TIDAL WORK IN THAILAND

Oceanographic Division, Hydrographic Department, Royal Thai Navy

1. Introduction

Approximately 1500 nautical miles long coastline of Thailand, both in Gulf of Thailand and Andaman Sea, located several sea ports, fishery communities, aquaculture facilities and industrial areas. Tidal observations and analysis are essential for many areas of study such as coastal engineering, fishery and marine environment. Tidal predictions are also one of the most crucial information for navigation and shipping including flood control along rivers' banks. As a result, many analysis and prediction have been performed by some department including Hydrographic Department, Royal Thai Navy.

2. Tidal Observation and Prediction in Thailand in the Past

Tidal observations in Thailand began in 1904 when Harbor Department of Thailand, started working on data collection at Bangkok Bar. The work on the tidal datum started in 1910, a tide pole was placed at Ko Lak in Prachubkereekarn Province (11° 49′ N. , 99° 46′ E) in September 1910. Sea level was read by observers from September to October, then, a permanent tide gauge has been established and started operation since October 1910. The subsequent 5-year water level of Ko Lak station was averaged and known as standard mean sea level of Thailand in October 1915. The Ko Lak 1915 datum is still used as standard mean sea level of Thailand.

After 1911, as Hydrographic Department, Royal Thai Navy has operated more and more tide gauges, tidal observations became its responsibility. In 1920, Hydrographic Department made predictions by non – harmonics method and harmonic analysis have become standard method in tide prediction since1930; however, as the Hydrographic Department, did not have tide predicting machine, the data had been sent

to U.S. Coast and Geodetic Survey for prediction. After 1952, Doodson Le′ge′, a tide predicting machine was acquired, as the consequence, the Hydrographic Department has become major authority in tidal observations and predictions since 1954. By using harmonic method together with up to 30 harmonic constituents, predictions and publications of hourly height were performed. Although the machine did help the tidal prediction much easier, such works was troublesome and very time consuming.

Tidal prediction utilizing computer has been introduced to the Hydrographic Department in 1977, since then, tidal analysis and predictions are no longer laborious task. Therefor, more tidal data is acquired from other authorities such as Port Authority of Thailand and Harbor Department of Thailand, who still operates bulge portion of tide gauges in Thai waters.

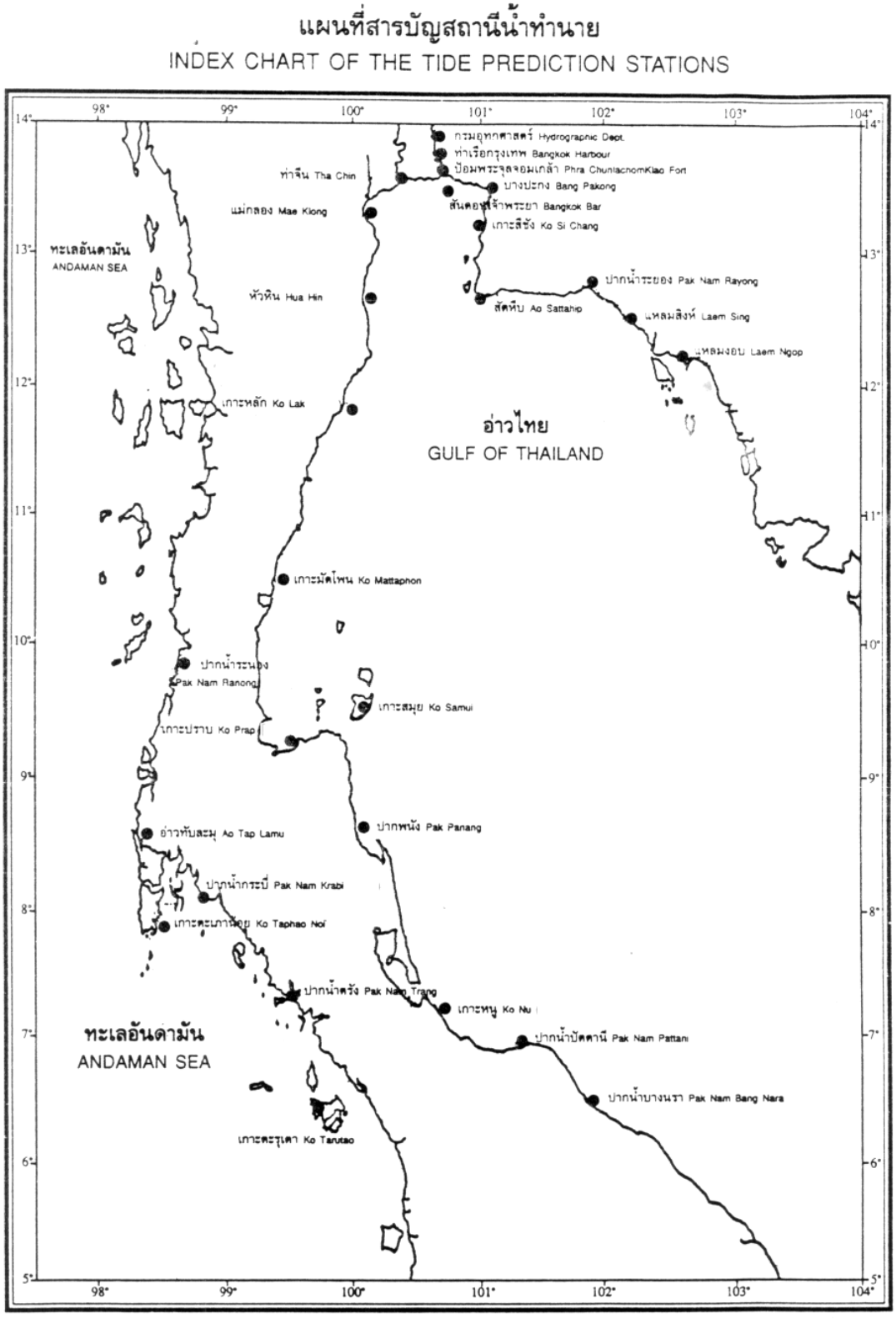
3. Tidal Observation and Prediction in Thailand Today

Today, Thailand operates 27 tide gauge stations (figure, 11 stations belong to Hydrographic Department, 4 stations belong to Port Authority of Thailand and 12 stations belong to Harbor Department). The Hydrographic Department is using 112 harmonic constituents together with software provided from Tidal Laboratory of the Flinders Institute of Atmospheric and Marine Sciences, Australia, predicting hourly height for all stations and high - low waters for some station. The Hydrographic Department does not only supply tidal data to agencies in Thailand, but also exchanges information with others abroad including PSMSL and TOGA (Table).

Most of the tide gauges in Thai waters are mechanical, even they are abide old but still perform superbly. The plan for supplement the old tide gauges has been prepared also; however, due to lacking of fund, new gauges will be hardly possible in the near future.

Figure

Chart of the Tide Prediction Station



Table

Data Distribution

1. High-Low water prediction of Bangkok Bar to
    - NOAA, U.S.A.
    - Hydrographer of the Navy, UK
    - Hydrographic Department, JAPAN
    - Hydrographic Department, SOUTH KOREA
2. Yearly and monthly mean to PSMSL since 1940
    - Phra Chunlachomklao Fort
    - Bangkok Bar
    - Ko Lak
    - Ko Mattaphon
    - Ko Thaphao Noi
3. Hourly height to TOGA since 1985
    - Ko Lak
    - Ko Thaphao No