



Update of Pacific OCS Region Pipelines

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Prevention First
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Bureau of Safety and Environmental Enforcement (BSEE)



MISSION:

BSEE works to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement

Overview of Inspection Program

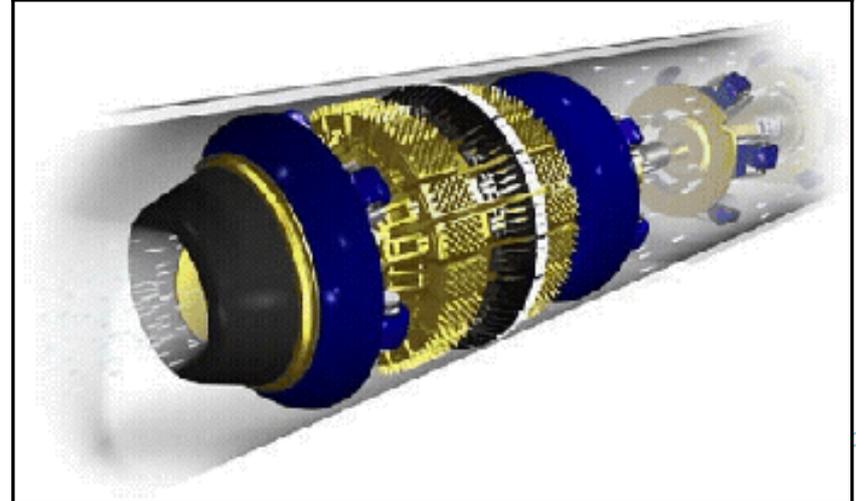


- In 1990, the current pipeline inspection program was established in the Pacific OCS Region
- In general, external and internal inspections required every other year
- Cathodic Protection (CP) survey annually
- Remediation plan must be submitted for safety, compliance with regulations and no conflicts with other OCS users

Pipeline Inspections and Tools



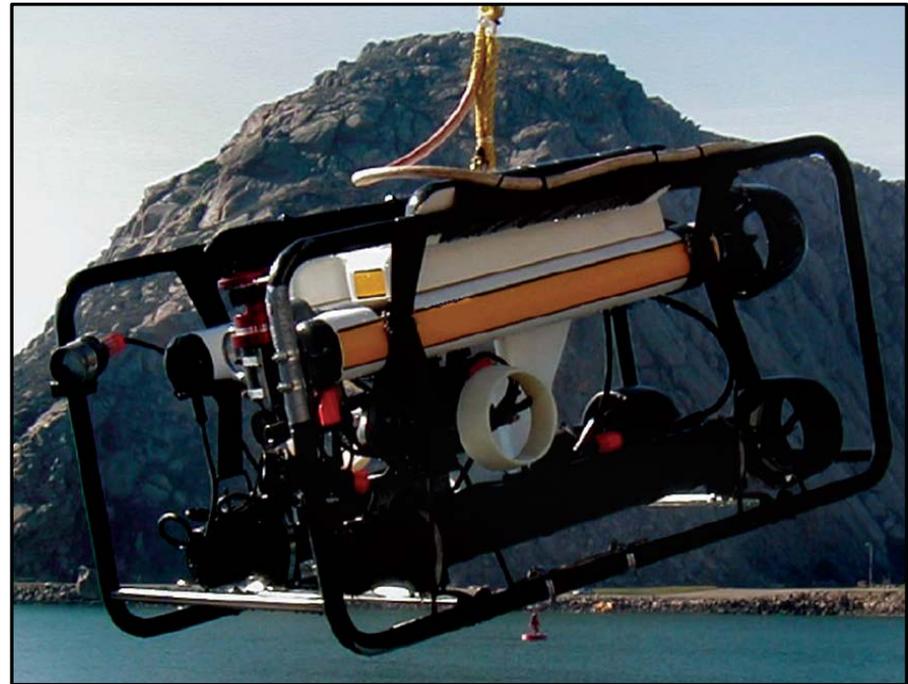
- Internal inspections conducted by intelligent pigs, a.k.a. smart pigs
- Used to detect wall loss (corrosion) and some dents



