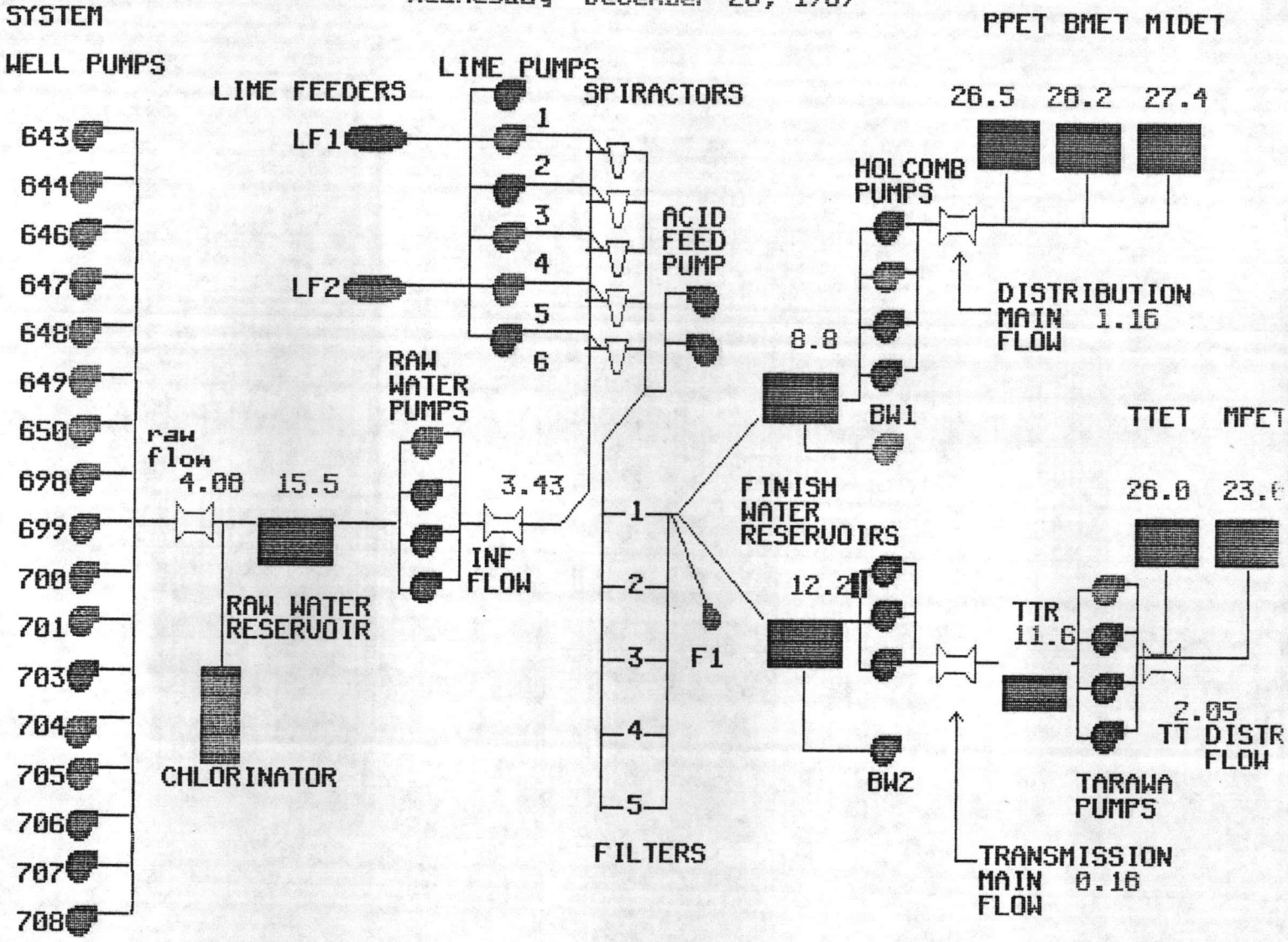
12/20/89 10:11:50 GRAPHIC SYSTEM DISPLAY

Wednesday December 20, 1989




ALL FLOWS IN MGD
ALL LEVELS IN FEET

WATER SYSTEM BLDG.670

Print Cnst  Print Scrn Rep Const  Select  Test  < ESC >  ====>

12/20/89 10:09:25 **Base Level Control Point**

Wednesday December 20, 1989

1) Point Id : TMPC
2) Desoription : TRANS MAIN PUMP CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | | Point Id | | Current Value |
|---|---|---|---|---|
| 1 | 6) | TTRESLVL | 7) | 11.5 |
| 2 | 8) | | 9) | 0 |
| 3 | 10) | | 11) | 0 |

12) Number Of Steps : 2

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | | Timer | | Step Status | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 10.9 | 14) | 11.5 | 15) | 20 | 16) | 0 | 17) | On |
| 2 | 18) | 9.8 | 19) | 10.8 | 20) | 20 | 21) | 0 | 22) | Off |
| 3 | 23) | 0.0 | 24) | 0.0 | 25) | 0 | 26) | 0 | 27) | Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) | 0 | 31) | 0 | 32) | Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) | 0 | 36) | 0 | 37) | Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) | 0 | 41) | 0 | 42) | Off |

Pump Control Assignments

| Step | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) | TMP1 | 44) | | 45) | | 46) | | 47) | |
| | 48) | | 49) | | 50) | | 51) | | 52) | |
| 2 | 53) | | 54) | TMP2 | 55) | | 56) | | 57) | |
| | 58) | | 59) | | 60) | | 61) | | 62) | |
| 3 | 63) | | 64) | | 65) | | 66) | | 67) | |
| | 68) | | 69) | | 70) | | 71) | | 72) | |
| 4 | 73) | | 74) | | 75) | | 76) | | 77) | |
| | 78) | | 79) | | 80) | | 81) | | 82) | |
| 5 | 83) | | 84) | | 85) | | 86) | | 87) | |
| | 88) | | 89) | | 90) | | 91) | | 92) | |
| 6 | 93) | | 94) | | 95) | | 96) | | 97) | |
| | 98) | | 99) | | 100) | | 101) | | 102) | |

103) Alternate Option : Yes

| Pump Id | | alternate with | Pump Id |
|---|---|---|---|
| 104) | TMP1 | 105) | TMP2 |
| 106) | | 107) | |

Print Cnst Print Scrn Rep Const **Select** Test < ESC > ====>

12/20/89 10:15:00 **Base Level Control Point**

Wednesday December 20, 1989

1) Point Id : TTPC
2) Description : TARAWA PUMP STATION
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value |
|---|---|---|
| 1 | 6) TTETLVL | 7) 26.0 |
| 2 | 8) | 9) 0 |
| 3 | 10) | 11) 0 |

12) Number Of Steps : 4

| Step | ON Setpoint | OFF Setpoint | Time Delay | Timer | Step Status |
|---|---|---|---|---|---|
| 1 | 13) 26.0 | 14) 27.0 | 15) 30 | 16) 0 | 17) On |
| 2 | 18) 25.2 | 19) 26.0 | 20) 30 | 21) 0 | 22) Off |
| 3 | 23) 23.0 | 24) 25.0 | 25) 30 | 26) 0 | 27) Off |
| 4 | 28) 21.0 | 29) 23.0 | 30) 30 | 31) 0 | 32) Off |
| 5 | 31) 0.0 | 34) 0.0 | 35) 0 | 36) 0 | 37) Off |
| 6 | 38) 0.0 | 39) 0.0 | 40) 0 | 41) 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 43) TTP1 | 44) | 45) | 46) | 47) | |
| | 48) | 49) | 50) | 51) | 52) | |
| 2 | 53) TTP2 | 54) | 55) | 56) | 57) | |
| | 58) | 59) | 60) | 61) | 62) | |
| 3 | 63) TTP3 | 64) | 65) | 66) | 67) | |
| | 68) | 69) | 70) | 71) | 72) | |
| 4 | 73) TTP4 | 74) | 75) | 76) | 77) | |
| | 78) | 79) | 80) | 81) | 82) | |
| 5 | 83) | 84) | 85) | 86) | 87) | |
| | 88) | 89) | 90) | 91) | 92) | |
| 6 | 93) | 94) | 95) | 96) | 97) | |
| | 98) | 99) | 100) | 101) | 102) | |

103) Alternate Option : Yes

| Pump Id | alternate with | Pump Id |
|---|---|---|
| 104) TTP1 | 105) | TTP3 |
| 106) | 107) | |

Print Cnst Print Scrn Rep Const **Select** Test < ESC > ====>

12/20/89 10:01:20 **Base Level Control Point**

Wednesday December 20, 1989

1) Point Id : RWPC
2) Desoription : RAW WATER PUMP CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value |
|---|---|---|
| 1 | 6) HBFWRL | 7) 8.8 |
| 2 | 8) TRMWRSV | 9) 12.2 |
| 3 | 10) | 11) 0 |

12) Number Of Steps : 1

| Step | ON Setpoint | OFF Setpoint | Time Delay | Timer | Step Status |
|---|---|---|---|---|---|
| 1 | 13) 8.3 | 14) 9.2 | 15) 20 | 16) 0 | 17) On |
| 2 | 18) 7.9 | 19) 8.3 | 20) 20 | 21) 0 | 22) Off |
| 3 | 23) 7.5 | 24) 7.9 | 25) 20 | 26) 0 | 27) Off |
| 4 | 28) 7.0 | 29) 7.5 | 30) 20 | 31) 0 | 32) Off |
| 5 | 31) 0.0 | 34) 0.0 | 35) 0 | 36) 0 | 37) Off |
| 6 | 38) 0.0 | 39) 0.0 | 40) 0 | 41) 0 | 42) Off |

Pump Control Assignments

| Step | | | | | |
|---|---|---|---|---|---|
| 1 | 43) | 44) LSU4 | 45) RWP1 | 46) LSU1 | 47) RWP4 |
| | 48) LSU3 | 49) LSU2 | 50) LSU5 | 51) | 52) |
| 2 | 53) | 54) | 55) | 56) | 57) |
| | 58) | 59) | 60) | 61) | 62) |
| 3 | 63) | 64) | 65) | 66) | 67) |
| | 68) | 69) | 70) | 71) | 72) |
| 4 | 73) | 74) | 75) | 76) | 77) |
| | 78) | 79) | 80) | 81) | 82) |
| 5 | 83) | 84) | 85) | 86) | 87) |
| | 88) | 89) | 90) | 91) | 92) |
| 6 | 93) | 94) | 95) | 96) | 97) |
| | 98) | 99) | 100) | 101) | 102) |

103) Alternate Option : Yes

| Pump Id | alternate with Pump Id |
|---|---|
| 104) RWP1 | 105) RWP2 |
| 106) | 107) |

Print Cnst Print Scrn Rep Const Select Test < ESC > ====>

12/20/89 10:06:20 **Base Level Control Point** Page 3 of 7

Wednesday December 20, 1989

1) Point Id : WPC
2) Description : WELL PUMP CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value |
|---|---|---|
| 1 | 6) RWTRESV | 7) 15.5 |
| 2 | 8) | 9) 0 |
| 3 | 10) | 11) 0 |

12) Number Of Steps : 2

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | Timer | | Step Status |
|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 15.5 | 14) | 16.2 | 15) 20 | 16) | 0 | 17) On |
| 2 | 18) | 15.5 | 19) | 16.2 | 20) 120 | 21) | 0 | 22) On |
| 3 | 23) | 0.0 | 24) | 0.0 | 25) 0 | 26) | 0 | 27) Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) 0 | 31) | 0 | 32) Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) 0 | 36) | 0 | 37) Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) 0 | 41) | 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) WP698 | 44) WP699 | 45) WP700 | 46) WP701 | 47) WP703 |
| | 48) WP704 | 49) CBP1 | 50) WP706 | 51) WP707 | 52) WP708 |
| 2 | 53) WP705 | 54) WP647 | 55) WP648 | 56) WP649 | 57) WP643 |
| | 58) WP646 | 59) | 60) WP650 | 61) | 62) |
| 3 | 63) | 64) | 65) | 66) | 67) |
| | 68) | 69) | 70) | 71) | 72) |
| 4 | 73) | 74) | 75) | 76) | 77) |
| | 78) | 79) | 80) | 81) | 82) |
| 5 | 83) | 84) | 85) | 86) | 87) |
| | 88) | 89) | 90) | 91) | 92) |
| 6 | 93) | 94) | 95) | 96) | 97) |
| | 98) | 99) | 100) | 101) | 102) |

103) Alternate Option : No Pump Id alternate with Pump Id
104) 105)
106) 107)

Print Cnst Print Scrn Rep Const Select Test < ESC > ====>

12/20/89 10:03:55 **Base Level Control Point**

Wednesday December 20, 1989

1) Point Id : HBPC
2) Description : HOLCMB BLVD PUMP CONTROL
3) Mult. Step Control : Disable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | | Point Id | | Current Value |
|---|---|---|---|---|
| 1 | 6) | PPETLVL | 7) | 26.5 |
| 2 | 8) | | 9) | 0 |
| 3 | 10) | | 11) | 0 |

12) Number Of Steps : 3

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | | Timer | | Step Status | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 28.0 | 14) | 30.0 | 15) | 20 | 16) | 0 | 17) | On |
| 2 | 18) | 26.0 | 19) | 28.0 | 20) | 20 | 21) | 0 | 22) | Off |
| 3 | 23) | 25.5 | 24) | 26.0 | 25) | 20 | 26) | 0 | 27) | Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) | 20 | 31) | 0 | 32) | Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) | 0 | 36) | 0 | 37) | Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) | 0 | 41) | 0 | 42) | Off |

Pump Control Assignments

| Step | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) | HBP2 | 44) | | 45) | | 46) | | 47) | |
| | 48) | | 49) | | 50) | | 51) | | 52) | |
| 2 | 53) | HBP1 | 54) | HBP2 | 55) | | 56) | | 57) | |
| | 58) | | 59) | | 60) | | 61) | | 62) | |
| 3 | 63) | HBP2 | 64) | HBP3 | 65) | | 66) | | 67) | |
| | 68) | | 69) | | 70) | | 71) | | 72) | |
| 4 | 73) | | 74) | | 75) | | 76) | | 77) | |
| | 78) | | 79) | | 80) | | 81) | | 82) | |
| 5 | 83) | | 84) | | 85) | | 86) | | 87) | |
| | 88) | | 89) | | 90) | | 91) | | 92) | |
| 6 | 93) | | 94) | | 95) | | 96) | | 97) | |
| | 98) | | 99) | | 100) | | 101) | | 102) | |

103) Alternate Option : Yes

| Pump Id | | alternate with | Pump Id |
|---|---|---|---|
| 104) | HBP1 | 105) | HBP2 |
| 106) | | 107) | |

Print Cnst Print Scrn Rep Const Select Test < ESC > ====>

12/19/89 15:09:15 **RUN TIME DISPLAY**

Tuesday December 19, 1989

RUNTIME

| | DAILY | WEEKLY | MONTHLY |
|---|---|---|---|
| WP698 | 9.30 | 41.48 | 295.92 |
| WP699 | 9.32 | 41.48 | 295.84 |
| WP700 | 9.32 | 41.48 | 294.61 |
| WP701 | 9.32 | 41.49 | 295.22 |
| WP703 | 0.00 | 0.00 | 158.85 |
| WP704 | 9.35 | 41.52 | 295.89 |
| WP705 | 9.22 | 41.28 | 293.99 |
| WP706 | 0.00 | 0.00 | 158.50 |
| WP707 | 0.00 | 0.00 | 158.89 |
| WP708 | 0.00 | 0.00 | 158.97 |
| WP643 | 9.23 | 41.22 | 136.19 |
| WP644 | 0.00 | 0.00 | 0.00 |
| OBP1 | 5.58 | 5.58 | 255.53 |
| WP646 | 9.22 | 41.20 | 294.06 |
| WP647 | 9.22 | 41.20 | 293.10 |
| WP648 | 9.25 | 41.22 | 136.20 |
| WP649 | 9.25 | 41.29 | 136.18 |
| WP650 | 9.26 | 41.11 | 294.02 |
| RWP1 | 8.57 | 24.77 | 143.19 |
| RWP2 | 1.43 | 18.01 | 161.84 |
| RWP3 | 0.00 | 0.00 | 0.23 |
| RWP4 | 0.00 | 0.00 | 0.00 |
| HBP1 | 9.97 | 36.62 | 214.99 |
| HBP2 | 1.84 | 13.61 | 207.54 |
| HBP3 | 1.36 | 4.81 | 25.79 |
| HBP4 | 0.00 | 0.00 | 0.00 |
| HBP5 | 0.00 | 0.00 | 0.00 |
| TMP1 | 2.73 | 12.00 | 85.76 |
| TMP2 | 3.00 | 12.33 | 91.20 |
| TMP3 | 0.00 | 0.00 | 0.00 |
| BW2 | 0.00 | 0.00 | 0.00 |
| BW1 | 1.42 | 2.92 | 8.87 |
| LSU001 | 0.00 | 0.00 | 108.81 |
| LSU002 | 10.01 | 42.78 | 196.36 |
| LSU003 | 10.01 | 42.78 | 305.09 |
| LSU004 | 0.00 | 0.00 | 66.83 |
| LSU005 | 10.01 | 42.78 | 238.26 |

