

## PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 77 70

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |                  |      |      |      |
|-----------|------------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|------------------|------------------|------|------|------|
| 34 23.2 N | 122 14.8 W | 19/11/05  | 1850 UTC  | 14 m   | 1205 - 1726 PST |      |      |      |      | 1154 PST | 1726 PST       | 353.9 mg C/m2    |                  |      |      |      |
| DEPTH     | TEMP       | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT            | UPTAKE (mg C/m3) |      |      |      |
| m         | DEG C      |           | THETA     | mL/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT              | 1                | 2    | MEAN | DARK |
| 2         | 15.20      | 33.217    | 24.555    | 5.94   | 103.7           | 2.8  | 0.35 | 0.6  | 0.06 | 0.74     | 0.18           | 80. A            | 10.1             | 9.9  | 10.0 | 0.16 |
| 11        | 15.06      | 33.209    | 24.580    | 5.95   | 103.6           | 2.5  | 0.35 | 0.6  | 0.07 | 0.79     | 0.20           | 30.              | 12.9             | 13.3 | 13.1 | 0.19 |
| 21        | 14.99      | 33.203    | 24.590    | 5.91   | 102.7           | 2.4  | 0.36 | 0.7  | 0.09 | 0.81     | 0.27           | 10.              | 10.2             | 10.0 | 10.1 | 0.15 |
| 30        | 14.92      | 33.189    | 24.595    | 5.84   | 101.4           | 2.4  | 0.40 | 1.1  | 0.14 | 0.68     | 0.26           | 3.7              | 4.7              | 5.2  | 5.0  | 0.12 |
| 39        | 14.78      | 33.186    | 24.623    | 5.76   | 99.7            | 2.3  | 0.43 | 1.4  | 0.19 | 0.47     | 0.26           | 1.4              | 1.7              | 1.7  | 1.7  | 0.08 |
| 48        | 12.48      | 33.025    | 24.966    | 5.42   | 89.4            | 5.0  | 0.78 | 6.2  | 0.30 | 0.33     | 0.28           |                  |                  |      |      |      |
| 56        | 11.79      | 33.006    | 25.082    | 5.27   | 85.6            | 6.3  | 0.92 | 8.6  | 0.08 | 0.29     | 0.26           | 0.22             | 0.14             | 0.18 | 0.16 | 0.05 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 80 60

| LATITUDE | LONGITUDE | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |                  |      |      |      |
|----------|-----------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|------------------|------------------|------|------|------|
| 34 8.7 N | 121 9.6 W | 17/11/05  | 1827 UTC  | 6 m    | 1155 - 1732 PST |      |      |      |      | 1150 PST | 1732 PST       | 752.7 mg C/m2    |                  |      |      |      |
| DEPTH    | TEMP      | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT            | UPTAKE (mg C/m3) |      |      |      |
| m        | DEG C     |           | THETA     | mL/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT              | 1                | 2    | MEAN | DARK |
| 2        | 13.94     | 33.303    | 24.889    | 6.40   | 109.0           | 4.5  | 0.47 | 1.1  | 0.12 | 9.09     | 0.80           | 60. A            | 92.4             | 86.5 | 89.5 | 0.66 |
| 4        | 13.91     | 33.308    | 24.899    | 6.44   | 109.6           | 6.6  | 0.44 | 1.1  | 0.11 | 9.23     | 1.12           | 36.              | 75.2             | 82.5 | 78.8 | 0.71 |
| 9        | 13.43     | 33.389    | 25.060    | 6.31   | 106.4           | 4.6  | 0.43 | 0.9  | 0.11 | 6.30     | 0.72           | 10.              | 33.9             | 34.3 | 34.1 | 0.57 |
| 13       | 13.30     | 33.396    | 25.092    | 5.88   | 98.9            | 7.3  | 0.53 | 2.3  | 0.14 | 4.21     | 0.75           | 3.6              | 9.9              | 10.1 | 10.0 | 0.36 |
| 17       | 13.29     | 33.397    | 25.094    | 5.82   | 97.8            | 7.5  | 0.56 | 2.5  | 0.15 | 3.37     | 1.04           | 1.3              | 2.6              | 2.5  | 2.5  | 0.26 |
| 24       | 13.24     | 33.393    | 25.102    | 5.91   | 99.2            | 7.7  | 0.55 | 2.5  | 0.16 | 3.50     | 0.76           | 0.22             | 0.40             | 0.29 | 0.34 | 0.27 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 80 100