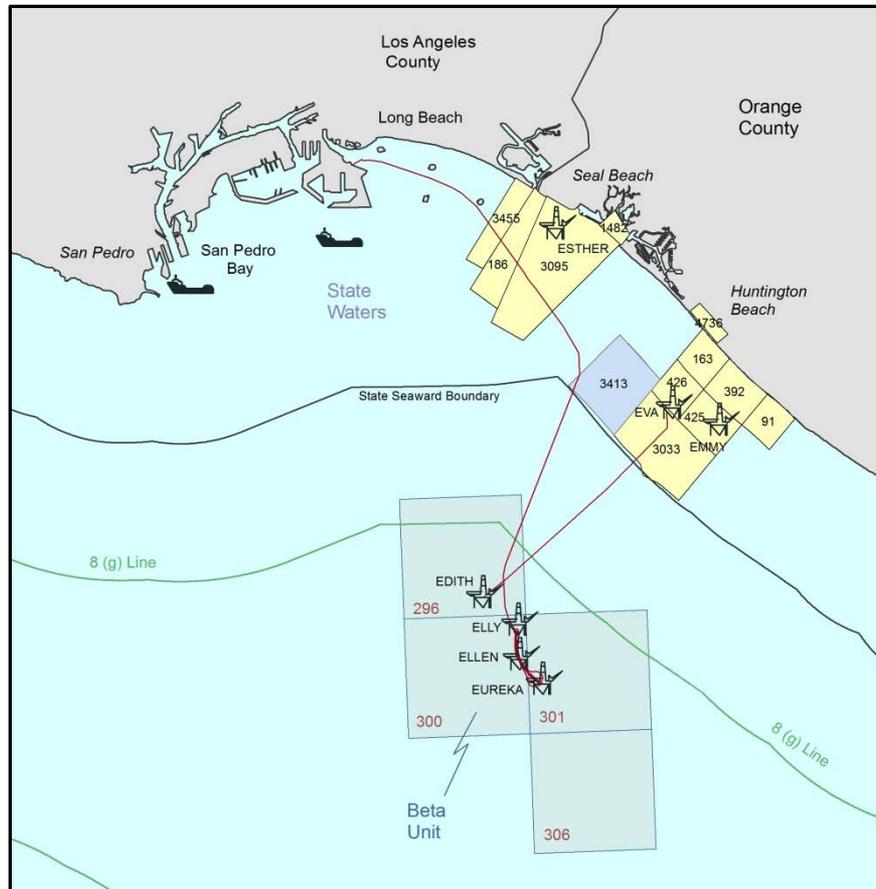
Pipeline Inspections and Tools



- External inspection conducted by remotely operated vehicle or side scan sonar
- Used to detect potential external problems including spans, debris, coating damage, dents



Beta – Cathodic Protection



- Inspection type: ROV and cathodic protection survey
- Problem identified: Platform Elly to shore oil pipeline historically has low cathodic protection readings; less negative than required

