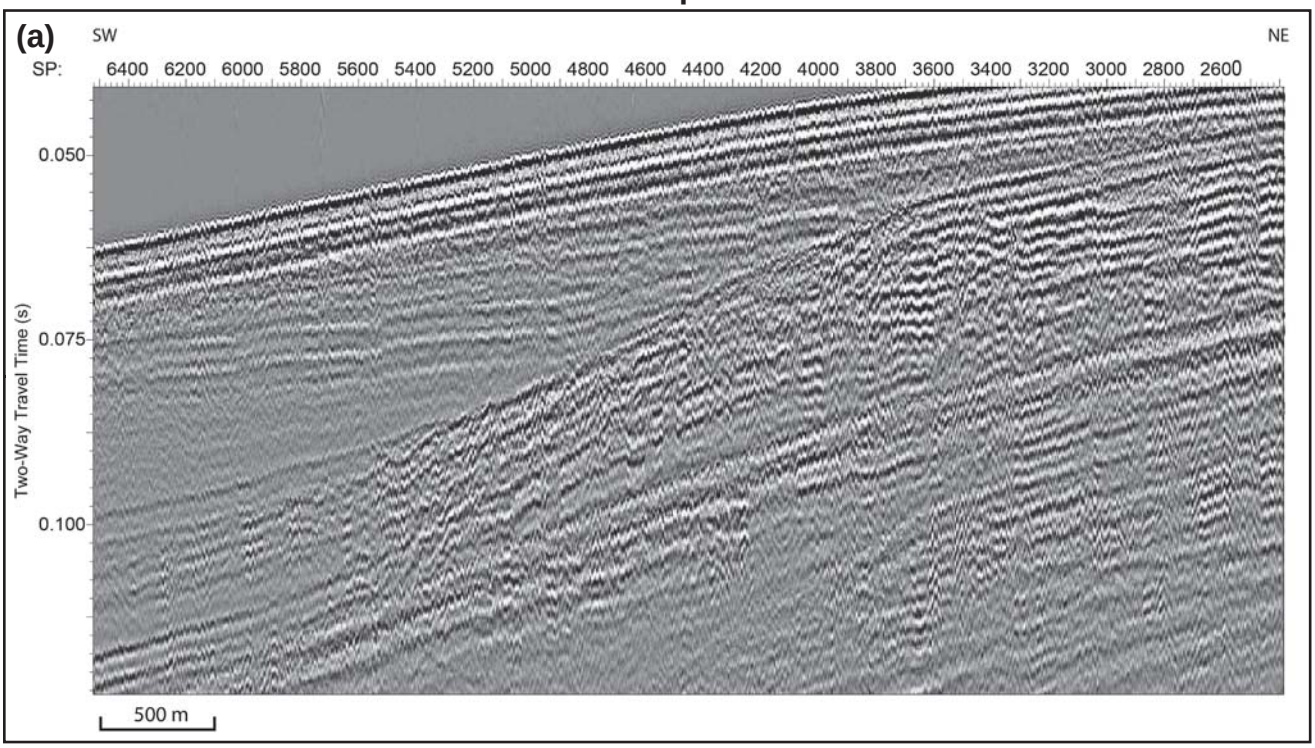
USGS Line PBS-10 Showing Offset of Upper Pleistocene Deposits by Los Berros Fault in San Luis Obispo Bay

OFFSHORE LESS STUDIES

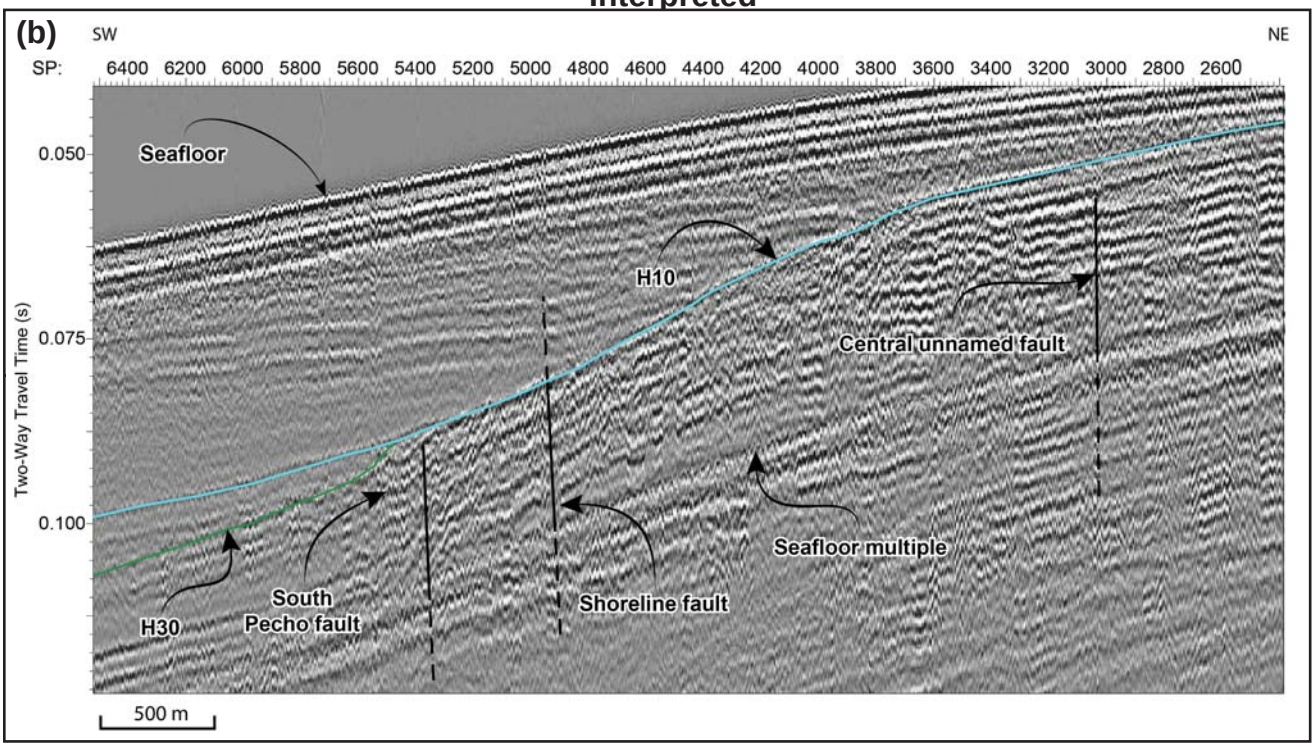
Pacific Gas and Electric Company | Figure 7-18

Ch3.GEO.DCPP.TR.14.02 R0

Uninterpreted



Interpreted



EXPLANATION

- Fault, dashed where inferred
- Unconformity H10
- Unconformity H30
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

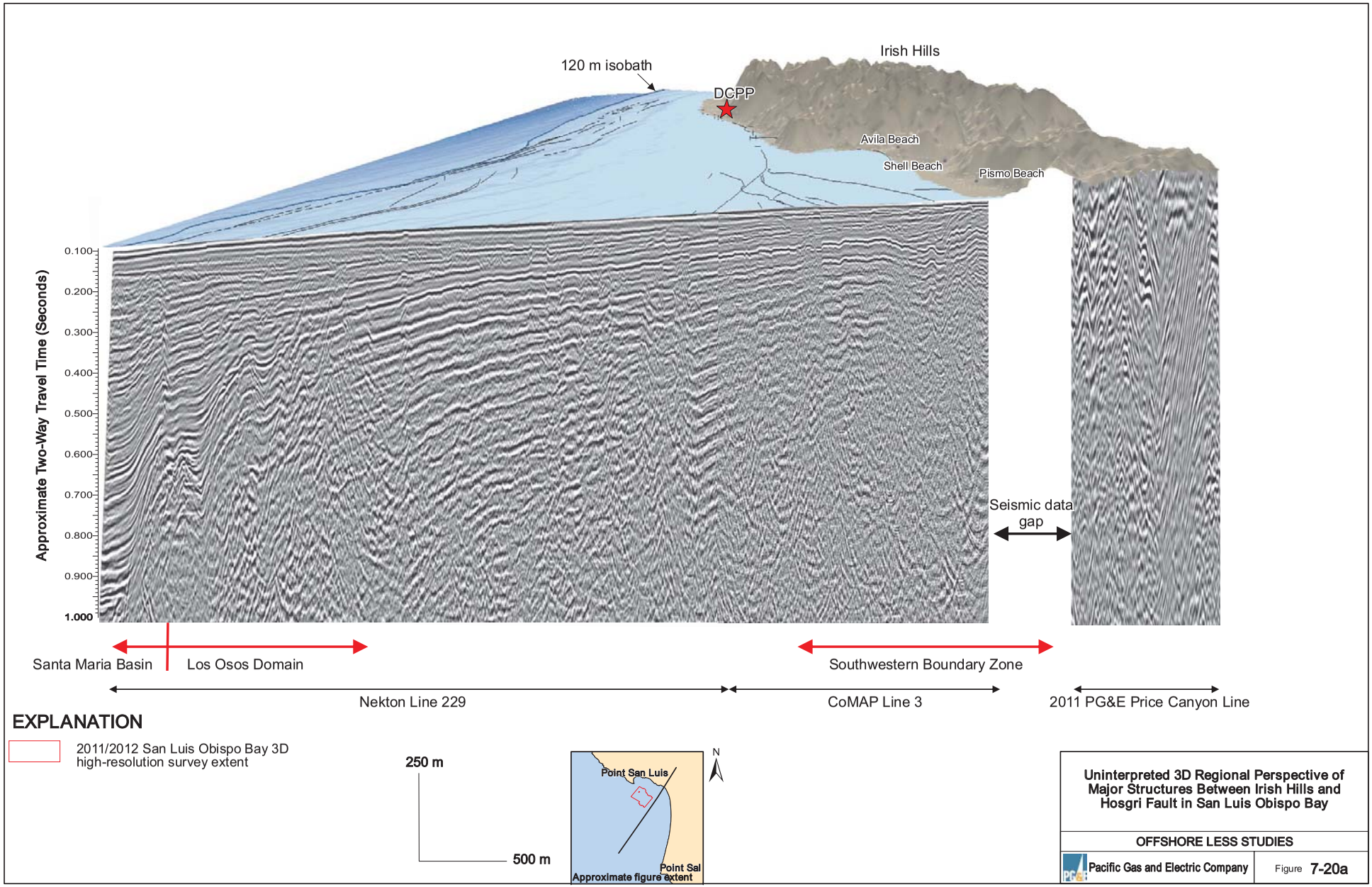
Note: See Figure 7-14 for seismic section location.

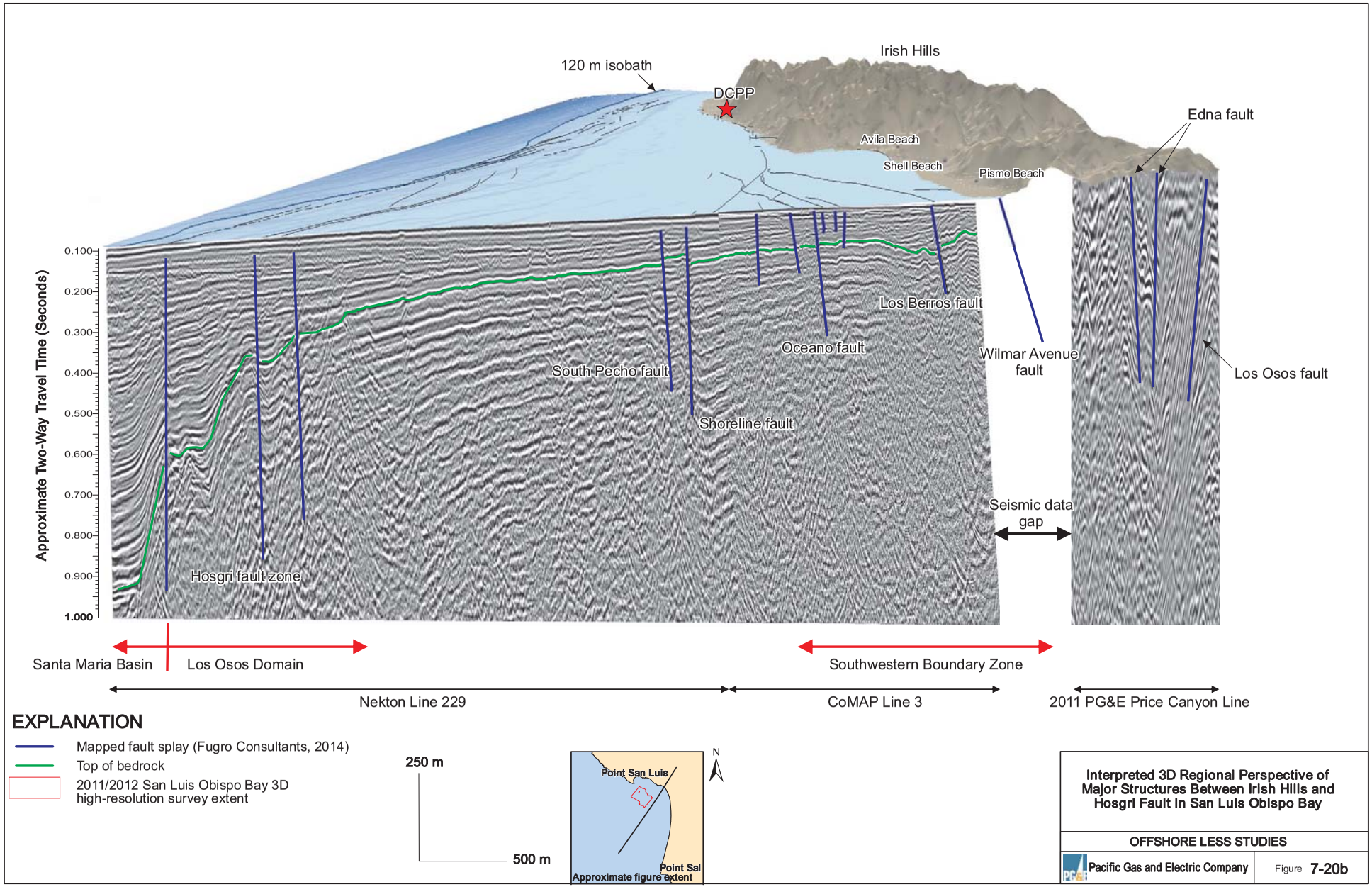
Source: PG&E legacy data archive.

Line PBS-283

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-19**





Interpreted 3D Regional Perspective of Major Structures Between Irish Hills and Hosgri Fault in San Luis Obispo Bay

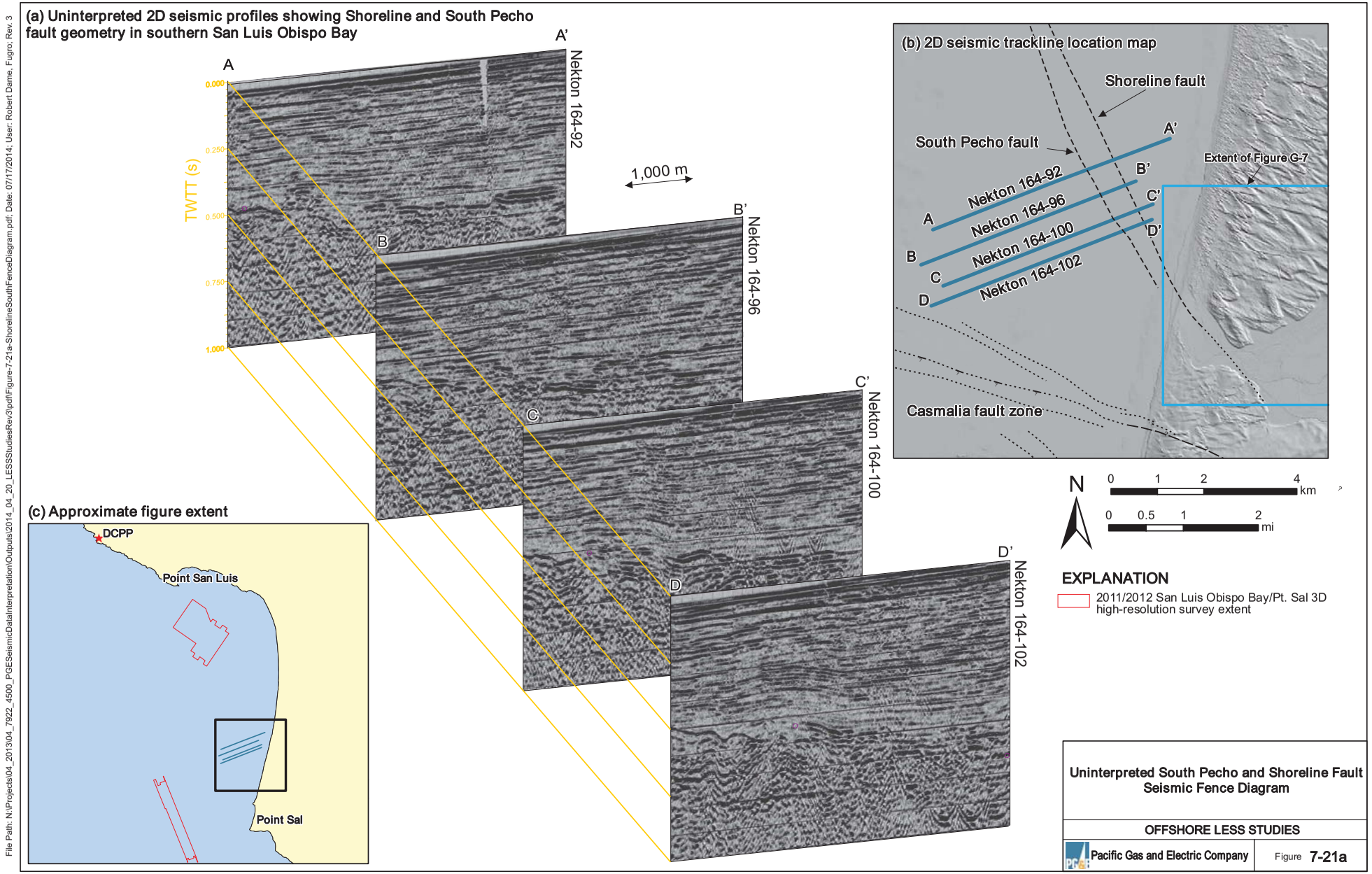
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure 7-20b

Ch3.GEO.DCPP.TR.14.02 R0

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\pdf\Figure-7-20-RegionalSLB.pdf; Date: 05/16/2014; User: Robert Dame, Fugro; Rev. 3