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |                  |      |      |      |
|-----------|------------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|------------------|------------------|------|------|------|
| 32 49.3 N | 123 54.6 W | 18/11/05  | 1832 UTC  | 23 m   | 1205 - 1740 PST |      |      |      |      | 1201 PST | 1740 PST       | 167.5 mg C/m2    |                  |      |      |      |
| DEPTH     | TEMP       | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT            | UPTAKE (mg C/m3) |      |      |      |
| m         | DEG C      |           | THETA     | mL/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT              | 1                | 2    | MEAN | DARK |
| 2         | 17.14      | 32.957    | 23.915    | 5.65   | 102.3           | 1.6  | 0.31 | 0.0  | 0.00 | 0.22     | 0.07           | 88. A            | 2.0              | 1.8  | 1.9  | 0.13 |
| 16        | 16.93      | 32.957    | 23.965    | 5.66   | 102.1           | 1.6  | 0.30 | 0.0  | 0.00 | 0.27     | 0.09           | 34.              | 3.5              | 3.4  | 3.5  | 0.10 |
| 26        | 16.80      | 32.972    | 24.007    | 5.69   | 102.4           | 1.5  | 0.31 | 0.0  | 0.00 | 0.29     | 0.11           |                  |                  |      |      |      |
| 35        | 16.74      | 32.970    | 24.020    | 5.69   | 102.3           | 1.6  | 0.31 | 0.0  | 0.00 | 0.36     | 0.12           | 9.7              | 2.8              | 3.0  | 2.9  | 0.12 |
| 42        | 16.73      | 32.982    | 24.031    | 5.67   | 101.9           | 1.6  | 0.31 | 0.0  | 0.00 | 0.44     | 0.17           |                  |                  |      |      |      |
| 49        | 14.85      | 32.933    | 24.413    | 5.95   | 103.0           | 2.0  | 0.43 | 0.8  | 0.14 | 0.54     | 0.47           | 3.8              | 2.3              | 2.4  | 2.3  | 0.08 |
| 56        | 13.89      | 32.925    | 24.609    | 5.91   | 100.3           | 2.5  | 0.50 | 1.6  | 0.29 | 0.49     | 0.43           |                  |                  |      |      |      |
| 63        | 13.00      | 32.880    | 24.753    | 5.86   | 97.6            | 3.2  | 0.57 | 2.7  | 0.18 | 0.34     | 0.41           | 1.5              | 0.54             | 0.50 | 0.52 | 0.16 |
| 73        | 12.26      | 32.895    | 24.908    | 5.63   | 92.3            | 4.5  | 0.71 | 5.0  | 0.03 | 0.21     | 0.25           |                  |                  |      |      |      |
| 84        | 11.90      | 33.022    | 25.074    | 5.48   | 89.2            | 4.3  | 0.66 | 4.5  | 0.02 | 0.13     | 0.14           |                  |                  |      |      |      |
| 92        | 11.20      | 33.084    | 25.250    | 5.21   | 83.6            | 6.7  | 0.87 | 8.3  | 0.02 | 0.08     | 0.11           | 0.22             | 0.13             | 0.06 | 0.10 | 0.08 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 83 70

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |                  |      |      |      |
|-----------|------------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|------------------|------------------|------|------|------|
| 33 15.4 N | 121 26.6 W | 15/11/05  | 1814 UTC  | 17 m   | 1150 - 1728 PST |      |      |      |      | 1150 PST | 1726 PST       | 357.4 mg C/m2    |                  |      |      |      |
| DEPTH     | TEMP       | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT            | UPTAKE (mg C/m3) |      |      |      |
| m         | DEG C      |           | THETA     | mL/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT              | 1                | 2    | MEAN | DARK |
| 2         | 15.13      | 33.298    | 24.633    | 5.77   | 100.6           | 2.3  | 0.39 | 1.0  | 0.13 | 0.74     | 0.18           | 83. A            | 10.1             | 10.5 | 10.3 | 0.15 |
| 10        | 15.05      | 33.307    | 24.657    | 5.76   | 100.3           | 2.2  | 0.40 | 1.1  | 0.15 | 0.73     | 0.31           |                  |                  |      |      |      |
| 12        | 15.05      | 33.307    | 24.657    | 5.77   | 100.5           | 2.0  | 0.40 | 1.1  | 0.15 |          |                | 34.              | 12.2             | 10.8 | 11.5 | 0.18 |
| 20        | 14.94      | 33.309    | 24.683    | 5.74   | 99.7            | 2.0  | 0.42 | 1.3  | 0.17 | 0.77     | 0.24           |                  |                  |      |      |      |
| 28        | 14.80      | 33.301    | 24.707    | 5.72   | 99.1            | 2.0  | 0.43 | 1.6  | 0.19 | 1.22     | 0.20           | 8.0              | 6.4              | 7.1  | 6.8  | 0.12 |
| 39        | 14.33      | 33.275    | 24.787    | 5.81   | 99.7            | 3.5  | 0.44 | 1.7  | 0.16 | 1.33     | 0.31           | 3.0              | 2.8              | 3.1  | 3.0  | 0.18 |
| 49        | 13.83      | 33.290    | 24.903    | 5.43   | 92.2            | 4.5  | 0.62 | 4.3  | 0.24 | 0.60     | 0.36           | 1.2              | 0.72             | 0.81 | 0.77 | 0.14 |
| 61        | 11.42      | 33.349    | 25.416    | 4.39   | 70.9            | 11.3 | 1.20 | 13.6 | 0.03 | 0.14     | 0.16           |                  |                  |      |      |      |
| 71        | 10.67      | 33.362    | 25.560    | 4.28   | 68.0            | 13.3 | 1.32 | 15.7 | 0.03 | 0.10     | 0.13           | 0.16             | 0.03             | 0.02 | 0.02 | 0.04 |

A) INCUBATION LIGHT INTENSITIES WERE 94, 35, 10, 3.6, 1.5, 0.21 PERCENT RESPECTIVELY.

## PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 87 40

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE          |                               |      |      |      |
|-----------|------------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|---------------------------|-------------------------------|------|------|------|
| 33 39.4 N | 118 59.4 W | 11/11/05  | 1727 UTC  | 13 m   | 1139 - 1725 PST |      |      |      |      | 1139 PST | 1725 PST       | 509.1 mg C/m <sup>2</sup> |                               |      |      |      |
| DEPTH     | TEMP       | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT                     | UPTAKE (mg C/m <sup>3</sup> ) |      |      |      |
| m         | DEG C      |           | THETA     | ml/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT                       | 1                             | 2    | MEAN | DARK |
| 2         | 15.70      | 33.353    | 24.549    | 6.00   | 105.9           | 0.1  | 0.26 | 0.2  | 0.04 | 1.00     | 0.32           | 79. A                     | 18.8                          | 17.4 | 18.1 | 0.27 |
| 10        | 15.37      | 33.370    | 24.636    | 6.20   | 108.7           | 0.0  | 0.25 | 0.2  | 0.04 | 1.38     | 0.56           | 31.                       | 25.9                          | 26.5 | 26.2 | 0.29 |
| 20        | 14.30      | 33.390    | 24.882    | 5.42   | 93.0            | 2.9  | 0.59 | 4.1  | 0.17 | 0.94     | 0.64           | 9.4                       | 10.1                          | 9.7  | 9.9  | 0.18 |
| 29        | 14.09      | 33.440    | 24.964    | 5.49   | 93.8            | 2.4  | 0.63 | 5.0  | 0.19 | 1.62     | 1.06           | 3.3                       | 7.1                           | 7.4  | 7.3  | 0.15 |
| 36        | 13.13      | 33.419    | 25.144    | 4.87   | 81.6            | 7.2  | 0.91 | 8.7  | 0.27 | 0.65     | 0.66           | 1.4                       | 0.94                          | 1.1  | 1.0  | 0.11 |
| 43        | 12.54      | 33.411    | 25.254    | 4.63   | 76.6            | 9.2  | 1.03 | 10.6 | 0.30 | 0.56     | 0.53           |                           |                               |      |      |      |
| 52        | 11.57      | 33.407    | 25.434    | 4.20   | 68.1            | 11.4 | 1.24 | 13.8 | 0.15 | 0.23     | 0.31           | 0.22                      | 0.11                          | 0.08 | 0.09 | 0.05 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 87 70

| LATITUDE  | LONGITUDE | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE          |                               |      |      |      |
|-----------|-----------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|---------------------------|-------------------------------|------|------|------|
| 32 39.3 N | 121 2.1 W | 12/11/05  | 1840 UTC  | 15 m   | 1155 - 1738 PST |      |      |      |      | 1148 PST | 1734 PST       | 247.0 mg C/m <sup>2</sup> |                               |      |      |      |
| DEPTH     | TEMP      | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT                     | UPTAKE (mg C/m <sup>3</sup> ) |      |      |      |
| m         | DEG C     |           | THETA     | ml/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT                       | 1                             | 2    | MEAN | DARK |
| 2         | 15.42     | 33.325    | 24.590    | 5.77   | 101.3           | 2.3  | 0.34 | 0.6  | 0.09 | 0.64     | 0.16           | 81. A                     | 1.6                           | 1.9  | 1.8  | 0.15 |
| 10        | 15.43     | 33.328    | 24.590    | 5.78   | 101.4           | 2.2  | 0.33 | 0.6  | 0.08 | 0.60     | 0.14           | 36.                       | 9.3                           | 9.5  | 9.4  | 0.15 |
| 16        | 15.43     | 33.324    | 24.587    | 5.76   | 101.1           | 2.1  | 0.33 | 0.5  | 0.08 | 0.62     | 0.13           |                           |                               |      |      |      |
| 23        | 15.42     | 33.325    | 24.591    | 5.77   | 101.2           | 1.9  | 0.32 | 0.5  | 0.08 | 0.66     | 0.18           | 9.5                       | 7.2                           | 7.2  | 7.2  | 0.18 |
| 31        | 15.04     | 33.316    | 24.667    | 5.68   | 98.9            | 2.3  | 0.40 | 1.3  | 0.18 | 0.66     | 0.22           |                           |                               |      |      |      |
| 32        | 14.90     | 33.313    | 24.695    | 5.68   | 98.6            | 2.4  | 0.43 | 1.6  | 0.21 | 0.59     | 0.26           | 3.8                       | 3.6                           | 3.8  | 3.7  | 0.11 |
| 41        | 14.65     | 33.309    | 24.746    | 5.61   | 96.9            | 2.7  | 0.47 | 2.2  | 0.27 | 0.63     | 0.25           | 1.5                       | 1.8                           | 1.6  | 1.7  | 0.10 |
| 49        | 13.41     | 33.282    | 24.982    | 5.19   | 87.4            | 4.5  | 0.71 | 5.6  | 0.37 | 0.46     | 0.36           |                           |                               |      |      |      |
| 60        | 12.36     | 33.331    | 25.227    | 4.70   | 77.4            | 7.8  | 1.00 | 10.4 | 0.08 | 0.27     | 0.23           | 0.22                      | 0.16                          | 0.11 | 0.13 | 0.06 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 87 100

