II. GENERAL WEATHER, TIDES AND CURRENTS

A. WEATHER: Harbor area fog is most likely in April and from October through February, when visibility over the bay is below 0.5 mile for 7-10 days per month. Fog is mostly a land (radiation) type that drifts out and worsens in the late night and early morning. Smoke from nearby industrial areas often adds to its thickness and persistence. Along the shore, fog drops visibility to less than 0.5 mile on 3 to 8 days per month from August through April, usually worst in December.

Winds vary, particularly in fall and winter. They are strongest during this period when the Santa Anas may blow. This offshore desert wind, though infrequent, may be violent. It occurs when a strong high–pressure system sits over the plateau region and generates a Northeasterly to Easterly flow over Southern California. Aside from weather forecasts, one gets little warning of a Santa Ana's onset: good visibility and unusually low humidity often prevail for some hours before it arrives. Shortly before arriving on the coast, the Santa Ana may appear as an approaching dark–brown dust cloud. This positive indication often gives a 10-to-30 minute warning. The Santa Ana may come at any time of day and can be reinforced by an early morning land breeze or weakened by an afternoon sea breeze.

Winter storms produce strong winds over San Pedro Bay, particularly from Southwesterly through Northwesterly. Winds of 17 knots or greater occur about 1-2% of the time from November through May. Southwesterly through Westerly winds begin to prevail in the spring and last into early fall. The following NOAA Web site gives an overall view of weather and climatic change:

http://www.weather.gov/

B. TIDES: The mean range of tide is 3.8' for Los Angeles Harbor and 3.7' for Long Beach Inner and Outer Harbors. The diurnal range is about 5.4' for both harbors and a range of 9' may occur at maximum tide. The time of tide is about the same for both harbors. Real and predicted tides along with wind speed, air pressure, and air/water temperature can be obtained from the following NOAA Web sites: http://tidesonline.nos.noaa.gov/. Select tide station via the state maps. High water conditions by individual port community are noted under High Water Conditions under the same web site.

Yearly tide preditions are listed under http://co-ops.nos.noaa.gov/

C. CURRENTS: The tidal currents follow the axis of the channels and rarely exceed one knot. The LA/LB Harbors are subject to seiche and surge, with the most persistent and conspicuous oscillation having about a one-hour period. Near Reservation Point, the prominent hourly surge causes velocity variations as great as one knot. These variations

often overcome the lesser tidal current, so that the current ebbs and flows at half–hour intervals. The more-restricted channel usually causes the surge through the Back Channel to reach a greater velocity at the east end of Terminal Island, rather than west of Reservation Point. In the Back Channel, hourly variation may be 1.5 knots or more. At times the hourly surge, together with shorter, irregular oscillations, causes a very rapid change in water height and current direction/velocity, which may endanger vessels moored at the piers.

A 1994 Army Corps of Engineers ship navigation study indicated that within LA's proposed channels, current magnitudes would essentially be a negligible 1/3 knot or less. By comparison, maximum current velocity in the Angels Gate area is less than one knot. These current magnitudes, determined during a simulation study, indicate depth–averaged values over three layers. The more-constricted area the Army Corps studied near the Los Angeles Gate should result in more current than at Angels Gate. According to Jacobsen Pilot Service (Jacobsen), the Long Beach Gate has deeper water than Los Angeles Gate and more open waterways just inside the breakwater. The pilots have never experienced greater than one knot in this area. Port construction and dredging should not significantly change existing conditions.

For additional navigational information, refer to the United States Coast Pilot 7, 40th Edition, Pacific Coast California, Oregon, Washington, and Hawaii paragraph (298 and 299) Charts 18751, 18746, 18749 San Pedro Bay.

D. PHYSICAL OCEANOGRAPHIC REAL TIME SYSTEM (PORTS):

PORTS is a system of environmental sensors and supporting telemetry equipment that gathers and disseminates accurate "real time" information on tides, visibility, winds, currents and sea swell to maritime users, to assist in the safe and efficient transit of vessels in a port area. The PORTS system in the Ports of Los Angeles and Long Beach consists of 8 Meteorological Data points and 1 Tide Gauge at POLA Berth 60. The Meteorological Data Points are collected at the following base stations:

-Angels Gate
-Badger Avenue Bridge
-POLA Berth 161, Berth 60, and Pier 400
-POLB Pier F, J, and S

* RECOMMENDATION

The Harbor Safety Committee recommends that a statewide uniform system of PORTS, certified by NOAA, be established in California waters. PORTS should be permanently financed by the State of California and/or NOAA as there is broad public benefit in terms of marine safety, protecting the environment, use by recreational boaters, academia, and preventing oil spills in California waters. Safety of navigation in our harbors is highly

dependent upon real time tidal, current, and wind information. OSPR, as an agency, should continue its oversight role.

The PORTS system and historical data can be accessed at the following web page:

http://tidesandcurrents.noaa.gov/ports.html