KSC SST-0031 Addendum 2

# LOCAL ATMOSPHERE SALT PROFILE

Shuttle Study Task No. 0031

Addendum II

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# DETERMINATION OF TRACE CONCENTRATIONS OF SODIUM CHLORIDE IN THE ATMOSPHERE

## INTRODUCTION

This report is presented as a conclusion to Shuttle Study Task No. 0031, initiated in 1974 to determine the concentration of sodium chloride in the atmosphere under varying weather conditions and at different locations around the Kennedy Space Center (KSC). Two previous reports[1,2] have presented data to substantiate the following conclusions.

A. Salt is present in the local atmosphere under all weather conditions.

B. East winds produce the highest average aerosol salt concentration.

C. The average atmospheric salt concentration does not vary significantly from ground level up to a height of 120 meters.

In addition, current data indicate that the atmospheric salt concentration decreases exponentially with distance of sampling location from the ocean.

This report includes data obtained during the period February 1975 through October 1976 using primarily plate fallout sampling and funnel-cylinder sampling. Limited wick and confined plate sampling were also performed to evaluate the methodology. Analysis methods were equivalent to those described in the 8 July 1974 report. Table I gives the collection sites and sampling frequency utilized in the current study; Figure I shows the sampling locations at KSC.

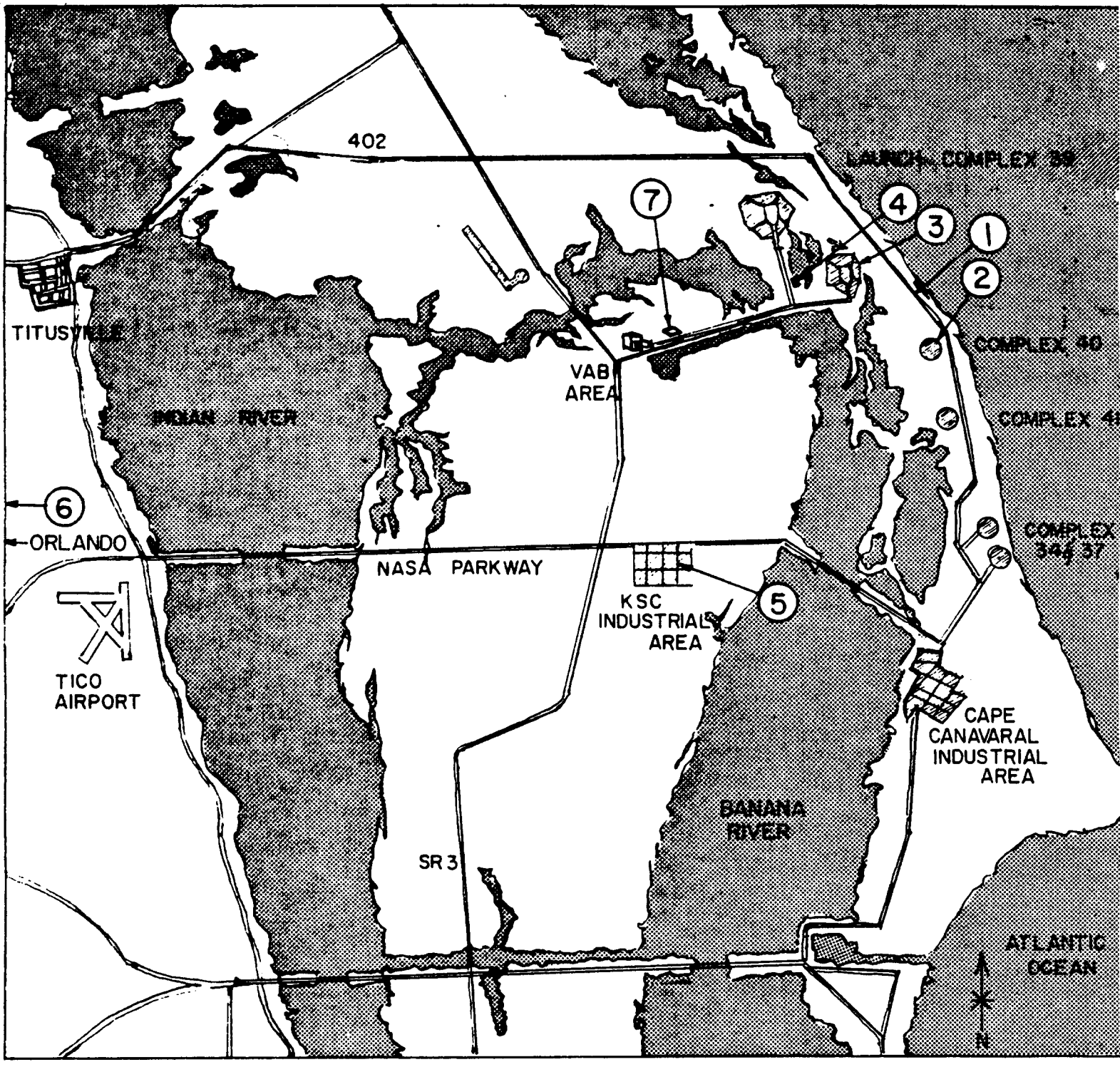
In general, the amount of salt collected at a given location is dependent on the type of sampling apparatus used and the weather conditions during the sampling period. The funnel-cylinder collects fallout from dry and moist air in addition to precipitation. This would be representative of areas on GSE and