Beta – Cathodic Protection



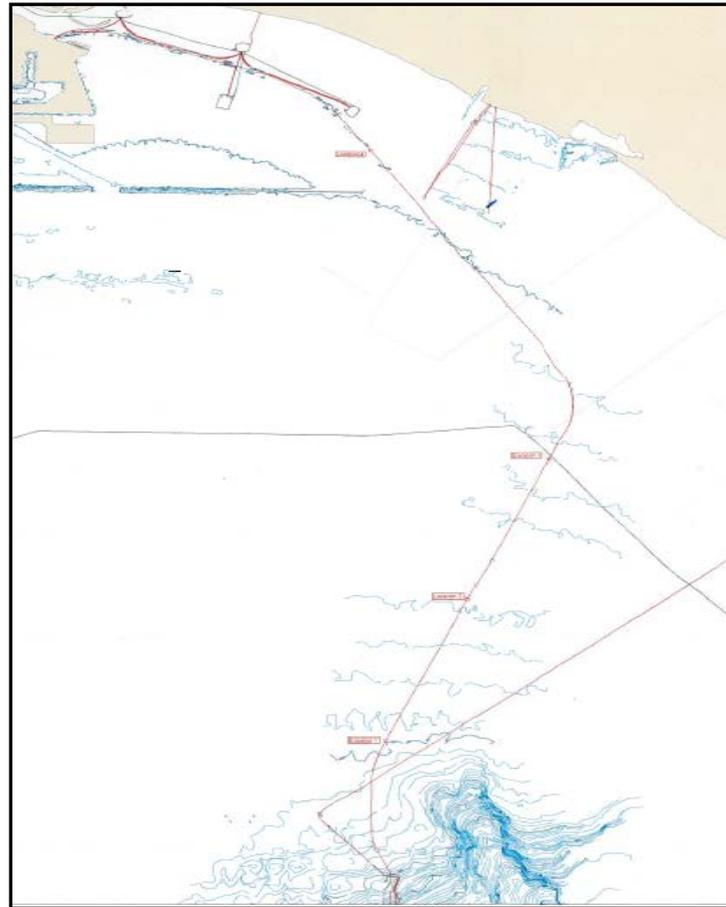
- Proposed solution:

 - Install 5 test points for future readings,
2 anode sleds, and 4 articulated mats

- Final solution:

 - All installed except for the 5th test point (in
Long Beach Harbor), due to depth of cover

