Jacobsen Pilot Service, Inc.

Captain John Strong
Vice President

Mega ships and Dynamic Under Keel Clearance Project

PORT OF LONG BEACH
Pilots need accurate, real-time information

NOAA P.O.R.T.S
- Tides
- Wind
- Air-Gap
Jacobsen Pilot Service, Inc.

Precision piloting with DGPS PilotMate system.
Jacobsen Pilot Service, Inc.

Challenges of VLCC’s and ULCC’s Entering Long Beach
With Zero Pitch:

- 76’ MLLW
- 65’ Max Draft per COTP
- 11’ Under Keel Clearance

With 1 degree of Pitch, there is a 9.6’ increase in draft for a 1,100 foot tanker:

- 76’ MLLW
- 65’ Max Draft per COTP
- 1.4’ Under Keel Clearance

POLB dredged to 76 feet from approach channel to Pier 121 (Tesoro and Pier 121 Users)
Jacobsen Pilot Service, Inc.

Our Present method of determining GO / NO GO

- CDIP/SCCOOS Swell Warnings
- Experience
- Seaman’s Eye
- Observed pitch & roll far enough offshore to permit “bail-out” before committing to channel
Jacobsen Pilot Service, Inc.

Bail Out Chart
Jacobsen Pilot Service, Inc.

Dynamic Under Keel Clearance project

**PROTIDE** takes predicted:
- water levels,
- currents,
- wave conditions,
- channel depth,
- course,
- ship dimensions, and
- vertical ship motion (roll/pitch/squat)

...and calculates the **under keel clearance & bottom touch probability**.

PROTIDE is now used in three harbors in the Netherlands to support the operational process (Port of Rotterdam, Port of Amsterdam & the Eemshaven).
Start with VLCC’s and ULCC’s first, then expand the project to other critical areas of the Port.
Jacobsen Pilot Service, Inc.