1 "Local Atmosphere Salt Profile", 8 July 1974, E.L. Williamson and C.W. Hoppesch. (Presents data collected from January 1974 through March 1974).2 "Local Atmosphere Salt Profile, Addendum 1", 2 June 1975, M.J. Dickinson and C.W. Hoppesch. (Presents data collected from August 1974 through January 1975).

TABLE I

SALT PROFILE TEST SITES

| TEST SITE | LOCATION | APPROXIMATE DISTANCE FROM OCEAN | SAMPLING EQUIPMENT | SAMPLING FREQUENCY |
|---|---|---|---|---|
| I (Beach Site) | Ocean side of Beach Road between Cx39A and Cx41 | 150 ft. | 1 plate<br>1 funnel | biweekly<br>biweekly |
| II (Cx41 Site) | West side of Beach Road at Cx41 entrance gate | 800 ft. | 1 plate<br>1 funnel | biweekly<br>biweekly |
| III (Cx39A Site) | East side of Cx39A Perimeter Road | 2500 ft. | 1 plate<br>1 funnel | biweekly<br>biweekly |
| IV (Pump house Site) | Near Cx39 water pump station between Pad A and Pad B | 5600 ft. | 1 plate<br>1 funnel | biweekly<br>biweekly |
| V (M7-605 Site) | Near Bldg. M7-605 in Industrial Area South of O&C | 32,000 ft. | 1 plate<br>1 funnel | biweekly<br>biweekly |
| VI (Naval Training Center Site) | Orlando, Florida | 260,000 ft. | 1 plate<br>1 funnel | 2 times only; once after 744 hrs., once after 696 hrs. exposure |
| VII (K7-516 Site) | On roof of Bldg. K7-516 (midway between VAB and Cx39A) | 17,500 ft. | 1 plate<br>1 confined plate<br>1 funnel<br>2 wicks<br>1 funnel | weekly<br>weekly<br>weekly<br>weekly<br>Every six weeks |




SALT SAMPLING LOCATIONS
AT
KENNEDY SPACE CENTER, FLORIDA

FIGURE 1

spacecraft which could trap water and salt. The flat plate collects fallout, but accumulation is limited by the washing action of winds and rain. This sample collector would be representative of flat areas on GSE and spacecraft hardware.

RESULTS AND DISCUSSION

A. The current study gives further evidence that sodium chloride is present in the local atmosphere at all times.

B. Data from the current study indicate that atmospheric salt concentration decreases with distance from the ocean in a predictable, exponential-type manner. Table II compares distances from the ocean with average salt collected (ugNaCl/$M^2$/hr) for flat plates and funnel-cylinders. Graphs of the Table II data are given in Figure II and Figure III.

C. The amount of salt collected (ugNaCl/$M^2$/hr) at Site VII by each of the four types of sampling equipment, averaged over the current study period, is given below.

| | | |
|---|---|---|
| 1. | Funnel-cylinder samples | : 951 |
| 2. | Wick samples | : 264 |
| 3. | Confined plate samples | : 233 |
| 4. | Flat plate samples | : 58 |

D. At a given distance from the ocean, and in a given type of sampling apparatus, the amount of salt collected is dependent on the weather conditions prevalent during the sampling period.

## EXPERIMENTAL

Data presented in this report were obtained by analysis of weekly samples from the roof of Building K7-516 and bi-weekly samples from the Test Sites described in Table I. In addition, a single funnel-cylinder sample was exposed for six week intervals at Site VII. Four other long-term (approximately 30 days) exposure samples were taken at Site VI. Collection at Site VI was discontinued due to heavy seasonal rainfall exceeding the capacity of the sampling apparatus.

No aerosol sampling was performed during the period covered by this report due to consistency of results obtained during the two previous testing periods.

A brief description of sampling equipment and techniques is given below. In each instance, result units of total micrograms sodium, obtained from Atomic Absorption (AA) analyses were converted by factor to units of micrograms sodium chloride per square meter per hour. Table III shows the testing period, the number of samples taken, the average salt collected, and the standard deviation for each sampling apparatus.