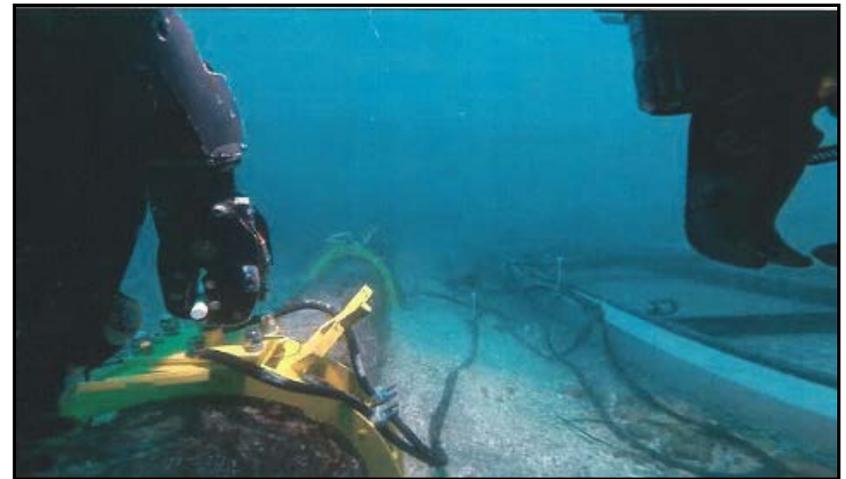
Beta – Cathodic Protection



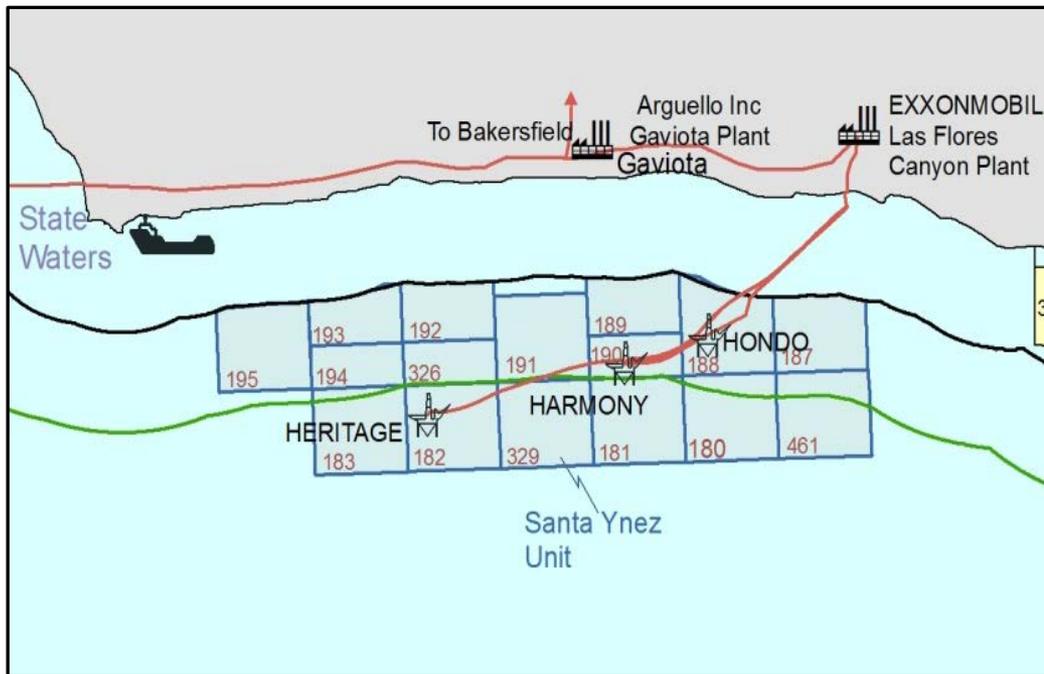
Beta – Cathodic Protection



Beta – Cathodic Protection



Santa Ynez Unit – Span Remediation



- Inspection type: ROV survey
- Problem identified: Multiple pipelines with excessive span lengths

Santa Ynez Unit – Span Remediation



Site ID	Pipeline	Reported Span Length (Feet)	Surveyed Span Length (Feet)
M-1	20" Oil	173	169
M-2	12" Water	163	195 *
M-3	12" Water	192	147
M-4	20" Oil	113	114
M-5	12" Gas	149	96 **
M-6	12" Gas	193	94

*Two spans with 67 foot center “touchdown” area. The 195 foot span is a combination of two with center “touchdown” area.

**Two spans with small center “touchdown” area. The 96 foot span is a combination of two with center “touchdown” area.

Santa Ynez Unit – Span Remediation



- Solution:
Setting concrete in burlap bags at predetermined locations under and along the pipelines

Santa Ynez Unit – Span Remediation



Santa Ynez Unit – Span Remediation



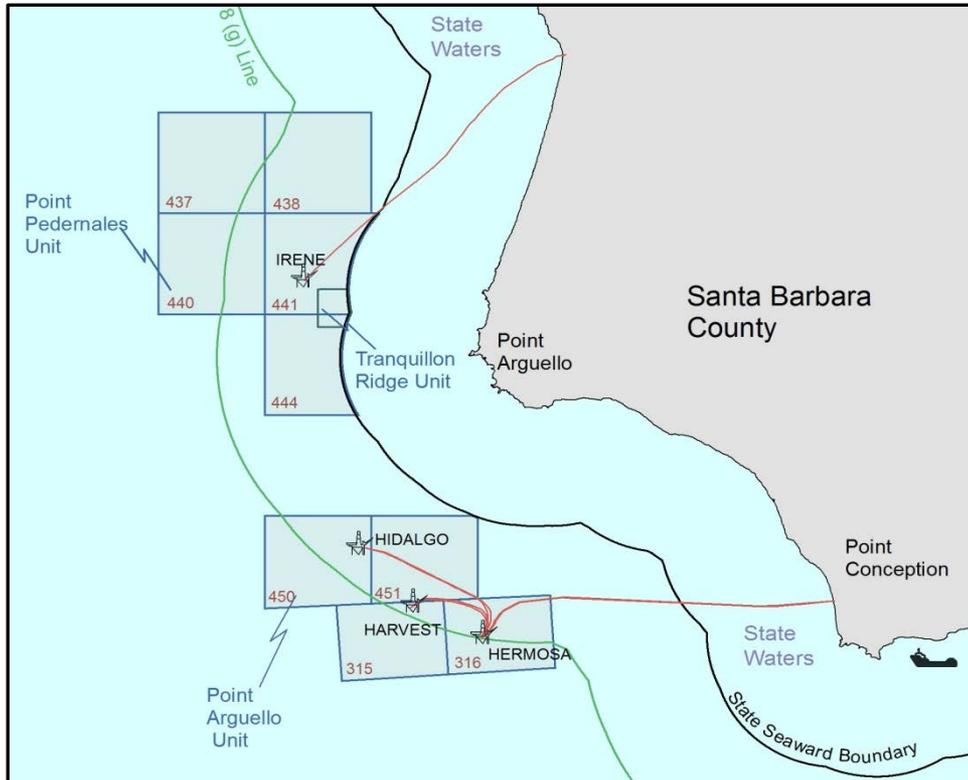
- Final Solution:

Site ID	Pipeline	Remediation
M-1	20" Oil	3 span supports (up to 10" of water under pipeline)
M-2	12" Water	3 span supports (up to 8" of water under pipeline)
M-3	12" Water	4 span supports (up to 12" of water under pipeline)
M-4	20" Oil	3 span supports (up to 10" of water under pipeline)
M-5	12" Gas	4 span supports (up to 18" of water under pipeline)
M-6	12" Gas	3 span supports (up to 12" of water under pipeline)

Santa Ynez Unit – Span Remediation



Irene – Pipeline Repair



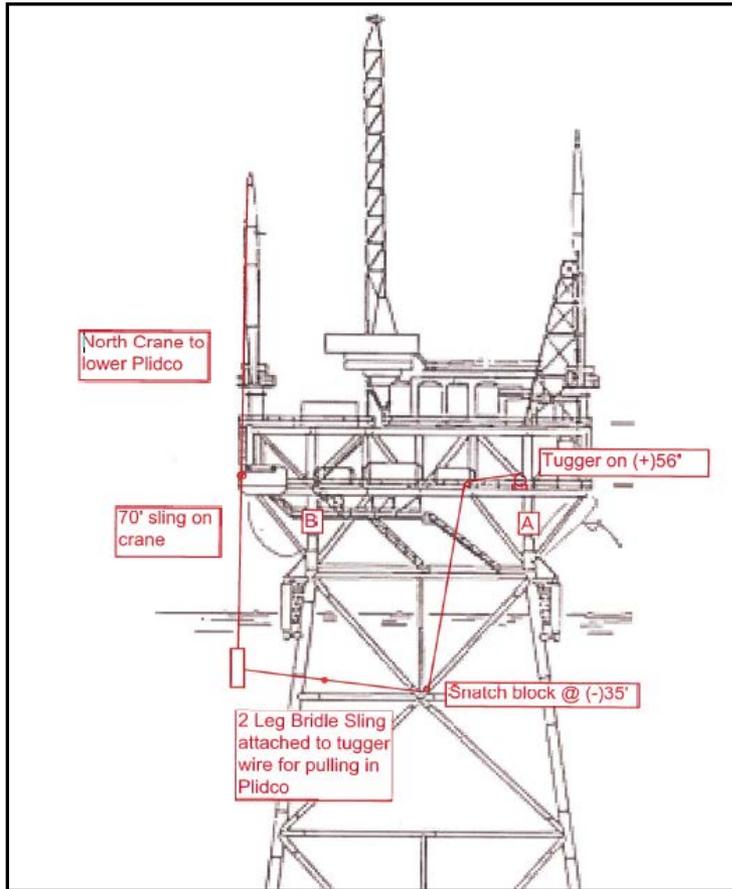
- Inspection type: Internal inspection (smart pig)
- Problem identified: Wall loss on Irene oil pipeline riser at -35 feet