| LATITUDE  | LONGITUDE | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE          |                               |      |      |      |
|-----------|-----------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|---------------------------|-------------------------------|------|------|------|
| 31 39.6 N | 123 4.4 W | 13/11/05  | 1728 UTC  | 18 m   | 1158 - 1744 PST |      |      |      |      | 1157 PST | 1744 PST       | 154.4 mg C/m <sup>2</sup> |                               |      |      |      |
| DEPTH     | TEMP      | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT                     | UPTAKE (mg C/m <sup>3</sup> ) |      |      |      |
| m         | DEG C     |           | THETA     | ml/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT                       | 1                             | 2    | MEAN | DARK |
| 2         | 16.86     | 33.176    | 24.149    | 5.63   | 101.6           | 1.3  | 0.29 | 0.0  | 0.01 | 0.32     | 0.12           | 84. A                     | 0.40                          | 0.19 | 0.29 | 0.19 |
| 11        | 16.88     | 33.190    | 24.155    | 5.61   | 101.2           | 1.5  | 0.29 | 0.0  | 0.01 | 0.35     | 0.10           | 39.                       | 4.8                           | 4.2  | 4.5  | 0.10 |
| 21        | 16.89     | 33.198    | 24.159    | 5.62   | 101.4           | 1.4  | 0.28 | 0.0  | 0.00 | 0.32     | 0.12           |                           |                               |      |      |      |
| 28        | 16.93     | 33.206    | 24.156    | 5.61   | 101.3           | 1.4  | 0.28 | 0.0  | 0.01 | 0.32     | 0.12           | 9.2                       | 3.4                           | 3.4  | 3.4  | 0.11 |
| 40        | 16.94     | 33.215    | 24.161    | 5.61   | 101.4           | 1.2  | 0.28 | 0.0  | 0.01 | 0.34     | 0.13           | 3.3                       | 1.8                           | 1.7  | 1.8  | 0.09 |
| 49        | 15.70     | 33.092    | 24.350    | 5.76   | 101.5           | 1.5  | 0.35 | 0.1  | 0.03 | 0.62     | 0.41           | 1.5                       | 1.5                           | 1.5  | 1.5  | 0.08 |
| 61        | 13.14     | 32.980    | 24.803    | 5.68   | 94.9            | 3.5  | 0.59 | 2.9  | 0.21 | 0.38     | 0.36           |                           |                               |      |      |      |
| 72        | 12.97     | 33.020    | 24.868    | 5.58   | 92.9            | 3.7  | 0.64 | 3.8  | 0.19 | 0.32     | 0.30           | 0.22                      | 0.14                          | 0.18 | 0.16 | 0.04 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 90 35

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME |      |      |      |      | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE          |                               |      |      |      |
|-----------|------------|-----------|-----------|--------|-----------------|------|------|------|------|----------|----------------|---------------------------|-------------------------------|------|------|------|
| 33 15.2 N | 118 14.4 W | 10/11/05  | 1751 UTC  | 19 m   | 1137 - 1718 PST |      |      |      |      | 1137 PST | 1718 PST       | 503.0 mg C/m <sup>2</sup> |                               |      |      |      |
| DEPTH     | TEMP       | SALINITY  | SIGMA     | OXYGEN | OXY             | SI03 | P04  | N03  | N02  | CHL-A    | PHAE0          | LIGHT                     | UPTAKE (mg C/m <sup>3</sup> ) |      |      |      |
| m         | DEG C      |           | THETA     | ml/L   | PCT             | uM/L | uM/L | uM/L | uM/L | ug/L     | ug/L           | PCT                       | 1                             | 2    | MEAN | DARK |
| 2         | 16.82      | 33.355    | 24.295    | 5.79   | 104.5           | 2.3  | 0.24 | 0.0  | 0.01 | 0.66     | 0.25           | 85. A                     | 11.2                          | 11.2 | 11.2 | 0.19 |
| 13        | 16.55      | 33.355    | 24.358    | 5.82   | 104.5           | 2.4  | 0.26 | 0.0  | 0.01 | 0.77     | 0.31           | 35.                       | 18.1                          | 19.1 | 18.6 | 0.21 |
| 21        | 16.26      | 33.343    | 24.416    | 5.68   | 101.4           | 2.8  | 0.29 | 0.1  | 0.03 | 0.83     | 0.35           |                           |                               |      |      |      |
| 30        | 13.34      | 33.317    | 25.023    | 4.89   | 82.2            | 6.8  | 0.77 | 5.1  | 0.40 | 0.80     | 0.20           | 8.9                       | 8.5                           | 8.5  | 8.5  | 0.13 |
| 41        | 12.20      | 33.349    | 25.271    | 4.37   | 71.8            | 9.8  | 1.09 | 10.9 | 0.18 | 0.52     | 0.23           | 3.6                       | 2.4                           | 2.7  | 2.6  | 0.07 |
| 52        | 11.44      | 33.442    | 25.485    | 3.80   | 61.4            | 13.8 | 1.39 | 15.3 | 0.06 | 0.23     | 0.19           | 1.5                       | 0.60                          | 0.58 | 0.59 | 0.05 |
| 64        | 10.86      | 33.510    | 25.642    | 3.66   | 58.5            | 15.9 | 1.51 | 17.8 | 0.03 | 0.15     | 0.16           |                           |                               |      |      |      |
| 77        | 10.77      | 33.635    | 25.755    | 3.04   | 48.5            | 19.8 | 1.75 | 20.3 | 0.02 | 0.06     | 0.09           | 0.20                      | 0.02                          | 0.03 | 0.03 | 0.05 |

A) INCUBATION LIGHT INTENSITIES WERE 94, 35, 10, 3.6, 1.5, 0.21 PERCENT RESPECTIVELY.

## PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 90 70

| LATITUDE   | LONGITUDE     | DAY/MO/YR | CAST TIME      | SECCHI         | INCUBATION TIME |              | LAN         | CIVIL TWILIGHT | INTEGRATED VALUE          |               |               |              |      |                               |      |      |
|------------|---------------|-----------|----------------|----------------|-----------------|--------------|-------------|----------------|---------------------------|---------------|---------------|--------------|------|-------------------------------|------|------|
| 32 5.7 N   | 120 38.0 W    | 09/11/05  | 1819 UTC       | 17 m           | 1146 - 1729 PST |              | 1146 PST    | 1729 PST       | 329.4 mg C/m <sup>2</sup> |               |               |              |      |                               |      |      |
| DEPTH<br>m | TEMP<br>DEG C | SALINITY  | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT      | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L    | N02<br>uM/L               | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | 1    | UPTAKE (mg C/m <sup>3</sup> ) |      |      |
|            |               |           |                |                |                 |              |             |                |                           |               |               |              | 2    | MEAN                          | DARK |      |
| 2          | 16.08         | 33.369    | 24.476         | 5.75           | 102.3           | 1.8          | 0.32        | 0.4            | 0.04                      | 0.68          | 0.15          | 83. A        | 3.6  | 4.1                           | 3.8  | 0.14 |
| 12         | 16.00         | 33.368    | 24.494         | 5.74           | 101.9           | 1.8          | 0.31        | 0.3            | 0.04                      | 0.66          | 0.14          | 34.          | 10.0 | 10.4                          | 10.2 | 0.19 |
| 20         | 15.99         | 33.368    | 24.496         | 5.76           | 102.3           | 1.9          | 0.32        | 0.3            | 0.04                      | 0.62          | 0.28          |              |      |                               |      |      |
| 26         | 15.98         | 33.374    | 24.503         | 5.73           | 101.7           | 1.9          | 0.31        | 0.3            | 0.04                      | 0.72          | 0.26          |              |      |                               |      |      |
| 27         | 15.98         | 33.370    | 24.500         | 5.74           | 101.9           | 1.9          | 0.31        | 0.3            | 0.04                      | 0.67          | 0.20          | 8.7          | 9.2  | 9.0                           | 9.1  | 0.17 |
| 36         | 14.70         | 33.407    | 24.811         | 5.43           | 94.0            | 3.5          | 0.57        | 3.4            | 0.44                      | 0.61          | 0.33          | 3.9          | 4.4  | 4.7                           | 4.5  | 0.13 |
| 49         | 13.34         | 33.405    | 25.092         | 5.00           | 84.1            | 5.5          | 0.84        | 6.9            | 0.68                      | 0.40          | 0.25          | 1.2          | 1.0  | 0.99                          | 1.0  | 0.15 |
| 59         | 11.49         | 33.470    | 25.498         | 3.98           | 64.4            | 13.3         | 1.37        | 15.8           | 0.05                      | 0.15          | 0.17          |              |      |                               |      |      |
| 68         | 10.67         | 33.556    | 25.711         | 3.57           | 56.8            | 17.2         | 1.58        | 19.2           | 0.03                      | 0.12          | 0.15          | 0.22         | 0.05 | 0.08                          | 0.06 | 0.03 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 90 100

| LATITUDE   | LONGITUDE     | DAY/MO/YR | CAST TIME      | SECCHI         | INCUBATION TIME |              | LAN         | CIVIL TWILIGHT | INTEGRATED VALUE         |               |               |              |      |                               |      |      |
|------------|---------------|-----------|----------------|----------------|-----------------|--------------|-------------|----------------|--------------------------|---------------|---------------|--------------|------|-------------------------------|------|------|
| 31 5.1 N   | 122 39.6 W    | 08/11/05  | 1936 UTC       | 21 m           | 1250 - 1740 PST |              | 1154 PST    | 1742 PST       | 96.6 mg C/m <sup>2</sup> |               |               |              |      |                               |      |      |
| DEPTH<br>m | TEMP<br>DEG C | SALINITY  | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT      | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L    | N02<br>uM/L              | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | 1    | UPTAKE (mg C/m <sup>3</sup> ) |      |      |
|            |               |           |                |                |                 |              |             |                |                          |               |               |              | 2    | MEAN                          | DARK |      |
| 2          | 17.46         | 33.037    | 23.900         | 5.58           | 101.8           | 1.8          | 0.31        | 0.0            | 0.00                     | 0.23          | 0.04          | 86. A        | 1.8  | 1.9                           | 1.9  | 0.07 |
| 8          | 17.46         | 33.039    | 23.902         | 5.58           | 101.8           | 1.8          | 0.31        | 0.0            | 0.00                     | 0.23          | 0.05          |              |      |                               |      |      |
| 15         | 17.40         | 33.040    | 23.917         | 5.59           | 101.8           | 1.8          | 0.30        | 0.0            | 0.00                     | 0.21          | 0.08          | 33.          | 1.9  | 1.9                           | 1.9  | 0.07 |
| 23         | 17.27         | 33.049    | 23.956         | 5.61           | 101.9           | 1.8          | 0.31        | 0.0            | 0.00                     | 0.29          | 0.10          |              |      |                               |      |      |
| 31         | 17.11         | 33.125    | 24.052         | 5.65           | 102.4           | 1.5          | 0.30        | 0.0            | 0.00                     | 0.42          | 0.10          | 10.          | 1.6  | 1.6                           | 1.6  | 0.07 |
| 38         | 16.75         | 33.117    | 24.130         | 5.73           | 103.1           | 1.6          | 0.31        | 0.0            | 0.00                     | 0.49          | 0.21          |              |      |                               |      |      |
| 46         | 15.37         | 32.995    | 24.348         | 6.09           | 106.5           | 1.8          | 0.34        | 0.0            | 0.00                     | 0.65          | 0.31          | 3.5          | 1.3  | 1.4                           | 1.3  | 0.05 |
| 52         | 14.13         | 32.958    | 24.585         | 6.09           | 103.9           | 2.2          | 0.37        | 0.1            | 0.02                     | 0.60          | 0.41          |              |      |                               |      |      |
| 59         | 13.53         | 32.943    | 24.696         | 5.95           | 100.2           | 2.6          | 0.46        | 0.9            | 0.16                     | 0.56          | 0.40          | 1.3          | 0.53 | 0.48                          | 0.51 | 0.03 |
| 71         | 12.84         | 32.964    | 24.850         | 5.73           | 95.1            | 3.4          | 0.55        | 2.0            | 0.26                     | 0.34          | 0.40          |              |      |                               |      |      |
| 82         | 12.41         | 33.098    | 25.037         | 5.44           | 89.6            | 4.3          | 0.66        | 4.2            | 0.04                     | 0.26          | 0.24          | 0.25         | 0.06 | 0.07                          | 0.06 | 0.02 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 93 110