FLOWS DAILY

| | |
|---|---|
| RAW WATER | 1567.293 |
| PLANT INF | 1452.446 |
| HOLCOMB | 721.471 |
| TRANSMISSION | 635.750 |

Print Cnst  Print Scrn  Rep Const  Select  Test  < ESC >  ====>

12/19/89 02:28:15 **HB PIPE PRINT**

Tuesday December 19, 1989

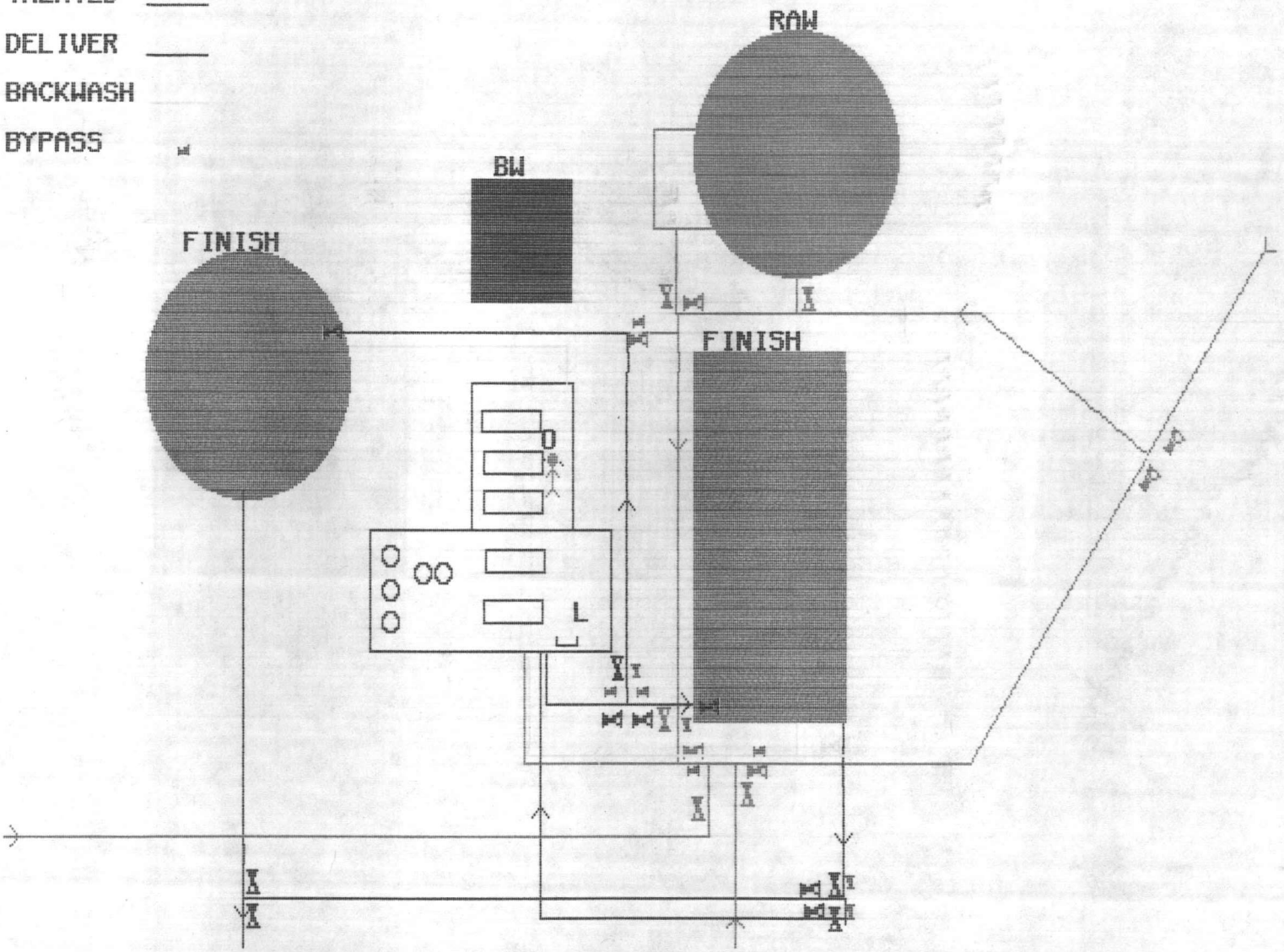
RAW ____

TREATED ____

DELIVER ____

BACKWASH

BYPASS




HBRESLVL B20 POOLS HB PIPE TT Spare =====>

[redacted]

DEPARTMENT OF THE NAVY

**Memorandum**

5000
MAIN

DATE: 1 February 1988

FROM: Water Treatment Plant Operator Foreman

TO: Leaders, Operators of Bldg. 670, 20, AS-110

SUBJ: SAMPLING PROCEDURE - FLUORIDE

1. The State of North Carolina required a fluoride sample be taken from the distribution system of each water plant. The rules governing Public Water Supplies Section: 0606, par. (c) state this. To insure proper sampling procedures, we must increase our sampling of fluoride. The following procedures will be implemented immediately:

a. Bldg. 670 - The operator will pick up samples from TT-38 or Camp Johnson pool daily on his check and bring back to 670 for the fluoride analysis to be run and recorded on log sheet under fluoride sample for distribution system.

b. Bldg. 20 - The well person will pick up sample from Bldg. 540 or 236 daily. Well person will carry sample to Bldg. 20 for operator to run flouride analysis and record on log sheet under fluoride sample for distribution system.

c. Bldg. AS-110 - The well person will pick up sample from Bldg. TC-501 daily. Well person will carry sample to AS-110 for operator to run fluoride analysis and record on log sheet under fluoride sample for distribution system.

2. Your cooperation will be greatly appreciated in this increase sampling procedure.

Stanley L. Miller

STANLEY L. MILLER

* U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
Memorandum
5000
MAIN

DATE: 23 January 1989

FROM: Water Treatment Plant Operator Foreman

TO: All Leaders and Operators

SUBJ: VEHICLE HOURLY USAGE RECORD

1. To maintain a more accurate record of time vehicle is used, the following method is recommended. When the daily report is called in from Courthouse Bay and Air Station, ask for hours vehicle has been used during the 24 hour period. Each operator of vehicle should make note of hours vehicle has been used each shift, including 670 well and supply persons.

Stanley L Miller

STANLEY L. MILLER

U.S. GPO: 1987-704-009/47024

CENTIGRADE CONVERSION TO FAHRENHEIT

| °C | °F |
|---|---|
| 40 | 104 |
| 39 | 102.2 |
| 38 | 100.4 |
| 37 | 98.6 |
| 36 | 96.8 |
| 35 | 95 |
| 34 | 93.2 |
| 33 | 91.4 |
| 32 | 89.6 |
| 31 | 87.8 |
| 30 | 86 |
| 29 | 84.2 |
| 28 | 84.2 |
| 27 | 80.6 |
| 26 | 78.8 |
| 25 | 77 |
| 24 | 75.2 |
| 23 | 73.4 |
| 22 | 71.6 |
| 21 | 69.8 |
| 20 | 68 |
| 19 | 66.2 |
| 18 | 64.4 |
| 17 | 63.6 |
| 16 | 60.8 |
| 15 | 59 |
| 14 | 57.2 |
| 13 | 55.4 |
| 12 | 53.6 |
| 11 | 51.8 |
| 10 | 50 |
| 9 | 48.2 |
| 8 | 46.4 |
| 7 | 44.6 |
| 6 | 42.8 |
| 5 | 41 |
| 4 | 39.2 |
| 3 | 37.4 |
| 2 | 35.6 |
| 1 | 33.8 |
| 0 | 32 |
| -1 | 30.2 |
| -2 | 28.4 |
| -3 | 26.8 |
| -4 | 24.8 |
| -5 | 23 |
| -6 | 21.2 |
| -7 | 19.4 |
| -8 | 17.6 |
| -9 | 15.8 |
| -10 | 14 |

# Temperature Conversion

| −459.4 to 0 | | | 1 to 60 | | | 61 to 290 | | | 300 to 890 | | | 900 to 3000 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | C / F | F | C | C / F | F | C | C / F | F | C | C / F | F | C | C / F | F |
| −273 | −459.4 | | −17.2 | 1 | 33.8 | 16.1 | 61 | 141.8 | 149 | 300 | 572 | 482 | 900 | 1652 |
| −268 | −450 | | −16.7 | 2 | 35.6 | 16.7 | 62 | 143.6 | 154 | 310 | 590 | 488 | 910 | 1670 |
| −262 | −440 | | −16.1 | 3 | 37.4 | 17.2 | 63 | 145.4 | 160 | 320 | 608 | 493 | 920 | 1688 |
| −257 | −430 | | −15.6 | 4 | 39.2 | 17.8 | 64 | 147.2 | 166 | 330 | 626 | 499 | 930 | 1706 |
| −251 | −420 | | −15.0 | 5 | 41.0 | 18.3 | 65 | 149.0 | 171 | 340 | 644 | 504 | 940 | 1724 |
| −246 | −410 | | −14.4 | 6 | 42.8 | 18.9 | 66 | 150.8 | 177 | 350 | 662 | 510 | 950 | 1742 |
| −240 | −400 | | −13.9 | 7 | 44.6 | 19.4 | 67 | 152.6 | 182 | 360 | 680 | 516 | 960 | 1760 |
| −234 | −390 | | −13.3 | 8 | 46.4 | 20.0 | 68 | 154.4 | 188 | 370 | 698 | 521 | 970 | 1778 |
| −229 | −380 | | −12.8 | 9 | 48.2 | 20.6 | 69 | 156.2 | 193 | 380 | 716 | 527 | 980 | 1796 |
| −223 | −370 | | −12.2 | 10 | 50.0 | 21.1 | 70 | 158.0 | 199 | 390 | 734 | 532 | 990 | 1814 |
| −218 | −360 | | −11.7 | 11 | 51.8 | 21.7 | 71 | 159.8 | 204 | 400 | 752 | 538 | 1000 | 1832 |
| −212 | −350 | | −11.1 | 12 | 53.6 | 22.2 | 72 | 161.6 | 210 | 410 | 770 | 549 | 1020 | 1868 |
| −207 | −340 | | −10.6 | 13 | 55.4 | 22.8 | 73 | 163.4 | 216 | 420 | 788 | 560 | 1040 | 1904 |
| −201 | −330 | | −10.0 | 14 | 57.2 | 23.3 | 74 | 165.2 | 221 | 430 | 806 | 571 | 1060 | 1940 |
| −196 | −320 | | −9.4 | 15 | 59.0 | 23.9 | 75 | 167.0 | 227 | 440 | 824 | 582 | 1080 | 1976 |
| −190 | −310 | | −8.9 | 16 | 60.8 | 24.4 | 76 | 168.8 | 232 | 450 | 842 | 593 | 1100 | 2012 |
| −184 | −300 | | −8.3 | 17 | 62.6 | 25.0 | 77 | 170.6 | 238 | 460 | 860 | 604 | 1120 | 2048 |
| −179 | −290 | | −7.8 | 18 | 64.4 | 25.6 | 78 | 172.4 | 243 | 470 | 878 | 616 | 1140 | 2084 |
| −173 | −280 | | −7.2 | 19 | 66.2 | 26.1 | 79 | 174.2 | 249 | 480 | 896 | 627 | 1160 | 2120 |
| −169 | −273 | −459.4 | −6.7 | 20 | 68.0 | 26.7 | 80 | 176.0 | 254 | 490 | 914 | 638 | 1180 | 2156 |
| −168 | −270 | −454 | −6.1 | 21 | 69.8 | 27.2 | 81 | 177.8 | 260 | 500 | 932 | 649 | 1200 | 2192 |
| −162 | −260 | −436 | −5.6 | 22 | 71.6 | 27.8 | 82 | 179.6 | 266 | 510 | 950 | 660 | 1220 | 2228 |
| −157 | −250 | −418 | −5.0 | 23 | 73.4 | 28.3 | 83 | 181.4 | 271 | 520 | 968 | 671 | 1240 | 2264 |
| −151 | −240 | −400 | −4.4 | 24 | 75.2 | 28.9 | 84 | 183.2 | 277 | 530 | 986 | 682 | 1260 | 2300 |
| −146 | −230 | −382 | −3.9 | 25 | 77.0 | 29.4 | 85 | 185.0 | 282 | 540 | 1004 | 693 | 1280 | 2336 |
| −140 | −220 | −364 | −3.3 | 26 | 78.8 | 30.0 | 86 | 186.8 | 288 | 550 | 1022 | 704 | 1300 | 2372 |
| −134 | −210 | −346 | −2.8 | 27 | 80.6 | 30.6 | 87 | 188.6 | 293 | 560 | 1040 | 732 | 1350 | 2462 |
| −129 | −200 | −328 | −2.2 | 28 | 82.4 | 31.1 | 88 | 190.4 | 299 | 570 | 1058 | 760 | 1400 | 2552 |
| −123 | −190 | −310 | −1.7 | 29 | 84.2 | 31.7 | 89 | 192.2 | 304 | 580 | 1076 | 788 | 1450 | 2642 |
| −118 | −180 | −292 | −1.1 | 30 | 86.0 | 32.2 | 90 | 194.0 | 310 | 590 | 1094 | 816 | 1500 | 2732 |
| −112 | −170 | −274 | −.6 | 31 | 87.8 | 32.8 | 91 | 195.8 | 316 | 600 | 1112 | 843 | 1550 | 2822 |
| −107 | −160 | −256 | 0 | 32 | 89.6 | 33.3 | 92 | 197.6 | 321 | 610 | 1130 | 871 | 1600 | 2912 |
| −101 | −150 | −238 | .6 | 33 | 91.4 | 33.9 | 93 | 199.4 | 327 | 620 | 1148 | 899 | 1650 | 3002 |
| − 96 | −140 | −220 | 1.1 | 34 | 93.2 | 34.4 | 94 | 201.2 | 332 | 630 | 1166 | 927 | 1700 | 3092 |
| − 90 | −130 | −202 | 1.7 | 35 | 95.0 | 35.0 | 95 | 203.0 | 338 | 640 | 1184 | 954 | 1750 | 3182 |
| − 84 | −120 | −184 | 2.2 | 36 | 96.8 | 35.6 | 96 | 204.8 | 343 | 650 | 1202 | 982 | 1800 | 3272 |
| − 79 | −110 | −166 | 2.8 | 37 | 98.6 | 36.1 | 97 | 206.6 | 349 | 660 | 1220 | 1010 | 1850 | 3362 |
| − 73 | −100 | −148 | 3.3 | 38 | 100.4 | 36.7 | 98 | 208.4 | 354 | 670 | 1238 | 1038 | 1900 | 3452 |
| − 68 | − 90 | −130 | 3.9 | 39 | 102.2 | 37.2 | 99 | 210.2 | 360 | 680 | 1256 | 1066 | 1950 | 3542 |
| − 62 | − 80 | −112 | 4.4 | 40 | 104.0 | 37.8 | 100 | 212.0 | 366 | 690 | 1274 | 1093 | 2000 | 3632 |
| − 57 | − 70 | − 94 | 5.0 | 41 | 105.8 | 43 | 110 | 230 | 371 | 700 | 1292 | 1121 | 2050 | 3722 |
| − 51 | − 60 | − 76 | 5.6 | 42 | 107.6 | 49 | 120 | 248 | 377 | 710 | 1310 | 1149 | 2100 | 3812 |
| − 46 | − 50 | − 58 | 6.1 | 43 | 109.4 | 54 | 130 | 266 | 382 | 720 | 1328 | 1177 | 2150 | 3902 |
| − 40 | − 40 | − 40 | 6.7 | 44 | 111.2 | 60 | 140 | 284 | 388 | 730 | 1346 | 1204 | 2200 | 3992 |
| − 34 | − 30 | − 22 | 7.2 | 45 | 113.0 | 66 | 150 | 302 | 393 | 740 | 1364 | 1232 | 2250 | 4082 |
| − 29 | − 20 | − 4 | 7.8 | 46 | 114.8 | 71 | 160 | 320 | 399 | 750 | 1382 | 1260 | 2300 | 4172 |
| − 23 | − 10 | 14 | 8.3 | 47 | 116.6 | 77 | 170 | 338 | 404 | 760 | 1400 | 1288 | 2350 | 4262 |
| − 17.8 | 0 | 32 | 8.9 | 48 | 118.4 | 82 | 180 | 356 | 410 | 770 | 1418 | 1316 | 2400 | 4352 |
| | | | 9.4 | 49 | 120.2 | 88 | 190 | 374 | 416 | 780 | 1436 | 1343 | 2450 | 4442 |
| | | | 10.0 | 50 | 122.0 | 93 | 200 | 392 | 421 | 790 | 1454 | 1371 | 2500 | 4532 |
| | | | 10.6 | 51 | 123.8 | 99 | 210 | 410 | 427 | 800 | 1472 | 1399 | 2550 | 4622 |
| | | | 11.1 | 52 | 125.6 | 100 | 212 | 413.6 | 432 | 810 | 1490 | 1427 | 2600 | 4712 |
| | | | 11.7 | 53 | 127.4 | 104 | 220 | 428 | 438 | 820 | 1508 | 1454 | 2650 | 4802 |
| | | | 12.2 | 54 | 129.2 | 110 | 230 | 446 | 443 | 830 | 1526 | 1482 | 2700 | 4892 |
| | | | 12.8 | 55 | 131.0 | 116 | 240 | 464 | 449 | 840 | 1544 | 1510 | 2750 | 4982 |
| | | | 13.3 | 56 | 132.8 | 121 | 250 | 482 | 454 | 850 | 1562 | 1538 | 2800 | 5072 |
| | | | 13.9 | 57 | 134.6 | 127 | 260 | 500 | 460 | 860 | 1580 | 1566 | 2850 | 5162 |
| | | | 14.4 | 58 | 136.4 | 132 | 270 | 518 | 466 | 870 | 1598 | 1593 | 2900 | 5252 |
| | | | 15.0 | 59 | 138.2 | 138 | 280 | 536 | 471 | 880 | 1616 | 1621 | 2950 | 5342 |
| | | | 15.6 | 60 | 140.0 | 143 | 290 | 554 | 477 | 890 | 1634 | 1649 | 3000 | 5432 |

Locate temperature in middle column. If in degrees Centigrade, read Fahrenheit equivalent in right hand column; if in degrees Fahrenheit, read Centigrade equivalent in left hand column.

Abstracted from "Bethlehem Alloy Steels". (Albert Sauveur type of table. Values revised.) Courtesy Bethlehem Steel Company.

