

Jacobsen Pilot Service, Inc.

Tug and Pilot Availability in the Event of a Tsunami



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Operations Manager**



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Topic Overview

- Decisive decision making by USCG and Port Partners
- Limitations of Pilot Staff and supporting Pilot boat crew
- Benefits of small geographical area compromising both LA/LB Harbors
- Use of NOAA Advisories





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Decisive Decision Making by Port Partners

- USCG
 - Issue initial warning broadcasts on VHF 16
 - Guidance for Vessel movement and priority
 - Advise JPS and MX/VTS
- Jacobsen Pilot Service
- Marine Exchange/VTS





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Ship Moves

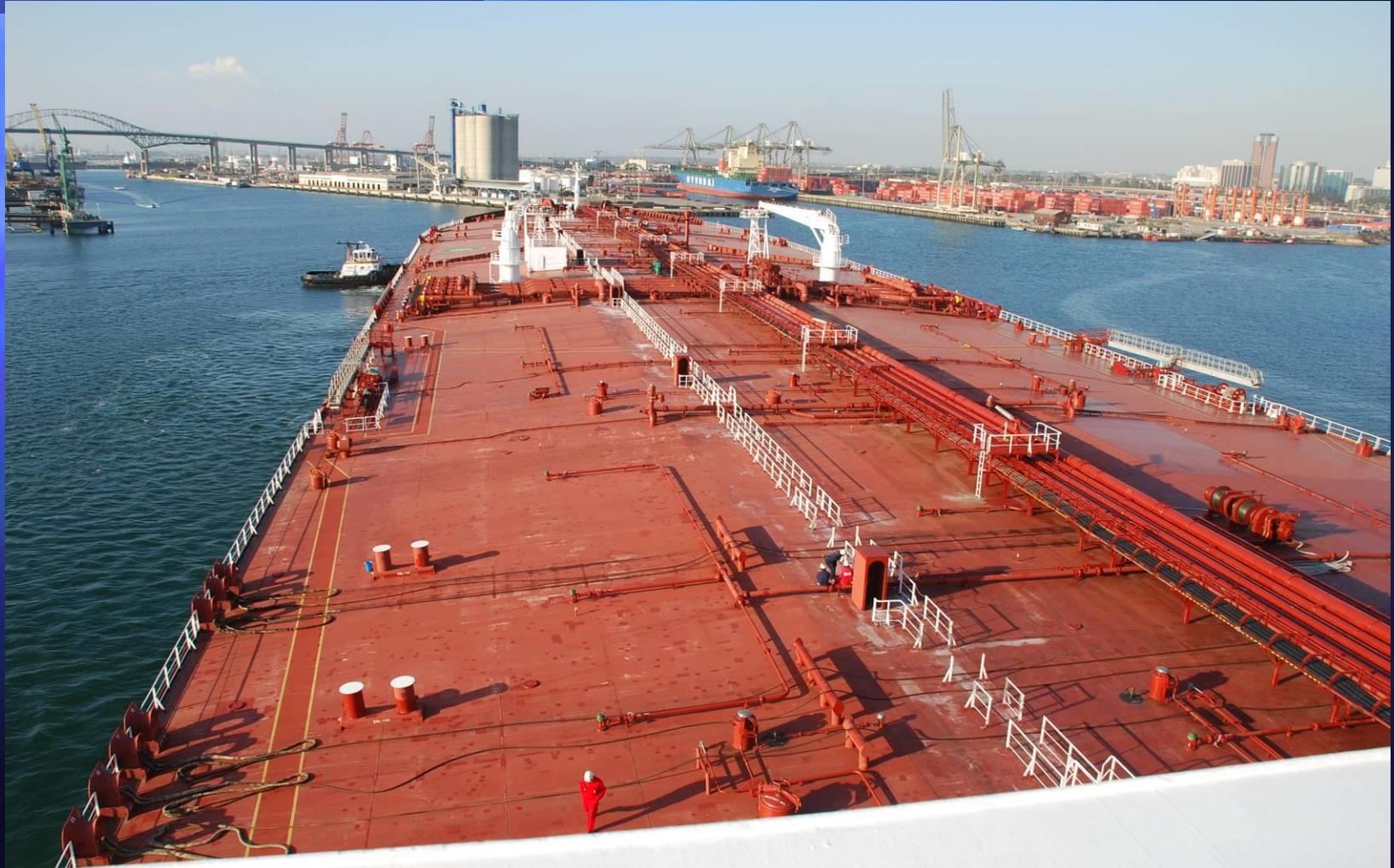
- EARLY AND TIMELY
- JPS coordination of moves with USCG, ship's agents, tug companies, line-handling agencies and terminals