| LATITUDE   | LONGITUDE     | DAY/MO/YR | CAST TIME      | SECCHI         | INCUBATION TIME |              | LAN         | CIVIL TWILIGHT | INTEGRATED VALUE          |               |               |              |      |                               |      |      |
|------------|---------------|-----------|----------------|----------------|-----------------|--------------|-------------|----------------|---------------------------|---------------|---------------|--------------|------|-------------------------------|------|------|
| 30 11.2 N  | 122 55.4 W    | 07/11/05  | 1753 UTC       | 35 m           | 1150 - 1745 PST |              | 1155 PST    | 1748 PST       | 170.2 mg C/m <sup>2</sup> |               |               |              |      |                               |      |      |
| DEPTH<br>m | TEMP<br>DEG C | SALINITY  | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT      | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L    | N02<br>uM/L               | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | 1    | UPTAKE (mg C/m <sup>3</sup> ) |      |      |
|            |               |           |                |                |                 |              |             |                |                           |               |               |              | 2    | MEAN                          | DARK |      |
| 3          | 18.39         | 33.224    | 23.818         | 5.46           | 101.5           | 2.2          | 0.29        | 0.0            | 0.00                      | 0.15          | 0.04          | 88. A        | 2.5  | 2.5                           | 2.5  | 0.06 |
| 12         | 18.36         | 33.229    | 23.829         | 5.46           | 101.4           | 2.0          | 0.28        | 0.0            | 0.00                      | 0.17          | 0.04          |              |      |                               |      |      |
| 24         | 18.39         | 33.239    | 23.830         | 5.48           | 101.9           | 2.0          | 0.28        | 0.0            | 0.00                      | 0.16          | 0.04          | 35.          | 2.8  | 2.7                           | 2.7  | 0.07 |
| 38         | 18.50         | 33.276    | 23.832         | 5.48           | 102.1           | 1.9          | 0.28        | 0.0            | 0.00                      | 0.17          | 0.05          |              |      |                               |      |      |
| 53         | 18.64         | 33.328    | 23.837         | 5.43           | 101.4           | 1.8          | 0.27        | 0.0            | 0.00                      | 0.17          | 0.05          | 9.8          | 1.5  | 1.5                           | 1.5  | 0.05 |
| 65         | 16.99         | 33.368    | 24.268         | 5.92           | 107.2           | 1.7          | 0.25        | 0.0            | 0.00                      | 0.24          | 0.09          |              |      |                               |      |      |
| 76         | 16.04         | 33.330    | 24.458         | 5.93           | 105.3           | 1.7          | 0.27        | 0.0            | 0.00                      | 0.24          | 0.13          | 3.6          | 0.34 | 1.0                           | 0.68 | 0.04 |
| 86         | 15.75         | 33.402    | 24.579         | 5.82           | 102.8           | 1.8          | 0.28        | 0.0            | 0.00                      | 0.20          | 0.17          |              |      |                               |      |      |
| 97         | 15.46         | 33.482    | 24.705         | 5.70           | 100.2           | 2.0          | 0.29        | 0.0            | 0.00                      | 0.19          | 0.17          | 1.4          | 0.43 | 0.41                          | 0.42 | 0.02 |
| 108        | 14.76         | 33.568    | 24.924         | 5.43           | 94.1            | 2.6          | 0.37        | 0.6            | 0.14                      | 0.20          | 0.18          |              |      |                               |      |      |
| 118        | 14.12         | 33.531    | 25.031         | 5.29           | 90.5            | 3.6          | 0.48        | 2.1            | 0.11                      | 0.19          | 0.19          |              |      |                               |      |      |
| 128        | 13.36         | 33.477    | 25.145         | 5.18           | 87.2            | 4.6          | 0.59        | 4.0            | 0.04                      | 0.14          | 0.17          |              |      |                               |      |      |
| 141        | 12.33         | 33.503    | 25.368         | 5.01           | 82.6            | 6.5          | 0.75        | 7.2            | 0.01                      | 0.10          | 0.13          | 0.21         | 0.04 | 0.07                          | 0.06 | 0.01 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 93 70