160
200
12000

| JON | DESCRIPTION | WGC | CAC | SFC |
|---|---|---|---|---|
| | M&R TO WATER SUPPLY & TREATMENT FACILITIES & EQUIPMENT | | | |
| AM_-23-A243-2372-T<br>2373-T<br>2383-T | Building BA-138 | 01 | 7650 | M1 |
| AM_-23-A244-2372-T<br>2373-T<br>2383-T | Building BA-138 | 02 | 7650 | M1 |
| AM_-23-A245-2372-T<br>2373-T<br>2383-T | Building 670 | 01 | 7650 | M1 |
| AM_-23-A246-2372-T<br>2373-T<br>2383-T | Building 670 | 02 | 7650 | M1 |
| AM_-23-A247-2372-T<br>2373-T<br>2383-T | Building AS-110 | 01 | 7650 | M1 |
| AM_-23-A248-2372-T<br>2373-T<br>2383-T | Building AS-110 | 02 | 7650 | M1 |
| | M&R TO SEWAGE TREATMENT FACILITIES. Equipment Only | | | |
| AM_-23-A249-2372-T<br>2373-T<br>2384-T | Building 22 | 01 | 7670 | M1 |
| AM_-23-A250-2372-T<br>2373-T<br>2384-T | Building 22 | 02 | 7670 | M1 |
| AM_-23-A251-2372-T<br>2373-T<br>2384-T | Building TC-563 | 01 | 7670 | M1 |
| AM_-23-A252-2372-T<br>2373-T<br>2384-T | Building TC-563 | 02 | 7670 | M1 |
| AM_-23-A253-2372-T<br>2373-T<br>2384-T | Building M-136<br>M-137<br>M-138 | 01 | 7670 | M1 |



for MCAS Pools

| JON | DESCRIPTION | WGC | CAC | SFC |
|---|---|---|---|---|
| | M&R TO PLANTS OVER 3.5 MILLION BTU. Equipment Only | | | |
| AM_-23-A232-2372-T<br>2373-T<br>2381-T | Building AS-4151 | 02 | 7620 | M1 |
| 01- 30 DAYS<br>02- 14 DAYS | M&R TO WATER SUPPLY & TREATMENT FACILITIES & EQUIPMENT | | | |
| AM_-23-A233-2372-T<br>2373-T<br>2383-T | Building 20 | 01 | 7650 | M1 |
| AM_-23-A234-2372-T<br>2373-T<br>2383-T | Building 20 | 02 | 7650 | M1 |
| AM_-23-A235-2372-T<br>2373-T<br>2383-T | Building TT-38 | 01 | 7650 | M1 |
| AM_-23-A236-2372-T<br>2373-T<br>2383-T | Building TT-38 | 02 | 7650 | M1 |
| AM_-23-A237-2372-T<br>2373-T<br>2383-T | Building M-178 | 01 | 7650 | M1 |
| AM_-23-A238-2372-T<br>2373-T<br>2383-T | Building M-178 | 02 | 7650 | M1 |
| AM_-23-A239-2372-T<br>2373-T<br>2383-T | Building RR-85 | 01 | 7650 | M1 |
| AM_-23-A240-2372-T<br>2373-T<br>2383-T | Building RR-85 | 02 | 7650 | M1 |
| AM_-23-A241-2372-T<br>2373-T<br>2383-T | Building BB-190 | 01 | 7650 | M1 |
| AM_-23-A242-2372-T<br>2373-T<br>2383-T | Building BB-190 | 02 | 7650 | M1 |

# Power Required for Pumping

| Gals. per Min. | Theoretical Horsepower Required to Raise Water (at 60 F) To Different Heights | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 feet | 10 feet | 15 feet | 20 feet | 25 feet | 30 feet | 35 feet | 40 feet | 45 feet | 50 feet | 60 feet | 70 feet | 80 feet | 90 feet | 100 feet |
| 5 | 0.006 | 0.013 | 0.019 | 0.025 | 0.032 | 0.038 | 0.044 | 0.051 | 0.057 | 0.063 | 0.076 | 0.088 | 0.101 | 0.114 | 0.126 |
| 10 | 0.013 | 0.025 | 0.038 | 0.051 | 0.063 | 0.076 | 0.088 | 0.101 | 0.114 | 0.126 | 0.152 | 0.177 | 0.202 | 0.227 | 0.253 |
| 15 | 0.019 | 0.038 | 0.057 | 0.076 | 0.095 | 0.114 | 0.133 | 0.152 | 0.171 | 0.190 | 0.227 | 0.265 | 0.303 | 0.341 | 0.379 |
| 20 | 0.025 | 0.051 | 0.076 | 0.101 | 0.126 | 0.152 | 0.177 | 0.202 | 0.227 | 0.253 | 0.303 | 0.354 | 0.404 | 0.455 | 0.505 |
| 25 | 0.032 | 0.063 | 0.095 | 0.126 | 0.158 | 0.190 | 0.221 | 0.253 | 0.284 | 0.316 | 0.379 | 0.442 | 0.505 | 0.568 | 0.632 |
| 30 | 0.038 | 0.076 | 0.114 | 0.152 | 0.190 | 0.227 | 0.265 | 0.303 | 0.341 | 0.379 | 0.455 | 0.531 | 0.606 | 0.682 | 0.758 |
| 35 | 0.044 | 0.088 | 0.133 | 0.177 | 0.221 | 0.265 | 0.310 | 0.354 | 0.398 | 0.442 | 0.531 | 0.619 | 0.707 | 0.796 | 0.884 |
| 40 | 0.051 | 0.101 | 0.152 | 0.202 | 0.253 | 0.303 | 0.354 | 0.404 | 0.455 | 0.505 | 0.606 | 0.707 | 0.808 | 0.910 | 1.011 |
| 45 | 0.057 | 0.114 | 0.171 | 0.227 | 0.284 | 0.341 | 0.398 | 0.455 | 0.512 | 0.568 | 0.682 | 0.796 | 0.910 | 1.023 | 1.137 |
| 50 | 0.063 | 0.126 | 0.190 | 0.253 | 0.316 | 0.379 | 0.442 | 0.505 | 0.568 | 0.632 | 0.758 | 0.884 | 1.011 | 1.137 | 1.263 |
| 60 | 0.076 | 0.152 | 0.227 | 0.303 | 0.379 | 0.455 | 0.531 | 0.606 | 0.682 | 0.758 | 0.910 | 1.061 | 1.213 | 1.364 | 1.516 |
| 70 | 0.088 | 0.177 | 0.265 | 0.354 | 0.442 | 0.531 | 0.619 | 0.707 | 0.796 | 0.884 | 1.061 | 1.238 | 1.415 | 1.592 | 1.768 |
| 80 | 0.101 | 0.202 | 0.303 | 0.404 | 0.505 | 0.606 | 0.707 | 0.808 | 0.910 | 1.011 | 1.213 | 1.415 | 1.617 | 1.819 | 2.021 |
| 90 | 0.114 | 0.227 | 0.341 | 0.455 | 0.568 | 0.682 | 0.796 | 0.910 | 1.023 | 1.137 | 1.364 | 1.592 | 1.819 | 2.046 | 2.274 |
| 100 | 0.126 | 0.253 | 0.379 | 0.505 | 0.632 | 0.758 | 0.884 | 1.011 | 1.137 | 1.263 | 1.516 | 1.768 | 2.021 | 2.274 | 2.526 |
| 125 | 0.158 | 0.316 | 0.474 | 0.632 | 0.790 | 0.947 | 1.105 | 1.263 | 1.421 | 1.579 | 1.895 | 2.211 | 2.526 | 2.842 | 3.158 |
| 150 | 0.190 | 0.379 | 0.568 | 0.758 | 0.947 | 1.137 | 1.326 | 1.516 | 1.705 | 1.895 | 2.274 | 2.653 | 3.032 | 3.411 | 3.790 |
| 175 | 0.221 | 0.442 | 0.663 | 0.884 | 1.105 | 1.326 | 1.547 | 1.768 | 1.990 | 2.211 | 2.653 | 3.095 | 3.537 | 3.979 | 4.421 |
| 200 | 0.253 | 0.505 | 0.758 | 1.011 | 1.263 | 1.516 | 1.768 | 2.021 | 2.274 | 2.526 | 3.032 | 3.537 | 4.042 | 4.548 | 5.053 |
| 250 | 0.316 | 0.632 | 0.947 | 1.263 | 1.579 | 1.895 | 2.211 | 2.526 | 2.842 | 3.158 | 3.790 | 4.421 | 5.053 | 5.684 | 6.316 |
| 300 | 0.379 | 0.758 | 1.137 | 1.516 | 1.895 | 2.274 | 2.653 | 3.032 | 3.411 | 3.790 | 4.548 | 5.305 | 6.063 | 6.821 | 7.579 |
| 350 | 0.442 | 0.884 | 1.326 | 1.768 | 2.211 | 2.653 | 3.095 | 3.537 | 3.979 | 4.421 | 5.305 | 6.190 | 7.074 | 7.958 | 8.842 |
| 400 | 0.505 | 1.011 | 1.516 | 2.021 | 2.526 | 3.032 | 3.537 | 4.042 | 4.548 | 5.053 | 6.063 | 7.074 | 8.084 | 9.095 | 10.11 |
| 500 | 0.632 | 1.263 | 1.895 | 2.526 | 3.158 | 3.790 | 4.421 | 5.053 | 5.684 | 6.316 | 7.579 | 8.842 | 10.11 | 11.37 | 12.63 |

| Gals. per Min. | 125 feet | 150 feet | 175 feet | 200 feet | 250 feet | 300 feet | 350 feet | 400 feet |
|---|---|---|---|---|---|---|---|---|
| 5 | 0.158 | 0.190 | 0.221 | 0.253 | 0.316 | 0.379 | 0.442 | 0.505 |
| 10 | 0.316 | 0.379 | 0.442 | 0.505 | 0.632 | 0.758 | 0.884 | 1.011 |
| 15 | 0.474 | 0.568 | 0.663 | 0.758 | 0.947 | 1.137 | 1.326 | 1.516 |
| 20 | 0.632 | 0.758 | 0.884 | 1.011 | 1.263 | 1.516 | 1.768 | 2.021 |
| 25 | 0.790 | 0.947 | 1.105 | 1.263 | 1.579 | 1.895 | 2.211 | 2.526 |
| 30 | 0.947 | 1.137 | 1.326 | 1.516 | 1.895 | 2.274 | 2.653 | 3.032 |
| 35 | 1.105 | 1.326 | 1.547 | 1.768 | 2.211 | 2.653 | 3.095 | 3.537 |
| 40 | 1.263 | 1.516 | 1.768 | 2.021 | 2.526 | 3.032 | 3.537 | 4.042 |
| 45 | 1.421 | 1.705 | 1.990 | 2.274 | 2.842 | 3.411 | 3.979 | 4.548 |
| 50 | 1.579 | 1.895 | 2.211 | 2.526 | 3.158 | 3.790 | 4.421 | 5.053 |
| 60 | 1.895 | 2.274 | 2.653 | 3.032 | 3.790 | 4.548 | 5.305 | 6.063 |
| 70 | 2.211 | 2.653 | 3.095 | 3.537 | 4.421 | 5.305 | 6.190 | 7.074 |
| 80 | 2.526 | 3.032 | 3.537 | 4.042 | 5.053 | 6.063 | 7.074 | 8.084 |
| 90 | 2.842 | 3.411 | 3.979 | 4.548 | 5.684 | 6.821 | 7.958 | 9.095 |
| 100 | 3.158 | 3.790 | 4.421 | 5.053 | 6.316 | 7.579 | 8.842 | 10.11 |
| 125 | 3.948 | 4.737 | 5.527 | 6.316 | 7.895 | 9.474 | 11.05 | 12.63 |
| 150 | 4.737 | 5.684 | 6.632 | 7.579 | 9.474 | 11.37 | 13.26 | 15.16 |
| 175 | 5.527 | 6.632 | 7.737 | 8.842 | 11.05 | 13.26 | 15.47 | 17.68 |
| 200 | 6.316 | 7.579 | 8.842 | 10.11 | 12.63 | 15.16 | 17.68 | 20.21 |
| 250 | 7.895 | 9.474 | 11.05 | 12.63 | 15.79 | 18.95 | 22.11 | 25.26 |
| 300 | 9.474 | 11.37 | 13.26 | 15.16 | 18.95 | 22.74 | 26.53 | 30.32 |
| 350 | 11.05 | 13.26 | 15.47 | 17.68 | 22.11 | 26.53 | 30.95 | 35.37 |
| 400 | 12.63 | 15.16 | 17.68 | 20.21 | 25.26 | 30.32 | 35.37 | 40.42 |
| 500 | 15.79 | 18.95 | 22.11 | 25.26 | 31.58 | 37.90 | 44.21 | 50.53 |

HORSEPOWER = 33 000 ...ft-lb/min
= 550 ...ft-lb/sec
= 2544.48 ...Btu/hr
= 745.7 ...watts

$(whp) = QH\rho \div 247\,000 = QP \div 1714$

$(bhp) = (whp) \div e_p = QH\rho \div 247\,000\, e_p$

$(e_p) = QH\rho \div 247\,000\,(bhp)$

where: $(whp)$ = water horsepower
$H$ = pump head in feet
$(bhp)$ = brake horsepower
$e_p$ = pump efficiency

Overall efficiency ($e_o$) takes into account all losses in the pump and driver.

$$e_o = e_p\, e_D\, e_T$$

where: $e_D$ = driver efficiency
$e_T$ = transmission efficiency

$e_V$ = volumetric efficiency

$$e_V(\%) = \frac{\text{actual pump displacement } (Q)\ (100)}{\text{theoretical pump displacement } (Q)}$$

*Note:* For fluids other than water, multiply table values by specific gravity. In pumping liquids with a viscosity considerably higher than that of water, the pump capacity and head are reduced. To calculate the horsepower for such fluids, pipe friction head must be added to the elevation head to obtain the total head; this value is inserted in the first horsepower equation given above.

