```
_____
PART 5: RUNUP2

          for transect: YK-110

Station locations shifted by: -2.57 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input


_____RUNUP2 INPUT CONVERSIONS_____
          for transect: YK-110

Incident significant wave height: 7.11 feet

Peak wave period: 15.23 seconds

Mean wave height: 4.45 feet

Local Depth below SWEL: 12.54 feet

Mean wave height deshoaled using Hunt approximation for
celerity assuming constant wave energy flux.
 References: R.G. Dean and R.A. Dalrymple. 2000.  Water

               Wave Mechanics for Engineers and Scientists. World
               Scientific Publishing Company, River Edge New Jersy

               USACE (1985), Direct Methods for Calculating Wavelength, CETN-1-17
               US Army Engineer Waterways Experiment Station Coastel Engineering
               Research Center, Vicksburg, MS

               also see Coastal Engineering Manual Part II-3
               for discussion of shoaling coefficient

     Depth, D = 12.54
     Period, T = 12.95
     Waveheight, H = 4.45
Deep water wavelength, L0 (ft)
     L0 = g*T*T/twopi
     L0 = 32.17*12.95*12.95/6.28 = 858.19
Deep water wave celerity, C0 (ft/s)
     C0 = L0/T
     C0 = 858.19/12.95 = 66.29
Angular frequency, sigma (rad/s)
     sigma = twopi/T
     sigma = 6.28/12.95 = 0.49
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
     y = sigma.*sigma.*D./g
     y = 0.49*0.49*12.54/32.17 = 0.09
     C1H = sqrt( g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)) )
     C1H = 19.78
Shoaling Coefficient KsH
     KsH = sqrt(C0/C1H)
     KsH = sqrt(66.29/19.78) = 1.83
Deepwater Wave Height H0_H (ft)
     H0_H = H/KsH
     H0_H = 4.45/1.83 = 2.43

Deepwater mean wave height: 2.43 feet

_____END RUNUP2 CONVERSIONS_____

_____RUNUP2 RESULTS_____
          for transect: YK-110

RUNUP2 SWEL:
9.00
9.00
9.00
9.00
```

```
9.00
9.00
9.00
9.00
9.00

RUNUP2 deepwater mean wave heights:
2.31
2.31
2.31
2.43
2.43
2.43
2.55
2.55
2.55

RUNUP2 mean wave periods:
12.30
12.95
13.59
12.30
12.95
13.59
12.30
12.95
13.59

RUNUP2 runup above SWEL:
1.35
1.48
1.60
1.47
1.60
1.74
1.58
1.73
1.89

RUNUP2 Mean runup height above SWEL: 1.60 feet

RUNUP2 2-percent runup height above SWEL: 3.53 feet

RUNUP2 2-percent runup elevation: 12.53 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____



_____ACES BEACH RUNUP_____

Incident significant wave height: 7.11 feet

Significant wave height is mean wave height divided by 0.626
Reference: D.2.8.1.2.1 Atlanic and Gulf of Mexico G&S Feb. 2007

Deepwater significant wave height: 3.88 feet

Peak wave period: 15.23 seconds

Average beach Slope: 1:28.90 (H:V)


ACES IRREGULAR WAVE RUNUP ON BEACHES

# Reference:
# Leenknecht, David A., Andre Szuwaiski, and Ann Sherlock. 1992.
# "Automated Coastal Engineering System Technical Reference",
# Coastal Engineering Research Center, Department of the Army
```

Waterways Experiments Station, Corps of Eniggneers, 3909 Halls
Ferry Road, Vicksburg, Mississippi 39180-6199.

INPUTS:

```
Acceleration Due to Gravity,        g  =    32.174
Deepwater Significant Wave height,  Hs =     3.88
Wave Period,                        T  =    15.23
Beach Slope,                        S  =     0.035
```

EQUATIONS:

```
Runup,          R   = Hs * a * Irb^b
Iribarren,      Irb = S/sqrt(Hs/L0)
Wavelength,     L0  = g * T^2 / 2 / pi
```

COEFFICIENTS:
(Mase, H. 1989, "Random Wave Runup Height on Gentle Slopes,"
j. Waterway, Port, Coastal and Ocean Engineering Division,
ASCE, Vol 115, No. 5, pp 649-661.)

```
            [Rmax,  R2%, R-1/3, R-1/10, R-mean]
        a = [2.32, 1.86,  1.70,   1.38,   0.88]
        b = [0.77, 0.71,  0.71,   0.70,   0.69]
```

RESULTS:

```
    RUNUP = [ 6.1,  5.1,   4.6,    3.8,    2.4]
```

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 5.05 feet

ACES Beach 2-percent runup elevation: 14.05 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____