| LATITUDE   | LONGITUDE     | DAY/MO/YR | CAST TIME      | SECCHI         | INCUBATION TIME |              | LAN         | CIVIL TWILIGHT | INTEGRATED VALUE          |               |               |              |      |                               |      |      |
|------------|---------------|-----------|----------------|----------------|-----------------|--------------|-------------|----------------|---------------------------|---------------|---------------|--------------|------|-------------------------------|------|------|
| 31 30.8 N  | 120 14.9 W    | 06/11/05  | 1741 UTC       | 24 m           | 1140 - 1735 PST |              | 1145 PST    | 1733 PST       | 262.1 mg C/m <sup>2</sup> |               |               |              |      |                               |      |      |
| DEPTH<br>m | TEMP<br>DEG C | SALINITY  | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT      | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L    | N02<br>uM/L               | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | 1    | UPTAKE (mg C/m <sup>3</sup> ) |      |      |
|            |               |           |                |                |                 |              |             |                |                           |               |               |              | 2    | MEAN                          | DARK |      |
| 2          | 17.00         | 33.235    | 24.161         | 5.60           | 101.3           | 1.5          | 0.28        | 0.0            | 0.00                      | 0.22          | 0.07          | 88. A        | 3.2  | 3.0                           | 3.1  | 0.09 |
| 17         | 16.99         | 33.235    | 24.164         | 5.62           | 101.7           | 1.4          | 0.28        | 0.0            | 0.00                      | 0.24          | 0.07          | 34.          | 4.4  | 4.4                           | 4.4  | 0.10 |
| 26         | 16.74         | 33.258    | 24.240         | 5.64           | 101.5           | 1.5          | 0.28        | 0.0            | 0.00                      | 0.32          | 0.12          |              |      |                               |      |      |
| 36         | 16.64         | 33.267    | 24.271         | 5.66           | 101.7           | 1.7          | 0.28        | 0.0            | 0.00                      | 0.37          | 0.14          | 10.          | 4.8  | 5.0                           | 4.9  | 0.09 |
| 44         | 16.30         | 33.237    | 24.326         | 5.72           | 102.1           | 1.6          | 0.30        | 0.0            | 0.00                      | 0.37          | 0.19          |              |      |                               |      |      |
| 52         | 14.58         | 33.150    | 24.638         | 5.70           | 98.2            | 2.9          | 0.44        | 1.0            | 0.07                      | 0.47          | 0.37          | 3.6          | 3.2  | 3.5                           | 3.3  | 0.08 |
| 59         | 13.95         | 33.146    | 24.767         | 5.62           | 95.6            | 3.4          | 0.50        | 1.8            | 0.13                      | 0.45          | 0.35          |              |      |                               |      |      |
| 66         | 13.28         | 33.165    | 24.918         | 5.42           | 90.9            | 4.5          | 0.63        | 3.9            | 0.22                      | 0.38          | 0.32          | 1.5          | 1.0  | 0.96                          | 1.0  | 0.05 |
| 76         | 12.17         | 33.209    | 25.169         | 5.02           | 82.3            | 7.2          | 0.88        | 8.2            | 0.07                      | 0.20          | 0.25          |              |      |                               |      |      |
| 87         | 11.11         | 33.335    | 25.462         | 4.38           | 70.3            | 11.8         | 1.23        | 14.0           | 0.02                      | 0.09          | 0.16          |              |      |                               |      |      |
| 96         | 10.59         | 33.373    | 25.583         | 4.22           | 66.9            | 13.7         | 1.36        | 16.1           | 0.02                      | 0.06          | 0.12          | 0.22         | 0.04 | 0.04                          | 0.04 | 0.02 |

A) INCUBATION LIGHT INTENSITIES WERE 94, 35, 10, 3.6, 1.5, 0.21 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 93 45

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |
|-----------|------------|-----------|-----------|--------|-----------------|----------|----------------|------------------|
| 32 20.9 N | 118 33.2 W | 05/11/05  | 1924 UTC  | 24 m   | 1236 - 1720 PST | 1136 PST | 1724 PST       | 360.3 mg C/m2    |