# TECHNICAL DATA SECTION

## Flow of Water Through Schedule 40 Steel Pipe

| Discharge | | Pressure Drop per 100 feet and Velocity in Schedule 40 Pipe for Water at 60 F. | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop | Veloc- ity | Press. Drop |
| Gallons per Minute | Cubic Ft. per Second | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. | Feet per Second | Lbs. per Sq. In. |
| | | 1/8" | | 1/4" | | 3/8" | | 1/2" | | | | | | | | | |
| .2 | 0.000446 | 1.13 | 1.86 | 0.616 | 0.359 | | | | | 3/4" | | | | | | | |
| .3 | 0.000668 | 1.69 | 4.22 | 0.924 | 0.903 | 0.504 | 0.159 | 0.317 | 0.061 | | | | | | | | |
| .4 | 0.000891 | 2.26 | 6.98 | 1.23 | 1.61 | 0.672 | 0.345 | 0.422 | 0.086 | | | | | | | | |
| .5 | 0.00111 | 2.82 | 10.5 | 1.54 | 2.39 | 0.840 | 0.539 | 0.528 | 0.167 | 0.301 | 0.033 | | | | | | |
| .6 | 0.00134 | 3.39 | 14.7 | 1.85 | 3.29 | 1.01 | 0.751 | 0.633 | 0.240 | 0.361 | 0.041 | | | | | | |
| .8 | 0.00178 | 4.52 | 25.0 | 2.46 | 5.44 | 1.34 | 1.25 | 0.844 | 0.408 | 0.481 | 0.102 | 1" | | 1¼" | | | |
| 1 | 0.00223 | 5.65 | 37.2 | 3.08 | 8.28 | 1.68 | 1.85 | 1.06 | 0.600 | 0.602 | 0.155 | 0.371 | 0.048 | | | 1½" | |
| 2 | 0.00446 | 11.29 | 134.4 | 6.16 | 30.1 | 3.36 | 6.58 | 2.11 | 2.10 | 1.20 | 0.526 | 0.743 | 0.164 | 0.429 | 0.044 | | |
| 3 | 0.00668 | | | 9.25 | 64.1 | 5.04 | 13.9 | 3.17 | 4.33 | 1.81 | 1.09 | 1.114 | 0.336 | 0.644 | 0.090 | 0.473 | 0.043 |
| 4 | 0.00891 | | | 12.33 | 111.2 | 6.72 | 23.9 | 4.22 | 7.42 | 2.41 | 1.83 | 1.49 | 0.565 | 0.858 | 0.150 | 0.630 | 0.071 |
| 5 | 0.01114 | 2" | | | | 8.40 | 36.7 | 5.28 | 11.2 | 3.01 | 2.75 | 1.86 | 0.835 | 1.073 | 0.223 | 0.788 | 0.104 |
| 6 | 0.01337 | 0.574 | 0.044 | 2½" | | 10.08 | 51.9 | 6.33 | 15.8 | 3.61 | 3.84 | 2.23 | 1.17 | 1.29 | 0.309 | 0.946 | 0.145 |
| 8 | 0.01782 | 0.765 | 0.073 | | | 13.44 | 91.1 | 8.45 | 27.7 | 4.81 | 6.60 | 2.97 | 1.99 | 1.72 | 0.518 | 1.26 | 0.241 |
| 10 | 0.02228 | 0.956 | 0.108 | 0.670 | 0.046 | | | 10.56 | 42.4 | 6.02 | 9.99 | 3.71 | 2.99 | 2.15 | 0.774 | 1.58 | 0.361 |
| 15 | 0.03342 | 1.43 | 0.224 | 1.01 | 0.094 | 3" | | | | 9.03 | 21.6 | 5.57 | 6.36 | 3.22 | 1.63 | 2.37 | 0.755 |
| 20 | 0.04456 | 1.91 | 0.375 | 1.34 | 0.158 | 0.868 | 0.056 | 3½" | | 12.03 | 37.8 | 7.43 | 10.9 | 4.29 | 2.78 | 3.16 | 1.28 |
| 25 | 0.05570 | 2.39 | 0.561 | 1.68 | 0.234 | 1.09 | 0.083 | 0.812 | 0.041 | 4" | | 9.28 | 16.7 | 5.37 | 4.22 | 3.94 | 1.93 |
| 30 | 0.06684 | 2.87 | 0.786 | 2.01 | 0.327 | 1.30 | 0.114 | 0.974 | 0.056 | | | 11.14 | 23.8 | 6.44 | 5.92 | 4.73 | 2.72 |
| 35 | 0.07798 | 3.35 | 1.05 | 2.35 | 0.436 | 1.52 | 0.151 | 1.14 | 0.071 | 0.882 | 0.041 | 12.99 | 32.2 | 7.51 | 7.90 | 5.52 | 3.64 |
| 40 | 0.08912 | 3.83 | 1.35 | 2.68 | 0.556 | 1.74 | 0.192 | 1.30 | 0.095 | 1.01 | 0.052 | 14.85 | 41.5 | 8.59 | 10.24 | 6.30 | 4.65 |
| 45 | 0.1003 | 4.30 | 1.67 | 3.02 | 0.668 | 1.95 | 0.239 | 1.46 | 0.117 | 1.13 | 0.064 | | | 9.67 | 12.80 | 7.09 | 5.85 |
| 50 | 0.1114 | 4.78 | 2.03 | 3.35 | 0.839 | 2.17 | 0.288 | 1.62 | 0.142 | 1.26 | 0.076 | 5" | | 10.74 | 15.66 | 7.88 | 7.15 |
| 60 | 0.1337 | 5.74 | 2.87 | 4.02 | 1.18 | 2.60 | 0.406 | 1.95 | 0.204 | 1.51 | 0.107 | | | 12.89 | 22.2 | 9.47 | 10.21 |
| 70 | 0.1560 | 6.70 | 3.84 | 4.69 | 1.59 | 3.04 | 0.540 | 2.27 | 0.261 | 1.76 | 0.143 | 1.12 | 0.047 | | | 11.05 | 13.71 |
| 80 | 0.1782 | 7.65 | 4.97 | 5.36 | 2.03 | 3.47 | 0.687 | 2.60 | 0.334 | 2.02 | 0.180 | 1.28 | 0.060 | | | 12.62 | 17.59 |
| 90 | 0.2005 | 8.60 | 6.20 | 6.03 | 2.53 | 3.91 | 0.861 | 2.92 | 0.416 | 2.27 | 0.224 | 1.44 | 0.074 | 6" | | 14.20 | 22.0 |
| 100 | 0.2228 | 9.56 | 7.59 | 6.70 | 3.09 | 4.34 | 1.05 | 3.25 | 0.509 | 2.52 | 0.272 | 1.60 | 0.090 | 1.11 | 0.036 | 15.78 | 26.9 |
| 125 | 0.2785 | 11.97 | 11.76 | 8.38 | 4.71 | 5.43 | 1.61 | 4.06 | 0.769 | 3.15 | 0.415 | 2.01 | 0.135 | 1.39 | 0.055 | 19.72 | 41.4 |
| 150 | 0.3342 | 14.36 | 16.70 | 10.05 | 6.69 | 6.51 | 2.24 | 4.87 | 1.08 | 3.78 | 0.580 | 2.41 | 0.190 | 1.67 | 0.077 | | |
| 175 | 0.3899 | 16.75 | 22.3 | 11.73 | 8.97 | 7.60 | 3.00 | 5.68 | 1.44 | 4.41 | 0.774 | 2.81 | 0.253 | 1.94 | 0.102 | | |
| 200 | 0.4456 | 19.14 | 28.8 | 13.42 | 11.68 | 8.68 | 3.87 | 6.49 | 1.85 | 5.04 | 0.985 | 3.21 | 0.323 | 2.22 | 0.130 | 8" | |
| 225 | 0.5013 | ... | ... | 15.09 | 14.63 | 9.77 | 4.83 | 7.30 | 2.32 | 5.67 | 1.23 | 3.61 | 0.401 | 2.50 | 0.162 | 1.44 | 0.043 |
| 250 | 0.557 | ... | ... | ... | ... | 10.85 | 5.93 | 8.12 | 2.84 | 6.30 | 1.46 | 4.01 | 0.495 | 2.78 | 0.195 | 1.60 | 0.051 |
| 275 | 0.6127 | ... | ... | ... | ... | 11.94 | 7.14 | 8.93 | 3.40 | 6.93 | 1.79 | 4.41 | 0.583 | 3.05 | 0.234 | 1.76 | 0.061 |
| 300 | 0.6684 | ... | ... | ... | ... | 13.00 | 8.36 | 9.74 | 4.02 | 7.56 | 2.11 | 4.81 | 0.683 | 3.33 | 0.275 | 1.92 | 0.072 |
| 325 | 0.7241 | ... | ... | ... | ... | 14.12 | 9.89 | 10.53 | 4.09 | 8.19 | 2.47 | 5.21 | 0.797 | 3.61 | 0.320 | 2.08 | 0.083 |
| 350 | 0.7798 | | | ... | ... | ... | ... | 11.36 | 5.41 | 8.82 | 2.84 | 5.62 | 0.919 | 3.89 | 0.367 | 2.24 | 0.095 |
| 375 | 0.8355 | | | ... | ... | ... | ... | 12.17 | 6.18 | 9.45 | 3.25 | 6.02 | 1.05 | 4.16 | 0.416 | 2.40 | 0.108 |
| 400 | 0.8912 | | | ... | ... | ... | ... | 12.98 | 7.03 | 10.08 | 3.68 | 6.42 | 1.19 | 4.44 | 0.471 | 2.56 | 0.121 |
| 425 | 0.9469 | | | ... | ... | ... | ... | 13.80 | 7.89 | 10.71 | 4.12 | 6.82 | 1.33 | 4.72 | 0.529 | 2.73 | 0.136 |
| 450 | 1.003 | 10" | | ... | ... | ... | ... | 14.61 | 8.80 | 11.34 | 4.60 | 7.22 | 1.48 | 5.00 | 0.590 | 2.89 | 0.151 |
| 475 | 1.059 | 1.93 | 0.054 | | | ... | ... | ... | ... | 11.97 | 5.12 | 7.62 | 1.64 | 5.27 | 0.653 | 3.04 | 0.166 |
| 500 | 1.114 | 2.03 | 0.059 | | | ... | ... | ... | ... | 12.60 | 5.65 | 8.02 | 1.81 | 5.55 | 0.720 | 3.21 | 0.182 |
| 550 | 1.225 | 2.24 | 0.071 | | | ... | ... | ... | ... | 13.85 | 6.79 | 8.82 | 2.17 | 6.11 | 0.861 | 3.53 | 0.219 |
| 600 | 1.337 | 2.44 | 0.083 | | | ... | ... | ... | ... | 15.12 | 8.04 | 9.63 | 2.55 | 6.66 | 1.02 | 3.85 | 0.258 |
| 650 | 1.448 | 2.64 | 0.097 | 12" | | ... | ... | ... | ... | ... | ... | 10.43 | 2.98 | 7.22 | 1.18 | 4.17 | 0.301 |
| 700 | 1.560 | 2.85 | 0.112 | 2.01 | 0.047 | | | ... | ... | ... | ... | 11.23 | 3.43 | 7.78 | 1.35 | 4.49 | 0.343 |
| 750 | 1.671 | 3.05 | 0.127 | 2.15 | 0.054 | 14" | | ... | ... | ... | ... | 12.03 | 3.92 | 8.33 | 1.55 | 4.81 | 0.392 |
| 800 | 1.782 | 3.25 | 0.143 | 2.29 | 0.061 | | | ... | ... | ... | ... | 12.83 | 4.43 | 8.88 | 1.75 | 5.13 | 0.443 |
| 850 | 1.894 | 3.46 | 0.160 | 2.44 | 0.068 | 2.02 | 0.042 | ... | ... | ... | ... | 13.64 | 5.00 | 9.44 | 1.96 | 5.45 | 0.497 |
| 900 | 2.005 | 3.66 | 0.179 | 2.58 | 0.075 | 2.13 | 0.047 | ... | ... | ... | ... | 14.44 | 5.58 | 9.99 | 2.18 | 5.77 | 0.554 |
| 950 | 2.117 | 3.86 | 0.198 | 2.72 | 0.083 | 2.25 | 0.052 | | | ... | ... | 15.24 | 6.21 | 10.55 | 2.42 | 6.09 | 0.613 |
| 1 000 | 2.228 | 4.07 | 0.218 | 2.87 | 0.091 | 2.37 | 0.057 | 16" | | ... | ... | 16.04 | 6.84 | 11.10 | 2.68 | 6.41 | 0.675 |
| 1 100 | 2.451 | 4.48 | 0.260 | 3.15 | 0.110 | 2.61 | 0.068 | | | ... | ... | 17.65 | 8.23 | 12.22 | 3.22 | 7.05 | 0.807 |
| 1 200 | 2.674 | 4.88 | 0.306 | 3.44 | 0.128 | 2.85 | 0.080 | 2.18 | 0.042 | ... | ... | ... | ... | 13.33 | 3.81 | 7.70 | 0.948 |
| 1 300 | 2.896 | 5.29 | 0.355 | 3.73 | 0.150 | 3.08 | 0.093 | 2.36 | 0.048 | ... | ... | ... | ... | 14.43 | 4.45 | 8.33 | 1.11 |
| 1 400 | 3.119 | 5.70 | 0.409 | 4.01 | 0.171 | 3.32 | 0.107 | 2.54 | 0.055 | | | | | 15.55 | 5.13 | 8.98 | 1.28 |
| 1 500 | 3.342 | 6.10 | 0.466 | 4.30 | 0.195 | 3.56 | 0.122 | 2.72 | 0.063 | 18" | | | | 16.66 | 5.85 | 9.62 | 1.46 |
| 1 600 | 3.565 | 6.51 | 0.527 | 4.59 | 0.219 | 3.79 | 0.138 | 2.90 | 0.071 | | | | | 17.77 | 6.61 | 10.26 | 1.65 |
| 1 800 | 4.010 | 7.32 | 0.663 | 5.16 | 0.276 | 4.27 | 0.172 | 3.27 | 0.088 | 2.58 | 0.050 | | | 19.99 | 8.37 | 11.54 | 2.08 |
| 2 000 | 4.456 | 8.14 | 0.808 | 5.73 | 0.339 | 4.74 | 0.209 | 3.63 | 0.107 | 2.87 | 0.060 | 20" | | 22.21 | 10.3 | 12.82 | 2.55 |
| 2 500 | 5.570 | 10.17 | 1.24 | 7.17 | 0.515 | 5.93 | 0.321 | 4.54 | 0.163 | 3.59 | 0.091 | | | | | 16.03 | 3.94 |
| 3 000 | 6.684 | 12.20 | 1.76 | 8.60 | 0.731 | 7.11 | 0.451 | 5.45 | 0.232 | 4.30 | 0.129 | 3.46 | 0.075 | 24" | | 19.24 | 5.59 |
| 3 500 | 7.798 | 14.24 | 2.38 | 10.03 | 0.982 | 8.30 | 0.607 | 6.35 | 0.312 | 5.02 | 0.173 | 4.04 | 0.101 | | | 22.44 | 7.56 |
| 4 000 | 8.912 | 16.27 | 3.08 | 11.47 | 1.27 | 9.48 | 0.787 | 7.26 | 0.401 | 5.74 | 0.222 | 4.62 | 0.129 | 3.19 | 0.052 | 25.65 | 9.80 |
| 4 500 | 10.03 | 18.31 | 3.87 | 12.90 | 1.60 | 10.67 | 0.990 | 8.17 | 0.503 | 6.46 | 0.280 | 5.20 | 0.162 | 3.59 | 0.065 | 28.87 | 12.2 |
| 5 000 | 11.14 | 20.35 | 4.71 | 14.33 | 1.95 | 11.85 | 1.21 | 9.08 | 0.617 | 7.17 | 0.340 | 5.77 | 0.199 | 3.99 | 0.079 | ... | ... |
| 6 000 | 13.37 | 24.41 | 6.74 | 17.20 | 2.77 | 14.23 | 1.71 | 10.89 | 0.877 | 8.61 | 0.483 | 6.93 | 0.280 | 4.79 | 0.111 | ... | ... |
| 7 000 | 15.60 | 28.49 | 9.11 | 20.07 | 3.74 | 16.60 | 2.31 | 12.71 | 1.18 | 10.04 | 0.652 | 8.08 | 0.376 | 5.59 | 0.150 | ... | ... |
| 8 000 | 17.82 | ... | ... | 22.93 | 4.84 | 18.96 | 2.99 | 14.52 | 1.51 | 11.47 | 0.839 | 9.23 | 0.488 | 6.38 | 0.192 | ... | ... |
| 9 000 | 20.05 | ... | ... | 25.79 | 6.09 | 21.34 | 3.76 | 16.34 | 1.90 | 12.91 | 1.05 | 10.39 | 0.608 | 7.18 | 0.242 | ... | ... |
| 10 000 | 22.28 | ... | ... | 28.66 | 7.46 | 23.71 | 4.61 | 18.15 | 2.34 | 14.34 | 1.28 | 11.54 | 0.739 | 7.98 | 0.294 | ... | ... |
| 12 000 | 26.74 | ... | ... | 34.40 | 10.7 | 28.45 | 6.59 | 21.79 | 3.33 | 17.21 | 1.83 | 13.85 | 1.06 | 9.58 | 0.416 | ... | ... |
| 14 000 | 31.19 | ... | ... | ... | ... | 33.19 | 8.89 | 25.42 | 4.49 | 20.08 | 2.45 | 16.16 | 1.43 | 11.17 | 0.562 | ... | ... |
| 16 000 | 35.65 | ... | ... | ... | ... | ... | ... | 29.05 | 5.83 | 22.95 | 3.18 | 18.47 | 1.85 | 12.77 | 0.723 | ... | ... |
| 18 000 | 40.10 | ... | ... | ... | ... | ... | ... | 32.68 | 7.31 | 25.82 | 4.03 | 20.77 | 2.32 | 14.36 | 0.907 | ... | ... |
| 20 000 | 44.56 | ... | ... | ... | ... | ... | ... | 36.31 | 9.03 | 28.69 | 4.93 | 23.08 | 2.86 | 15.96 | 1.12 | ... | ... |

For pipe lengths other than 100 feet, the pressure drop is proportional to the length. Thus, for 50 feet of pipe, the pressure drop is approximately one-half the value given in the table... for 300 feet, three times the given value, etc. Velocity is a function of the cross sectional flow area; thus, it is constant for a given flow rate and is independent of pipe length.

# TECHNICAL DATA SECTION

## Temperature Conversion Chart

### Instructions For Use:

1. Start in the "Temp" column and find the temperature you wish to convert.
2. If the temperature to be converted is in degrees C, scan to the right column for the degrees F equivalent.
3. If the temperature to be converted is in degrees F, scan to the left column for the degrees C equivalent.

| °C | TEMP. | °F | °C | TEMP. | °F | °C | TEMP. | °F |
|---|---|---|---|---|---|---|---|---|
| -101 | -150 | -238 | -25 | -13 | 8.6 | -3.9 | 25 | 77 |
| -95.6 | -140 | -220 | -24.4 | -12 | 10.4 | -3.3 | 26 | 78.8 |
| -90 | -130 | -202 | -23.9 | -11 | 12.2 | -2.8 | 27 | 80.6 |
| -84.4 | -120 | -184 | -23.3 | -10 | 14 | -2.2 | 28 | 82.4 |
| -78.9 | -110 | -166 | -22.8 | -9 | 15.8 | -1.7 | 29 | 84.2 |
| -73.3 | -100 | -148 | -22.2 | -8 | 17.6 | -1.1 | 30 | 86 |
| -67.8 | -90 | -130 | -21.7 | -7 | 19.4 | -0.6 | 31 | 87.8 |
| -62.2 | -80 | -112 | -21.1 | -6 | 21.2 | 0 | 32 | 89.6 |
| -56.7 | -70 | -94 | -20.6 | -5 | 23 | 0.6 | 33 | 91.4 |
| -51.1 | -60 | -76 | -20 | -4 | 24.8 | 1.1 | 34 | 93.2 |
| -45.6 | -50 | -58 | -19.4 | -3 | 26.6 | 1.7 | 35 | 95 |
| -40 | -40 | -40 | -18.9 | -2 | 28.4 | 2.2 | 36 | 96.8 |
| -39.4 | -39 | -38.2 | -18.3 | -1 | 30.2 | 2.8 | 37 | 98.6 |
| -38.9 | -38 | -36.4 | -17.8 | 0 | 32 | 3.3 | 38 | 100.4 |
| -38.3 | -37 | -34.6 | -17.2 | 1 | 33.8 | 3.9 | 39 | 102.2 |
| -37.8 | -36 | -32.8 | -16.7 | 2 | 35.6 | 4.4 | 40 | 104 |
| -37.2 | -35 | -31 | -16.1 | 3 | 37.4 | 5 | 41 | 105.8 |
| -36.7 | -34 | -29.2 | -15.6 | 4 | 39.2 | 5.6 | 42 | 107.6 |
| -36.1 | -33 | -27.4 | -15 | 5 | 41 | 6.1 | 43 | 109.4 |
| -35.6 | -32 | -25.6 | -14.4 | 6 | 42.8 | 6.7 | 44 | 111.2 |
| -35 | -31 | -23.8 | -13.9 | 7 | 44.6 | 7.2 | 45 | 113 |
| -34.4 | -30 | -22 | -13.3 | 8 | 46.4 | 7.8 | 46 | 114.8 |
| -33.9 | -29 | -20.2 | -12.8 | 9 | 48.2 | 8.3 | 47 | 116.6 |
| -33.3 | -28 | -18.4 | -12.2 | 10 | 50 | 8.9 | 48 | 118.4 |
| -32.8 | -27 | -16.6 | -11.7 | 11 | 51.8 | 9.4 | 49 | 120.2 |
| -32.2 | -26 | -14.8 | -11.1 | 12 | 53.6 | 10 | 50 | 122 |
| -31.7 | -25 | -13 | -10.6 | 13 | 55.4 | 10.6 | 51 | 123.8 |
| -31.1 | -24 | -11.2 | -10 | 14 | 57.2 | 11.1 | 52 | 125.6 |
| -30.6 | -23 | -9.4 | -9.4 | 15 | 59 | 11.7 | 53 | 127.4 |
| -30 | -22 | -7.6 | -8.9 | 16 | 60.8 | 12.2 | 54 | 129.2 |
| -29.4 | -21 | -5.8 | -8.3 | 17 | 62.6 | 12.8 | 55 | 131 |
| -28.9 | -20 | -4 | -7.8 | 18 | 64.4 | 13.3 | 56 | 132.8 |
| -28.3 | -19 | -2.2 | -7.2 | 19 | 66.2 | 13.9 | 57 | 134.6 |
| -27.8 | -18 | 0.4 | -6.7 | 20 | 68 | 14.4 | 58 | 136.4 |
| -27.2 | -17 | 1.4 | -6.1 | 21 | 69.8 | 15 | 59 | 138.2 |
| -26.7 | -16 | 3.2 | -5.6 | 22 | 71.6 | 15.6 | 60 | 140 |
| -26.1 | -15 | 5 | -5.0 | 23 | 73.4 | 16.1 | 61 | 141.8 |
| -25.6 | -14 | 6.8 | -4.4 | 24 | 75.2 | 16.7 | 62 | 143.6 |

**CONVERSION FACTORS**

°C = (°F - 32) x 5/9
°F = (°C x 9/5) + 32

0 Kelvin = -273.15°C
0 Rankine = -459.69°F

SUMNER

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

**DATE:** 25 April 1988

**FROM:** Water Treatment Operator Foreman

**TO:** Leaders and Operators, Bldg. 670

**SUBJ:** LIME PUMP FLUSHING

1. It appears that some operators are not flushing lime pumps long enough to wash out drain of excess sand and lime. As of this date, when lime pumps are washed out, use water hose and wash excess sand and lime down drain as far as possible.