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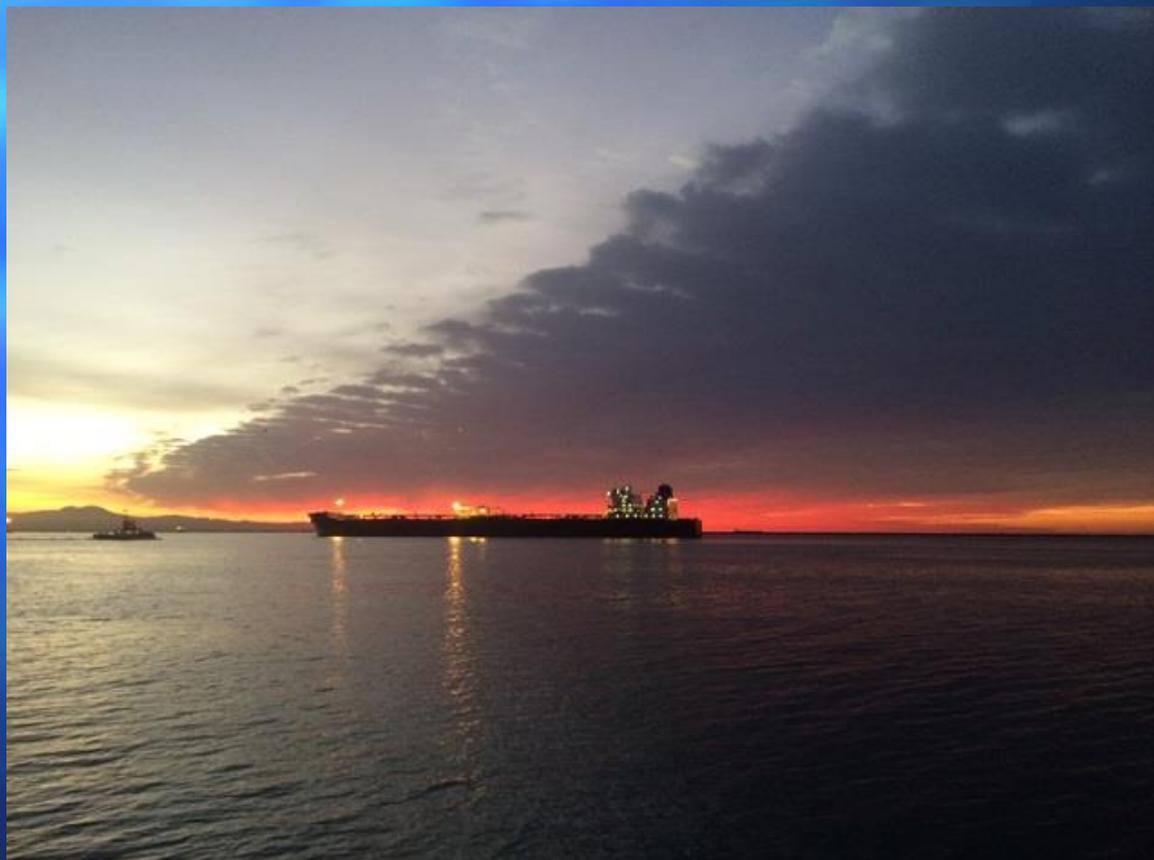
Tankers at Berth With Minimum UKC - PRIORITY





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VLCC at Anchor With Minimum UKC - PRIORITY





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Bigger Ships more difficult to move in urgent conditions- Air and Water draft considerations





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Pilot Dispatch/Vessel Traffic Service / Long Beach Sector



- Dispatcher at JPS coordinates all moves.



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Pilot Availability

- Available Pilot Staff and JPS Team
- 8 Pilots and Management Pilot on duty
- Additional 8 Pilots on time off/Call in available pilots
- 2 Boatman
- 1 Dispatcher
- 3 Pilot Boats
- Boats to Sea





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3 Major Tug Companies in the Port Complex