Irene – Pipeline Repair



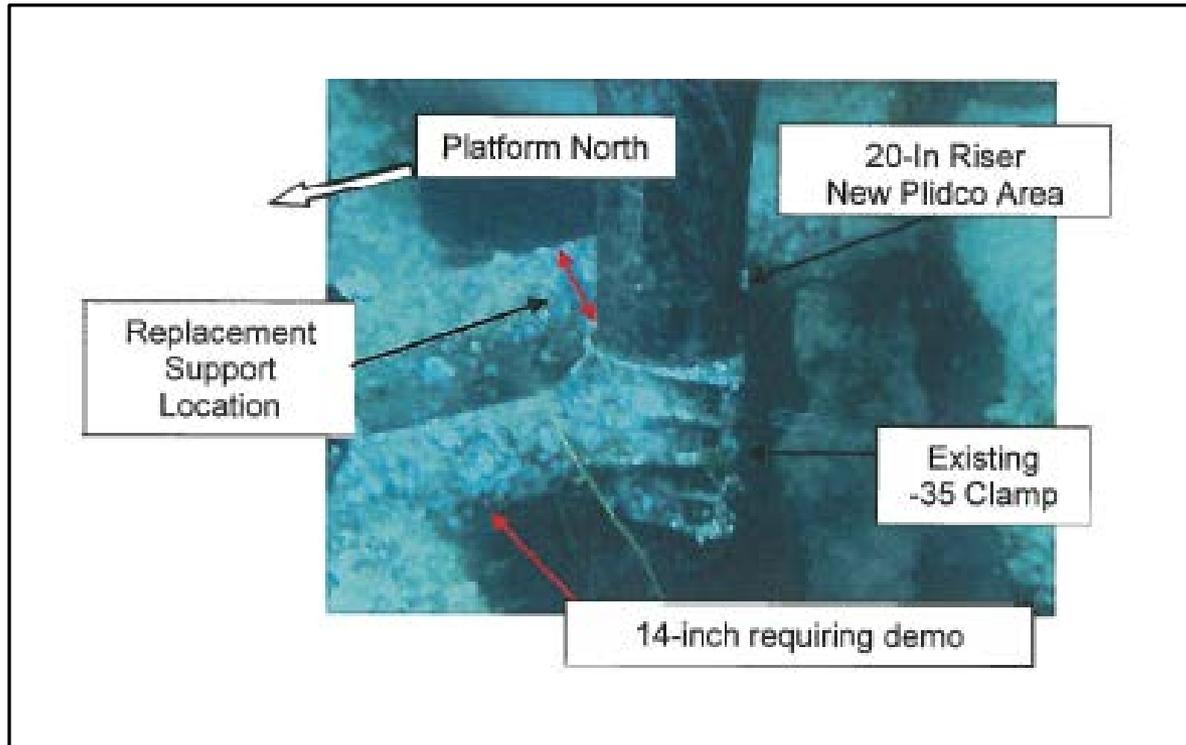
Results of Irene Riser Oil Emulsion Pipeline Inspections		
Year	Type of Inspection	Wall Loss
2004	Smart Pig	45%
2004	UT/ Pit Gauge	40%
2005	Smart Pig	40%
2006	Smart Pig	40%
2007	Smart Pig	32%
2008	Smart Pig	41%
2009	Smart Pig	49%
2010	UT/ Pit Gauge	41%
2010	Smart Pig	47%
2011	Smart Pig	36%
2012	Smart Pig	54%

Irene – Pipeline Repair



- Solution:
Relocate riser support clamp and install full encirclement clamp over wall loss

Irene – Pipeline Repair



Irene – Pipeline Repair



Irene – Pipeline Repair



Irene – Pipeline Repair



Irene – Pipeline Repair





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