Uninterpreted South Pecho and Shoreline Fault Seismic Fence Diagram

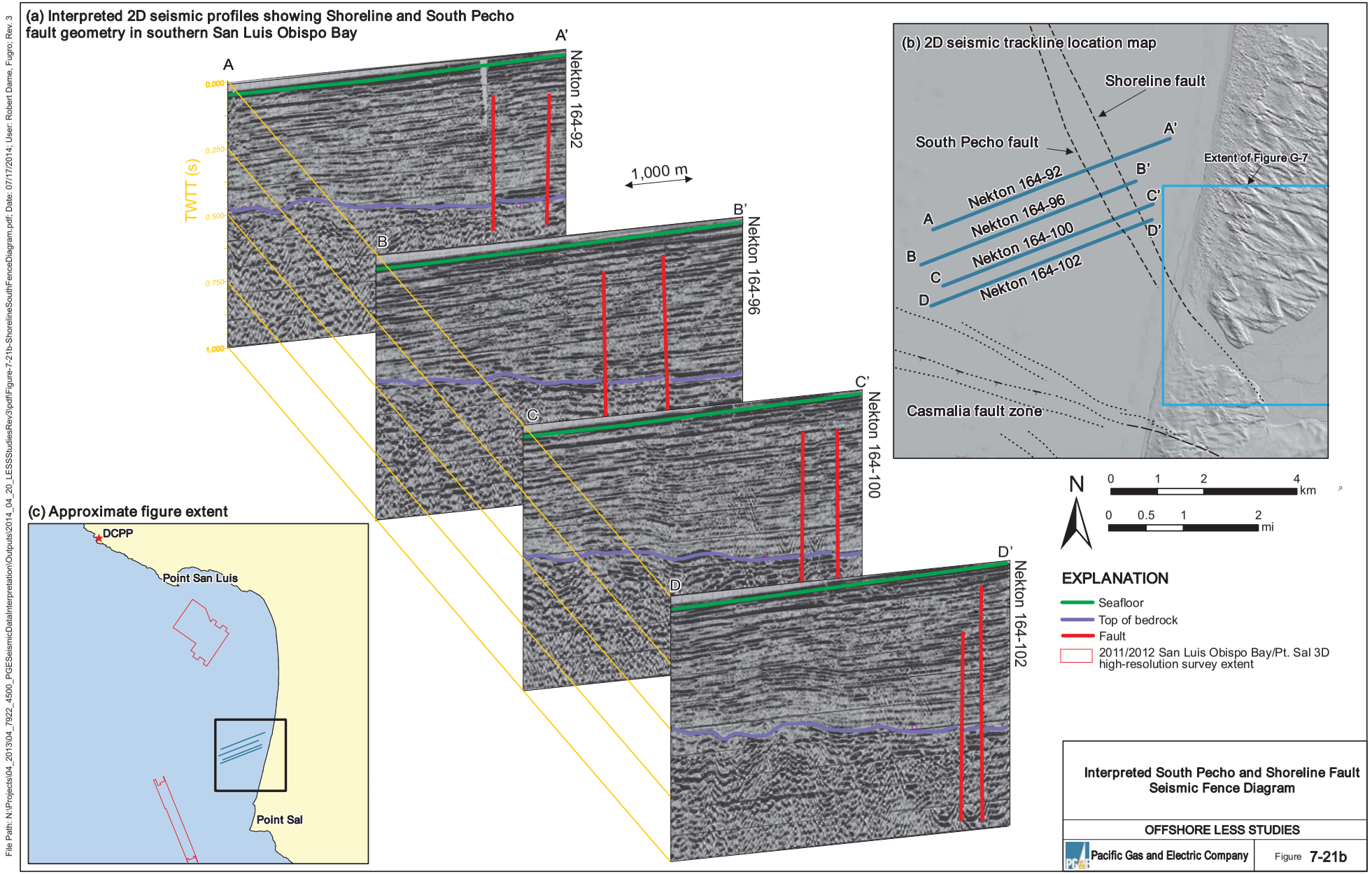
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure 7-21a

Ch3.GEO.DCPP.TR.14.02 R0

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\pdf\Figure-7-21a-ShorelineSouthFenceDiagram.pdf; Date: 07/17/2014; User: Robert Dame, Fugro; Rev. 3



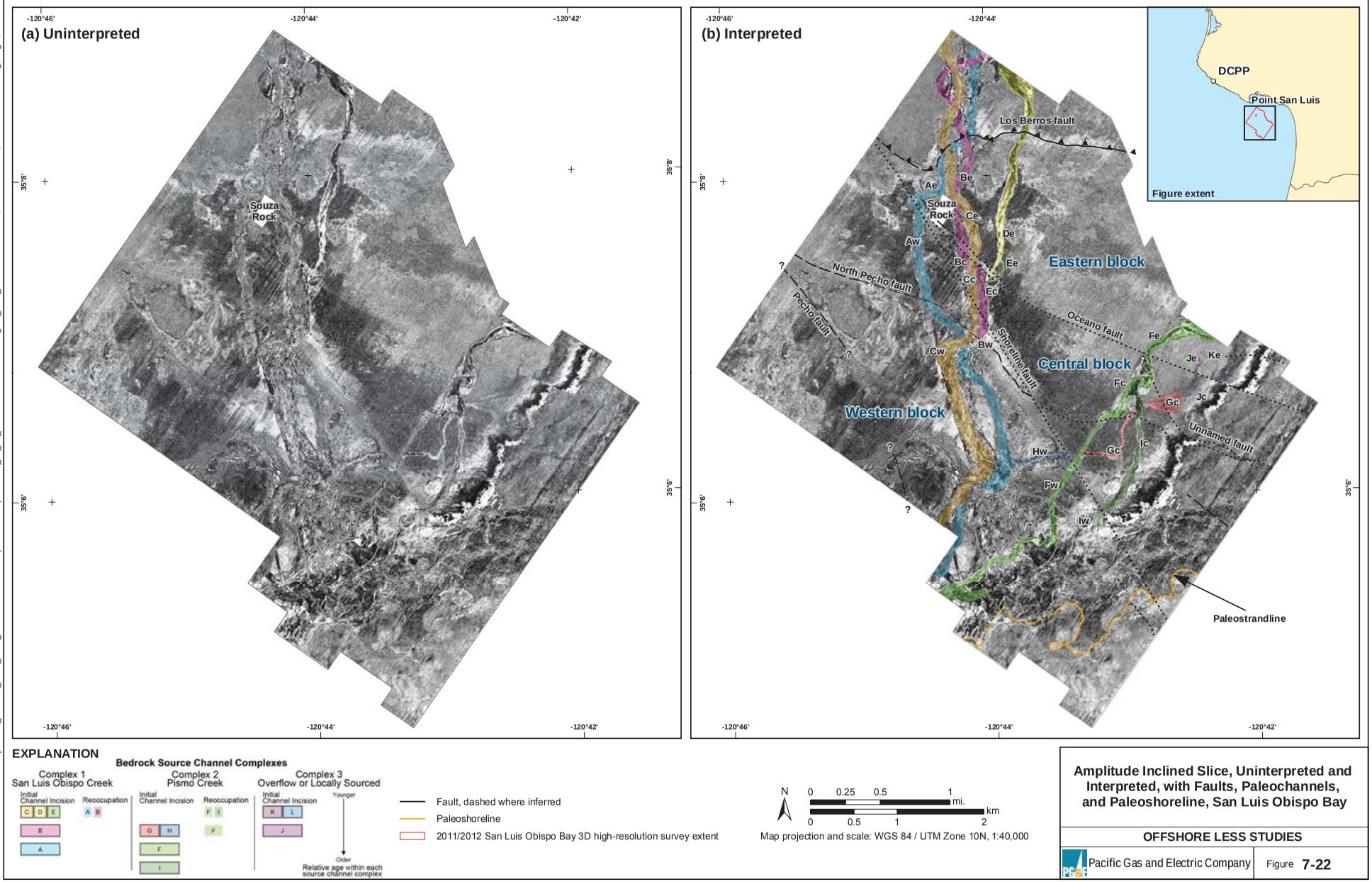
Interpreted South Pecho and Shoreline Fault Seismic Fence Diagram

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company

Figure **7-21b**

Ch3.GEO.DCPP.TR.14.02 R0



EXPLANATION

Bedrock Source Channel Complexes

Complex 1 — San Luis Obispo Creek

Initial Channel Incision	Reoccupation
C D E	A B
B	
A	

Complex 2 — Pismo Creek

Initial Channel Incision	Reoccupation
G H	F I
F	
I	

Complex 3 — Overflow or Locally Sourced

Initial Channel Incision
K L
J

Younger → Older: Relative age within each source channel complex

Fault, dashed where inferred

Paleoshoreline

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 0.25 0.5 1 mi.

0 0.5 1 2 km

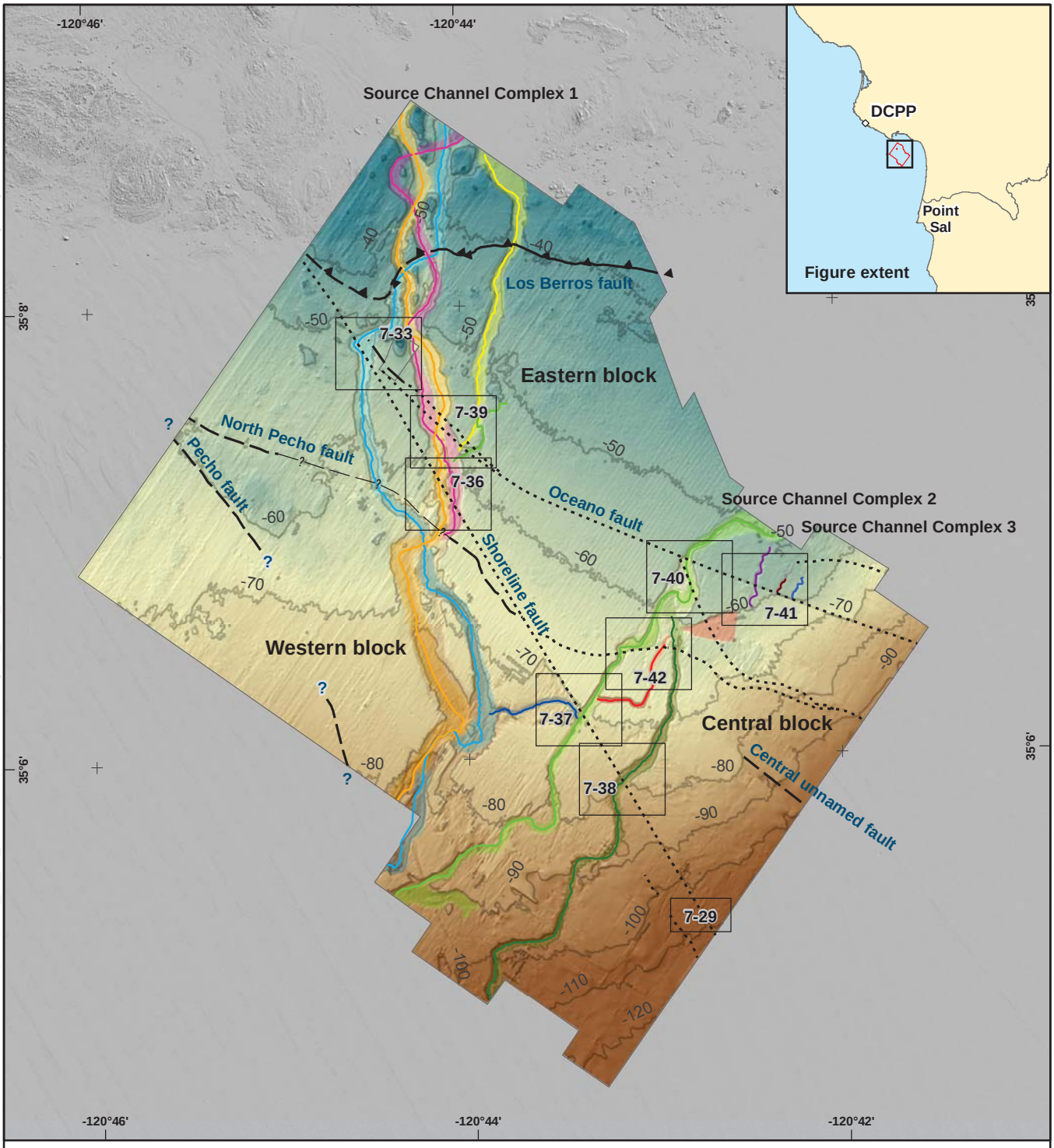
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

Amplitude Inclined Slice, Uninterpreted and Interpreted, with Faults, Paleochannels, and Paleoshoreline, San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-22**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-22_Paleoshoreline.mxd; Date: 6/11/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

Fault — Channel thalweg — Piercing point

Bedrock Source Channel Complexes

San Luis Obispo Creek			Pismo Creek		Overflow or Locally Sourced	
Initial Channel Incision		Reoccupation	Initial Channel Incision	Reoccupation	Initial Channel Incision	
C D E		A B	G H	F I	K L	Younger
B			F	F	J	
A			I			Older

Notes:
1. Depth values on grid assume a velocity of 1,600 m/sec.
2. Relative age within each source channel complex.

Source: PG&E DEM compilation v2013.07.

N

0 0.5 1 mi.
0 1 2 km

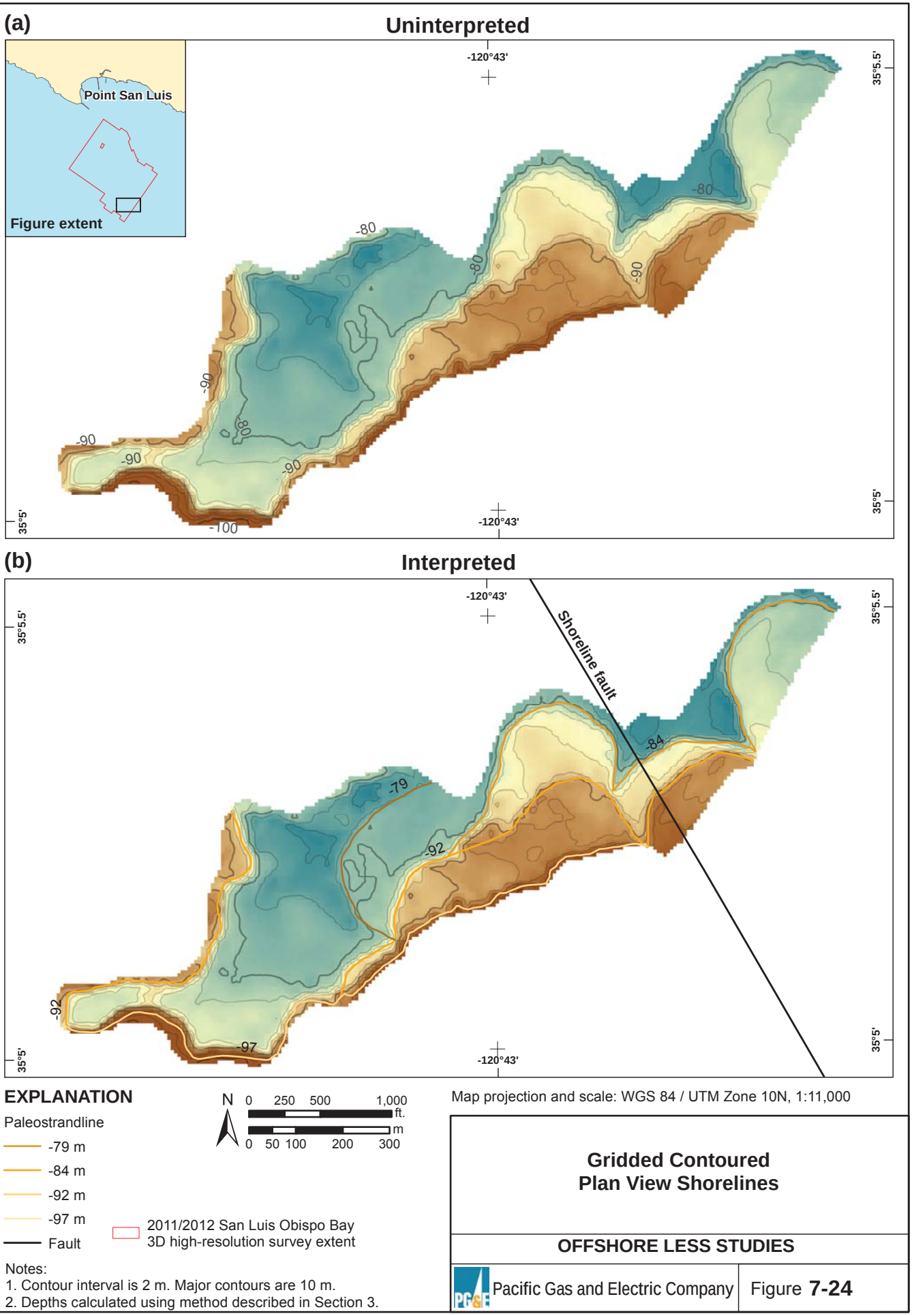
Map projection and scale: WGS 84 / UTM Zone 10N, 1:48,000

San Luis Obispo Bay Piercing Points

OFFSHORE LESS STUDIES

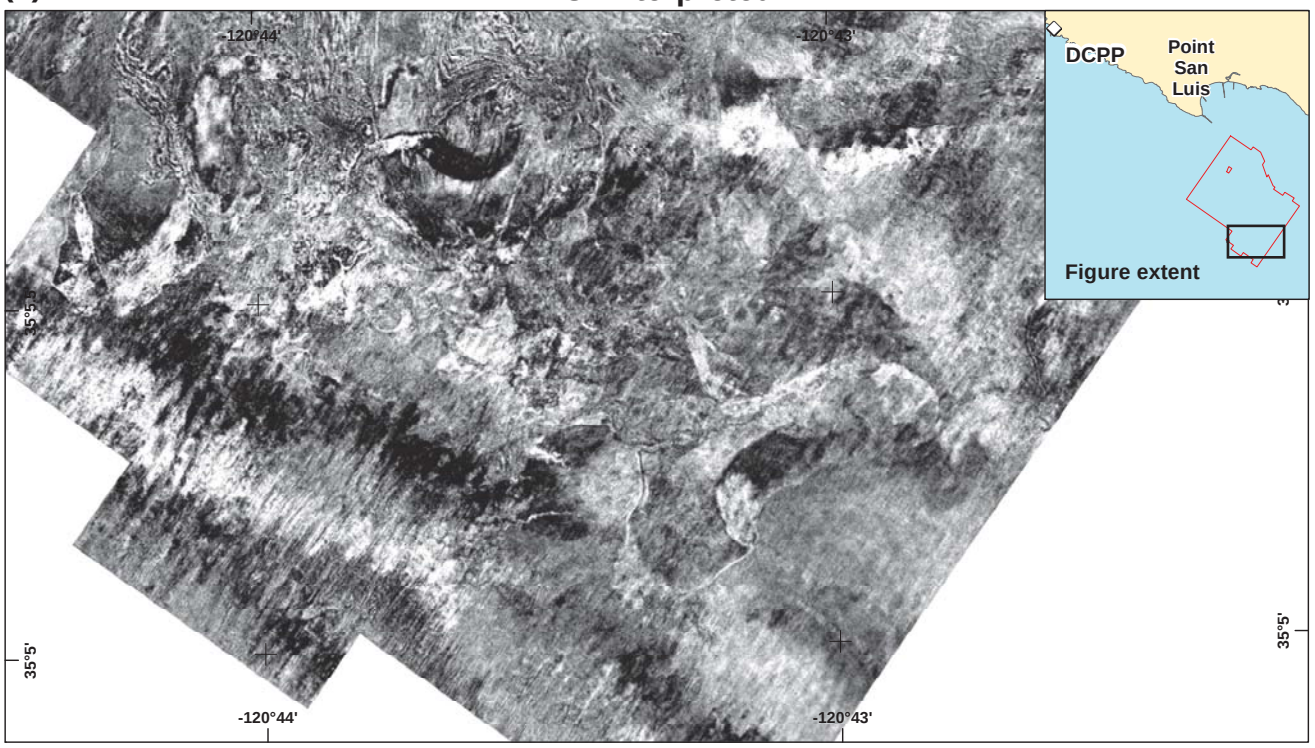
Pacific Gas and Electric Company | Figure **7-23**