2. The united cooperation of all personnel will be greatly appreciated.

STANLEY L. MILLER

* U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

5000
MAIN

**DATE:** 1 March 1988

**FROM:** Water Treatment Plant Operator Foreman

**TO:** Bldg. 20 Operator and Bldg. 670 Leader

**SUBJ:** WATER FLOW AT BLDG. 20

1. The month of February water flows indicated a difference of 8,195,000 gallons. I checked this plant four times during February and I found the raw water reservoir running over three out of the four times. This will no longer be tolerated. Do not exceed 11'8" in the raw water reservoir. If this reservoir is found running over, corrective action will be taken.

STANLEY L. MILLER

☆U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

**Memorandum**

5000
MAIN

**DATE:** 22 March 1988

**FROM:** Water Treatment Plant Operator Foreman

**TO:** Leaders and Operators of Bldg. 20, 670, and AS-110

**SUBJ:** PH SAMPLING REQUIREMENTS

1. Beginning immediately, the pH analyses will be run on the treated water every two hours. The pH meter will be calibrated one time each day at the beginning of the day shift, with a standard buffer of 4.0, 7.0, and 9.0. However, if pH meter needs calibrating, you may comply with calibration more often. NOTE: Store probe in the pH. 7.0 buffer when not in use - meter on stand by.

2. This increase is to insure a more efficient operation of feeding lime; pH is a good indication of equipment malfunction or poor lime quality.

Stanley L. Miller

STANLEY L. MILLER

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

**Memorandum**

5000
MAIN

**DATE:** 22 March 1988

**FROM:** Water Treatment Plant Operator Foreman

**TO:** Leaders and Operators of Bldg. 20, 670, and AS-110

**SUBJ:** PH SAMPLING REQUIREMENTS

1. Beginning immediately, the pH analyses will be run on the treated water every two hours. The pH meter will be calibrated one time each day at the beginning of the day shift, with a standard buffer of 4.0, 7.0, and 9.0. However, if pH meter needs calibrating, you may comply with calibration more often. NOTE: Store probe in the pH. 7.0 buffer when not in use - meter on stand by.

2. This increase is to insure a more efficient operation of feeding lime; pH is a good indication of equipment malfunction or poor lime quality.

Stanley S Miller

STANLEY L. MILLER

NOTE: (1) TO ALL LEADERS:
THIS SAMPLE IS THE TREATED
SAMPLE THAT COME FROM THE
BOTTOM OF FILTER

(2) ALL CALCULATION FOR
CHEMICAL WILL BE CALCULATED
ON TREATED FLOW

(3) #1 SPERATOR IS NO LONGER
BEING CHECKED FOR SAND SIZE.
ALL SPERATOR ARE TO BE
CHANGED EVERY 1500 HR. AS
BEFORE.

* U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

2-19-88

Mac Fragale said he wanted us to adjust the chlorine to 1 PPM here at plant so Medford Point will have a residual of .8

Written By

JOE HARTSOE

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

**Memorandum**

5000
MAIN

**DATE:** 1 February 1988

**FROM:** Water Treatment Plant Operator Foreman

**TO:** Leaders, Operators of Bldg. 670, 20, AS-110

**SUBJ:** SAMPLING PROCEDURE - FLUORIDE

1. The State of North Carolina required a fluoride sample be taken from the distribution system of each water plant. The rules governing Public Water Supplies Section: 0606, par. (c) state this. To insure proper sampling procedures, we must increase our sampling of fluoride. The following procedures will be implemented immediately:

a. Bldg. 670 - The operator will pick up samples from TT-38 or Camp Johnson pool daily on his check and bring back to 670 for the fluoride analysis to be run and recorded on log sheet under fluoride sample for distribution system.

b. Bldg. 20 - The well person will pick up sample from Bldg. 540 or 236 daily. Well person will carry sample to Bldg. 20 for operator to run flouride analysis and record on log sheet under fluoride sample for distribution system.

c. Bldg. AS-110 - The well person will pick up sample from Bldg. TC-501 daily. Well person will carry sample to AS-110 for operator to run fluoride analysis and record on log sheet under fluoride sample for distribution system.

2. Your cooperation will be greatly appreciated in this increase sampling procedure.

Stanley L. Miller

STANLEY L. MILLER

*U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 21 January 1988

FROM: Foreman

TO: Leaders and Operators at 670 & 20

SUBJ: FLOURIDE SAMPLES

The Base Lab is at the present time under staffed. The following procedure will be followed as of this date.

1. Each Plant will run daily Flouride on raw and delivered, and record on log sheet (day shift). You will no longer take samples to Lab each morning.

2. Each Monday you will take samples to Lab as always. This is the only day samples will be taken to Lab. NOTE: This will be the sample taken on Monday morning 12-8 shift.

3. Each shift should run a Flouride and record on log sheet.

STANLEY L. MILLER

U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

670

DEPARTMENT OF THE NAVY

**Memorandum**

5000
MAIN

DATE: 19 June 1987

FROM: Utilities Systems General Foreman

TO: All Leaders and Foreman, Water and Wastewater

SUBJ: CA-1, SUBMISSION OF

1. Whenever water and wastewater personnel are injured, a Form CA-1, Federal Employees Notice of Traumatic Injury will be filled out by their supervisor. If the employee is sent to Building 15, a CA-1 will be issued to them when they leave. If an employee is injured on the weekends, holidays and after hours, and is sent to the Naval Hospital, a CA-1 will not be provided. The supervisor is responsible for filling out this form upon employee's return to work on the next workday. Leaders should remind their supervisor, upon their return to work, about the injury and leave appropriate data for their supervisor to correctly fill out CA-1.

2. All CA-1's and other pertinent information will be forwarded through me and to Utilities General Foreman, Building 1202.

B. M. FRAZELLE, II

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

5000
MAIN

**DATE:** 30 December 1987

**FROM:** Water Treatment Plant Operator Foreman

**TO:** All Leaders and Operators Bldg. 670 Plant

**SUBJ:** CHLORINE CYLINDERS

1. Set scales at 4000 lb. with no cylinder on scales.

2. Place cylinder on scales, subtract tare weight of cylinder. This will give weight of chlorine.

3. Make sure empty cylinder is tagged "empty".

4. Record date full cylinder was placed in service on log sheet and on cylinder.

Stanley L Miller

STANLEY L. MILLER

*U.S. GOVERNMENT PRINTING OFFICE: 1986-605-009:35418

## CIVILIAN PERSONNEL ADMINISTRATION BASE ORDERS

The following is a complete list of Base Orders pertaining to civilian personnel administration. Each department maintains a file of all orders in locations that are accessible to both supervisors and employees upon request.

| Number | Subject |
|---|---|
| 12000.1R | Position Maint. Review |
| 12000.2C | Civilian Personnel Mgmt. Program |
| 12270.1A ch1 | Travel Orders for Civil Service Personnel |
| 12275.1A | Self-Eval. of Civilian Personnel Mgmt. |
| 12293.1A | Maint., Use, and Disposition of Civil Service Personnel Records and Files |
| 12300.4C | DOD Program for Stability of Civilian Employment |
| 12306.1 | Handicapped and Disabled Veterans Program |
| 12315.1 | Probationary Period for Managers and Supervisors |
| 12335.1C | Merit Staffing Program |
| 12335.2B | Use of Details and Temporary Promotions of 120 Calendar Days or Less |
| 12351.1D | Reduction-in-Force (RIF) |
| 12410.3G | Civilian Employee Training and Development Program |
| 12430.1L | Performance Appraisals and Ratings of Civil Service Employees |
| 12432.1 | Reduction in Grade and Removal Based on Unacceptable Performance |
| 12451.1G ch1,2 | Incentive Awards Program/Military Cash Awards Program |
| 12511.1B | Position Classification |
| 12531.7C | Salary Increases for Civil Service Employees |
| 12531.8B | Selection of Salary and Wage Step Rates for Civil Service Employees |
| 12532.1N | Wage Schedules for Trades and Labor Employees |
| 12532.2A ch 1 | Grading of Trades and Labor Positions under the Federal Wage System |
| 12540.1A | Merit Pay System (MPS) |
| 12594.2C | Uniforms and Handtools; regulations concerning |
| 12610.1G ch1 | Hours of Work |
| 12630.1G ch1 | Absence and Leave for Civil Service Employees |
| 12711.1A | Official Time for Representational Functions |
| 12713.4B | Upward Mobility for Civil Service Employees |
| 12713.5F | MCB Update of Affirmative Action Program Plan Goals for FY 83-87 |
| 12713.6B | EEO Program |
| 12713.7 | Sexual Harassment |
| 12715.1 | Clearance Requirements of Civil Service Employees Preliminary to Separation for any Reason |
| 12750.1H | Discipline, Conduct, and Adverse Actions |
| 12771.1 | Department of the Navy Grievance Procedure |
| 12790.1E | Service to Employees (General) |
| 12790.2E | MCB Camp Lejeune Employees' Recreation and Welfare Association |
| 12790.4D | Dependents' Aid Association |
| 12792.1C | Medical Examinations and Services for Civil Service Employees |
| 12792.2B | Civilian Employee Assistance Program (CEAP) |
| 12810.1 | Federal Employees' Compensation Program |

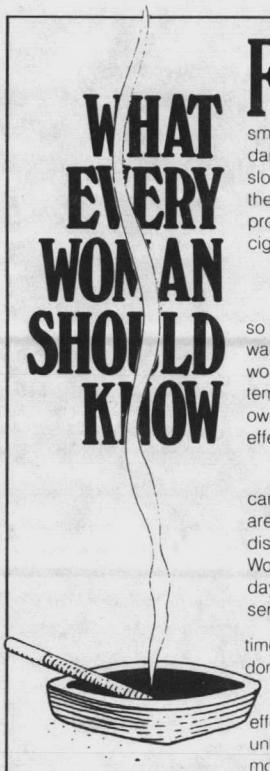
**********

There's always room for improvement; it's the biggest room in the house.

**********

Call 451-3928 - The CLNC HOTLINE to report incidents of **WASTE, FRAUD, ABUSE, CORRUPTION**

# WHAT EVERY WOMAN SHOULD KNOW



For years we've known how harmful cigarette smoking is to men. Now we're finding out how harmful it is to women. Since women haven't smoked as long or as heavily as men, the damage has become apparent more slowly. Until recently, we could cling to the illusion that women had a built-in protection from the consequences of cigarette smoking.

Unhappily, it was just an illusion.

Now the evidence is in. So grave and so far-reaching are the findings that they warrant thoughtful consideration by women of all ages who smoke, or are tempted to—women who care about their own bodies and are concerned about the effect their actions may have on others.

Heart disease, stroke, emphysema, cancers of the mouth and larynx. These are just a few of the other serious diseases women smokers are prey to. Women who smoke also spend 15% more days sick in bed each year with less serious ailments, and lose nearly three times as many work days as women who don't smoke.

For a pregnant woman, the harmful effects of smoking also extend to her unborn child. Nicotine and carbon monoxide from cigarettes can retard the fetus' growth so that the infant is born below normal weight. Small babies frequently have difficulty getting a good start in life, and their physical and emotional development during childhood may be affected.

In addition, women who smoke during pregnancy are more likely to have a stillborn infant, or a baby who dies soon after birth.

Teen-age girls, too, seem to be caught in the smoking spiral. Smoking in this group is rising sharply. Originally an activity which appealed primarily to boys, smoking has now become a habit for more than 15 percent of girls between 12 and 18—just a fraction under the number of boys the same age who smoke. Those who start young tend to smoke heavily, and it is heavy smokers who run the greatest risk. Studies show that children are more likely to smoke if their parents or older sisters and brothers smoke.

Now that the damaging facts are in, those of you who smoke may want to rethink your feelings about smoking—your reasons for starting in the first place, why you still do it, whether you even enjoy it. Ask yourself a hard question: is your cigarette habit really worth the consequences—and harder still, shouldn't you try to quit?

Can you quit?

Many people don't find the actual quitting very difficult, once they have made up their minds. Thirty million women and men have been able to do it.

The decision is yours now.

If you decide to quit, here are a few suggestions that might make it easier:

1. List the reasons for and against smoking.
2. Change to a low tar, low nicotine brand.
3. Select a day to quit.
4. Chart your smoking habits for two weeks: how many cigarettes, when, which is the most and least important.
5. Each night, repeat at least ten times one of your reasons for not smoking.
6. Eliminate one cigarette from your routine: the most or least desired.
7. Quit on the day you selected. Keep busy: go to the movies, exercise, take long walks. Use substitutes, sip water, chew gum, eat raisins or carrots, chew a clove.

Don't be discouraged if you don't make it the first time. Try again. Some ex-smokers say they tried and failed many times before succeeding. The important thing is they did try, and they did finally succeed.

You can, too.

**********

## 'LOOK-ALIKE' DRUG ABUSE SPREADING

The use of counterfeit or "look-alike" drugs is a peculiar form of drug abuse which is sweeping the country, according to the U.S. Department of Justice's Drug Enforcement Administration.

Look-alikes are carefully designed to resemble prescription drugs, such as amphetamines, barbituates, tranquilizers and narcotic pain killers which are sold, in many cases, illegally on the street. They are known by the same names as their dangerous counterparts: Black Beauties, Dexies, Yellows, Christmas Trees and Rainbows. But look-alikes contain only substances such as caffeine, ephedrine, phenylpropanolamine, acetaminophen and other over-the-counter non-prescription drugs.

The public health dangers of look-alikes have become apparent. The user who thinks he has been purchasing "speed" (an amphetamine, such as dexedrine) or "ludes" (methaqualone) and has become used to taking several look-alike capsules or tablets at a time in order to "get the full effect" runs the risk of serious overdose or death if one day he ingests the same number of the "real thing."

Also the look-alikes, themselves, can have serious effects. The number of emergency room incidents attributable to these drugs has risen dramatically in the past year and more than a dozen deaths caused by look-alikes have been reported.

These drugs not only cause problems for those who take them, they are causing serious problems for state and federal officials and medical personnel. Since the pushers are not selling a controlled substance, legal authorities are almost powerless. Also, overdose of look-alikes are difficult to treat since the actual substance ingested may not be known.

If it is suspected that such a substance (look-alike or other unknown drug) has been taken, contact a physician immediately and try to obtain a capsule (or tablet) of the drug so that it can be identified.

**********

## THE CIVILIAN EMPLOYEE ASSISTANCE PROGRAM

The Civilian Employee Assistance Program was established to provide assistance to those employees with alcohol or other drug dependence, or personal problems which are adversely affecting their job performance. If you have such a problem, Dottie Pullicino is available to discuss it with you and to offer assistance. Her office is in Building 33, Civilian Personnel Division; telephone extensions, 1458/1579.

**********

When you put part of your savings into U.S. Savings Bonds you're helping to build a brighter future for your country and for yourself.

# Civilian Guidepost

Compiled and Edited by

CIVILIAN PERSONNEL DIVISION, MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations

VOLUME 29 NO. 3 11 FEBRUARY 1983

COMMANDING GENERAL
Marine Corps Base
Camp Lejeune, North Carolina 28542

19 January 1983

TO ALL PERSONNEL:

I have received numerous reports of assistance provided to needy families by our military and civilian personnel through their work organizations during the Christmas season.

During these times when many of our citizens in the surrounding communities are suffering economic hardship, such actions exemplify the true spirit of Christmas.

To all of you who so generously participated to bring a measure of hope and cheer to these needy families, I commend you for a job well done.

D. J. FULHAM
Brigadier General, U. S. Marine Corps

**********

## CHANGE IN DISCONTINUED SERVICE RETIREMENT ELIGIBILITY

A recently enacted Public Law has amended the retirement law to restrict eligibility for discontinued service retirement. Prior to 1 October 1982, employees who were involuntarily separated from the service other than for misconduct or delinquency were eligible for discontinued service retirement if they were at least 50 years old with 20 years service, or any age with 25 years service, even if they declined offers of positions at the same grade and pay. Under the new law, an employee who is involuntarily separated from the service on and after 1 October 1982, will not be eligible for discontinued service retirement if the employee has declined a reasonable offer of another position in the employee's agency for which qualified, which is not lower than two grades or pay levels below the person's current position, which is in the employee's same commuting area.

**********

St. Valentine's Day - 14 February 1983

## WITHHOLDING WITHIN-GRADE INCREASES LINKED TO BASIC PERFORMANCE APPRAISAL PROGRAM

The Department of the Navy (DON) has issued Civilian Personnel Instruction (CPI) 431 which links the withholding of within-grade increases to DON's Basic Performance Appraisal Program. Base Order 12531.1C, recently issued, incorporates the essential requirements of that CPI.

The same performance standards established under the Performance Appraisal Program are the standards which must be considered in deciding to withhold or grant a within-grade increase. The requirement under the previous order for advance written notice of deficiencies in performance has been eliminated. Instead, the performance appraisal process, particularly the most recent appraisal, will be the mechanism for warning an employee that his or her performance is not satisfactory. A rating of less than satisfactory in one or more critical elements requires the withholding of a within-grade increase unless justified in writing.

The new procedure for the withholding of within-grade increases should make it easier to identify and correct employees with performance-related problems.

Both General Schedule and Federal Wage System employees may have within-grade increases withheld; however, the procedures to follow differ in several respects for each group. Specifics are detailed in the new Base Order. Questions concerning the order may be directed to the Classification Branch, extension 1532.

**********

## DEVELOPING YOUR BENEFICIAL SUGGESTION

Develop your suggestion! To ensure the best possible chance of your idea winning approval (and dollar awards) nail it down with all the necessary details.

Civilian Courier

**********

## DID YOU KNOW

A gasoline container with only a small amount of gas in it creates a gas-air mixture much more explosive than a container three-quarters full. Think Safety!

