Coastal Engineering Technical Note

COMPUTER PROGRAM: TIDEC (MACE-3)

PROGRAM PURPOSE: To estimate the tidal current speed at any time based on the predictions of National Oceanic and Atmospheric Administration (NOAA) "Tidal Current Tables."

PROGRAM CAPABILITY: This program is written in Microsoft BASIC and produces a tabular printout of time and tidal current speed (in knots, feet per second, and meters per second) for specific days of interest. The computations are based on the assumption that current velocities vary between maximum flood and maximum ebb values (and vice versa) in a sinusoidal manner. Corrections for both the time and speed at subordinate stations can be incorporated by TIDEC. The resulting tidal current speeds can be presented at 15-, 20-, 30-, or 60-minute intervals.

PROGRAM APPLICATION: This program is applicable to both reference stations and subordinate stations under average weather conditions. The predicted tidal current speeds do not account for nonastronomical influences or some localized hydraulic effects. Users should consult the references listed at the end of this CETN for technical explanation of tides and related coastal phenomena.

PROGRAM AVAILABILITY: The program is available for the IBM PC on a 5-1/4-in. diskette or as a printed program listing and may be obtained from the Coastal Design Branch, Coastal Engineering Research Center, U. S. Army Engineer Waterways Experiment Station, P. O. Box 631, Vicksburg, Mississippi 39180-0631. Questions concerning the application of TIDEC may be directed to Mr. Orson P. Smith of the Coastal Design Branch at 601-634-2013 (FTS 542-2013).

INPUT:

1. Time and current speed for slack water and maximum current at an appropriate reference station.

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2. Minimum before flood, flood, minimum before ebb, and ebb time differences at the subordinate station of interest.

3. Speed ratios.

4. Time interval at which predicted currents are desired.

OUTPUT: A table of tidal current speeds at regular intervals of time over specified periods.

SAMPLE PROBLEM:

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LOAD"TIDEC.BAS
O
RUN
DO YOU NEED INSTRUCTIONS (Y OR N) ? N

DO YOU WISH TO SEE AN EXAMPLE (Y OR N) ? N
PRESS ANY KEY TO CONTINUE.
HOW MANY SETS OF TIME AND CURRENT MEASUREMENTS ? 2

 1  TIME AND CURRENT ? 0622,0.0
 2  TIME AND CURRENT ? 0939,3.5

LOCATION Anchor Pt., Alaska(3 mi. SW)

DATE(S) 8 August, 1984

IS THIS A PRIMARY STATION (Y OR N) ? n

TIME CORRECTION-MINIMUM BEFORE FLOOD ? -06

TIME CORRECTION-MINIMUM BEFORE EBB ? 53

TIME CORRECTION-FLOOD CURRENT ? 11

TIME CORRECTION-EBB CURRENT ? -20

FLOOD SPEED RATIO? 0.6

EBB SPEED RATIO ? 0.6

TIME INTERVAL (15,20,30, OR 60 MIN) ? 30
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Anchor Pt., Alaska(3 mi. SW)      8 August, 1984
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TIME     CURRENT(KN)   FT/SEC    M/SEC
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0616          -0.0       -0.0      -0.0
0630           0.2        0.4       0.1
0700           0.7        1.1       0.3
0730           1.1        1.8       0.6
0800           1.5        2.5       0.7
0830           1.7        3.0       0.9
0900           2.0        3.3       1.0
0930           2.1        3.5       1.1
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NEGATIVE VALUES ARE EBB CURRENTS
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MORE DATA (Y OR N) ? n
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IPPEN, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1966.

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