| DEPTH<br>m | TEMP<br>DEG C | SALINITY | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L | N02<br>uM/L | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | UPTAKE (mg C/m3) |      |      |      |
|------------|---------------|----------|----------------|----------------|------------|--------------|-------------|-------------|-------------|---------------|---------------|--------------|------------------|------|------|------|
|            |               |          |                |                |            |              |             |             |             |               |               |              | 1                | 2    | MEAN | DARK |
| 2          | 17.23         | 33.326   | 24.177         | 5.68           | 103.3      | 1.9          | 0.24        | 0.0         | 0.00        | 0.28          | 0.10          | 88. A        | 4.2              | 4.1  | 4.2  | 0.14 |
| 10         | 17.20         | 33.323   | 24.182         | 5.67           | 103.1      | 2.1          | 0.24        | 0.0         | 0.00        | 0.28          | 0.11          |              |                  |      |      |      |
| 17         | 17.06         | 33.319   | 24.212         | 5.70           | 103.3      | 2.0          | 0.25        | 0.0         | 0.00        | 0.29          | 0.11          | 34.          | 5.9              | 6.3  | 6.1  | 0.22 |
| 26         | 16.53         | 33.285   | 24.310         | 5.76           | 103.3      | 2.1          | 0.26        | 0.0         | 0.00        | 0.37          | 0.18          |              |                  |      |      |      |
| 37         | 15.28         | 33.247   | 24.562         | 5.78           | 101.1      | 2.9          | 0.37        | 0.3         | 0.03        | 0.88          | 0.38          | 9.4          | 9.7              | 9.9  | 9.8  | 0.14 |
| 44         | 13.40         | 33.261   | 24.968         | 5.20           | 87.5       | 5.5          | 0.71        | 4.0         | 0.35        | 0.66          | 0.43          |              |                  |      |      |      |
| 50         | 12.46         | 33.253   | 25.147         | 4.95           | 81.7       | 7.0          | 0.90        | 7.8         | 0.20        | 0.47          | 0.36          | 4.1          | 2.3              | 2.4  | 2.3  | 0.12 |
| 59         | 12.16         | 33.269   | 25.217         | 4.81           | 78.9       | 7.8          | 0.96        | 8.8         | 0.15        | 0.41          | 0.38          |              |                  |      |      |      |
| 65         | 11.58         | 33.283   | 25.336         | 4.61           | 74.7       | 9.3          | 1.10        | 11.5        | 0.08        | 0.29          | 0.29          | 1.6          | 0.87             | 0.80 | 0.84 | 0.03 |
| 80         | 11.60         | 33.536   | 25.529         | 3.29           | 53.4       | 15.8         | 1.57        | 17.1        | 0.04        | 0.14          | 0.19          |              |                  |      |      |      |
| 90         | 11.82         | 33.679   | 25.600         | 2.41           | 39.3       | 20.6         | 1.89        | 20.1        | 0.03        | 0.09          | 0.14          |              |                  |      |      |      |
| 96         | 11.71         | 33.726   | 25.657         | 2.19           | 35.7       | 22.1         | 2.08        | 21.2        | 0.02        | 0.07          | 0.12          | 0.22         | 0.03             | 0.03 | 0.03 | 0.04 |

RV NEW HORIZON

CALCOFI CRUISE 0511

STATION 93 26.7

| LATITUDE  | LONGITUDE  | DAY/MO/YR | CAST TIME | SECCHI | INCUBATION TIME | LAN      | CIVIL TWILIGHT | INTEGRATED VALUE |
|-----------|------------|-----------|-----------|--------|-----------------|----------|----------------|------------------|
| 32 57.3 N | 117 18.6 W | 04/11/05  | 1949 UTC  | 12 m   | 1233 - 1725 PST | 1133 PST | 1721 PST       | 495.2 mg C/m2    |

| DEPTH<br>m | TEMP<br>DEG C | SALINITY | SIGMA<br>THETA | OXYGEN<br>mL/L | OXY<br>PCT | SI03<br>uM/L | P04<br>uM/L | N03<br>uM/L | N02<br>uM/L | CHL-A<br>ug/L | PHAE0<br>ug/L | LIGHT<br>PCT | UPTAKE (mg C/m3) |      |      |      |
|------------|---------------|----------|----------------|----------------|------------|--------------|-------------|-------------|-------------|---------------|---------------|--------------|------------------|------|------|------|
|            |               |          |                |                |            |              |             |             |             |               |               |              | 1                | 2    | MEAN | DARK |
| 2          | 16.70         | 33.319   | 24.296         | 6.13           | 110.3      | 2.4          | 0.18        | 0.0         | 0.00        | 1.10          | 0.15          | 77. A        | 17.6             | 18.3 | 17.9 | 0.30 |
| 5          | 16.64         | 33.320   | 24.310         | 6.14           | 110.4      | 2.4          | 0.17        | 0.0         | 0.00        | 1.29          | 0.25          |              |                  |      |      |      |
| 8          | 16.56         | 33.316   | 24.326         | 6.14           | 110.2      | 2.4          | 0.17        | 0.0         | 0.00        | 1.26          | 0.43          | 36.          | 21.5             | 23.1 | 22.4 | 0.35 |
| 18         | 14.50         | 33.317   | 24.783         | 5.41           | 93.2       | 4.6          | 0.42        | 0.1         | 0.05        | 1.81          | 0.65          | 10.          | 16.2             | 19.4 | 17.8 | 0.39 |
| 26         | 12.63         | 33.339   | 25.180         | 4.68           | 77.6       | 8.0          | 0.82        | 4.3         | 0.31        | 1.22          | 0.64          | 3.6          | 6.5              | 6.7  | 6.6  | 0.23 |
| 34         | 11.23         | 33.392   | 25.484         | 4.30           | 69.2       | 10.2         | 1.15        | 11.4        | 0.10        | 0.49          | 0.41          | 1.3          | 1.1              | 1.1  | 1.1  | 0.05 |
| 40         | 10.98         | 33.403   | 25.537         | 4.11           | 65.8       | 11.2         | 1.25        | 12.6        | 0.05        | 0.43          | 0.38          |              |                  |      |      |      |
| 49         | 10.81         | 33.431   | 25.589         | 3.88           | 61.9       | 12.7         | 1.35        | 14.0        | 0.06        | 0.40          | 0.24          | 0.19         | 0.09             | 0.13 | 0.11 | 0.06 |

A) INCUBATION LIGHT INTENSITIES WERE 94, 35, 10, 3.6, 1.5, 0.21 PERCENT RESPECTIVELY.