## STAFFING ANNOUNCEMENTS

Open Continuously

Practical Nurse, GS-3 TARGET GS-4, Ann. No. 63-81
Clerk, GS-2 and GS-3, Ann. No. 162-81
Laundry Worker, WG-2, and Presser, WG-2, Ann. No. 165-81
Clerk-Stenographer, GS-3, and Clerk-Typist, GS-3, Ann. No. 168-81
Laborer, WG-2 and WG-3, Ann. No. 176-81
Food Service Worker, WG-2, Ann. No. 188-81
Clerk-Stenographer, GS-4, Ann. No. 78-82

Open for Specified Period

Boiler Plant Operator General Foreman, WS-13, Ann. No. 14-83, closes 15 February 1983
Electrician General Foreman, WS-12, Ann. No. 15-83, closes 15 February 1983

## UPCOMING ANNOUNCEMENTS

WATCH YOUR OFFICIAL BULLETIN BOARDS

Supply Clerk, GS-5 TARGET Supply Technician, GS-6
Accounting Technician, GS-4
Accounting Technician, GS-5
Purchasing Agent, GS-4 TARGET GS-5
Purchasing Agent, GS-5

**********

## HEALTH BENEFITS COVERAGE FOR THE DISABLED CHILD

The law provides that an employee's self and family enrollment includes unmarried children over age 22 who are incapable of self-support because of physical or mental incapacity which existed before they reach age 22. Financial dependency is not a factor--a determination of incapacity for self-support is based entirely on medical considerations.

Medical certification and a request for coverage may be submitted to the Civilian Personnel Division at the time of initial enrollment or at any later time; however, for a child who has been covered in a self and family enrollment, certification should be submitted at least 30 days before the child attains age 22. Depending on the nature of the handicap, coverage may be extended for a limited time or permanently. If the extension is for a limited period, and incapacity continues beyond that period, further extension of coverage may be approved upon presentation of medical certification.

If you have self and family coverage and have a child whom you believe falls in this category, you should contact the Employee Relations Branch, extension 1579, for further information.

**********

## IT'S A FACT

Most automobiles get about 20 percent more miles per gallon on the highway at 55 mph than they do at 70 mph.

## KEROSENE HEATERS: USE WITH CAUTION

If you are thinking of getting a kerosene heater, the National Safety Council offers the following advice:

First, check to see if kerosene heaters are allowed where you live. Their use is prohibited on military bases and in military housing and government buildings. Some states and counties restrict or limit their use.

If the sale and use is not prohibited in your area, look for the newer models with built-in safety features. Features to look for are: safety shut-off devices, guard rails, low center of gravity (to reduce tipping and spilling), double walls and push-button "on" switch so you don't have to use matches.

Burn only kerosene. Never use gasoline, white gas, camp-stove fuel or other fuels. They are extremely hazardous if used in kerosene heaters.

The kerosene should be Grade #1 (it looks clear, like water). Yellow or colored kerosene will smoke, smell and mess up your wick.

Keep your kerosene in an approved container, clearly marked KEROSENE, away from living quarters.

Refill the heater away from living quarters when the heater is cool. Use a siphon pump to keep from spilling fuel.

Place the heater away from curtains, furniture, papers, clothes or other things that will burn.

Some heater surfaces will get hot. Keep children away and instruct them to not touch the controls. Consider putting up a barrier to prevent them from contacting the heater.

Make sure enough air is circulating through the room. Open the door to an adjacent room. Open a window slightly in totally closed rooms.

Because the heaters have an open flame, don't use flammables like aerosol sprays, lacquers or gasoline in the same room.

When you turn the heater off, be sure the flame is all the way out.

Read and follow the manufacturer's instructions for using and maintaining the heater.

**********

## MEETINGS

AFGE MEETING: 7:30 p.m., 17 February 1983, AFGE Office Building, Gum Branch Road.

FMA MEETING: 4:30 p.m., 24 February 1983, NCO Club, Bldg. 425. All supervisors are invited to attend.

UNITED STATES MARINE CORPS
Base Maintenance Division
Marine Corps Base
Camp Lejeune, North Carolina 28542

IN REPLY REFER TO
11380
MAIN
29 Jul 85

From: Director, Utilities Branch
To: Air Conditioning Equipment Mechanic Foreman

Subj: CHECK IN PROCEDURES

1. To promote plant and personnel safety within the Cold Storage Plant, the following check in procedures will be implemented upon receipt of this letter:

a. The Water Treatment Plant, phone number: 5988 will be called at 1600, 1800, 2000, 2200, 2400, 0200, 0400, and 0600 daily on weekdays. Telephone calls will also be made every two hours throughout the 24-hour period on Saturdays, Sundays, and holidays. During the months that don't require a 12/8 operator, the 4/12 shift operator will also call between the time frame of 2330-2400.

b. Anytime telephone calls are not received on schedule, the Water Treatment Plant Operator will call the Cold Storage Plant, phone 3567, to insure that no accident has occurred. If the operator cannot be reached, the Water Treatment Plant Operator will initiate action by sending the Helper on duty to the Cold Storage Plant to investigate the problem and report same to the Water Treatment Plant Operator. Anytime that no one is available at the water plant, the operator will call and report the problem to Mr. Chesley Thigpen, phone: 324-4319 (Richlands), or Mr. Arthur Becker, phone: 347-5287 (Jacksonville), or Mr. D. L. Southerland, phone: 298-3654 (Beulaville).

c. After checking the Cold Storage Plant, if an accident or any other difficulty exist, the operator will get medical aid and call Mr. Chesley Thigpen or Mr. Arthur Becker at the above mentioned telephone numbers.

d. Cold Storage Plant Operator will note on log sheet time call was placed to the Water Treatment Plant Operator. Water Plant Operator will note on log sheet time call was received from Cold Storage Plant.

G. S. Johnson, Jr.
G. S. JOHNSON, JR.

Copy to:
WaterTreatSec

# UTILITIES BRANCH
# EMERGENCY CALLBACK LIST

## DIRECTOR

| | | |
|---|---|---|
| JOHNSON, GOLD S. JR. | SWANSBORO | 393-8417 |

## ASSISTANT DIRECTOR

| | | |
|---|---|---|
| SOUTHERLAND, DAVID L. | CHINQUAPIN | 298-3654 |

---

## STEAM GENERATION SECTION

| | | |
|---|---|---|
| SHEPARD, KENNETH R.<br>Boiler Plant Operator General Foreman | RICHLANDS | 285-4225 |
| MEADOWS, BOBBY E.<br>Boiler Plant Operator Foreman | MAYSVILLE | 743-7971 |
| JONES, JAMES V.<br>Boiler Plant Equipment Mechanic Foreman | CHINQUAPIN | 324-2211 |
| HUMPHREY, MORRIS<br>Pipefitter Foreman | RICHLANDS | 324-5718 |

---

## WATER & WASTEWATER TREATMENT SECTION

| | | |
|---|---|---|
| PRICE, WILLARD R.<br>Utility Systems General Foreman | PINK HILL | 298-3629 |
| FRAZELLE, Byron M.<br>Water Treatment Plant Operator Foreman | JACKSONVILLE | 353-7595 |
| DAVIS, MACK D.<br>Sewage Disposal Plant Operator Foreman | SNEADS FERRY | 327-3757 |
| LISIEWSKI, JOE S.<br>Plumbing Foreman | JACKSONVILLE | (353-9576) |

---

## UMACS SECTION

| | | |
|---|---|---|
| ENGLE, PAT<br>General Engineer | HUBERT | 326-1658 |

---

## COLD STORAGE SECTION

| | | |
|---|---|---|
| BECKER, ARTHUR F.<br>Air Conditioning Equipment Mechanic Foreman | Jacksonville | 347-5287 |

---

## ELECTRICAL DISTRIBUTION SECTION

MACMILLAN, L. T. WALLACE 285-7281
Electrician Foreman

The gasoline day tank is located under the base of the generator. The float reset button is located front right. This button will allow you to also feed fuel manually from the main tank.

When starting engine, if you receive a overcrank alarm, try to start generator again, the engine may be cold or out of fuel.

The alarm in red will shut down the engine. You must reset each fail before the engine will start. The reset is the red lite, the alarm disconnect only silences the horn.

Starter overspeed is set at 600 RPM and then it will pull out and give an alarm.

If the engine shuts down for any reason it will not start until 70 seconds has elasped.

The engine should be warm to touch at all times, this means heater jacket is working.

The oil stick is on left and should be checked each start up.

To start generator in manual turn start/stop switch to manual. To stop generator turn start/stop switch to auto and leave in auto position.

The hertz should read 60. If reajustment is required, call leader on duty.

The red button on the left behind the panel shuts off generator (emergency shut down). It must be reset inside box, top middle reset. Turn start, stop, reset, switch to reset then back to auto. To check system if commercial power is on, place test switch to test, generator will start, power will go off for 3 seconds, switch will transfer, pumps will go off for 50 seconds. The pumps that were in auto will come back on and run for 5 minutes. Pumps will go off for 50 seconds, switch will transfer back to commercial power. Generator will run for 5 more minutes.

Make sure that leader is called before test.

When commercial power goes off generator will start and system should transfer. Operator will place pump needed in hand and press start button. Cut pumps not required to off position until commercial power is restored at which time system will transfer back to commercial power. Generator will run for 5 minutes and shut down. Place all pumps back to auto.

If this system fails to transfer automatically, follow instructions on transfer panel for manual transfer.

PUMPING RATES + SCREEN LEVELS

New Wells.

JOHN MILLER

| WELL # | DOWN TO: | UPPER SCREEN | PUMP RATE |
|---|---|---|---|
| 1 | 68'0" | 78'0" | 250 |
| 2 | 62'0" | 72'0" | 200 |
| 3 | [redacted] 90'0" | 100'0" | 250 |
| 4 | 50' | 60' | 250 |
| 5 | 75' | 85 | 300 |
| 6 | 74' | 84' | 200 |
| 7 | 60' | 70' | 250 |
| 8 | 120' | 130' | 250 |
| 9 | 80' | 90' | 300 |
| 10 | 116' | 126' | 300 |
| 11 | 65' | 75' | 200 |
| 12 | 60' | 70' | 200 |
| 13 | 50' | 60' | 200 |
| 14 | 120' | 130' | 350' |

John Miller 1-638-3476

# NOTICE

The following personnel will check the fire extinguishers for proper pressure, seal on pin, and initial card monthly. Check weekly inspection sheet when completed.

Hadnot Point
TT and Camp Johnson
MCAS, MOQ and CG
Holcomb Boulevard
OB, CHB, RR
Shop (at Bldg. 762)

Pehowic
Hartsoe
Ellis
Holland
Sumner
Rich

Stanley L. Miller

Utilities

UNITED STATES MARINE CORPS
BASE MAINTENANCE DIVISION
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5000

IN REPLY REFER TO
12451
MAIN
05 OCT 1987

From: Base Maintenance Officer

Subj: EMERGENCY PROCESS CODE

1. Effective immediately the emergency access code "Red" will be utilized by maintenance personnel to gain access to the Base Maintenance radio frequency network in case of an emergency. Upon hearing this code, all personnel are to vacate the network to permit the individual to seek assistance.

2. Your cooperation and assistance is appreciated in this matter.

M. G. LILLEY

DISTRIBUTION: C

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
Memorandum
5000
MAIN

DATE: 30 September 1987

FROM: Water Treatment Plant Foreman

TO: All Water Treatment Plant Personnel

SUBJ: PLANT INSPECTIONS

1. I would like to express my appreciation for a job well done. Over the past few months, there has been some changes in operation and inspection of plants by leaders. Most everyone has cooperated to the fullest in maintaining the plant appearance and quality of water required.

2. I like to think of the Water Treatment personnel as a football team. Each player has an assignment when they go out on the field. When the assignment is done properly by each player, the team wins. From my standpoint at the present time, you are a winning team.

Stanley L. Miller

STANLEY L. MILLER

☆U.S. GOVERNMENT PRINTING OFFICE: 1982-505-106:8483

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY
*Memorandum*
5000
MAIN

DATE: 30 September 1987

FROM: Utilities Systems General Foreman

TO: Water Treatment Plant Operator Foreman
Wastewater Treatment Plant Operator Foreman

SUBJ: PLANT INSPECTIONS

1. A review of utility plants, plant inspections and chemical and bacterial analysis reveals that plant operations and appearance are exceptional. Please convey to all personnel my sincere appreciation and a job well done.

2. The past year has brought many changes in personnel and operating procedures. Only through each employees' initiative, cooperation and assistance can we continue to meet the mission of the Water and Wastewater Treatment Section. Please solicit each employee for new ideas, improved operations and their continued support.

3. Let's continue to keep up the good work.

B. M. FRAZELLE, II

WE LEADER'S

CAN FILL OUT

DISPENSARY

PERMIT FOR

HEARING TEST

M

3 COPIES

# OCCUPATIONAL HEALTH PERMIT

MCBCL 5100/3

INSTRUCTIONS:
1. Complete in Triplicate.
2. Return Original to Supervisor; 1 Copy to Civilian Personnel; 1 Copy to Base Safety Manager.
3. If an Occupational Injury, Form CA-17 with Part A Completed MUST Also be Submitted.

**THIS SECTION TO BE COMPLETED BY SUPERVISOR**

TO: OCCUPATIONAL HEALTH NURSE, BUILDING 15, CAMP LEJEUNE, N.C. 28542

FROM: (Title of Supervisor, Shop or Office, and Location)
VOU

| NAME OF EMPLOYEE (First, Middle, Last) | PAYROLL NO. | SOCIAL SEC. NO. |
|---|---|---|
| LEON S. PARKER | 2383-14908 | 246-40-0308 |
| JOB TITLE: WATER PLANT OPERATOR | TIME LEFT JOB | TIME RETURNED |

REASON FOR REFERRAL

☐ INJURY ☐ ILLNESS ☐ EMPLOYEE'S REQUEST (YOUR Choice) ☐ OTHER (Specify)

| DATE AND TIME OF INJURY | DATE REFERRED TO CLINIC | OCCUPATIONAL |
|---|---|---|
| — | — | ☒ YES ☒ NO ☐ QUESTIONABLE |

REMARKS

| NAME OF SUPERVISOR (Print) | SIGNATURE | PHONE | DATE |
|---|---|---|---|
| D. E. Hill | — | 5488 | 11-12-85 |

**THIS SECTION TO BE COMPLETED BY MEDICAL OFFICER**

| TIME REPORTED | TIME RELEASED | OCCUPATIONAL |
|---|---|---|
| | | ☐ YES ☐ NO ☐ QUESTIONABLE |

DEGREE OF INJURY

☐ FIRST AID ☐ DISPENSARY ☐ HOSPITAL ☐ PERSONAL PHYSICIAN ☐ SENT HOME ☐ OTHER (Explain in Remarks)

**DISPOSITION OF EMPLOYEE**

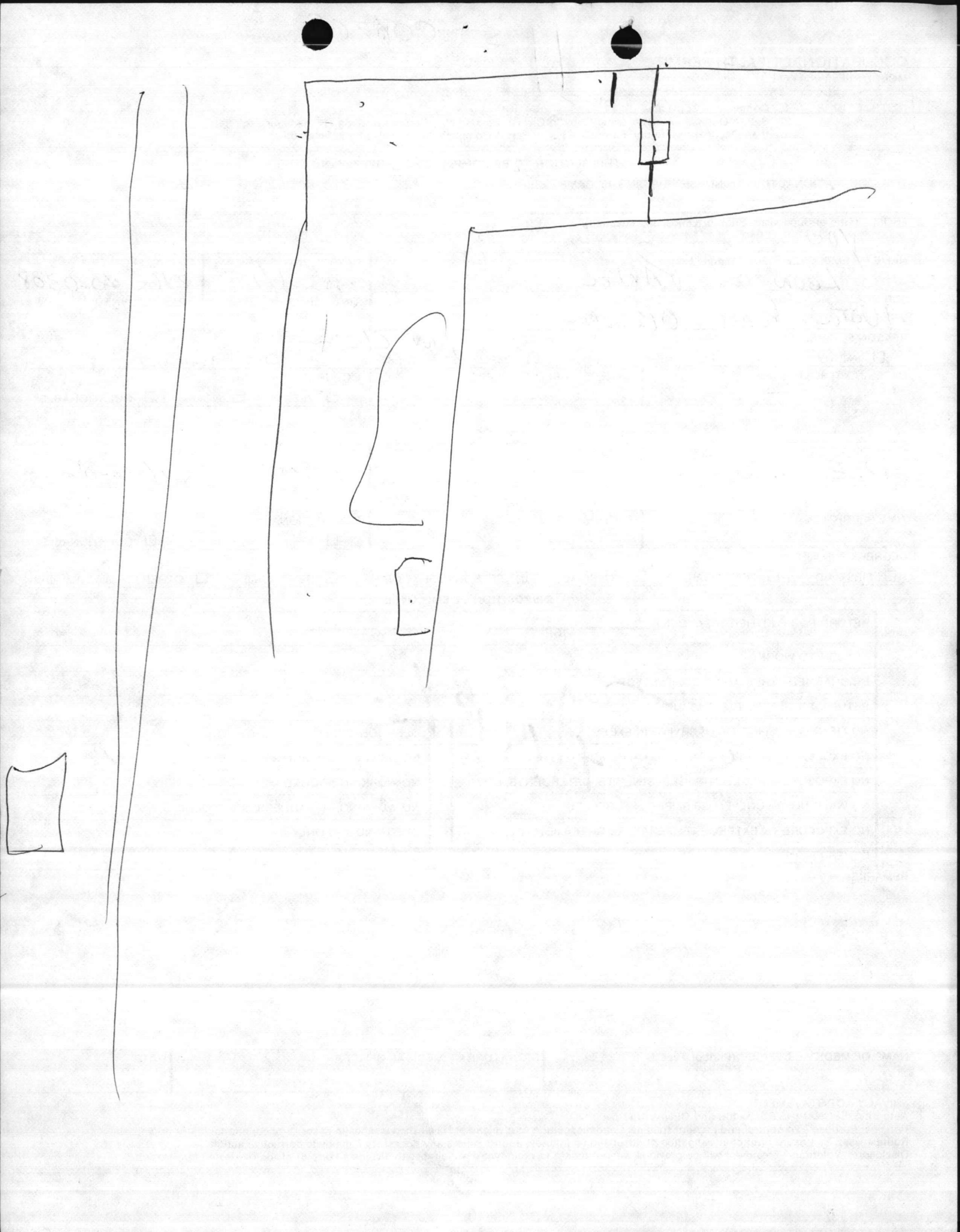
| | | |
|---|---|---|
| | RETURN FOR FURTHER TREATMENT ____ TIME ____ DATE | |
| | RETURN TO WORK | |
| | DISCHARGED. TREATMENT COMPLETED | |
| | RETURN TO LIMITED DUTY AS INDICATED BELOW | |
| | NO LIFTING, PULLING OR CARRYING IN EXCESS OF ____ LBS. | DESK JOB ONLY |
| | NO EXCESSIVE WALKING, STANDING OR BENDING | NO DRIVING GOVERNMENT VEHICLE |
| | NO EXPOSURE TO SOLVENTS, GREASES, OILS, DETERGENTS, ETC. | NO WORKING AROUND MOVING MACHINERY |
| | NO WALKING ON UNEVEN OR SLIPPERY SURFACES | NO WORKING ON LADDERS, SCAFFOLDING, ETC. |
| | NO EXPOSURE TO EXTREME TEMPERATURE OR HUMIDITY | ONE HAND JOB ONLY |
| | OTHER (Explain) | |

SAMPLE

REMARKS

| NAME OF MEDICAL OFFICER (Print or Type) | SIGNATURE OF MEDICAL OFFICER | DATE |
|---|---|---|
| | | |

PRIVACY ACT STATEMENT
Authority: SECNAVINST 5100.10B and OPNAVINST 5100.14
Principal Purpose: To control and monitor treatment and disposition of civilians of Naval Dispensaries in cases of occupational injury or illness.
Routine Use: To ensure prompt investigation of occupational injuries, and to initiate any necessary immediate corrective action.
Disclosure: Voluntary. Treatment will be provided without regard to employee's willingness to divulge all or part of the requested information.



