

## CHAPTER VIII

### NATURAL CONDITIONS

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#### **Art.84 - Tides and Currents in SC :**

The SC is divided into three main sectors according to the nature of tide in each.

The characteristics of each can be summarized as follows :

#### **A -The Northern Sector:**

This part is located between Port Said and the G.B.L. :

- (1) The height of tide at Port Said co-oscillates with the tide of the Mediterranean Sea with 0.65-meter extreme tidal range ( Difference between successive crests and trough levels of tidal wave) at Spring tides. This extreme tidal range decreases gradually going South, to be about 0.55 meter at the entrance of Lake Timsah. The average tidal rang is about 0.3 meter at both Port Said and Timsah Lake.
- (2) In this sector, the peak tidal current may reach 1.6 knot.
- (3) Currents may increased by strong prevailing winds and other factors.
- (4) Peak currents occur about 30 and 90 minutes after predicted HW and LW at Port Said.
- (5) The duration and velocity of currents in this sector are greatly affected by the relative mean sea levels between the Mediterranean Sea, the Bitter Lakes and the Red Sea as follows:
  - a) **In Summer:** between July and October, the mean sea level at Port Said is slightly higher than that of the Bitter Lakes. This difference (which reaches its maximum of about 0.20 meter in September), beside the great evaporation at the Bitter Lakes, causes the predominance of the Southward current in duration and velocity.
  - b) **In Winter:** between December and May, the Mean sea level at the Bitter Lakes is slightly higher than that of Port Said. This difference, which reaches its Maximum of about 0.30 meter in January, causes the predominance of the Northward current in duration and velocity.

## **B -The Lakes : ( Timsah and Bitter Lakes ) :**

- (1)The Lakes along the Canal have an important role in dampening the effects of sudden meteorological changes.**
- (2)The Bitter Lakes with a surface of about 250 Km<sup>2</sup> reduce the vertical movement of the tide to a minimum between Km.100 and Km. 130.**
- (3)The main high spring tide range ( MHWS ) in G.B.L. may reach 0.25 meter.**
- (4)The phase of the vertical tide in G.B.L. is about 3 hours later than that of Port Tewfik.**
- (5)The vertical tide in Lake Timsah is almost in phase with the tide in G.B.L.**

## **C -The Southern Region :**

**This part is located between Port of Suez and the Bitter Lakes :**

- (1) The height of tide in Suez co-oscillates with the tides of the Red Sea with extreme tidal range of about 1.90 meters at Spring tides. This range decreases gradually going North till the Little Bitter Lakes entrance at Genefa where this extreme value becomes about 060 meter. The average tidal rang is about 1.0 and 0.3 meters at port Taufiq and Gineifa respectively.**
- (2) The tidal volume of the Bitter Lakes is very large compared to the tidal volume of the Southern section. Consequently, the currents are relatively strong and almost uniform between Port Tewfik and Genefa**
- (3) In this region, the Northward current is called Flood and the Southward current is called Ebb.**
- (4) Peak currents occur about 50 minutes after predicted HW and LW at Port Tewfik.**
- (5) At the entrance of the Canal, Km. 159, the Flood tide starts at an average of 3 hours after the Low Water at Suez. The Ebb tide 3 hours after H .W. in Suez.**
- (6) Generally in summer, the duration of the Ebb exceeds the average of 6 hours. In winter, the Flood is the predominant. The Ebb is prolonged by " Strong Northerly Winds". The Flood is prolonged by "Strong Southerly Winds".**
- (7) In this region, the average peak current is about 2.2 knots. In Spring tides, current may reach 4.0 knots.**

## **D -Current Buoys:**

In the Canal, there are current buoys indicating the direction of the current :

Head Current : Red & White horizontal bands or 1 reflector at night.

Stern Current : Black & White vertical stripes or 2 reflectors at night.

These buoys are laid in the following positions :

|                           |            |      |
|---------------------------|------------|------|
| Port Fouad .....          | Km. 2.750  | East |
| El Raswa .....            | Km. 3.710  | "    |
| Ras El Ech ( E ) .....    | Km. 12.800 | "    |
| Ras El Ech ( W ) .....    | Km. 14.304 | "    |
| Tineh .....               | Km. 24.775 | "    |
| Cap .....                 | Km. 35.420 | "    |
| Kantara .....             | Km. 45.130 | "    |
| Ballah ( E & W ) .....    | Km. 54.770 | "    |
| Ferdan .....              | Km. 64.894 | "    |
| Ismailia .....            | Km. 76.133 | "    |
| Toussoum .....            | Km. 86.780 | "    |
| Deversoir ( E & W ) ..... | Km. 97.845 | "    |
| Kabrit ( E & W ) .....    | Km.120.827 | "    |
| Gineifa .....             | Km.133.950 | "    |
| Shallufa .....            | Km.146.125 | "    |
| Port Tewfik .....         | Km.160.300 | "    |

## **Art. 85 - Weather Forecast :**

Six Meteorological stations are installed on the Canal area. Information about weather will be passed to vessels through pilots, Ismailia Radio station.