### A. Plate Samples

Horizontal plate samples were taken weekly at Site VII and biweekly at Sites I through V. Two approximately 30-day exposure plate samples were taken at Site VI. In addition, a confined plate sample with one-inch high sides was taken weekly at Site VII. The stainless steel plates with approximately one-tenth square meter ($0.1M^2$) surface area were supported by four No. 2 rubber stoppers

to eliminate surface contamination. The plates were rinsed with sodium-free de-ionized (DI) water and analyzed for sodium by AA. Individual plate results are given in Table IV and V.

B. Funnel-Cylinder Samples

Funnel-cylinder samples were taken weekly at Site VII and biweekly at Sites I through V. In addition, one funnel sample was taken at six-week intervals at Site VII, and two approximately 30-day exposure samples were taken at Site VI. The sampling apparatus consisted of a 100 mm diameter glass funnel inserted in a 1000 ml volumetric flask with a connecting plastic sleeve to support the funnel. Sodium-free DI water rinses of the funnel surface and flask interior were combined with precipitation water from the flask, and the total liquid analyzed for sodium by AA. Tables IV and V show individual funnel results.

Blank runs were made at Site VII by allowing a funnel-cylinder apparatus covered with plastic to remain exposed up to 16 days. A total of 17 blanks (14 seven-day exposures plus three 16-day exposures) gave results which ranged from no sodium detected to 12 ugNaCl/$M^2$/hr with an average blank of 4 ugNaCl/$M^2$/hr and a standard deviation of 3. The blank is not significant compared to the amount of salt collected by the funnel apparatus.

C. Wick Samples

Two wick samples were taken weekly at Site VII. The sampling apparatus consisted of a 24.0 cm Whatman No. 1 filter rolled into a cylinder and inserted

into the neck of a 250 ml Erlenmeyer flask containing sodium-free DI water. The filter paper, supported by a metal wire, was changed whenever it became torn; water was added to the flasks between sampling times to prevent complete evaporation. Sodium-free DI water rinses of the filter paper and the interior of the flasks were combined with water from the flasks, and the total liquid was analyzed for sodium by AA. Individual wick results are given in Table V.