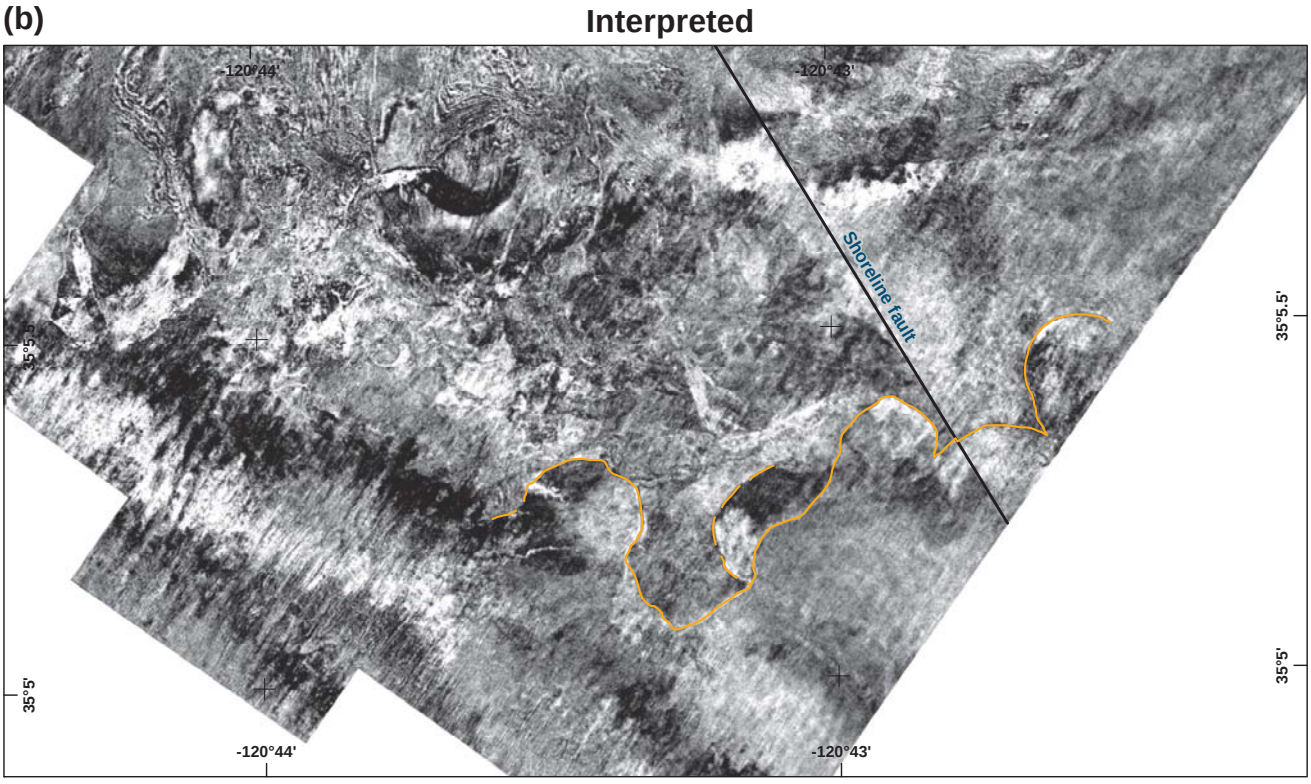
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-23_PiercingPoints.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3



Notes:
1. Contour interval is 2 m. Major contours are 10 m.
2. Depths calculated using method described in Section 3.

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-24_Paleostrandline.mxd; Date: 5/12/2014; User: Ranon Dulberg, Fugro; Rev.3





EXPLANATION

- Paleoshoreline
- Fault
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N 0 500 1,000 2,000 ft.
0 100 200 400 600 m

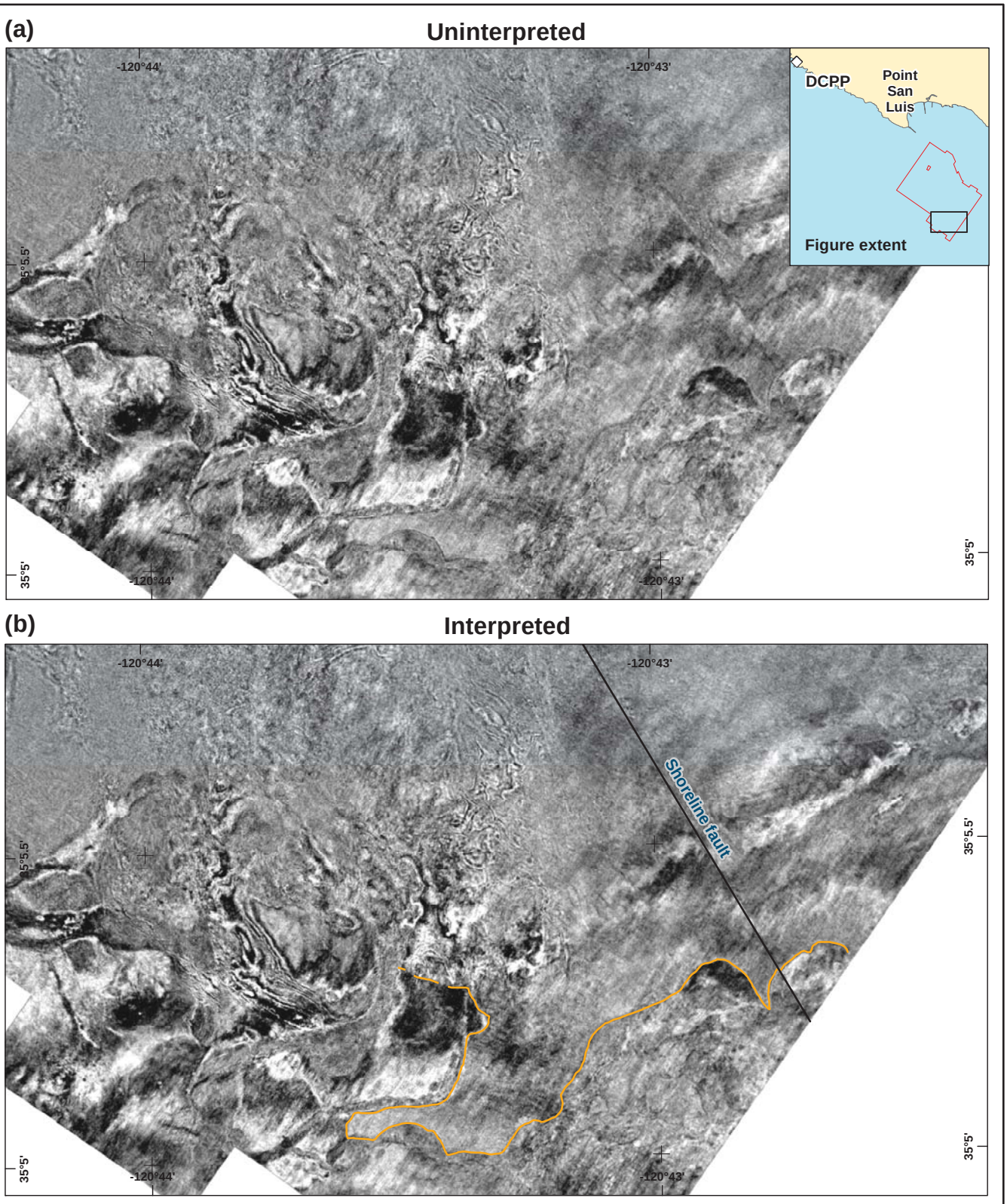
Map projection and scale: WGS 84 / UTM Zone 10N, 1:20,000

Amplitude Time Slice at 105.3 ms with 84 m Paleoshoreline and Shoreline Fault

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-25**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-25_Paleoshoreline_1053.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3

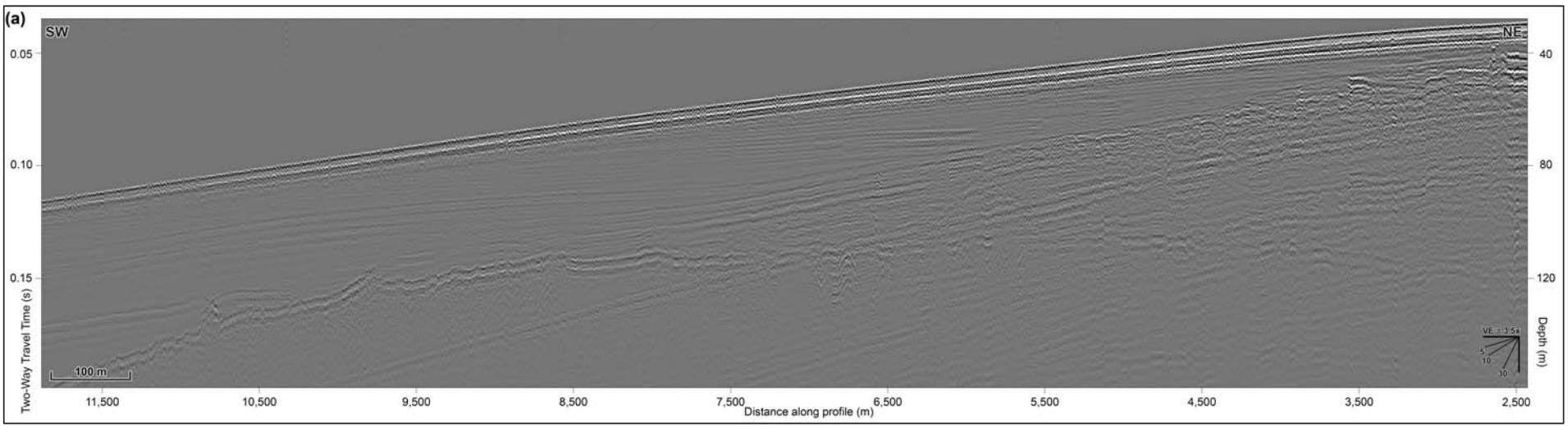


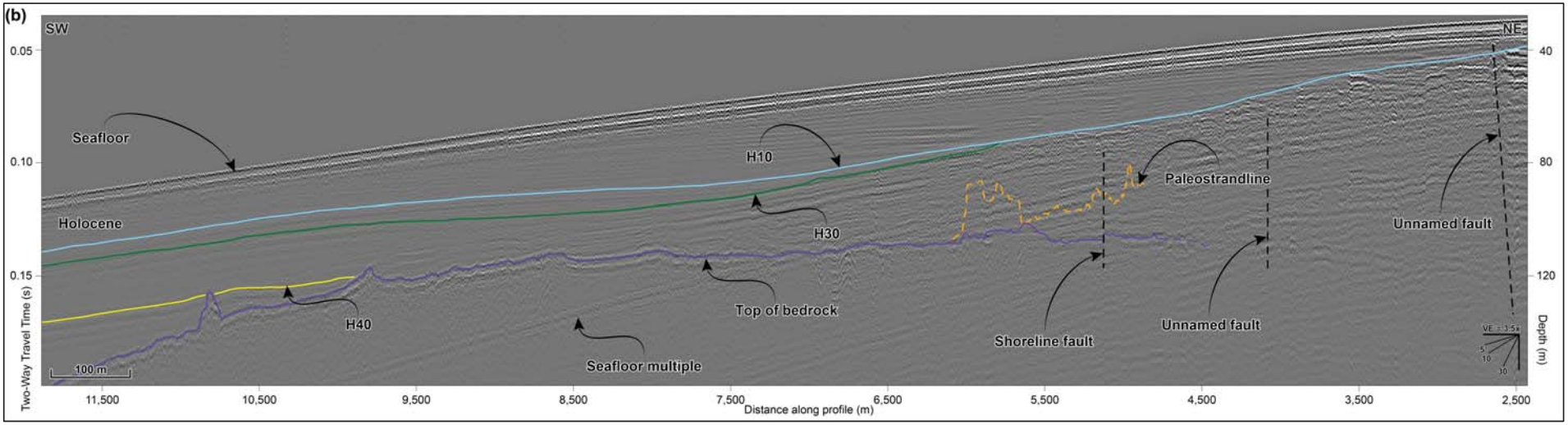
Amplitude Time Slice at 119.3 ms with 92 m Paleoshoreline and Shoreline Fault

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-26**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-26_Paleoshoreline_1193.mxd; Date: 5/12/2014; User: Ranon Dulberg, Fugro; Rev.3

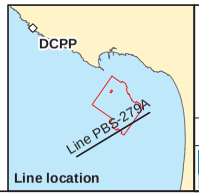




EXPLANATION

- Unconformity H10
- Unconformity H30
- Unconformity H40
- Top of bedrock
- Paleoshoreline (H35)
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Note: Depth values on seismic profile assume a velocity of 1,600 m/s.

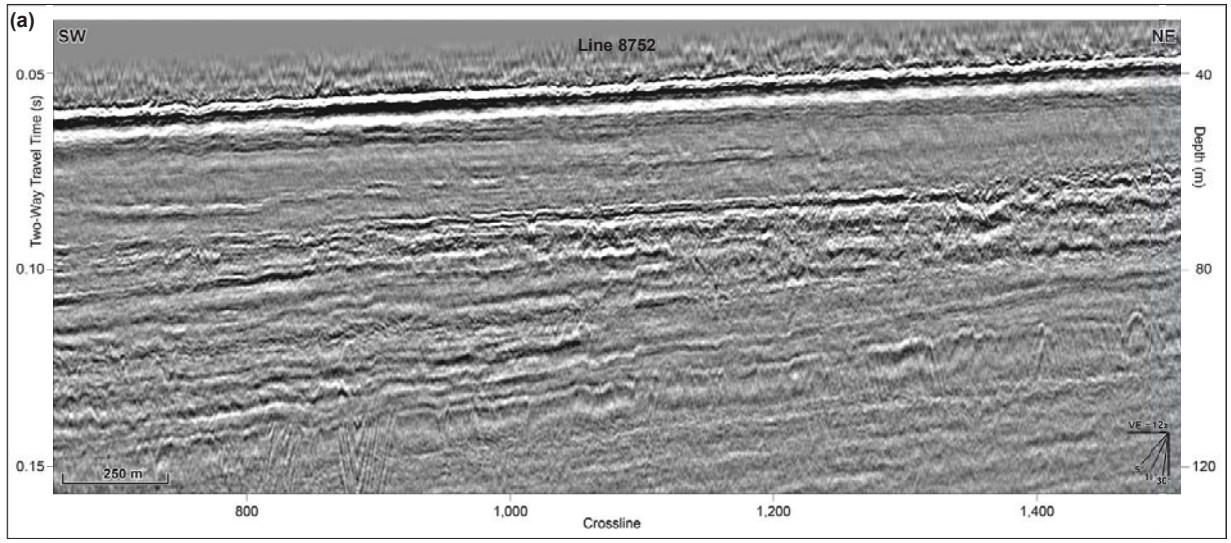


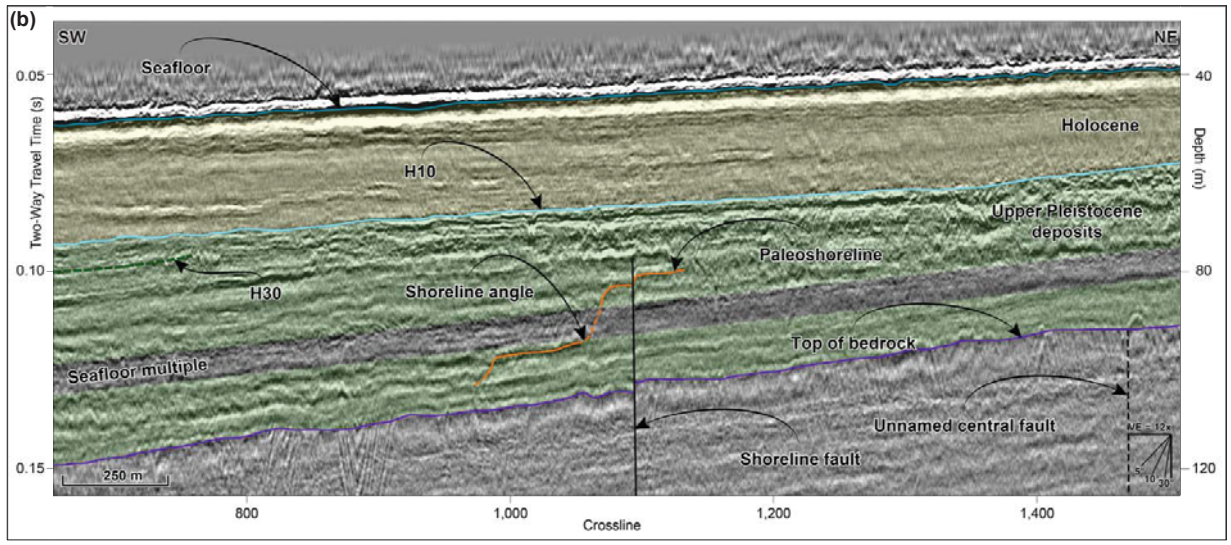
Excerpt of Line PBS-279A Showing Paleostrandline and Regional Unconformities San Luis Obispo Bay

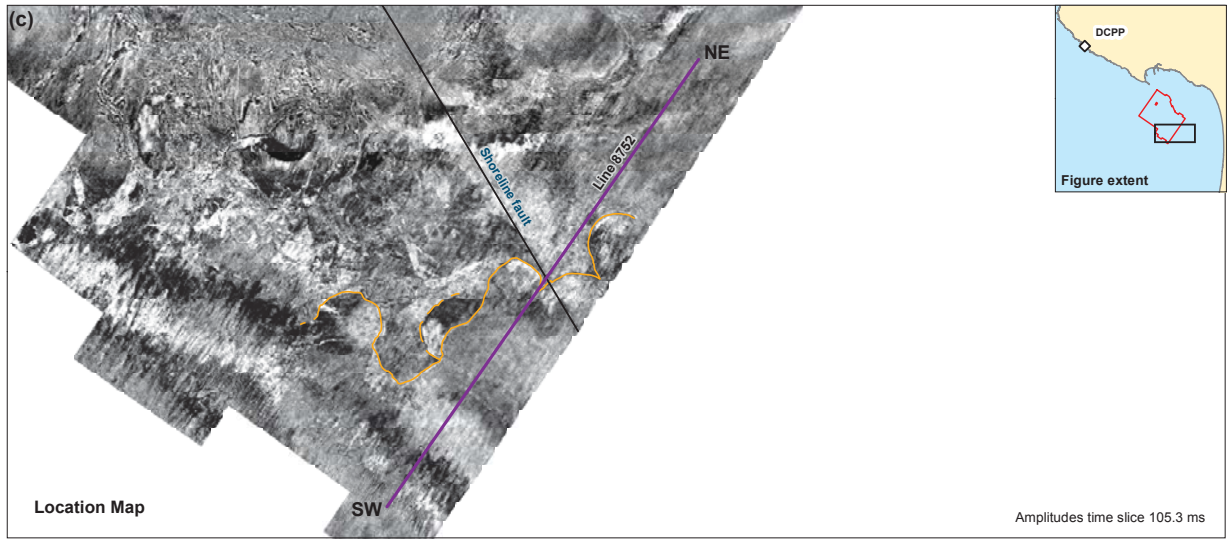
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-27**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-27_PBS-279A.mxd; Date: 7/15/2014; User: R. Dame, Fugro; Rev.3







EXPLANATION

- Fault
- Seafloor
- Unconformity H10
- Unconformity H30
- Paleoshoreline
- Top of bedrock
- Line 8752
- Holocene sediment
- Upper Pleistocene deposits
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 0.5 1 mi.