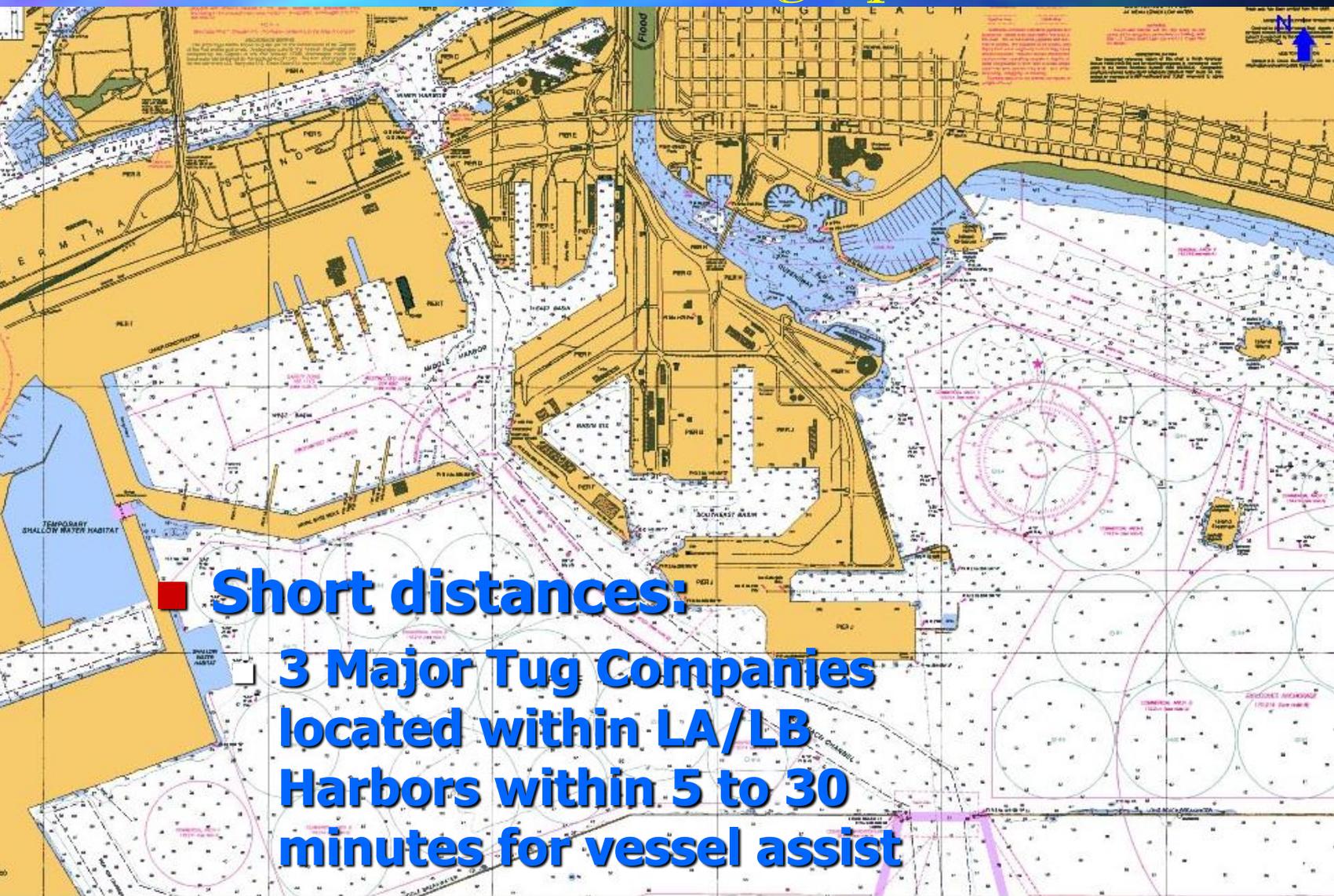
- *Foss, Millennium and Crowley – with approximately 16 tugs available*
- *Tug Co.'s will have evacuation plan for their own equipment*





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Benefit of Geographical Size



■ **Short distances:**
3 Major Tug Companies
located within LA/LB
Harbors within 5 to 30
minutes for vessel assist



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Geographical Benefits

- Short transit time outbound from anchorages and most berths in the harbor complex
- “Doubling back” of Pilots and Tugs