FIGURE II
PLATE SAMPLES

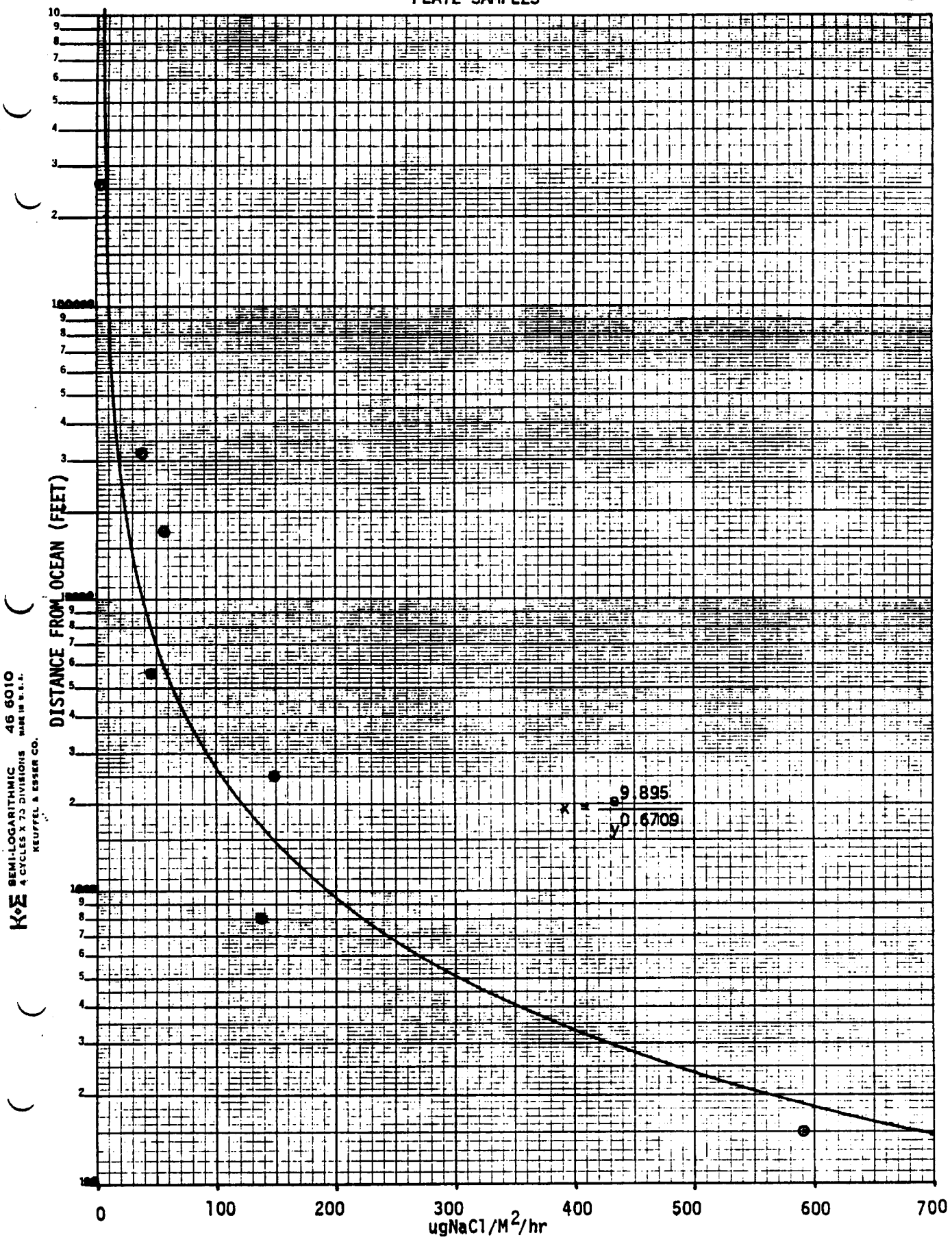


FIGURE III
FUNNEL SAMPLES

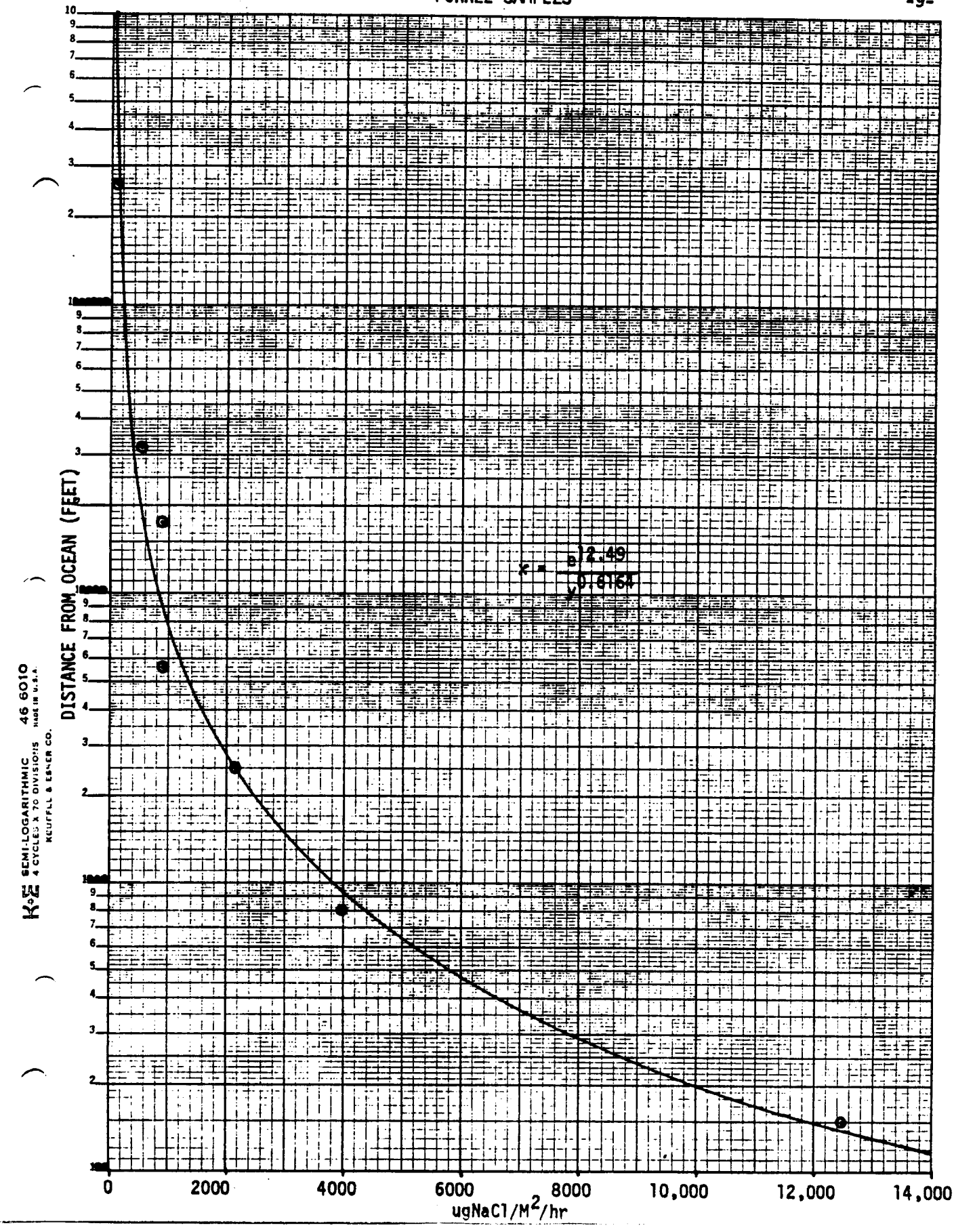


TABLE II

APPROXIMATE DISTANCE FROM OCEAN
vs.
AVERAGE SALT COLLECTED
($ugNaCl/M^2/hr$)