0 0.5 1 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:24,000

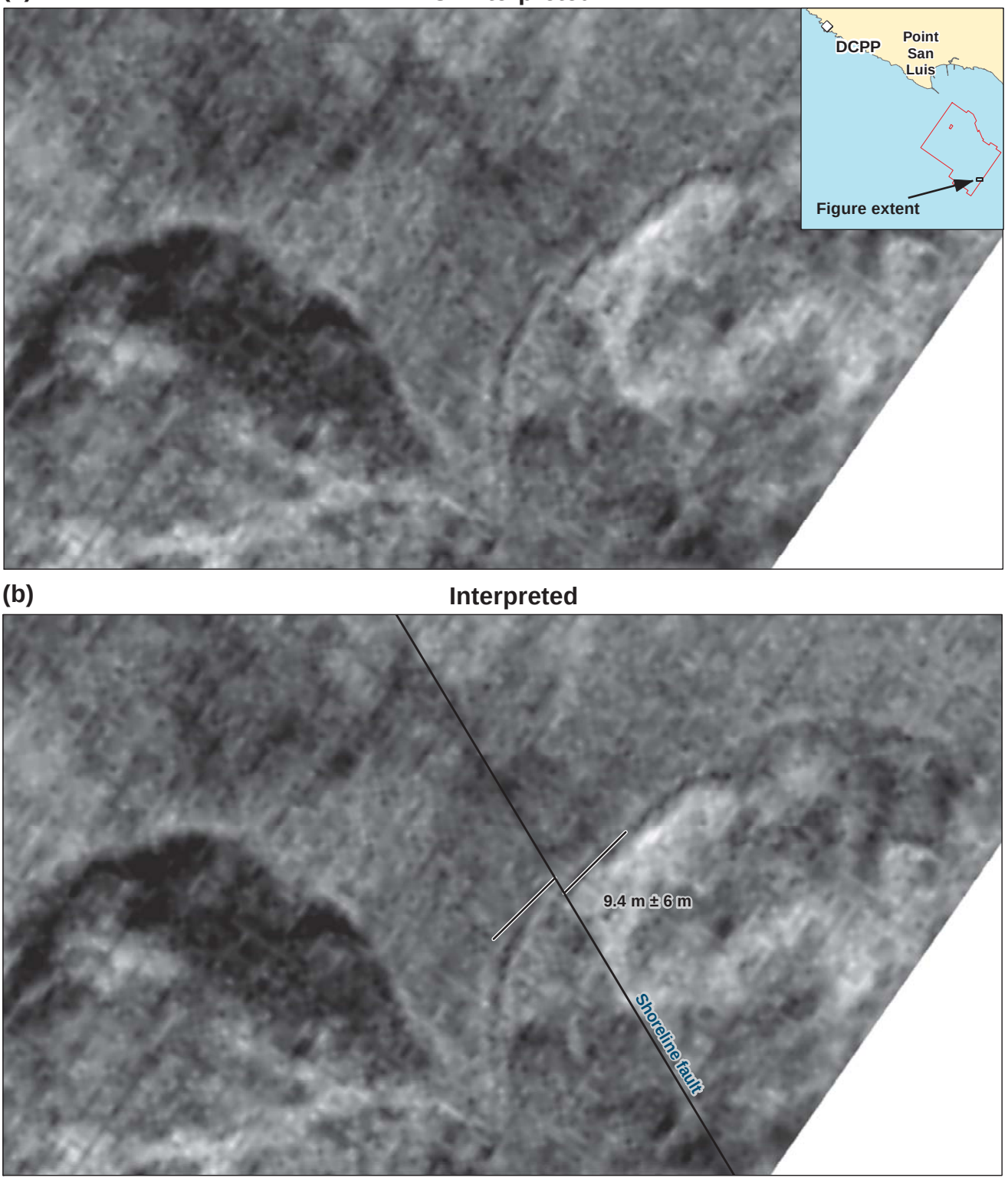
Note: Depth values on seismic profile assume a velocity of 1,600 m/s.

Excerpt of Line 8752 and Amplitudes Time Slice at 105.3 ms Showing Paleoshoreline Offset

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-28**

File Path: N:\Projects\04_201304_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-28_Paleoshoreline_Line8752.mxd; Date: 7/15/2014; User: R. Dame, Fugro; Rev.3



EXPLANATION

Shoreline fault

2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

N

0 100 200 ft.

0 50 100 m

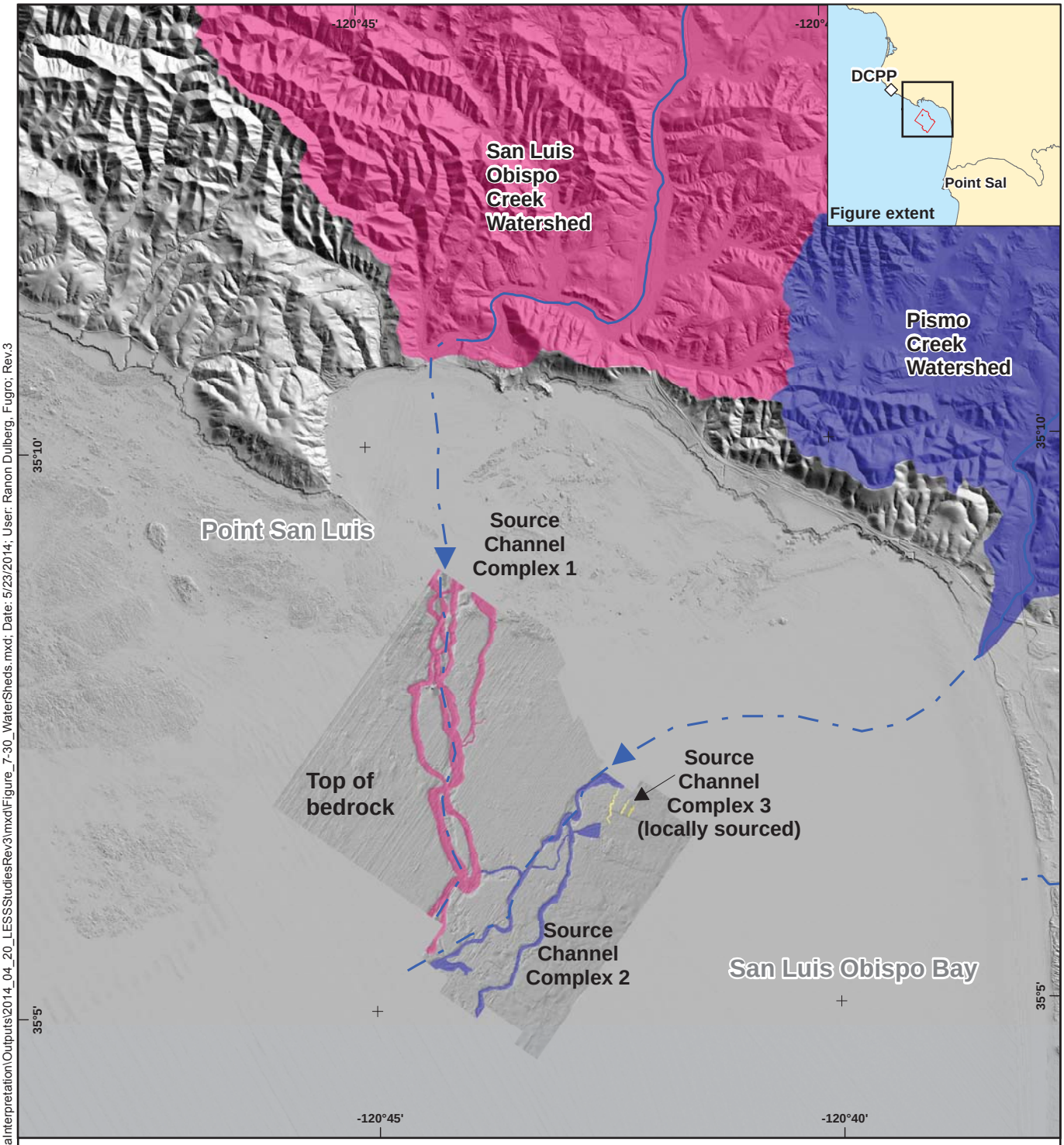
Map projection and scale: WGS 84 / UTM Zone 10N, 1:2,850

Amplitude Time Slice at 119.3 ms with Paleoshoreline and Shoreline Fault Offset Measurement

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-29**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-29_Shoreline.mxd; Date: 6/12/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Paleochannel flow pathway
- Creek
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey extent

Notes:
1. See Plate 6 for paleochannel profiles.
2. See Plate 5 for contoured bedrock surface.
3. PG&E DEM compilation v2013.07.

N

0 2 4 mi.

0 2 4 km

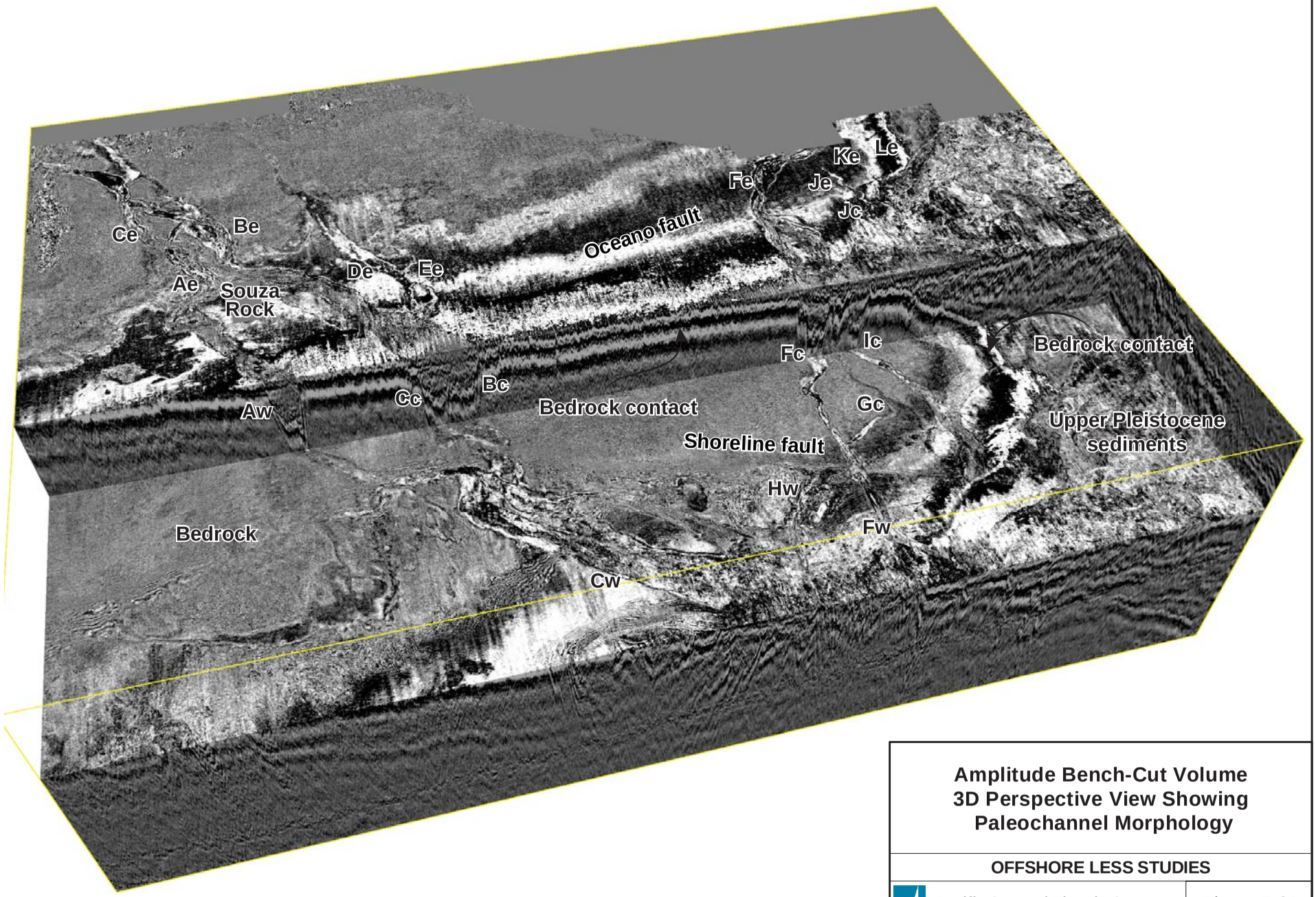
Map projection and scale: WGS 84 / UTM Zone 10N, 1:96,000

San Luis Obispo Bay Source Channel Complex One, Two, and Three Watersheds

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-30**

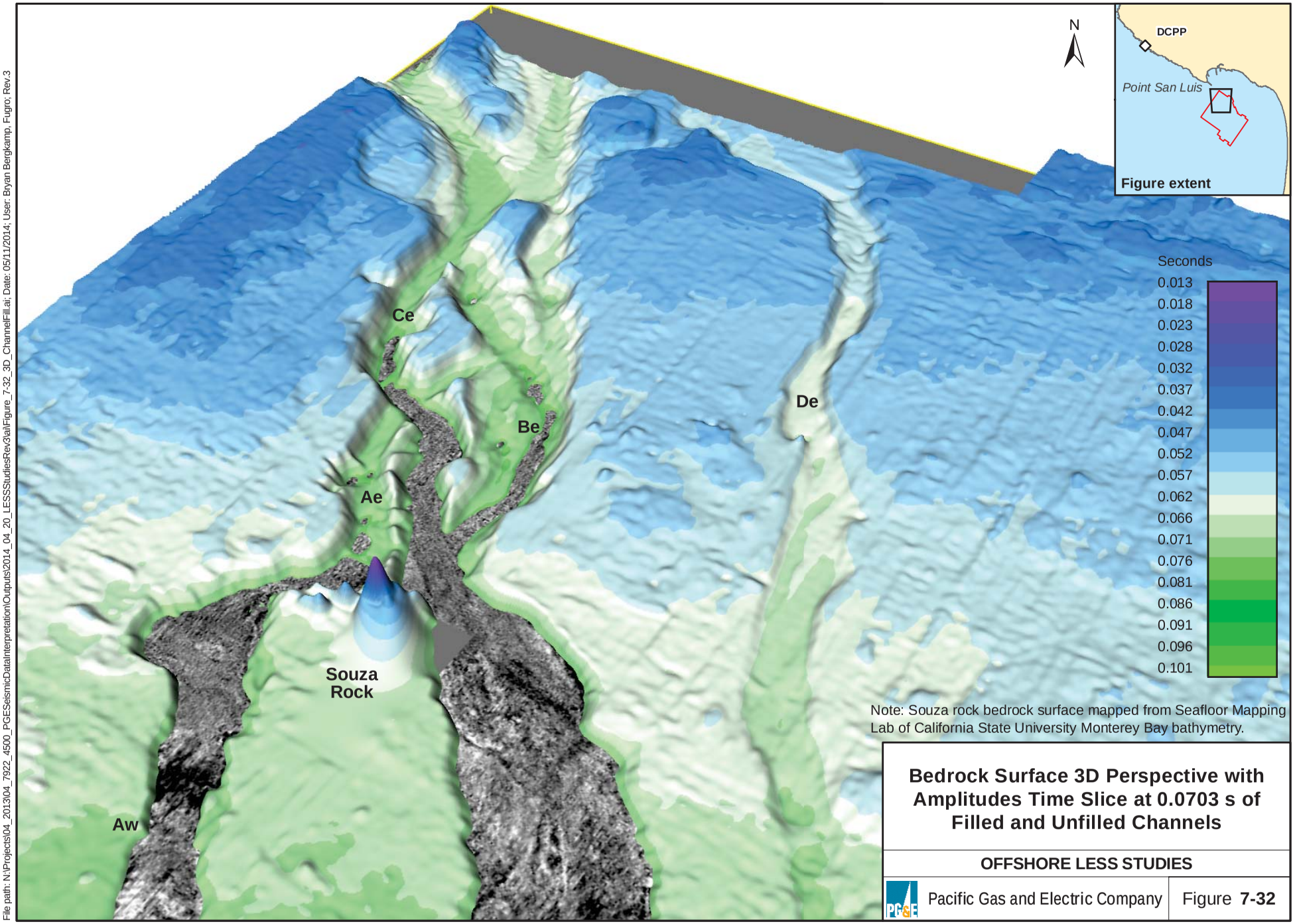
File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-30_WaterSheds.mxd; Date: 5/23/2014; User: Ranon Dulberg, Fugro; Rev.3



Amplitude Bench-Cut Volume
3D Perspective View Showing
Paleochannel Morphology

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-31**



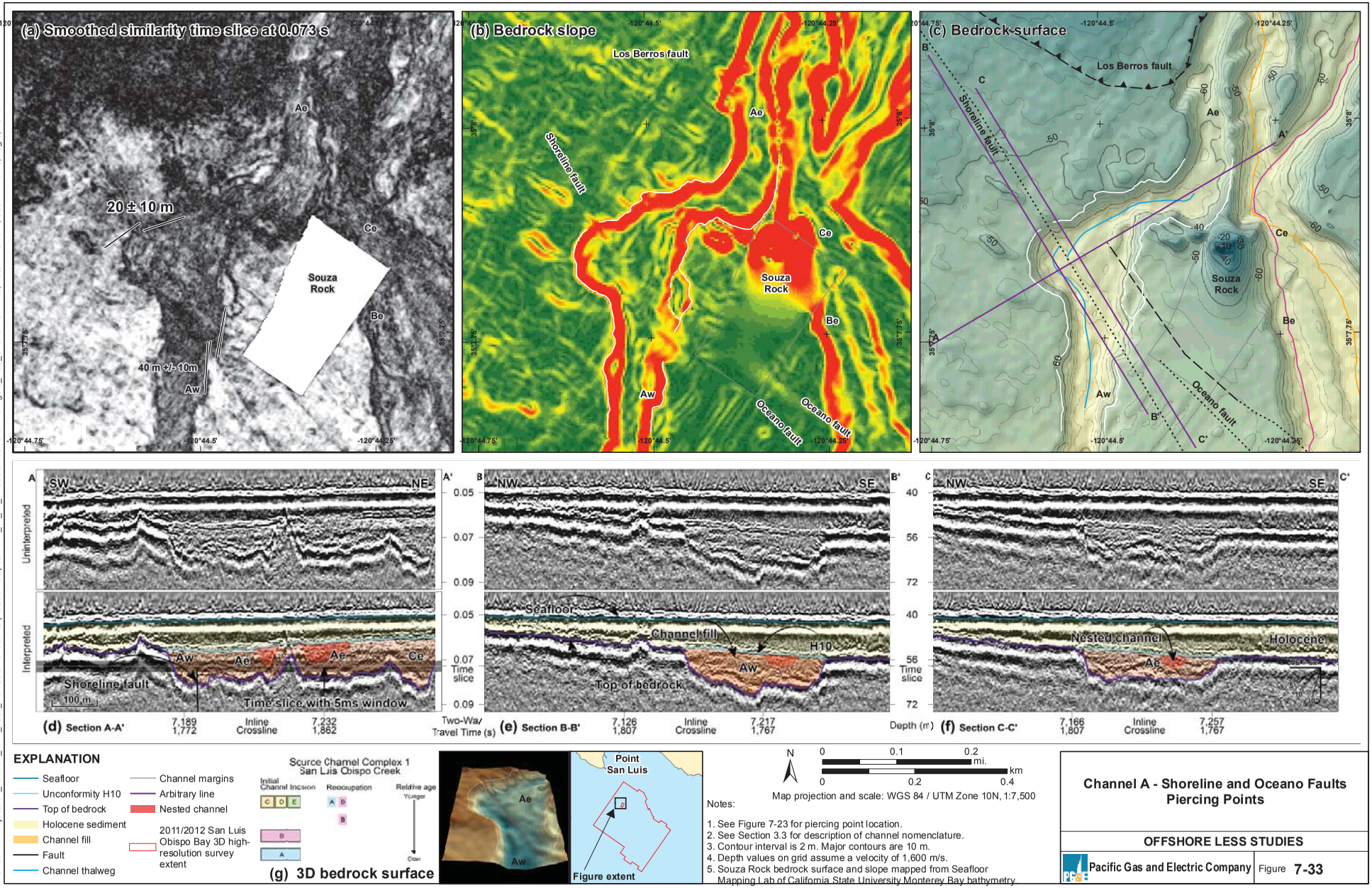
Note: Souza rock bedrock surface mapped from Seafloor Mapping Lab of California State University Monterey Bay bathymetry.