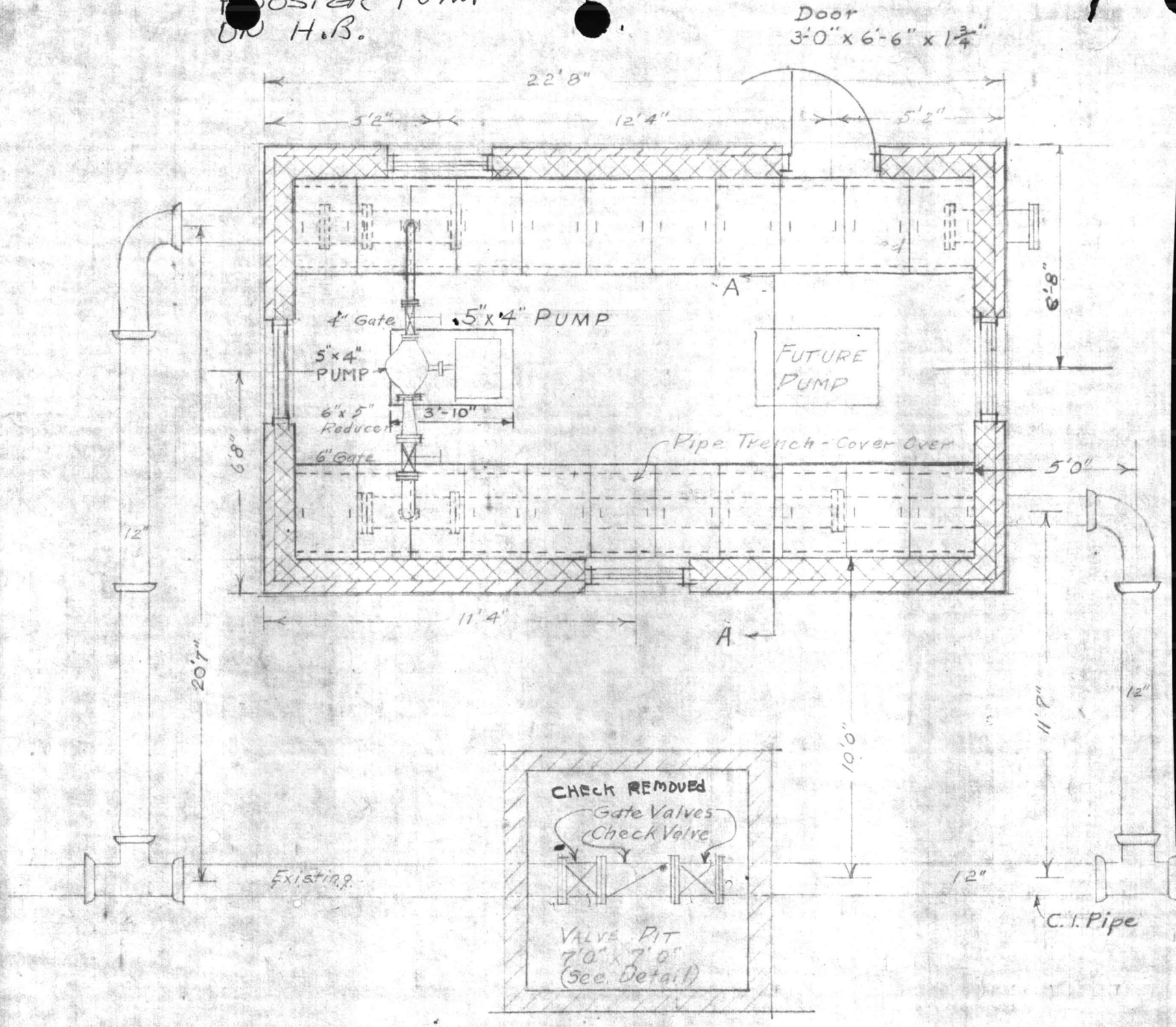
TO LEADERS AND OPERATORS AT 670:

When recording flow used, the raw water meter on the computer for raw water flow reading. This is a total reading for the day.

When recording delivered water add HBFLW and TRMFLW together for the delivered water reading. This will be a total daily flow.

Record old meter reading on back of Log Sheet for information only.

BOOSTER PUMP
U.D. H.B.




The contractor shall provide and install a horizontal split case centrifugal pump complete & ready to operate. Pump shall have characteristics as follows when the suction head is 46 psi ga. (106'):

| GPM | Head feet | Total head in system | BHP | EFF |
|---|---|---|---|---|
| 600 | 68' | 174' | 12.6 | 80 % |
| 650 | 64' | 170' | 12.8 | 81 % |
| 700 | 60' | 166' | 12.9 | 82 % |
| 750 | 55' | 161' | 12.8 | 82 % |
| 800 | 48' | 154' | 12.3 | 80 % |

Pump shall be direct connected, electric motor driven, 208 V - 60 cy - 3 ϕ, with a 15 HP motor.

PLAN
Scale 1/4" = 1'0"

TARAWA TERRACE PUMP SEQUENCE 4-6-87

Step #1 - Pump 3 - All others off

Step #2 - Pump #1 or #2 on (Alternate) - Pump #3 & #4 off.

Step #3 - Pump #1 and #2 on - Pump #3 & #4 off.

Step #4 ~~=~~ Pump #4 on - All others off

#4 Pump in Auto 6/26/87

~~Note: *This pump in OFF position - waiting parts for repair.~~

DATA BASE - Discrete.
Point 153 - Generator For 670 in R.W. Pump House.

07/23/87 14:00:14 **Lake Level Control Point**

Thursday July 23, 1987

1) Point Id : WPC
2) Description : WELL PUMP CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value | Point Id | Current Value |
|---|---|---|---|---|
| 1 | 6) RWTRESV | 7) 17.0 | | |
| 2 | 8) | 9) 0 | | |
| 3 | 10) | 11) 0 | | |

12) Number Of Steps : 2

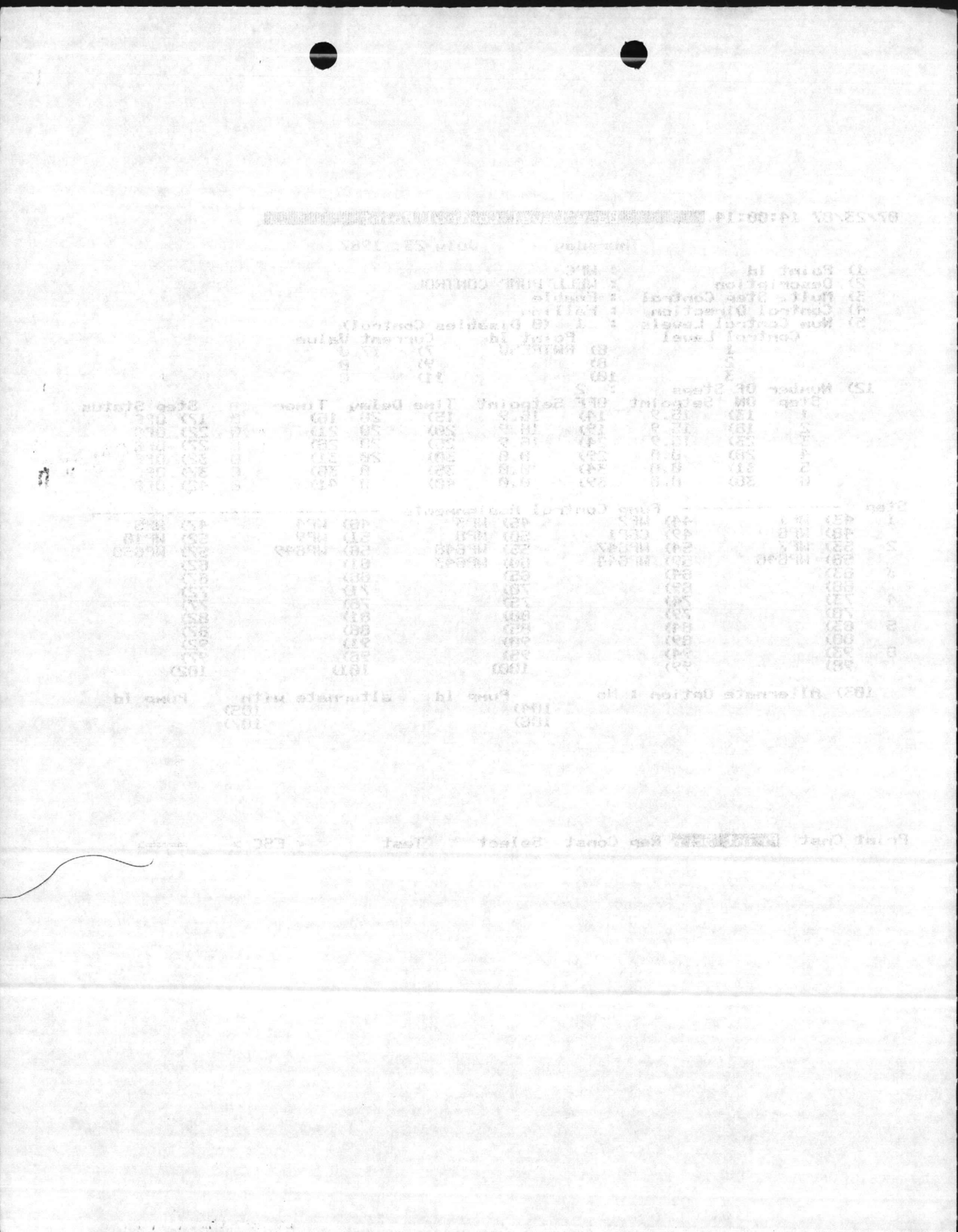
| Step | ON | Setpoint | OFF | Setpoint | Time Delay | Timer | | Step Status |
|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 15.9 | 14) | 16.9 | 15) 20 | 16) | 0 | 17) Off |
| 2 | 18) | 15.9 | 19) | 16.9 | 20) 20 | 21) | 0 | 22) Off |
| 3 | 23) | 15.9 | 24) | 16.9 | 25) 20 | 26) | 0 | 27) Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) 20 | 31) | 0 | 32) Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) 0 | 36) | 0 | 37) Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) 0 | 41) | 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) WP1 | 44) WP2 | 45) WP3 | 46) WP4 | 47) WP5 |
| | 48) WP6 | 49) C8P1 | 50) WP8 | 51) WP9 | 52) WP10 |
| 2 | 53) WP7 | 54) WP647 | 55) WP648 | 56) WP649 | 57) WP650 |
| | 58) WP646 | 59) WP644 | 60) WP643 | 61) | 62) |
| 3 | 63) | 64) | 65) | 66) | 67) |
| | 68) | 69) | 70) | 71) | 72) |
| 4 | 73) | 74) | 75) | 76) | 77) |
| | 78) | 79) | 80) | 81) | 82) |
| 5 | 83) | 84) | 85) | 86) | 87) |
| | 88) | 89) | 90) | 91) | 92) |
| 6 | 93) | 94) | 95) | 96) | 97) |
| | 98) | 99) | 100) | 101) | 102) |

103) Alternate Option : No Pump Id 104) alternate with 105) Pump Id 106) 107)

Print Cnst **Print Scst** Rep Const Select Test < ESC > ==>



07/23/87 16:00:43 Base Level Control Point

Thursday July 23, 1987

```
 1) Point Id                    : RWPC
 2) Description                 : RAW WATER PUMP CONTROL
 3) Mult. Step Control          : Disable
 4) Control Direction           : Falling
 5) Num Control Levels          :  1  (0 Disables Control)
      Control Level                Point Id      Current Value
            1                    6) HBFWRL        7)     8.1
            2                    8) TRMWRSV       9)     9.9
            3                   10)              11)       0
12) Number Of Steps             :  1
     Step  ON  Setpoint  OFF Setpoint  Time Delay  Timer      Step Status
       1   13)     8.7   14)     9.2   15)   20  16)    0  17) On
       2   18)     7.9   19)     8.3   20)   20  21)    0  22) Off
       3   23)     7.5   24)     7.9   25)   20  26)    0  27) Off
       4   28)     7.0   29)     7.5   30)   20  31)    0  32) Off
       5   31)     0.0   34)     0.0   35)    0  36)    0  37) Off
       6   38)     0.0   39)     0.0   40)    0  41)    0  42) Off

Step ---------------- Pump Control Assignments ----------------------------
 1   43) RWP1        44) RWP2        45) RWP3        46) RWP4        47)
     48)             49)             50)             51)             52)
 2   53)             54)             55)             56)             57)
     58)             59)             60)             61)             62)
 3   63)             64)             65)             66)             67)
     68)             69)             70)             71)             72)
 4   73)             74)             75)             76)             77)
     78)             79)             80)             81)             82)
 5   83)             84)             85)             86)             87)
     88)             89)             90)             91)             92)
 6   93)             94)             95)             96)             97)
     98)             99)            100)            101)            102)

103) Alternate Option : No        Pump Id     alternate with     Pump Id
                                 104) RWP1                    105) RWP2
                                 106)                         107)
```

Print Cnst Point Sorr Rep Const Select Test < ESC > ====>

07/23/87 13:54:57 Base Level Control Point

Thursday July 23, 1987

1) Point Id : CFC
2) Description : CHEMICAL FEED CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Rising
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value |
|---|---|---|
| 1 | 6) PINFLW | 7) 0.00 |
| 2 | 8) | 9) 0 |
| 3 | 10) | 11) 0 |

12) Number Of Steps : 2

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | Timer | | Step Status |
|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 0.50 | 14) | 0.35 | 15) 10 | 16) | 0 | 17) Off |
| 2 | 18) | 0.50 | 19) | 0.35 | 20) 10 | 21) | 0 | 22) Off |
| 3 | 23) | 3.10 | 24) | 2.50 | 25) 10 | 26) | 0 | 27) Off |
| 4 | 28) | 4.10 | 29) | 3.50 | 30) 10 | 31) | 0 | 32) Off |
| 5 | 31) | 0.00 | 34) | 0.00 | 35) 0 | 36) | 0 | 37) Off |
| 6 | 38) | 0.00 | 39) | 0.00 | 40) 0 | 41) | 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) | LF2 | 44) | LP2 | 45) | LP3 | 46) | FLF1 | 47) | FLP1 |
| | 48) | LSU3 | 49) | LSU2 | 50) | LSU1 | 51) | LP1 | 52) | LP6 |
| 2 | 53) | LSU4 | 54) | AFP1 | 55) | AFP2 | 56) | LP4 | 57) | LSU5 |
| | 58) | | 59) | | 60) | | 61) | | 62) | |
| 3 | 63) | | 64) | | 65) | | 66) | | 67) | |
| | 68) | | 69) | | 70) | | 71) | | 72) | |
| 4 | 73) | | 74) | | 75) | | 76) | | 77) | |
| | 78) | | 79) | | 80) | | 81) | | 82) | |
| 5 | 83) | | 84) | | 85) | | 86) | | 87) | |
| | 88) | | 89) | | 90) | | 91) | | 92) | |
| 6 | 93) | | 94) | | 95) | | 96) | | 97) | |
| | 98) | | 99) | | 100) | | 101) | | 102) | |

103) Alternate Option : No Pump Id alternate with Pump Id
104) 105)
106) 107)

Print Cnst Print Sort Rep Const Select Test < ESC > ===>

07/23/87 16:04:12 **Base Level Control Point**

Thursday July 23, 1987

1) Point Id : HBPC
2) Description : HOLCMB BLVD PUMP CONTROL
3) Mult. Step Control : Disable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | | Current Value |
|---|---|---|---|
| 1 | 6) PPETLVL | 7) | 25.7 |
| 2 | 8) PPETLVL | 9) | 25.7 |
| 3 | 10) PPETLVL | 11) | 25.7 |

12) Number Of Steps : 3

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | Timer | | Step Status |
|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 28.0 | 14) | 30.0 | 15) 60 | 16) | 0 | 17) Off |
| 2 | 18) | 27.0 | 19) | 28.0 | 20) 60 | 21) | 0 | 22) On |
| 3 | 23) | 25.5 | 24) | 26.9 | 25) 60 | 26) | 0 | 27) Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) 60 | 31) | 0 | 32) Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) 0 | 36) | 0 | 37) Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) 0 | 41) | 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) | HBP1 | 44) | | 45) | | 46) | | 47) | |
| | 48) | | 49) | | 50) | | 51) | | 52) | |
| 2 | 53) | HBP1 | 54) | HBP2 | 55) | | 56) | | 57) | |
| | 58) | | 59) | | 60) | | 61) | | 62) | |
| 3 | 63) | | 64) | HBP2 | 65) | HBP3 | 66) | | 67) | |
| | 68) | | 69) | | 70) | | 71) | | 72) | |
| 4 | 73) | | 74) | | 75) | | 76) | | 77) | |
| | 78) | | 79) | | 80) | | 81) | | 82) | |
| 5 | 83) | | 84) | | 85) | | 86) | | 87) | |
| | 88) | | 89) | | 90) | | 91) | | 92) | |
| 6 | 93) | | 94) | | 95) | | 96) | | 97) | |
| | 98) | | 99) | | 100) | | 101) | | 102) | |