| SITE | APPROXIMATE DISTANCE FROM OCEAN | PLATE SAMPLE | FUNNEL SAMPLE |
|---|---|---|---|
| I | 150 ft. | 591 | 12,544 |
| II | 800 ft. | 137 | 3,974 |
| III | 2500 ft. | 149 | 2,162 |
| IV | 5600 ft. | 46 | 913 |
| V | 32,000 ft. | 37 | 555 |
| VI | 260,000 ft. | 2 | 99 |
| VII | 17,500 ft. | 58 | 967<br>850 (six week sample) |

TABLE III

AVERAGE SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

| | | TEST PERIOD | NUMBER OF SAMPLES | $\bar{x}$ | Sx |
|---|---|---|---|---|---|
| SITE I | Plate | 3/26/75-11/3/76 | 41 | 591 | 884 |
| | Funnel | " | 41 | 12,544 | 15,387 |
| SITE II | Plate | " | 41 | 137 | 218 |
| | Funnel | " | 41 | 3,974 | 4,821 |
| SITE III | Plate | " | 42 | 149 | 313 |
| | Funnel | " | 40 | 2,161 | 1,949 |
| SITE IV | Plate | " | 42 | 46 | 79 |
| | Funnel | " | 42 | 913 | 830 |
| SITE V | Plate | " | 42 | 37 | 50 |
| | Funnel | " | 41 | 555 | 760 |
| SITE VI | Plate | 4/11/75-6/10/75 | 2 | 2 | - |
| | Funnel | " | 2 | 99 | - |
| SITE VII | Flat Plate | 5/7/75-11/3/76 | 75 | 58 | 94 |
| | Confined Plate | 2/5/75-11/3/76 | 85 | 233 | 301 |
| | Funnel | " | 84 | 967 | 2,725 |
| | Wick #1 | " | 85 | 271 | 354 |
| | Wick #2 | " | 84 | 257 | 260 |
| | Six week Funnel | 5/7/75-11/3/76 | 13 | 850 | 1,227 |

TABLE IV

SALT ACCUMULATION RATE
(ugNaCl/$M^2$/hr)

SITE I - SITE VI* SAMPLES

| DATE | PRECIPI-TATION | SITE I | | SITE II | | SITE III | | SITE IV | | SITE V | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL |
| 4/09/75 | 0 | 1076 | 6538 | 166 | 996 | 209 | 893 | 111 | 337 | 55 | 133 |
| 4/23/75 | 1.19 | 1471 | 4791 | 470 | 963 | 437 | 861 | 205 | 493 | 253 | 433 |
| 5/07/75 | 0.03 | 272 | 4849 | 42 | 1691 | 40 | 360 | 10 | 242 | 21 | 275 |
| 5/21/75 | 3.55 | 345 | 4510 | 64 | 1324 | 12 | 679 | 8 | 737 | 17 | 243 |
| 6/04/75 | 2.72 | 12 | 2756 | 3 | 1098 | 6 | 512 | 1 | 359 | 1 | 55 |
| 6/18/75 | 3.54 | 95 | 2532 | 29 | 924 | 11 | 787 | 28 | 513 | 2 | 308 |
| 7/02/75 | 3.31 | 879 | 28,488 | 163 | 3285 | 124 | 1643 | 38 | 1027 | 16 | 471 |
| 7/16/75 | 2.25 | 469 | 13,238 | 108 | 2243 | 67 | 1420 | 23 | 534 | 19 | 713 |
| 7/30/75 | 2.34 | 21 | 2546 | 4 | 835 | 18 | 417 | 9 | 142 | 7 | 508 |
| 8/13/75 | 0.83 | NO ACCESS - VIKING LAUNCH 9 | | | | | 631 | 5 | 416 | 3 | 168 |
| 8/27/75 | 0 | 44 | 4312 | 37 | 2259 | 183 | 1506 | 55 | 671 | 37 | 103 |
| 9/10/75 | 5.47 | 263 | 17,427 | 68 | 2633 | 39 | 773 | 13 | 342 | 3 | 366 |
| 9/24/75 | 1.02 | 59 | 13,750 | 18 | 3490 | 9 | 1109 | 2 | 924 | 41 | 431 |
| 10/08/75 | 4.93 | 938 | 17,794 | 175 | 17,974 | 37 | 2851 | 5 | 1791 | 5 | 934 |
| 10/22/75 | 0.32 | 742 | 15,245 | 215 | 3764 | 132 | 1081 | 83 | 317 | 63 | 144 |
| 11/05/75 | 2.11 | 820 | 94,892 | 30 | 16,528 | 10 | 8026 | 50 | 3672 | 22 | 1353 |
| 11/19/75 | 0.58 | 1815 | 18,499 | 77 | 9075 | 195 | 1361 | 37 | 789 | 15 | 382 |
| 12/03/75 | 0.23 | 1731 | 18,821 | 146 | 2353 | 1763 | 1032 | 117 | 352 | 62 | 161 |