Bedrock Surface 3D Perspective with Amplitudes Time Slice at 0.0703 s of Filled and Unfilled Channels

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-32**

File path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\allFigure_7-32_3D_ChannelFill.ai; Date: 05/11/2014; User: Bryan Bergkamp, Fugro; Rev.3



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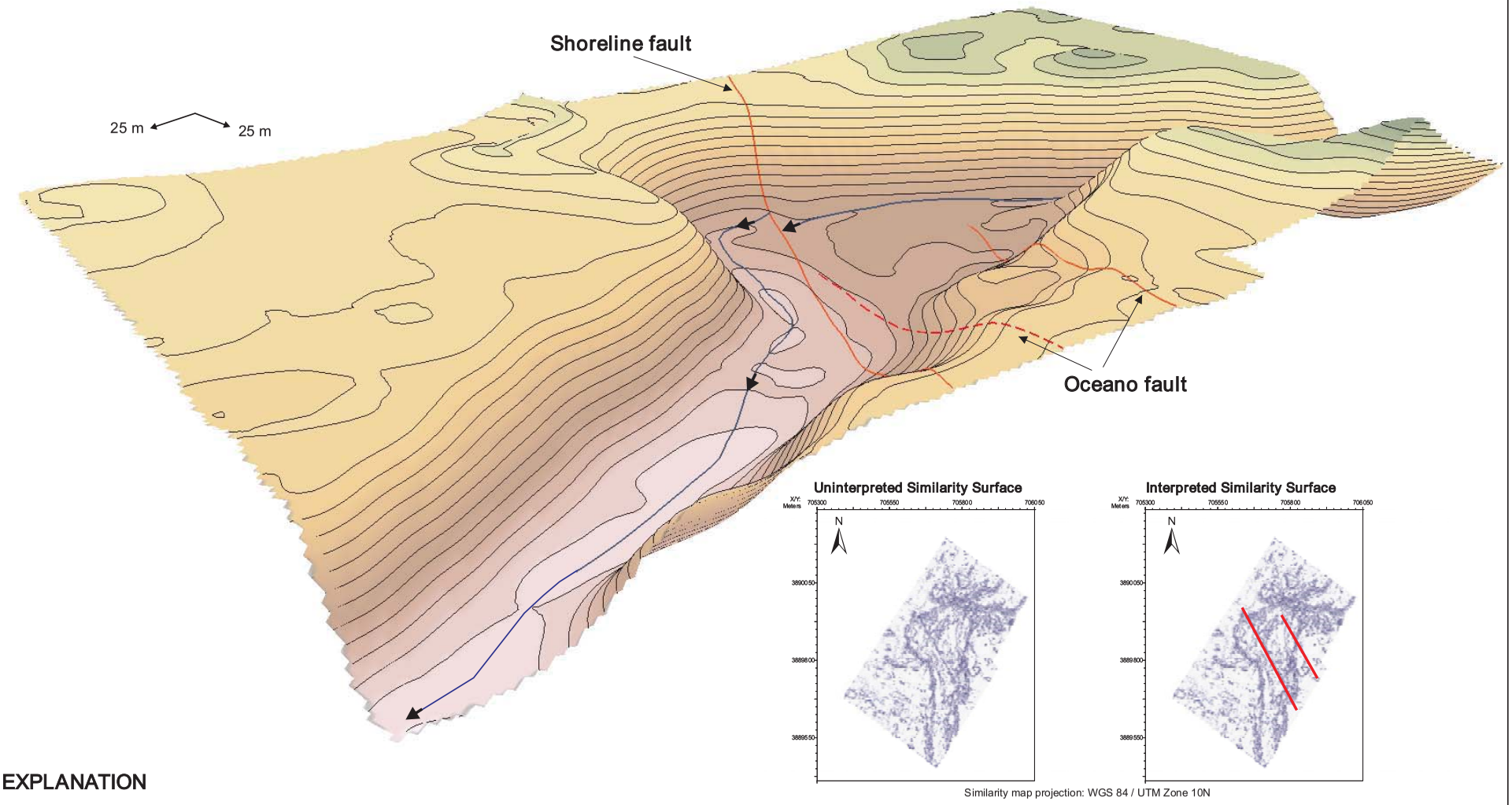
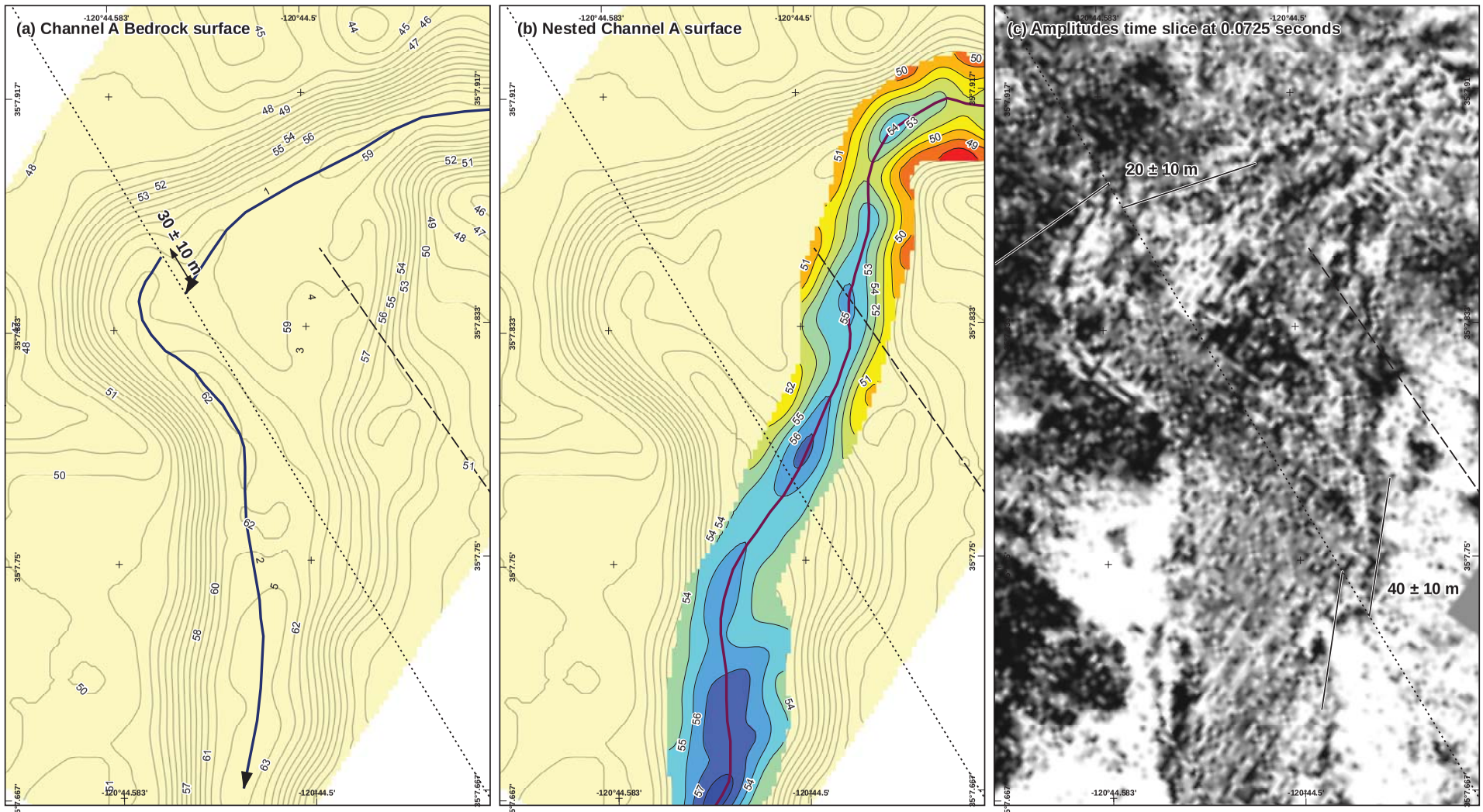




EXPLANATION

- Nested Channel A thalweg
- Channel A thalweg, flow direction indicated by arrow
- Fault
  - Concealed
  - Approximate
- 2011/2012 San Luis Bay 3D high-resolution survey extent

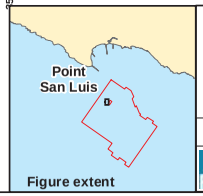
N

0 250 500 ft.

0 50 100 m

Map projection and scale: WGS 84 / UTM Zone 10N, 1:2,500

Notes:
1. Contour interval is 1 m.
2. Depth values on grid assume a velocity of 1,600 m/s.

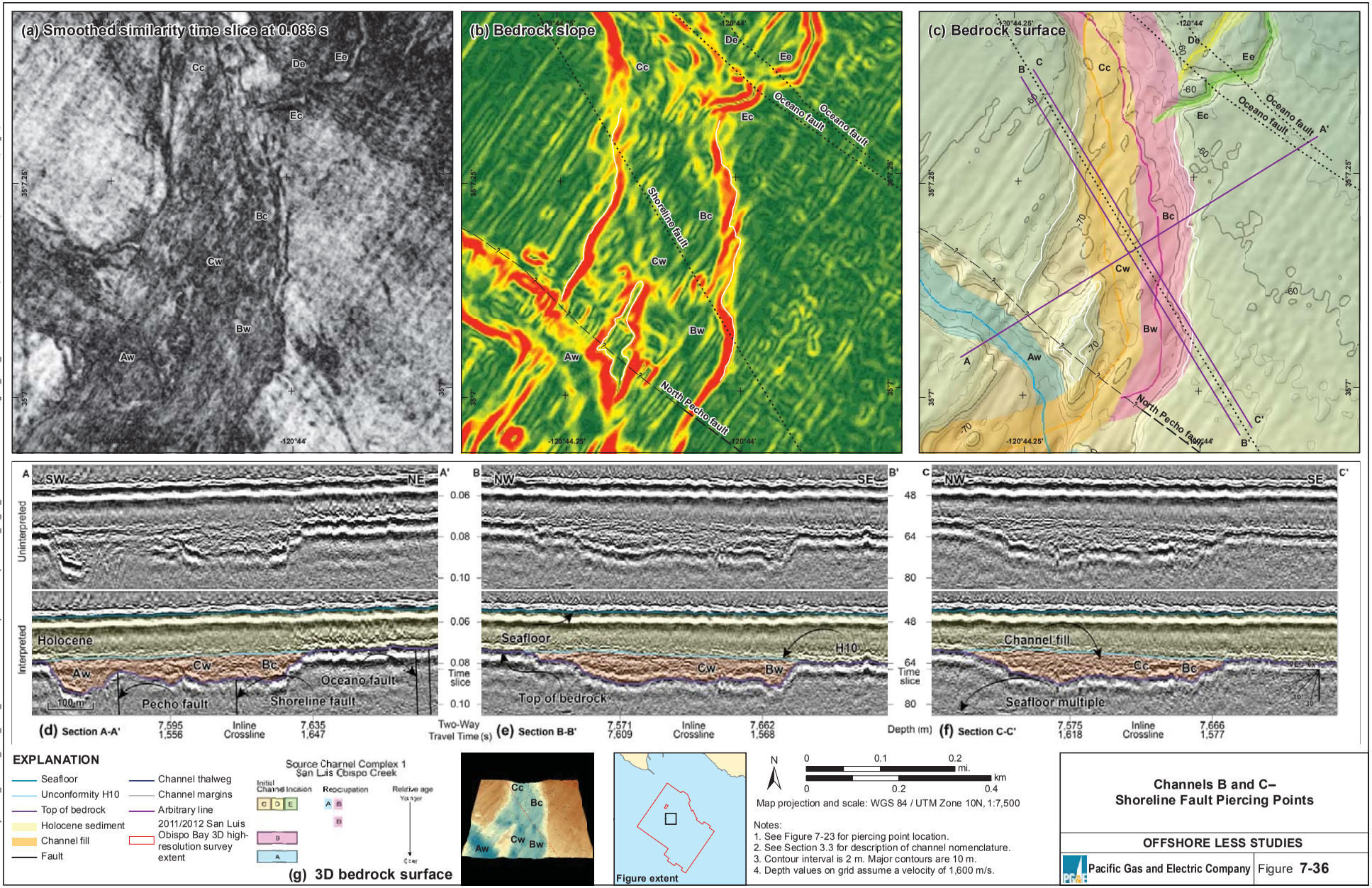


Channel Complex A - Shoreline Fault Zone Piercing Points

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-35**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-35_ChannelA.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev.3