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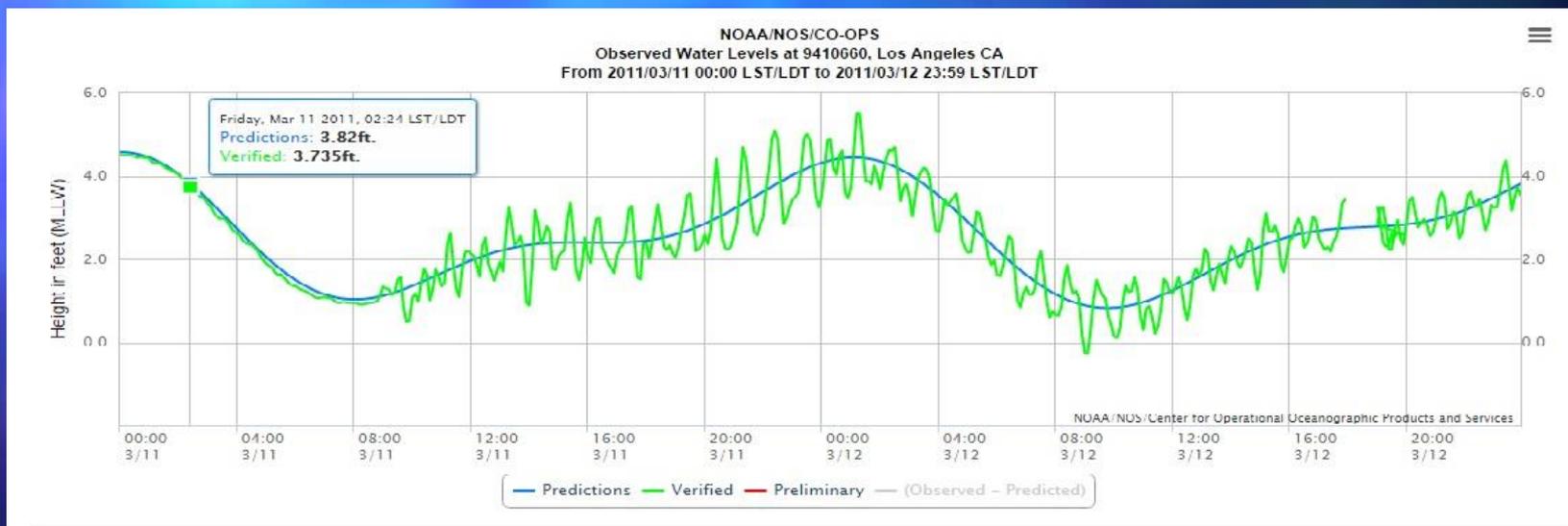
Use of NOAA Tsunami Advisories and forecasts to determine time frame of safe vessel movement

- Safe Vessel movement can be determined by use of the advisories and warnings
 - Time and amplitude of wave/surge predicted
 - Air gap for Desmond Bridge in Long Beach Real and predicted
 - Water level gauge in Los Angeles



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NOAA Advisories



JPS monitored Real-Time Water Level in March 11, 2011 Event



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	Maximum Tsunami Amplitudes			First Arrival Times		Estimated Maximum Current Speeds (knots)	Reported Damage or Other Effects from Tsunami (NDR = no damage reported)
	Forecasted (meters)	Observed Tide Gauges (meters)	Estimated By Others (meters)	Forecasted (PDT)	Observed Tide Gauges (PDT)		
Crescent City	0.61	0.64		1340	1346		NDR
Eureka	0.2	0.23		1336	1333		NDR
Arena Cove	0.49	0.39		1248	1304		NDR
Point Reyes	0.46			1259	1259		NDR
Alameda	0.18	0.12		1344	1345		NDR
San Francisco	0.22	0.32		1320	1326		NDR
Half Moon Bay	0.96		0.6				NDR
Santa Cruz	0.51		0.9			8-10	minor damage to boats and marine infrastructure
Monterey	0.45	0.36		1231	1243		NDR
Morro Bay	0.82		0.5			4-6	NDR
Port San Luis	0.84		0.8				NDR
Pismo Beach	1.43		0.9-1.2				NDR
Santa Barbara	0.75	0.91		1230	1231	8-10	minor damage to dredging equipment
Ventura			0.6-0.9			12-15	over 20 docks damaged; buoys moved
Santa Monica	1.18	0.64		1225	1225		NDR
Two Harbors/Catalina			0.6-0.9				minor damage to several docks
Los Angeles	0.77	0.42		1215	1215	4-6	minor damage to docks and marine infrastructure
Seal Beach							minor flooding from storm and tsunami surges 24 hours later
Dana Point			0.5-0.7			10-12	bait barge severed
Oceanside			0.4			5-8	several buoys carried out to sea; boat trailer swamped
La Jolla	0.84	0.60		1202	1202		NDR
Mission Bay						8-10	small sailboat swamped trying to leave harbor; buoys moved
San Diego	0.27	0.40	0.6	1204	1208	12-15	damage to docks, concrete piers, and boats



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US Navy Contract for Piloting / NWS Seal Beach

- JPS Pilots
 - Assist Navy in Piloting Warships in Seal Beach
 - Movements not under USCG authority
 - Naval Vessels would be part of the evacuation process





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Tsunami Surge February 27, 2010





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Hurricane Marie Swell Condition Long Beach

August 27, 2014





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Hurricane Marie Swell Condition Long Beach

August 27, 2014





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