TABLE IV

SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

SITE I - SITE VI* SAMPLES

| DATE | PRECIPI-TATION | SITE I | | SITE II | | SITE III | | SITE IV | | SITE V | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL | PLATE | FUNNEL |
| 12/17/75 | 0.05 | 35 | 3627 | 170 | 22,544 | 59 | 2014 | 8 | 1047 | 38 | 414 |
| 12/30/75 | 0.12 | 637 | 3593 | 154 | 1723 | 177 | 1222 | 11 | 712 | 61 | 390 |
| 1/14/76 | 0 .47 | 533 | 8386 | 57 | 2051 | 127 | 2214 | 9 | 1357 | 50 | 719 |
| 1/28/76 | 0.38 | 97 | 7111 | 10 | 1595 | 43 | 2187 | 8 | 796 | 4 | 472 |
| 2/11/76 | 0.01 | 807 | 3608 | 107 | 898 | 231 | 1788 | 104 | 395 | 93 | 515 |
| 2/25/76 | 0.02 | 134 | 30,901 | 46 | 1509 | 57 | 1678 | 24 | 578 | 168 | 317 |
| 3/10/76 | 0.51 | 295 | 12,427 | 40 | 2490 | 49 | 2170 | 32 | 368 | 16 | 563 |
| 3/24/76 | 0.07 | 1152 | 15,861 | 366 | 3265 | 273 | 4081 | 127 | 1042 | 59 | 818 |
| 4/07/76 | 0.19 | 136 | 17,847 | 14 | 2613 | 16 | 3112 | 8 | 654 | 10 | 503 |
| 4/21/76 | 0.03 | 4244 | 26,298 | 784 | 8500 | 804 | | 254 | 1615 | 119 | 804 |
| 5/05/76 | 0.12 | 605 | 17,158 | 82 | 3234 | 68 | | 35 | 948 | 29 | 573 |
| 5/19/76 | 2.41 | 103 | 6529 | 17 | 3401 | 11 | 987 | 37 | 2578 | 7 | 395 |
| 6/02/76 | 3.79 | 322 | 6981 | 181 | 2647 | 81 | 2301 | 27 | 1181 | 62 | 77 |
| 6/16/76 | 4.13 | 42 | 7830 | 20 | 3237 | 10 | 3049 | 6 | 1035 | 14 | 476 |
| 6/30/76 | 5.65 | 7 | 3981 | 6 | 1448 | 3 | 1805 | 5 | 631 | 2 | 486 |
| 7/14/76 | 1.76 | 67 | 890 | 11 | 690 | 12 | 537 | 4 | 169 | 21 | 210 |
| 7/28/76 | 0.01 | 353 | 427 | 507 | 315 | 60 | 205 | 18 | 69 | 22 | 39 |

TABLE IV

SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

SITE I - SITE VI* SAMPLES

| DATE | PRECIPITATION | SITE I PLATE | SITE I FUNNEL | SITE II PLATE | SITE II FUNNEL | SITE III PLATE | SITE III FUNNEL | SITE IV PLATE | SITE IV FUNNEL | SITE V PLATE | SITE V FUNNEL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/11/76 | 1.26 | 63 | 2390 | 36 | 112 | 24 | 1450 | 12 | 390 | 2 | 577 |
| 8/25/76 | 3.54 | 54 | 18,674 | 26 | 5636 | 16 | 5150 | 4 | 1668 | 3 | 746 |
| 9/08/76 | 1.59 | 8 | 7340 | 34 | 2866 | 1 | 2691 | 1 | 394 | 5 | 241 |
| 9/22/76 | 5.44 | 16 | 7917 | 1 | 4260 | 1 | 5210 | 0 | 1506 | 2 | |
| 0/06/76 | 2.11 | 108 | 2623 | 57 | 1714 | 23 | 2089 | 7 | 229 | 3 | 279 |
| 0/20/76 | 0.24 | 3334 | 22,380 | 1066 | 6964 | 797 | 6587 | 407 | 1516 | 114 | 1004 |
| 1/03/76 | 3.14 | 12 | 8952 | 2 | 7802 | 2 | 7980 | 2 | 3801 | 1 | 4969 |