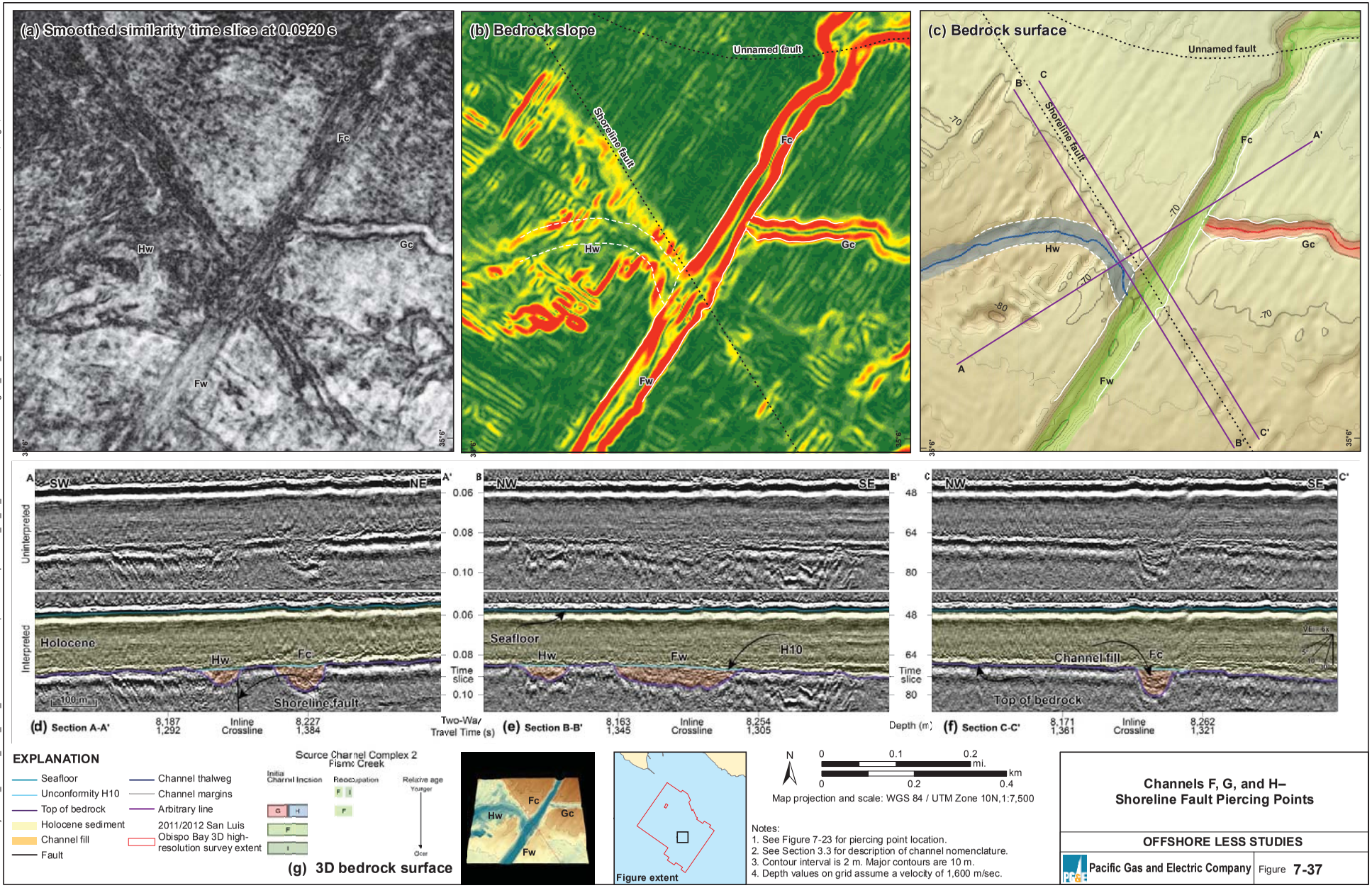


Channels B and C–
Shoreline Fault Piercing Points

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-36**

Ch3.GEO.DCPP.TR.14.02 R0



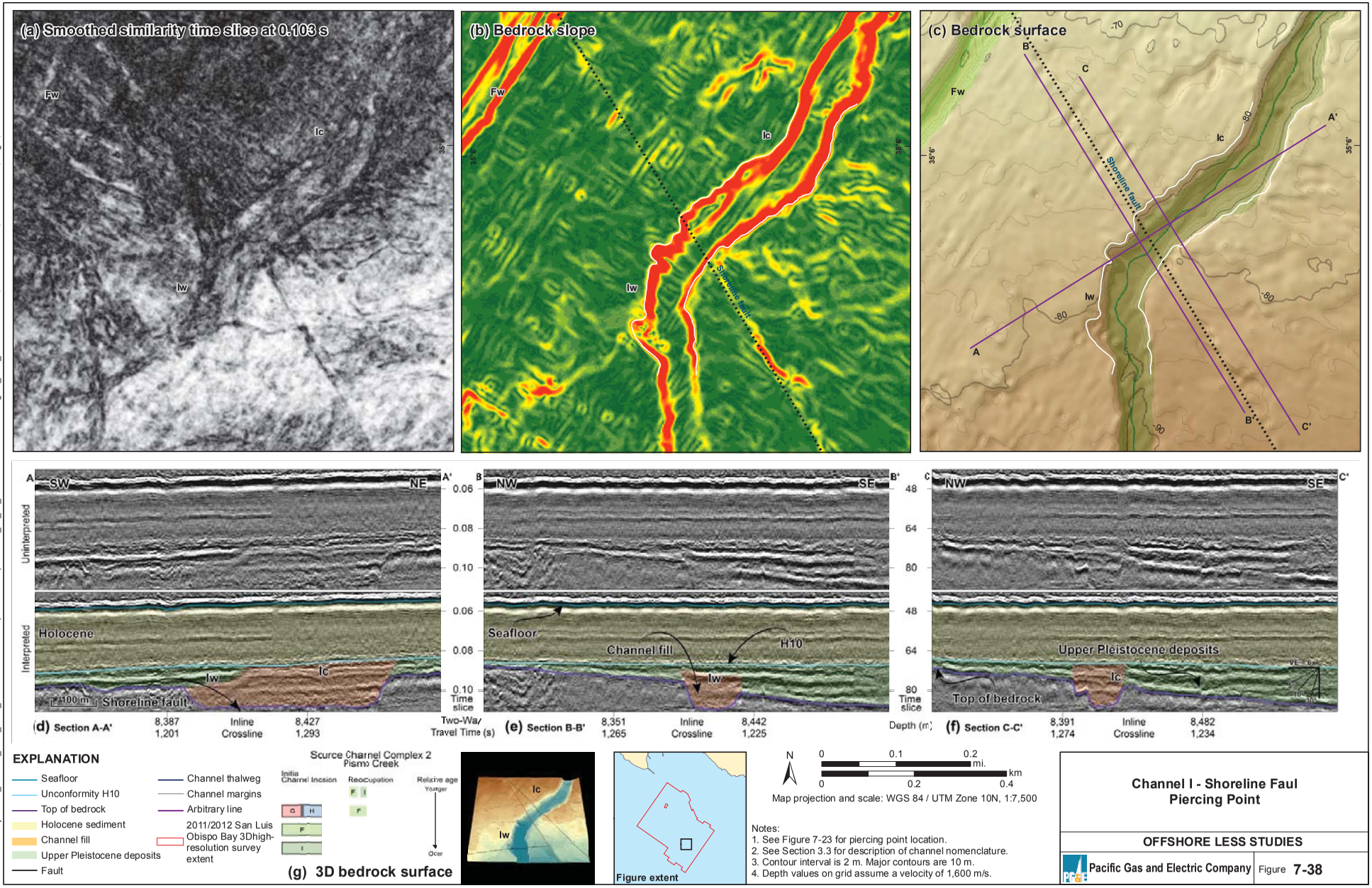
Notes:
1. See Figure 7-23 for piercing point location.
2. See Section 3.3 for description of channel nomenclature.
3. Contour interval is 2 m. Major contours are 10 m.
4. Depth values on grid assume a velocity of 1,600 m/sec.

Channels F, G, and H–
Shoreline Fault Piercing Points

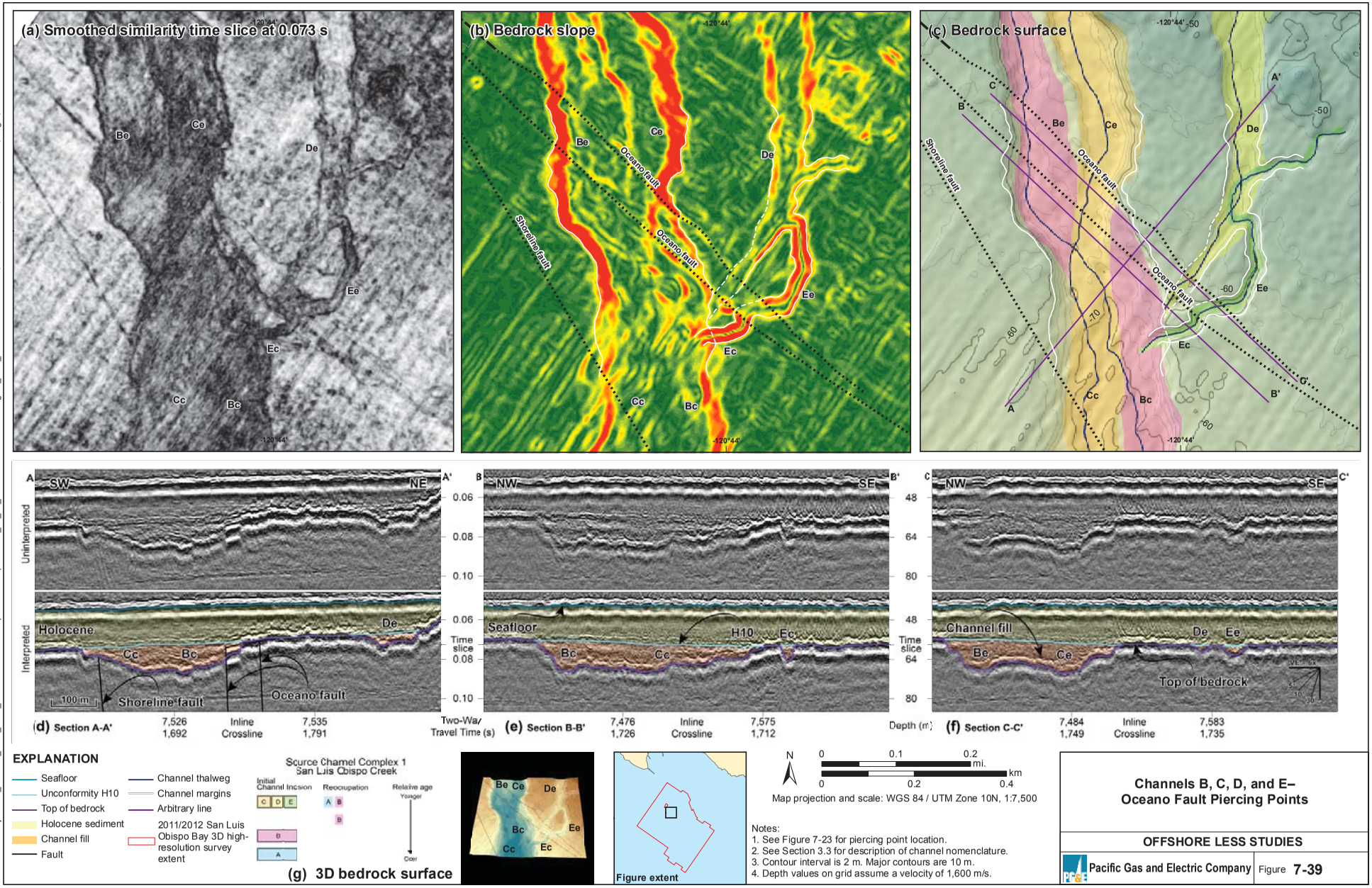
OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-37**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-37_SFChannelFGH.mxd; Date: 7/15/2014; User: R. Dame, Fugro; Rev.3



File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-38_SFChannelI.mxd, Date: 7/15/2014; User: R. Dame, Fugro; Rev.3



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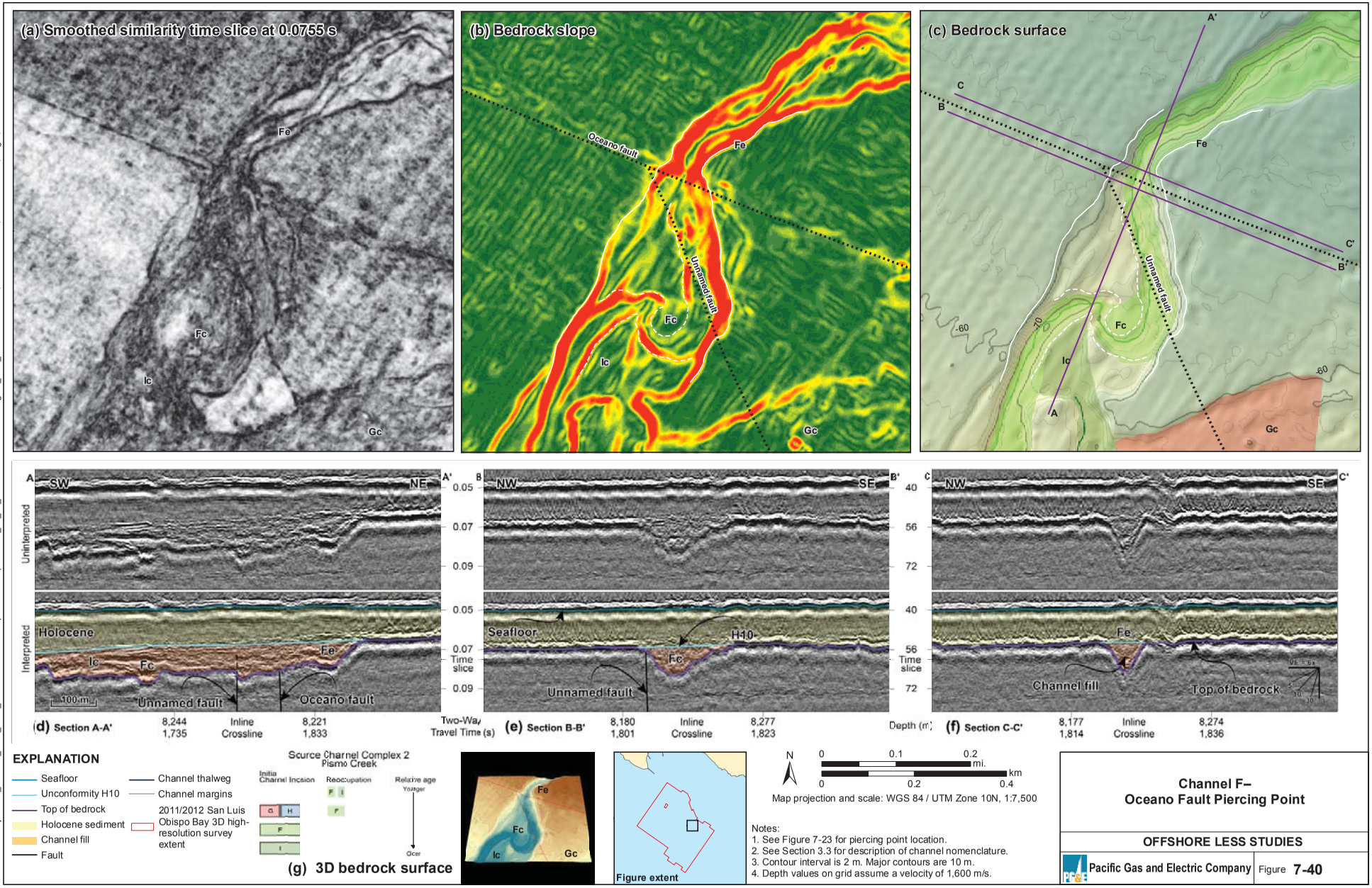

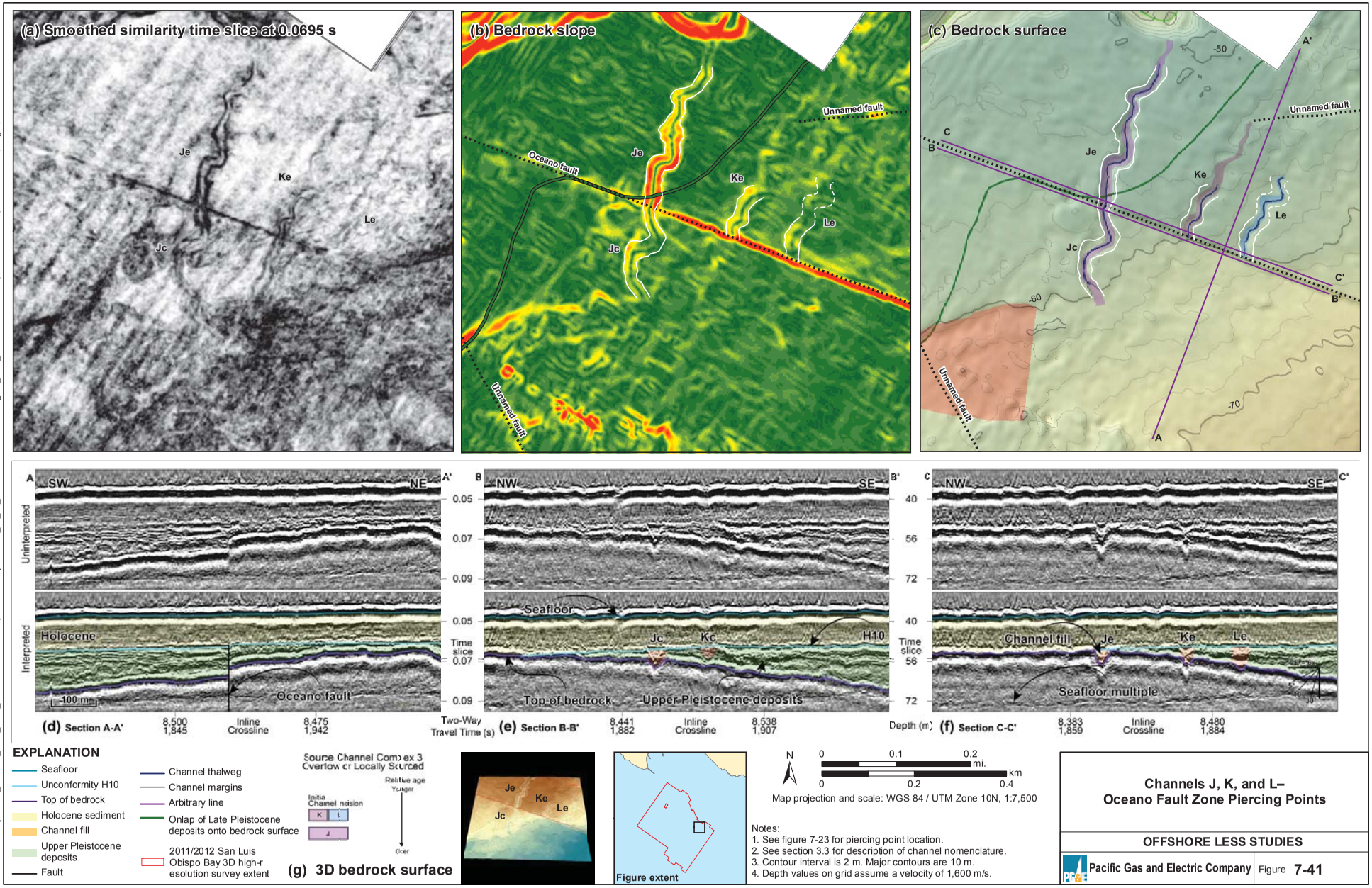

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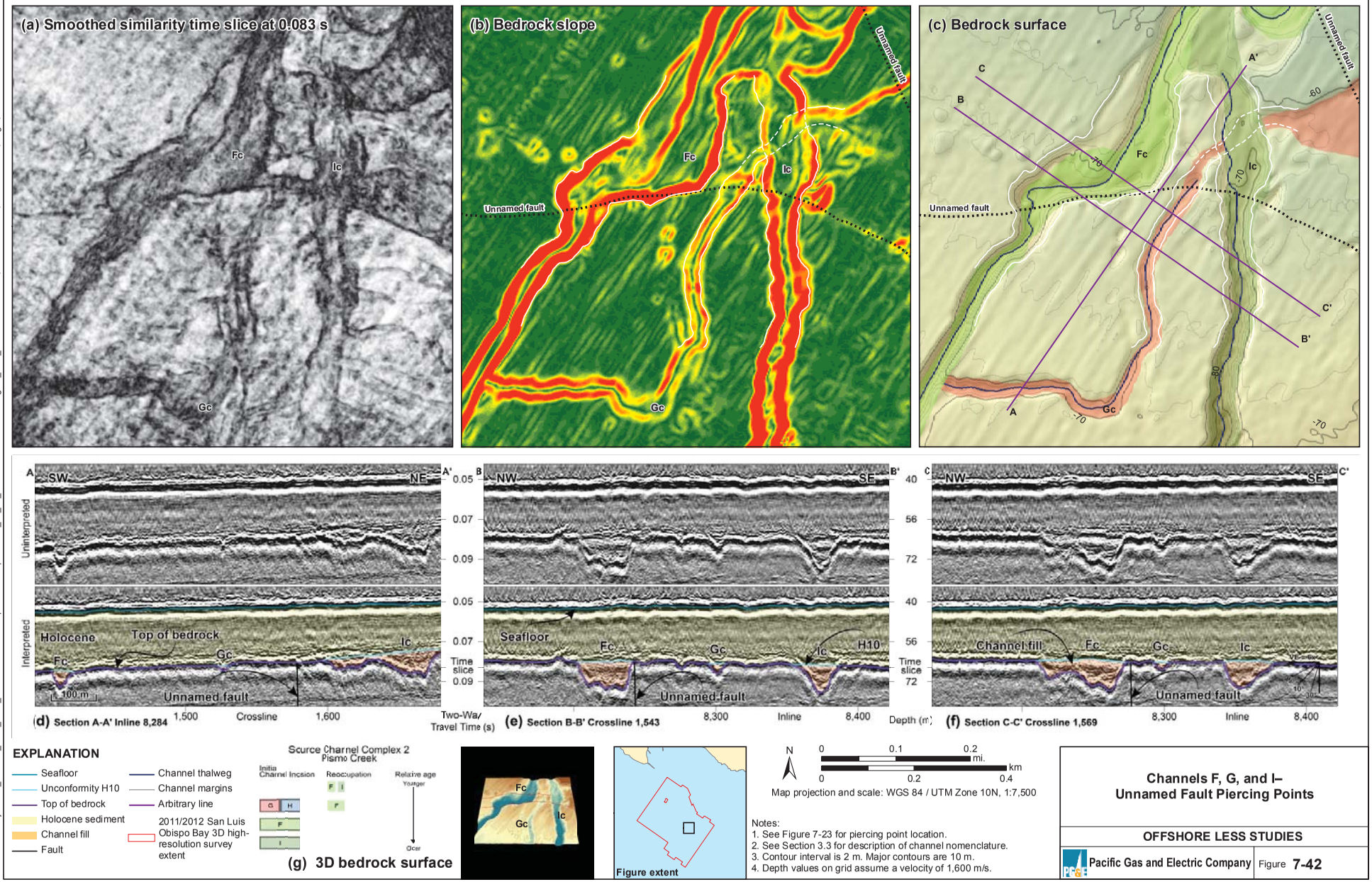


