

flood runoff from the Sacramento-San Joaquin Rivers, wind velocity and direction, salinity of water, distance which salt water has moved upstream, depth of water at point of deposition, etc. The silt comes downstream in the fresh water from the Sacramento-San Joaquin river system. When the silt interacts with the salt water it becomes colloidal and is easily carried from place to place. The colloidal matter usually is first deposited in San Pablo Bay. During spring and early summer the westerly winds cause the silt to become waterborn and much of it is carried into Mare Island Strait and deposited. There is a two hour differential in tides between Carquinez Strait and Mare Island Strait. Encl. (1) illustrates the movement of silt from San Pablo Bay upstream into Carquinez Strait. Water can flow from Carquinez Strait when the flood tide has started in Mare Island Strait and it is still ebbing in Carquinez Strait.

The U.S. Army Engineers, by H. Doc. 644, 75th Congress, 3rd Session, dated June 20, 1938, were authorized to maintain a channel in Mare Island Strait at a depth of 30 feet below mean lower low water. The channel is 700 feet wide from Carquinez Strait flaring into a turning basin 1000 feet wide at the southerly end of the finger piers and extending to a line 75 feet southerly from the causeway between Vallejo and Mare Island. The depth decreases from 30 feet to 26 feet in the northerly 600 feet of the turning basin. This channel is shown on encl. (2).

The Shipyard maintains berths outside of the turning basin and areas in berths inside the turning basin where the Army dredge cannot operate because of ships or other obstructions.

II. NUCLEAR SUBMARINE REQUIREMENTS

The Shipyard, on 10 March 1959, requested the U.S. Army Engineers to increase the depth of the channel and turning basin to 35 feet and decrease the widths by about 400 feet. This depth was to allow the passage of nuclear powered submarines through Mare Island Strait. The Army Engineers were unable to sponsor this legislation. Subsequently, 35 foot depth requirement was reduced to 32 feet because of the need of austerity. Under this reduced depth, it was recognized that it would be necessary to restrict the movement of the nuclear submarines to one hour before and one hour after high tide to keep them off the bottom of the 32 foot channel.

The Navy obtained funds from a Military Construction Project and authorized the U.S. Army Engineers to deepen the channel with their dredge. The work was completed in January 1962. Some overdredging was accomplished at this time to allow for silting. This channel is shown on encl. (2).

Experience now shows that the restrictions as to times of operations through the 32 foot channel are not feasible where a multiple number of ships are outfitting, docking, undergoing trials, or operating in and out of the shipyard. Further, unforeseen weather conditions, such as fog inside the bay or in the submarine operating area, together with operational and testing uncertainties, preclude any rigid adherence to tidal schedules.

The present construction program schedules for Mare Island Naval Shipyard require that SSB(N) submarines operate extensively in and out of Mare Island Channel on sea trials during the period March 1963 through October 1965. These ships require 35 feet at MLLW during this period. Additionally, present logistic planning for the shipyard includes a regular overhaul capability for SS(N) submarines. These submarines require a minimum of 34 feet at MLLW and this depth requirement is a continuing one.

The requirement for 35 feet at MLLW, is concurred in by the 12th Naval District and Fleet Operating Commands. The Shipyard has submitted Project P-21 in its 1964 Military Construction Program. Encl. (3) is the description for this project.

III. REQUIREMENTS FOR MAINTENANCE DREDGING

Following completion of the MilCon project for deepening the channel to 32 feet the U.S. Engineers were requested to enter into negotiations to maintain the channel to this new depth. The Chief of Engineers, U.S. Army, advised DuBocks on 30 July 1962 as follows:

"The authorized depth for the Federal navigation project for Mare Island Strait is 30 feet and no general authority currently exists which would permit