* SITE VI

| DATE | PLATE | FUNNEL | |
|---|---|---|---|
| 5/12/75 | 3 | 48 | 744 hours exposure |
| 6/10/75 | <1 | 150 | 696 hours exposure (overflow on funnel sample) |

TABLE V

SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

SITE VII SAMPLES

| DATE | PRECIPITATION | FLAT PLATE | CONFINED PLATE | FUNNEL CYLINDER | WICK #1 | WICK #2 | SIX WEEKS FUNNEL |
|---|---|---|---|---|---|---|---|
| 2/12/75 | 0.01 | | 91 | 289 | 36 | 105 | |
| 2/19/75 | 0 | | 249 | 375 | 143 | 109 | |
| 2/26/75 | 0.34 | | 252 | 693 | 149 | 229 | |
| 3/05/75 | 0.62 | | 104 | 862 | 99 | 182 | |
| 3/12/75 | 0 | | 376 | 1066 | 152 | 113 | |
| 4/09/75 | 0 | | 211 | 567 | 128 | 133 | |
| 4/16/75 | 1.19 | | 105 | 757 | 181 | 172 | |
| 4/23/75 | 0 | | 488 | 918 | 428 | 232 | |
| 4/30/75 | 0 | | 281 | 1132 | 192 | 197 | |
| 5/07/75 | 0.03 | | 95 | 150 | 143 | 175 | |
| 5/14/75 | 1.92 | 15 | 45 | 260 | 175 | 206 | |
| 5/21/75 | 1.63 | 36 | 147 | 425 | 17 | 155 | |
| 5/28/75 | 0 | 48 | 59 | 83 | 12 | 12 | |
| 6/04/75 | 2.72 | 2 | 28 | 635 | 480 | 317 | |
| 6/11/75 | 1.10 | 12 | 60 | 237 | 17 | 8 | |
| 6/18/75 | 2.44 | 13 | 93 | 385 | 380 | 6 | 327 |
| 6/25/75 | 2.38 | 11 | 242 | 597 | 297 | 475 | |
| 7/02/75 | 0.93 | 33 | 114 | 385 | 131 | 166 | |
| 7/09/75 | 2.20 | 2 | 21 | 246 | 106 | 70 | |
| 7/16/75 | 0.05 | 49 | 36 | 578 | 7 | 80 | |
| 7/23/75 | 1.51 | 5 | 71 | 350 | 275 | 372 | |
| 7/30/75 | 0.83 | 11 | 31 | 254 | 119 | 119 | 345 |

TABLE V

SALT ACCUMULATION RATE
($\mu gNaCl/M^2/hr$)

SITE VII SAMPLES

| DATE | PRECIPITATION | FLAT PLATE | CONFINED PLATE | FUNNEL CYLINDER | WICK #1 | WICK #2 | SIX WEEKS FUNNEL |
|---|---|---|---|---|---|---|---|
| 8/06/75 | 0.03 | 10 | 116 | 246 | 128 | 118 | |
| 8/13/75 | 0.80 | 7 | 107 | 285 | 67 | 74 | |
| 8/20/75 | 0 | 6 | 26 | 125 | 29 | 21 | |
| 8/27/75 | 0 | 12 | 33 | 123 | 30 | 29 | |
| 9/03/75 | 4.32 | 5 | 83 | 460 | 245 | 184 | |
| 9/10/75 | 1.15 | 30 | 113 | 214 | 116 | 86 | 200 |
| 9/17/75 | 0.33 | 22 | 48 | 69 | 171 | 163 | |
| 9/24/75 | 0.69 | 107 | 415 | 1398 | 247 | 719 | |
| 10/01/75 | 3.57 | 9 | 82 | 1011 | 590 | 416 | |
| 10/08/75 | 1.36 | 7 | 66 | 714 | 238 | 51 | |
| 10/15/75 | 0.02 | 205 | 387 | 210 | 157 | 162 | |
| 10/22/75 | 0.30 | 66 | 142 | 728 | 266 | 323 | 539 |
| 10/29/75 | 0.95 | 1 | 88 | 997 | 408 | 792 | |
| 11/05/75 | 1.16 | 200 | 923 | 2091 | 1647 | 1065 | |
| 11/12/75 | 0.35 | 59 | 233 | 597 | 992 | 304 | |
| 11/19/75 | 0.35 | 135 | 301 | 360 | 259 | 214 | |
| 11/26/75 | 0.23 | 23 | 91 | 185 | 250 | 250 | |
| 12/03/75 | 0 | 203 | 216 | 337 | 117 | 245 | 650 |
| 12/10/75 | 0.02 | 94 | 289 | 624 | 1904 | 1142 | |
| 12/17/75 | 0.03 | 67 | 554 | 612 | 681 | 730 | |
| 12/23/75 | 0.10 | 8 | 197 | 234 | 58 | 159 | |
| 12/30/75 | 0.02 | 69 | 397 | 674 | 364 | 593 | |
| 1/07/76 | 0.31 | 6 | 345 | 1289 | 641 | 449 | |