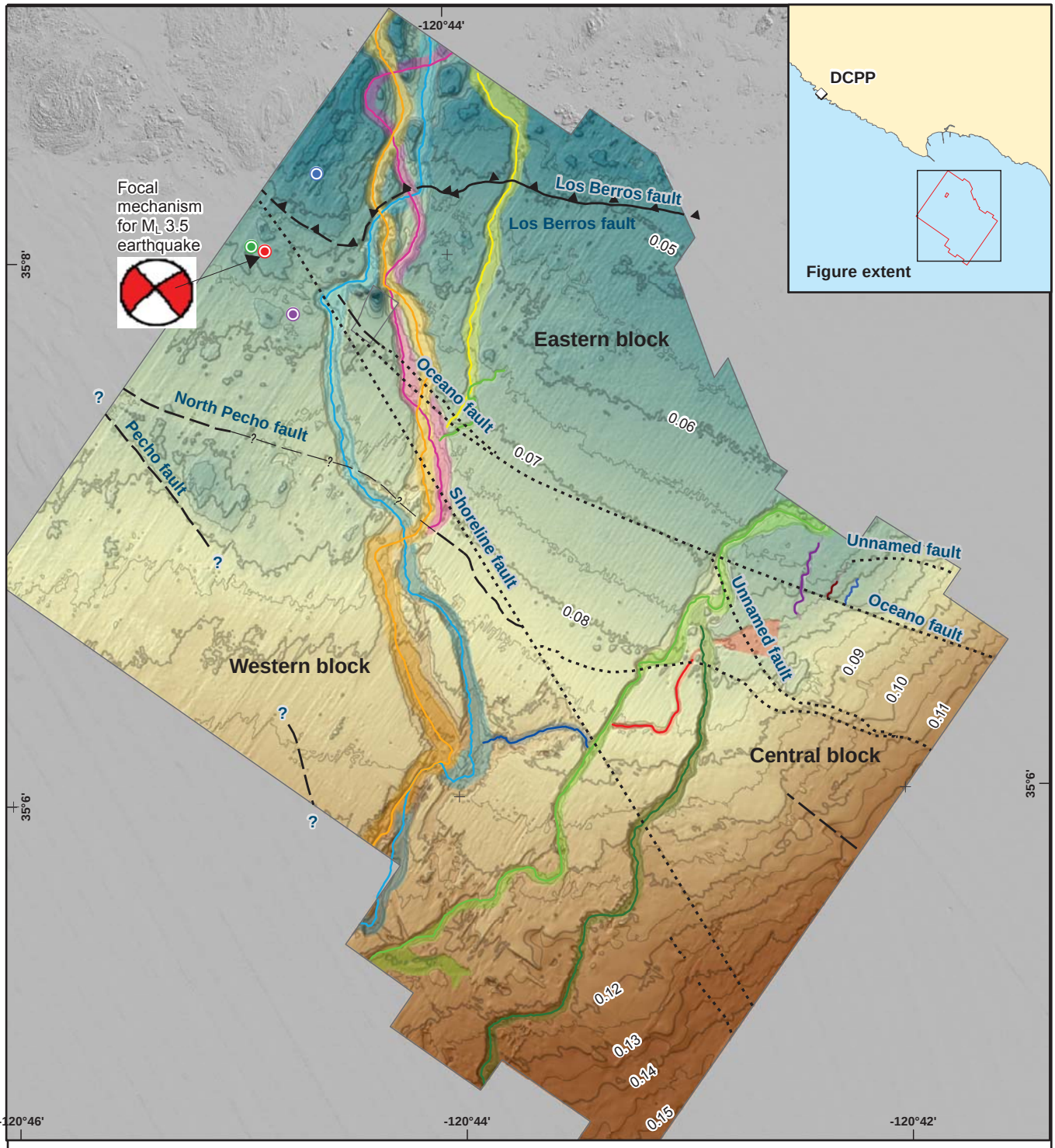
Notes:
1. See Figure 7-23 for piercing point location.
2. See Section 3.3 for description of channel nomenclature.
3. Contour interval is 2 m. Major contours are 10 m.
4. Depth values on grid assume a velocity of 1,600 m/s.

Channels F, G, and I–
Unnamed Fault Piercing Points

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-42**

Ch3.GEO.DCPP.TR.14.02 R0



EXPLANATION

Fault, dashed where inferred

Earthquake locations from Hardebeck (pers. comm., 2014)

- 3.5 (8/10/2000)
- 1.7 (8/13/2000)
- 1.4 (12/2/2001)
- 1.2 (12/5/2001)

Notes:

1. **Refer to Figure 7-23 for paleochannel explanation.**
2. **Bedrock contour interval is 5 ms.**

N

0 0.5 1 mi.

0 1 2 km

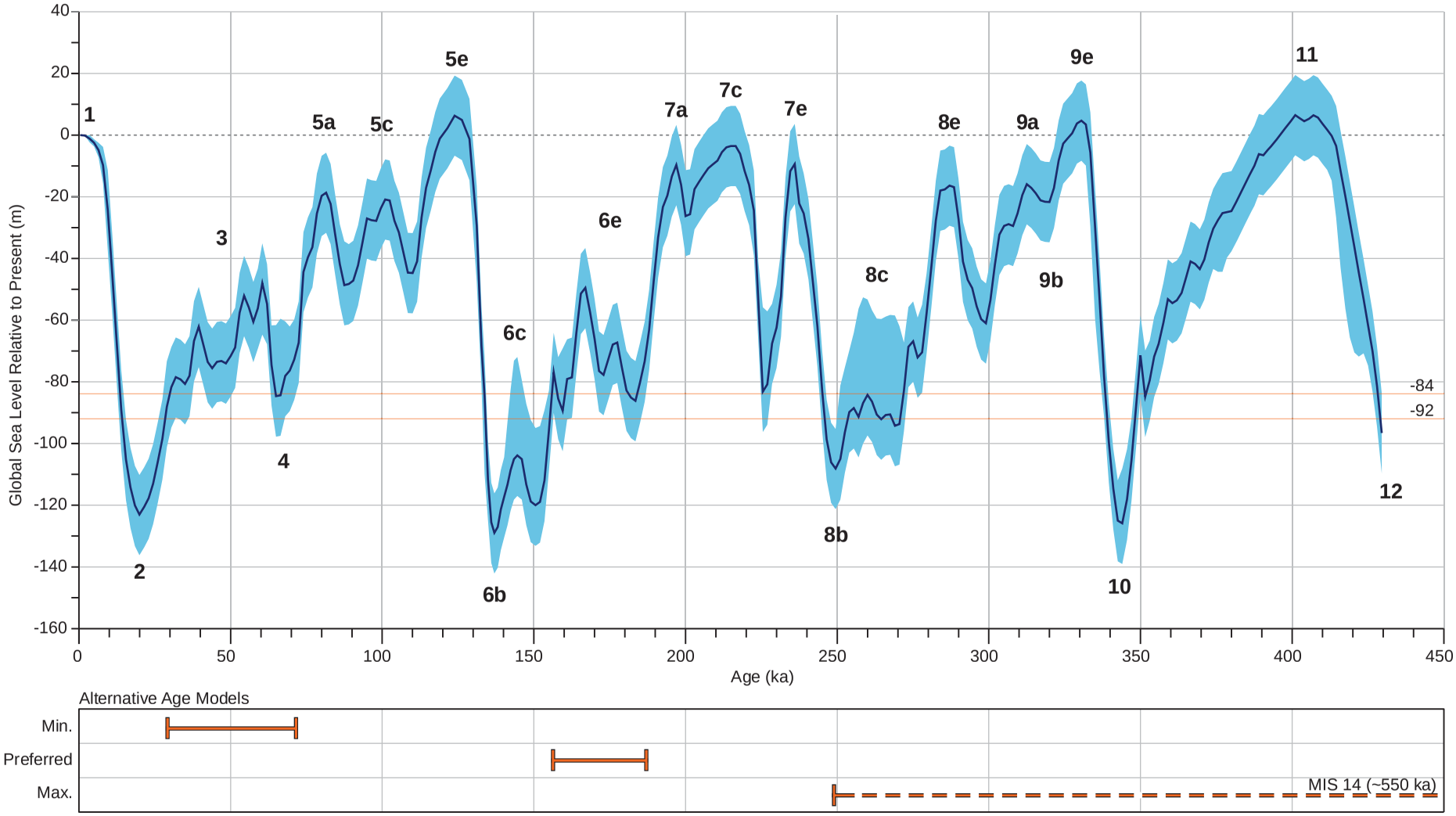
Map projection and scale: WGS 84 / UTM Zone 10N, 1:40,000

10 August 2000 M_L 3.5 Event, Bedrock Surface, San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-43**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-43_M3-5_Event.mxd; Date: 5/19/2014; User: Ranon Dulberg, Fugro; Rev.3



EXPLANATION

- Sea-level curve
- Uncertainty
- 5a Marine isotope stage, substage
- Paleoshoreline

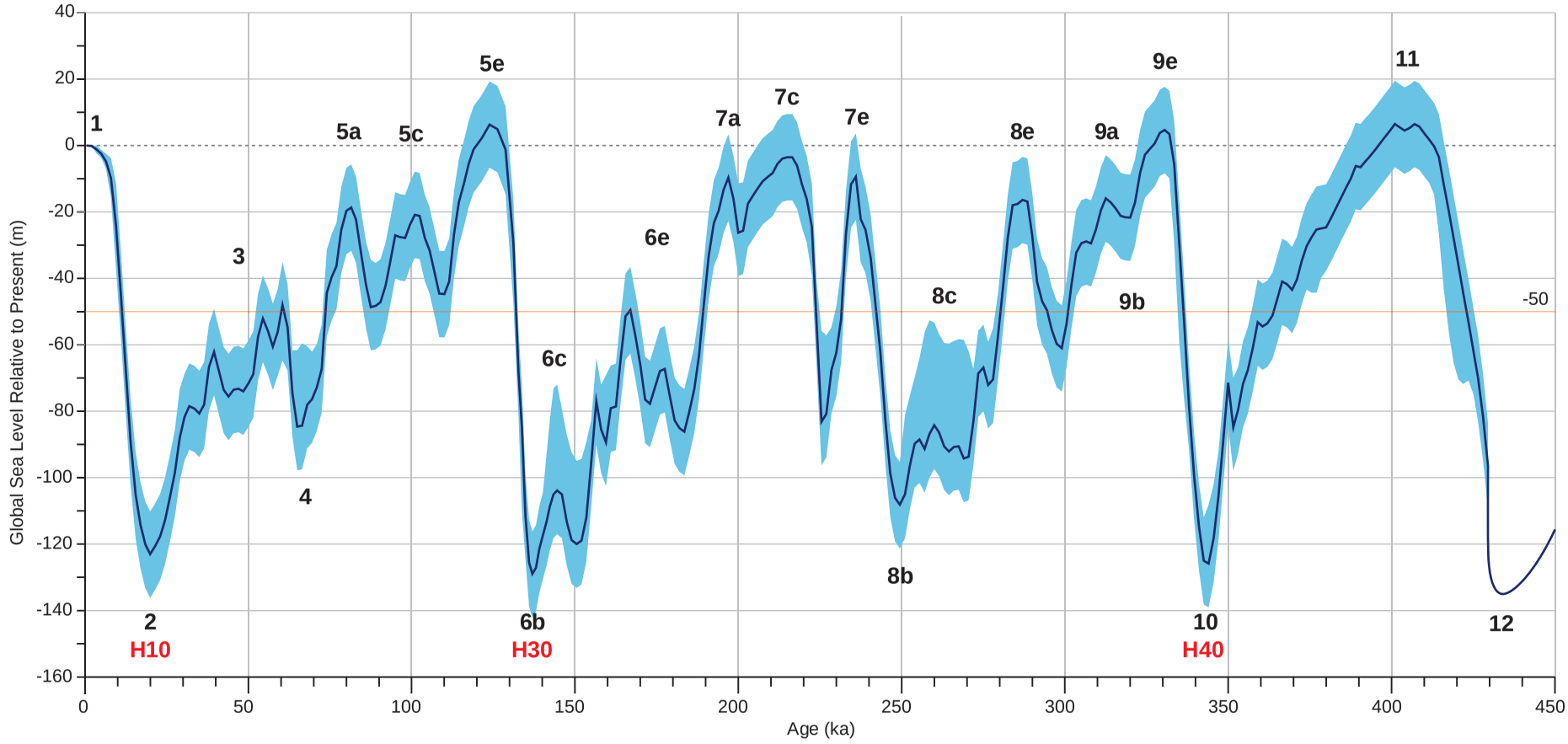
Note: See Figures 7-22 and 7-24 for illustrations of buried paleostrandlines.

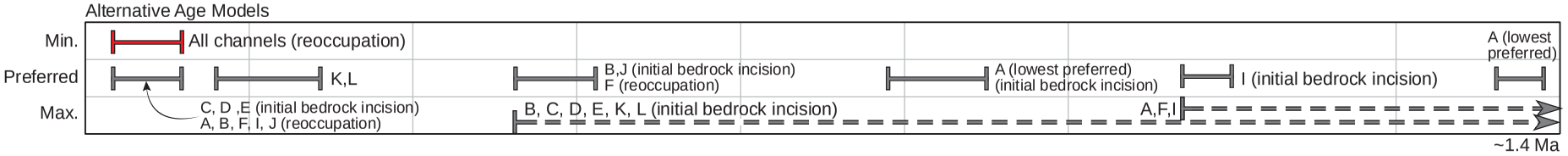
Source: Modified from Waelbroeck et al. (2002).

Age Model for Buried Paleostrandlines
San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-44**





EXPLANATION

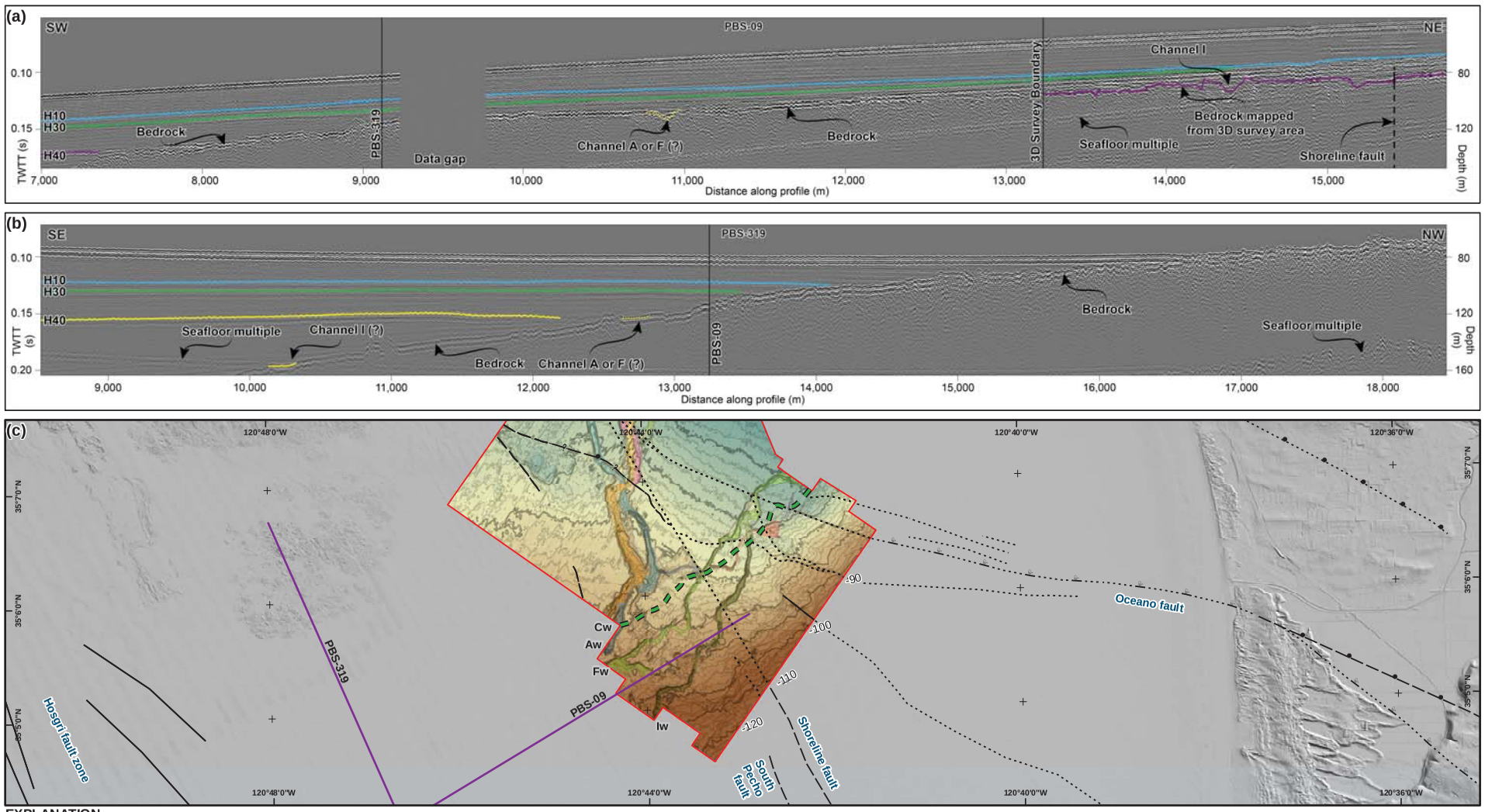
- Sea-level curve
- Uncertainty
- 5a Marine isotope stage, substage
- H10 Unconformity (see Figure 1-6)
- All channels (reoccupation)
- Select paleochannels

Notes:
1. See Figures 7-32 through 7-43 for illustrations of paleochannels.
2. Channels G and H are not included in age model.

Age Model for Paleochannels, San Luis Obispo Bay

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-45**



EXPLANATION

- Onlap of Upper Pleistocene deposits onto bedrock surface
- Line location
- 2011/2012 San Luis Obispo Bay 3D high-resolution survey

Faults

- Certain
- Approximate
- Approximate queried
- Concealed
- Reverse fault concealed

Bedrock Source Channel Complexes

Complex 1 San Luis Obispo Creek	Complex 2 Pismo Creek	Complex 3 Overflow or Locally Sourced
Initial Channel Incision: C D E	Initial Channel Incision: G H	Initial Channel Incision: K L
Reoccupation: A B	Reoccupation: F I	
B	F	J
A	I	

Younger → Older

Relative age within each source channel complex

N

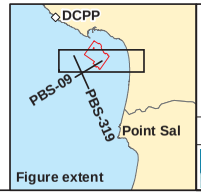
0 1 2 mi.

0 2 4 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:61,451

Notes:
1. Depth values on seismic profile assume a velocity of 1,600 m/s.
2. Contour interval is 2 m. Heavy contours are 10 m.

Source: PG&E DEM compilation v2013.07.

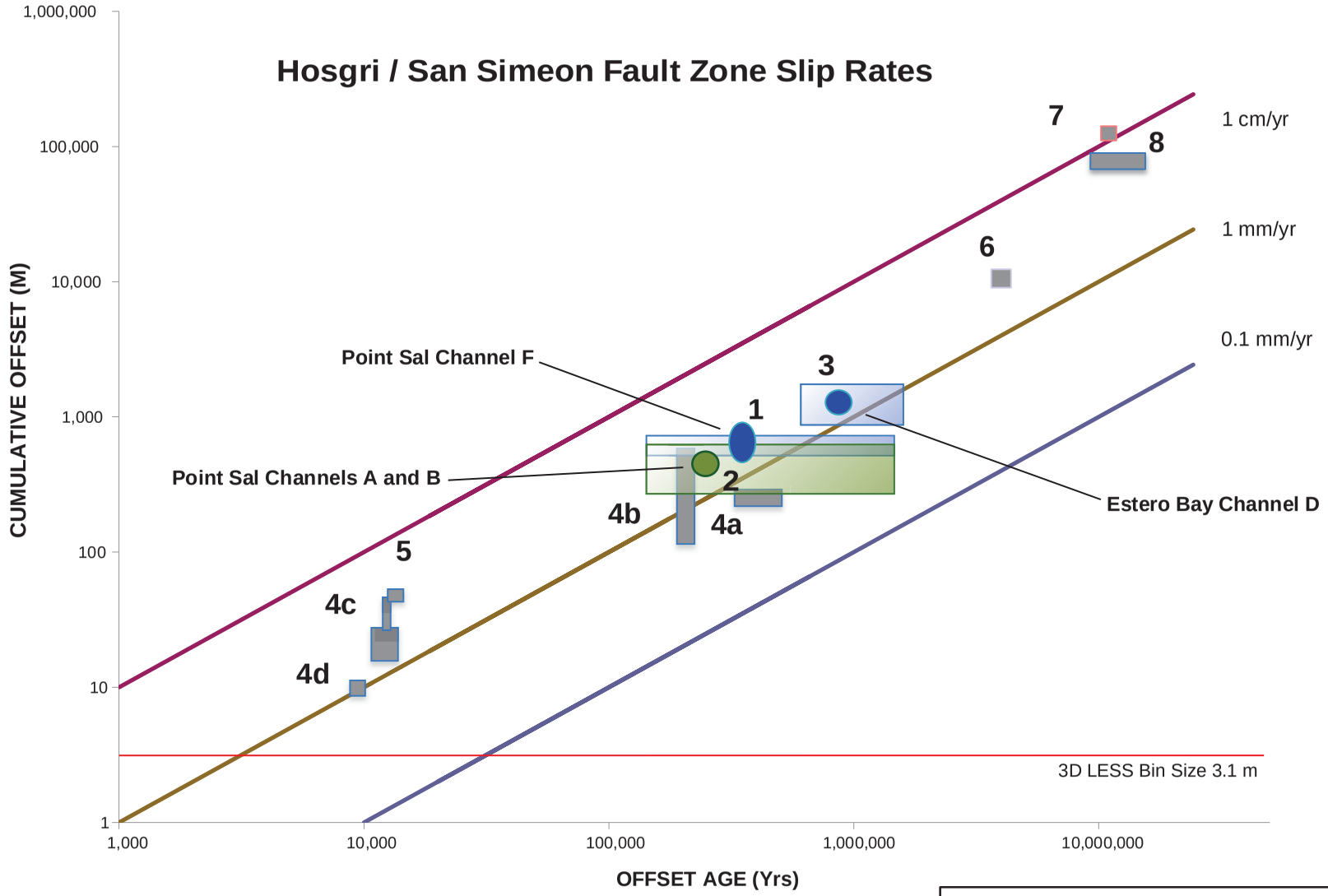


USGS Lines PBS-09 and PBS-319 with Possible Channel A

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **7-46**

File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_7-46_PBS-09-319.mxd; Date: 7/15/2014; User: R. Dame, Fugro; Rev.3

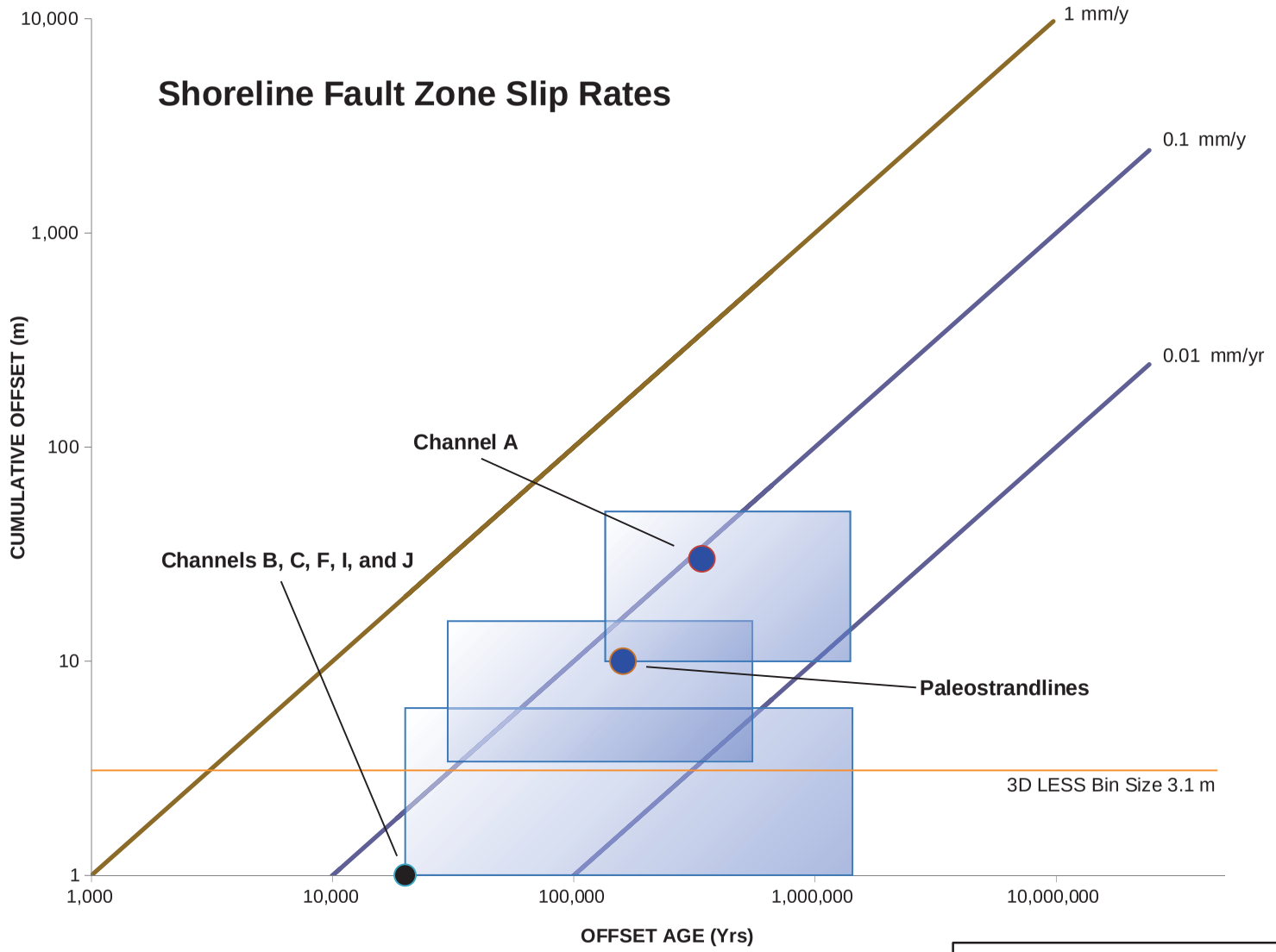


Note:
Cumulative fault offsets are plotted with respect to the reported age of the offset. For each piercing point, the reported range of offsets and age date are shown as rectangles. Preferred values are shown as filled circles. Reference rates of 1 cm/y, 1, and 0.1 mm/y are shown as diagonal lines. Points 1, 2, and 3 refer to the slip rates reported in this study (Pt. Sal (1) channel F (1.8 to 1.9 mm/yr (range: 0.4 to 5.1 mm/yr)) and (2) channels A and B (1.8 mm/yr (range: 0.2 to 4.5 mm/yr)) and Estero Bay (3) Channel De-Ee1-DBw (1.4 mm/yr (range: 0.2 to 3.6 mm/yr))). Other slip rates or piercing points include points 4a-d (San Simeon, Hall et al., 1994; Hansen et al., 1994); 5 (offshore Pt. Estero, Johnson et al (2013); 6 (southern Hosgri , Sorlien et al., 1999); 7 , 8 (Pt. Buchon/Pt. Sur and Pt. Sal/ San Simeon ophiolites (Langenheim et al., 2013)).

Hosgri-San Simeon Fault Zone Slip Rates

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **8-1**

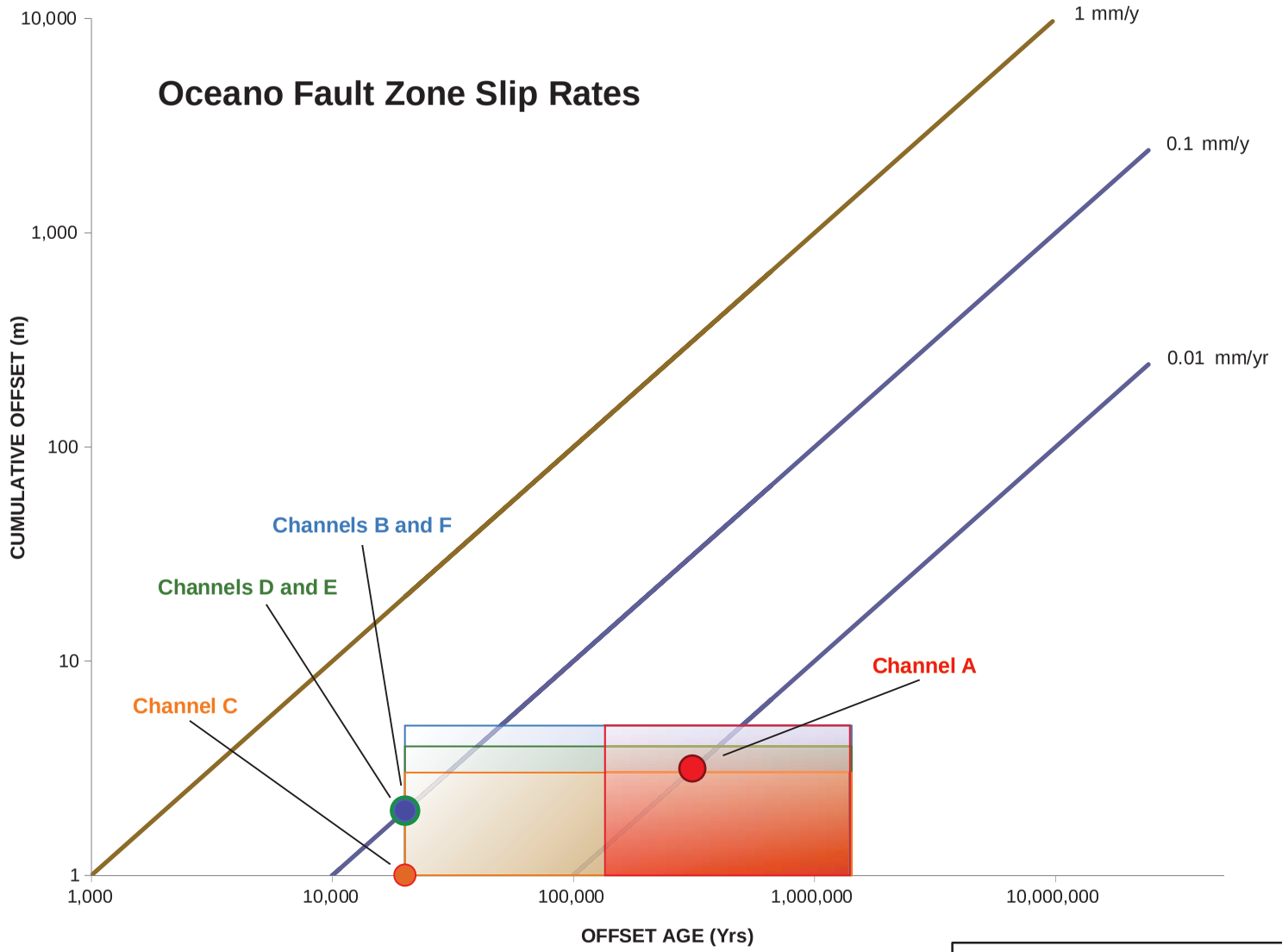


Note:
Cumulative fault offsets are plotted with respect to the reported age of the offset. For each piercing point, the reported range of offsets and age date are shown as rectangles. Preferred values are shown as filled circles. Reference rates of 1, 0.1 and 0.01 mm/y are shown as diagonal lines. Horizontal line depicts the 3D LESS bin size of 3.1 m, which represents the minimum spatial resolution dimension (or pixel size) for the 3D seismic reflection volume used in this study. The paleostrandlines have a preferred slip rate of 0.06 mm/yr (range: 0.01 to 0.5 mm/yr), Channel A has preferred slip rate of 0.1 (range: 0.01 to 0.4 mm/yr) and, and Channels B, C, F, I, and J have a preferred slip rate of 0 mm/yr (range: 0 to 0.3 mm/yr). See text for further discussion.

Shoreline Fault Zone Slip Rates

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **8-2**

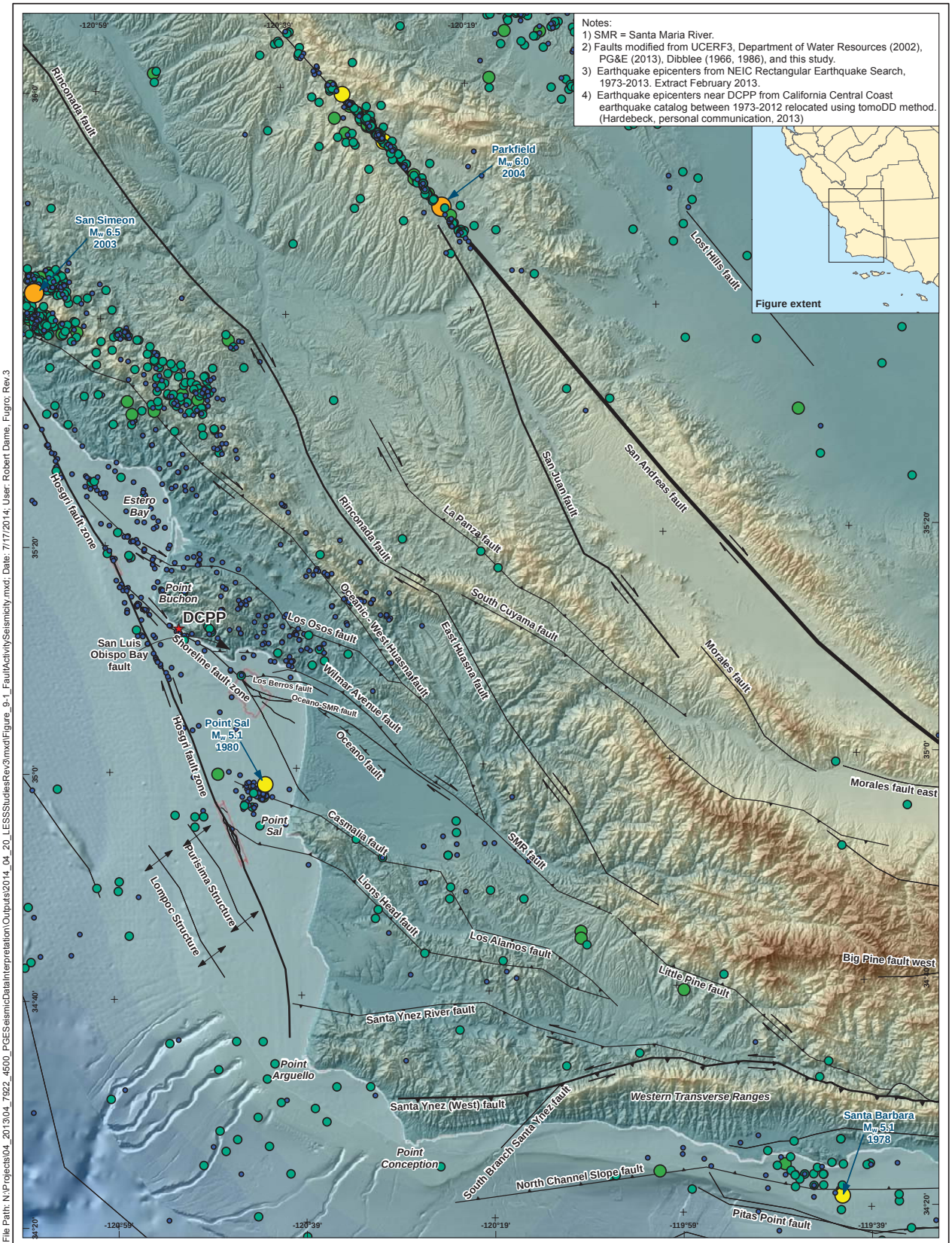


Note:
Cumulative fault offsets are plotted with respect to the reported age of the offset. For each piercing point, the reported range of offsets and age date are shown as rectangles. Preferred values are shown as filled circles. Reference rates of 1, 0.1 and 0.01 mm/y are shown as diagonal lines. Channel A has a preferred slip rate of 0.01 mm/yr (range: 0.0007 to 0.04 mm/yr), Channels B and F have a preferred slip rate of 0.1 mm/yr (range: 0.0007 to 0.3 mm/yr), Channel C has a preferred slip rate of 0.05 mm/yr (range: 0.0007 to 0.15 mm/yr), and Channels D and E have a preferred slip rate of 0.1 mm/yr (range: 0.00007 to 0.2 mm/yr).

Oceano Fault Zone Slip Rates

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **8-3**



File Path: N:\Projects\04_2013\04_7922_4500_PGESeismicDataInterpretation\Outputs\2014_04_20_LESSStudiesRev3\mxd\Figure_9-1_FaultActivitySeismicity.mxd; Date: 7/17/2014; User: Robert Dame, Fugro; Rev.3

EXPLANATION

Faults

- Strike-slip fault (dips 70° to 90°)
- Reverse of thrust fault, teeth on hanging wall (dips 30° to 75°)
- Reverse or thrust fault, mostly blind
- Oblique-slip fault, reverse component (dips 45° to 75°)
- Fault poorly characterized
- Offshore Anticline

Slip Rate Categories

- > 5 mm/yr
- 1-5 mm/yr
- < 1 mm/yr
- 3D LESS extents

Earthquake Epicenter M_w

- 1.5 - 2.9
- 3.0 - 3.9
- 4.0 - 4.9
- 5.0 - 5.9
- 6.0 - 6.9

N

0 10 20 mi.
0 15 30 km

Map projection and scale: WGS 84 / UTM Zone 10N, 1:600,000

Generalized Fault Activity and Seismicity Map

OFFSHORE LESS STUDIES

Pacific Gas and Electric Company | Figure **9-1**