TABLE V

SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

SITE VII SAMPLES

| DATE | PRECIPITATION | FLAT PLATE | CONFINED PLATE | FUNNEL CYLINDER | WICK #1 | WICK #2 | SIX WEEKS FUNNEL |
|---|---|---|---|---|---|---|---|
| 1/14/76 | 0.16 | 36 | 237 | 347 | 138 | 86 | 657 |
| 1/21/76 | 0.06 | 165 | 647 | 918 | 182 | 266 | |
| 1/28/76 | 0.32 | 5 | 150 | 385 | 309 | 216 | |
| 2/04/76 | 0.01 | 65 | 241 | 655 | 138 | 143 | |
| 2/11/76 | 0 | 84 | 212 | 320 | 36 | 131 | |
| 2/18/76 | 0 | 26 | 130 | 181 | 65 | 75 | |
| 2/25/76 | 0.02 | 52 | 1105 | 776 | 259 | 218 | 949 |
| 3/03/76 | 0.44 | 59 | 90 | 735 | 713 | 544 | |
| 3/10/76 | 0.07 | 130 | 185 | 312 | 170 | 43 | |
| 3/17/76 | 0.04 | 26 | 161 | 475 | 133 | 121 | |
| 3/24/76 | 0.03 | 139 | 754 | 1228 | 38 | 828 | |
| 3/31/76 | trace | 190 | 282 | 595 | 531 | 466 | |
| 4/07/76 | 0.19 | 5 | 123 | 402 | 461 | 447 | 482 |
| 4/21/76 | 0.03 | 215 | 656 | | 398 | 405 | |
| 5/05/76 | 0.12 | 26 | 144 | 432 | 196 | 174 | |
| 5/12/76 | 0.18 | 24 | 78 | 373 | 137 | 162 | |
| 5/19/76 | 2.23 | 13 | 59 | 1434 | 622 | 510 | 963 |
| 6/02/76 | 3.79 | 114 | 112 | 886 | 371 | 193 | |
| 6/09/76 | 3.54 | 10 | 213 | 1011 | 103 | 171 | |
| 6/16/76 | 0.59 | 7 | 149 | 1174 | 493 | 508 | |
| 6/23/76 | 1.66 | 1 | 99 | 1209 | 240 | 405 | |
| 6/30/76 | 3.99 | 5 | 40 | 835 | 59 | 1 | 552 |

TABLE V

SALT ACCUMULATION RATE
($ugNaCl/M^2/hr$)

SITE VII SAMPLES

| DATE | PRECIPITATION | FLAT PLATE | CONFINED PLATE | FUNNEL CYLINDER | WICK #1 | WICK #2 | SIX WEEKS FUNNEL |
|---|---|---|---|---|---|---|---|
| 7/07/76 | 0.95 | 33 | 92 | 194 | 20 | 5 | |
| 7/14/76 | 0.81 | 11 | 24 | 260 | 40 | | |
| 7/21/76 | 0.01 | 40 | 61 | 169 | 13 | 4 | |
| 7/28/76 | 0 | 1 | 9 | 135 | 54 | 32 | |
| 8/04/76 | 0.55 | 5 | 39 | 90 | 62 | 68 | |
| 8/11/76 | 0.71 | 36 | 87 | 513 | 4 | 281 | 245 |
| 8/18/76 | 0.71 | 12 | 137 | 721 | 48 | 103 | |
| 8/25/76 | 2.83 | 26 | 506 | 1933 | 190 | 245 | |
| 9/01/76 | 0.01 | 92 | 208 | 429 | 19 | 13 | |
| 9/08/76 | 1.58 | 23 | 102 | 693 | 45 | 40 | |
| 9/15/76 | 5.42 | 3 | 116 | 4277 | 874 | 813 | |
| 9/22/76 | 0.02 | 1 | 35 | 121 | 17 | 14 | 293 |
| 9/29/76 | 0.42 | 40 | 64 | 111 | 111 | 55 | |
| 10/06/76 | 1.69 | 15 | 142 | 485 | 324 | 125 | |
| 10/13/76 | 0.24 | 281 | 2092 | 3742 | 82 | 56 | |
| 10/20/76 | 0 | 659 | 1036 | 1332 | 107 | 141 | |
| 10/27/76 | 0 | 76 | 509 | 1607 | 162 | 396 | |
| 11/03/76 | 3.14 | 2 | 186 | 24871 | 1772 | 1132 | 4851 |