103) Alternate Option : Yes

| Pump Id | | alternate with | Pump Id |
|---|---|---|---|
| 104) HBP1 | | 105) | HBP2 |
| 106) | | 107) | |

Print Cnst **Print Sett** Rep Const Select Test < ESC > ==>

07/23/87 16:04:47 Base Level Control Point

Thursday July 23, 1987

1) Point Id : TMPC
2) Description : TRANS MAIN PUMP CONTROL
3) Mult. Step Control : Enable
4) Control Direction : Falling
5) Num Control Levels : 1 (0 Disables Control)

| Control Level | Point Id | Current Value |
|---|---|---|
| 1 | 6) TTRSVL | 7) 10.9 |
| 2 | 8) | 9) 0 |
| 3 | 10) | 11) 0 |

12) Number Of Steps : 2

| Step | ON | Setpoint | OFF | Setpoint | Time Delay | Timer | | Step Status |
|---|---|---|---|---|---|---|---|---|
| 1 | 13) | 10.2 | 14) | 11.4 | 15) 20 | 16) | 0 | 17) On |
| 2 | 18) | 9.0 | 19) | 10.2 | 20) 20 | 21) | 0 | 22) Off |
| 3 | 23) | 0.0 | 24) | 0.0 | 25) 0 | 26) | 0 | 27) Off |
| 4 | 28) | 0.0 | 29) | 0.0 | 30) 0 | 31) | 0 | 32) Off |
| 5 | 31) | 0.0 | 34) | 0.0 | 35) 0 | 36) | 0 | 37) Off |
| 6 | 38) | 0.0 | 39) | 0.0 | 40) 0 | 41) | 0 | 42) Off |

Pump Control Assignments

| Step | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43) | TMP2 | 44) | | 45) | | 46) | | 47) | | | |
| | 48) | | 49) | | 50) | | 51) | | 52) | | | |
| 2 | 53) | | 54) | TMP1 | 55) | | 56) | | 57) | | | |
| | 58) | | 59) | | 60) | | 61) | | 62) | | | |
| 3 | 63) | | 64) | | 65) | | 66) | | 67) | | | |
| | 68) | | 69) | | 70) | | 71) | | 72) | | | |
| 4 | 73) | | 74) | | 75) | | 76) | | 77) | | | |
| | 78) | | 79) | | 80) | | 81) | | 82) | | | |
| 5 | 83) | | 84) | | 85) | | 86) | | 87) | | | |
| | 88) | | 89) | | 90) | | 91) | | 92) | | | |
| 6 | 93) | | 94) | | 95) | | 96) | | 97) | | | |
| | 98) | | 99) | | 100) | | 101) | | 102) | | | |

103) Alternate Option : Yes

| Pump Id | | alternate with | Pump Id |
|---|---|---|---|
| 104) | TMP1 | 105) | TMP2 |
| 106) | | 107) | |

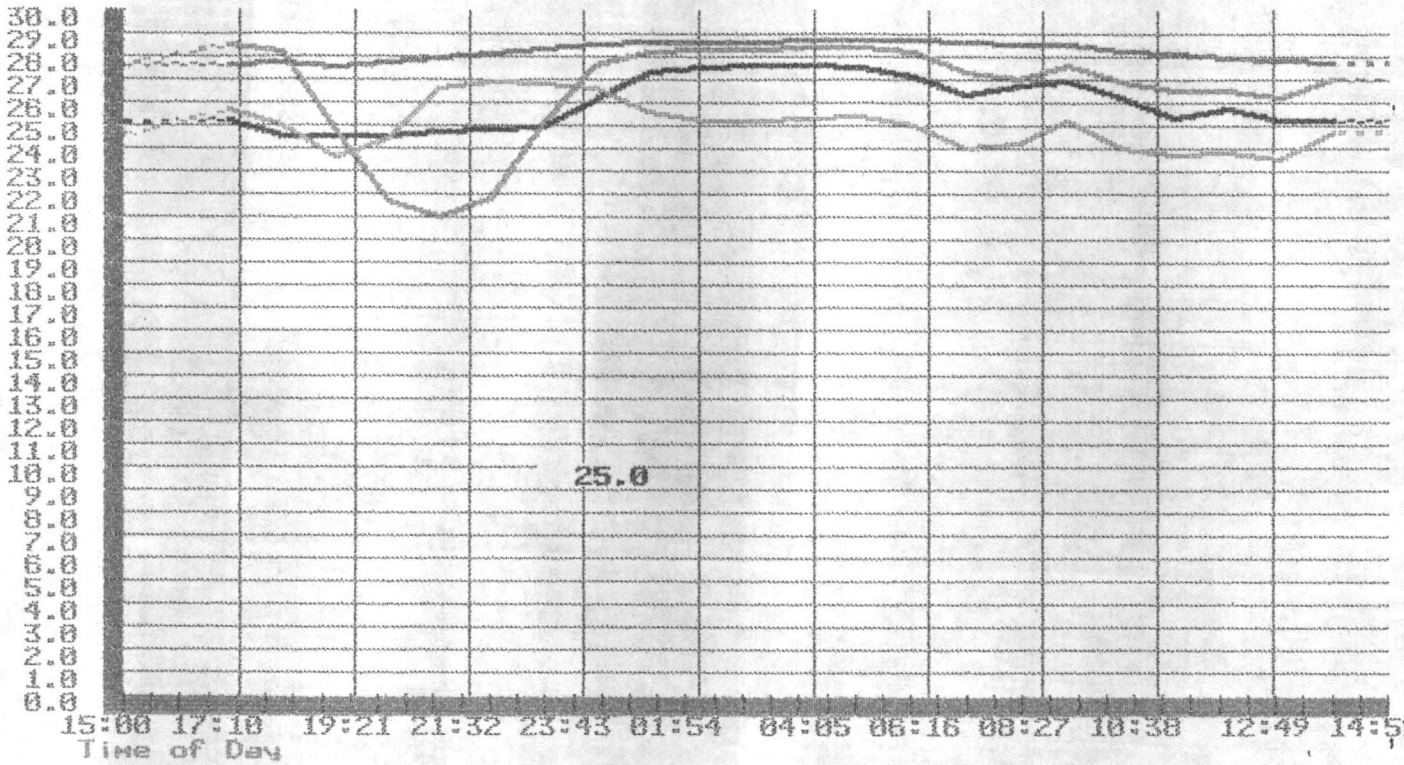
Print Cnst Print Sent Rep Const Select Test < ESC > ====>

07/23/87 15:44:01 HB REV TANK LEVELS

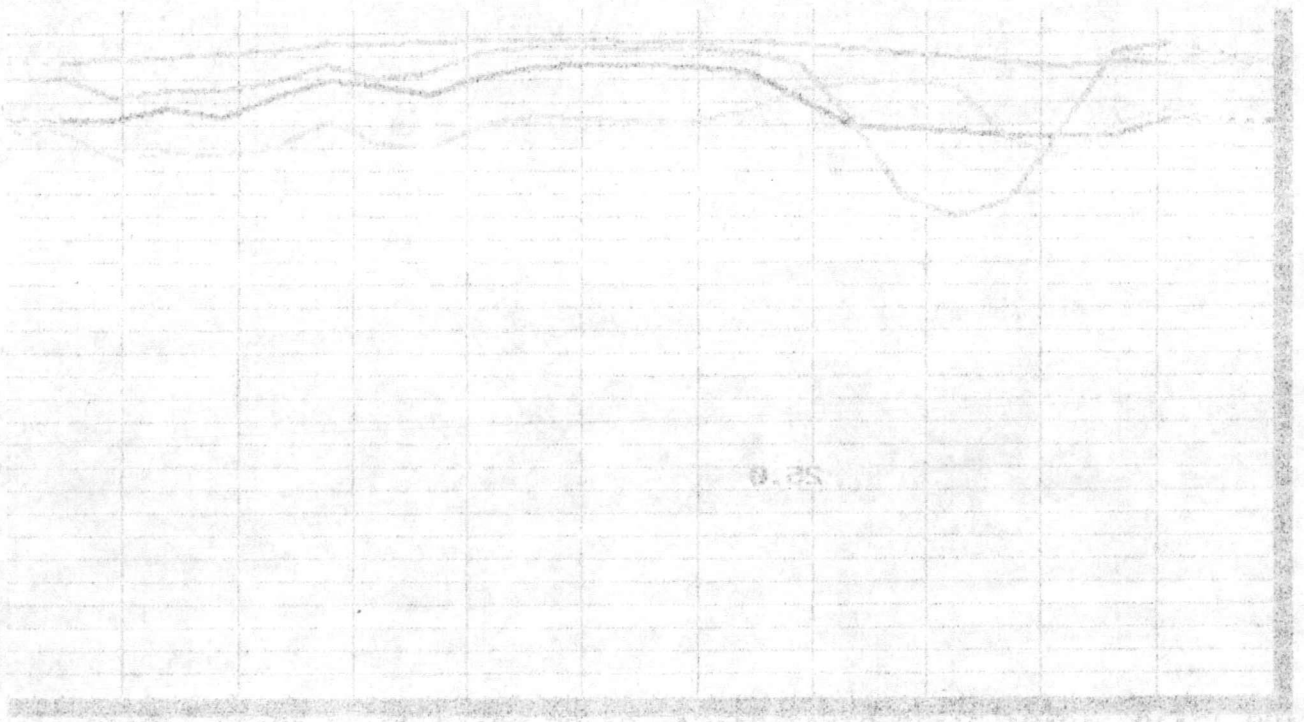
Thursday July 23, 1987

PPETLVL
BMETLVL
MPETLVL

HOLCOMB BLVD ETLVL




Print Cnst Print Scrn Rep Const Select Test < ESC > ==>



OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 6 October 1986

FROM: Water Treatment Operator Foreman

TO: All Operators

SUBJ: FLUSHING EYEWASH STATIONS

1. All eyewash stations will be flushed for 3 minutes weekly on Thursdays. This flushing test will be logged on plant logsheet. A call will be made to Water Treatment Plant Operator Leader after flushing completed, acknowledging same.

2. Those water treatment plants without eyewashes piped with drains or without drains located nearby will use hoses and buckets until drain connection can be made.

B. M. FRAZELLE, II

NAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

5100
MAIN

DATE: 2 Oct 86

FROM: Director, Utilities Branch

TO: All Supervisors

SUBJ: FLUSHING OF EYEWASH STATIONS

Encl: (1) COMNAVMEDCOM Washington DC msg 041920Z Sep 86

1. Request that a program be started to comply with the enclosure. The requirement is to flush eyewash stations for at least three minutes once a week. Some method of documentation should be maintained (such as a log book) so that Base Safety can verify compliance. Since the water expended during this test will be considerable, provisions should be made for runoff to prevent unnecessary falls from stepping in puddling water. For example, those stations which are located adjacent to outside walls could be piped to the outside. Otherwise, stations will have to be piped to existing floor drains. Tickets should be requested for needed assistance.

2. Please inform this office upon completion. If any assistance is needed, please let me know.

3. Also, ensure that the program is described in your SOP's.

G. S. JOHNSON, JR.

DISTRIBUTION:
K. Shepard
B. Meadows
J. V. Jones
M. Humphrey
W. Price
M. Frazelle
M. Davis
J. Lisiewski
G. Smith

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

U U N C L A S S I F I E D U

ADMINISTRATIVE MESSAGE

PRIORITY

P 041920Z SEP 86 ZYB

FM COMNAVMEDCOM WASHINGTON DC

TO AIG SEVEN SEVEN EIGHT THREE

UNCLAS //N05100//

SUBJ: ACANTHAMOEBAE IN EYEWASH UNITS

A. U.S. DEPT OF ENERGY DOE/EH-0010 ENVIRONMENT, SAFETY AND HEALTH BULLETIN, ISSUE NO. 15, MAY 1986 (NOTAL)

B. AMERICAN NATIONAL STANDARDS, ANSI Z358.1-1981

1. IT HAS RECENTLY COME TO OUR ATTENTION, REF A, THAT ACANTHAMOEBAE, SMALL AMOEBAE CAPABLE OF CAUSING SERIOUS EYE INJURY, WERE FOUND IN NUMEROUS PORTABLE AND STATIONARY EYEWASH STATIONS AT A GOVERNMENT ACTIVITY. SUCH INFECTIONS CAN BE PARTICULARLY SEVERE. THEY ARE DIFFUCULT TO TREAT AND CAN CAUSE LOSS OF THE INFECTED EYE.

2. ACANTHAMOEBAE CAN SURVIVE CONVENTIONAL WATER PLANT TREATMENT REGIMENS. TREATING WATER IN PORTABLE STATIONS WITH CALCIUM HYPOCHLORITE TO EFFECT A FREE CHLORINE RESIDUAL OF APPROXIMATELY 25 PPM DESTROYED THE AMOEBAE BUT CAUSED CORROSION OF SOME STAINLESS STEEL EYEWASH UNITS.

3. FLUSHING PLUMBED EYEWASH UNITS FOR THREE (3) MINUTES DRASTICALLY REDUCED THE NUMBER OF POSITIVE SAMPLES. ONE MINUTE FLUSHES DID LITTLE TO REDUCE THE NUMBER OF AMOEBAE.

4. REF B REQUIRES THAT PLUMBED EYEWASH UNITS BE ACTIVATED WEEKLY TO FLUSH THE LINE AND TO VERIFY PROPER OPERATION. HOWEVER, BASED ON REF A, AND BECAUSE THESE POTENTIALLY HAZARDOUS AMOEBAE MAY BE FOUND IN ANY WATER SUPPLY, NAVSEA RECOMMENDS THAT ALL PLUMBED EYEWASH UNITS BE FLUSHED FOR AT LEAST THREE (3) MINUTES ONCE A WEEK. THE WATER IN SELF-CONTAINED EYEWASH STATIONS SHOULD BE SFT 5

DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

RTD:000-000/COPIES:0008

208478/247 1 OF 2 MATA047B 247/20:02Z 041920Z SEP 86
CSN:AUIA01373 COMNAVMEDCOM W

U U N C L A S S I F I E D U

ACTION → NORTHENE

01 4P
04 3
05 DTY
CO

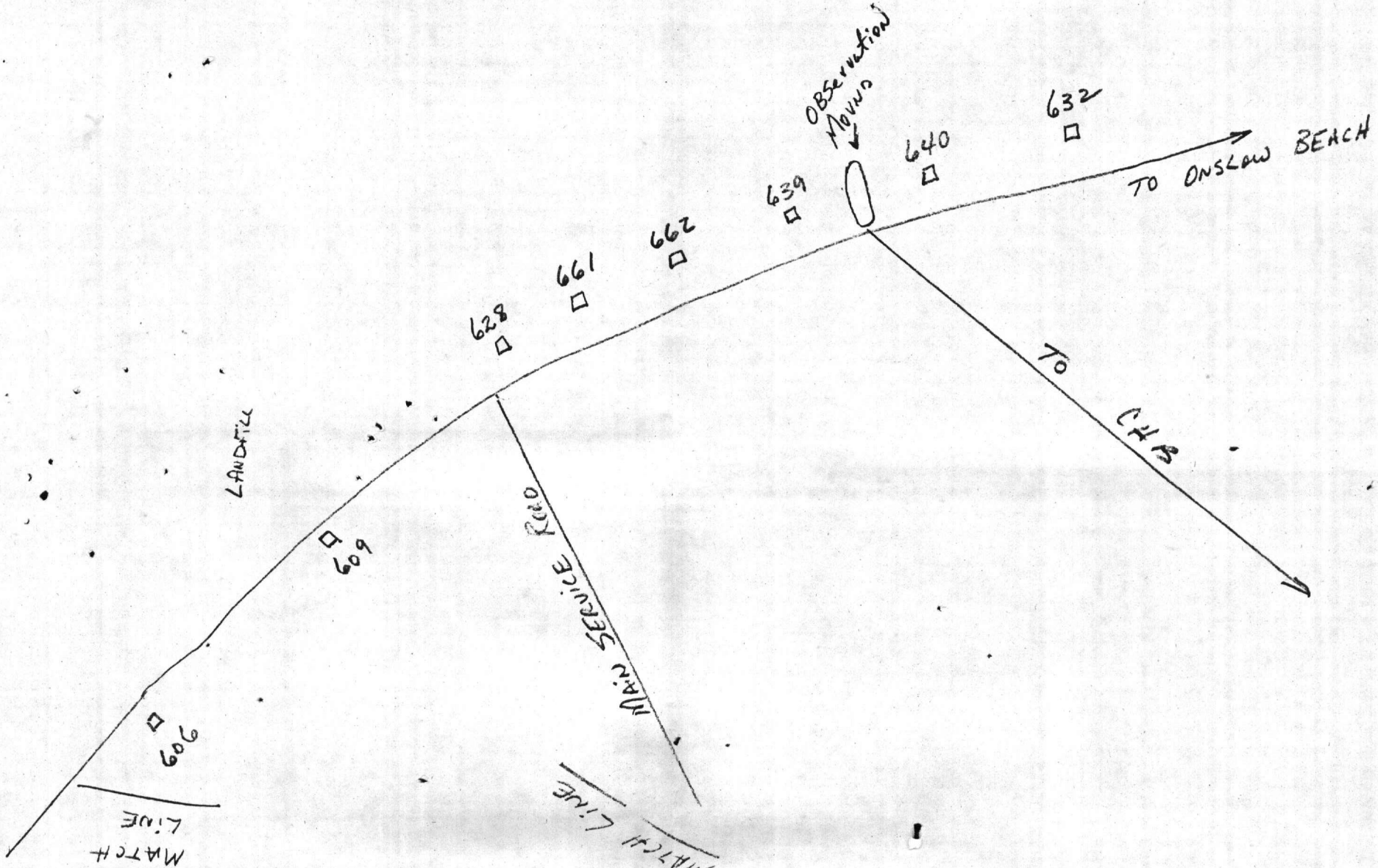
DO U HAVE PLS AD

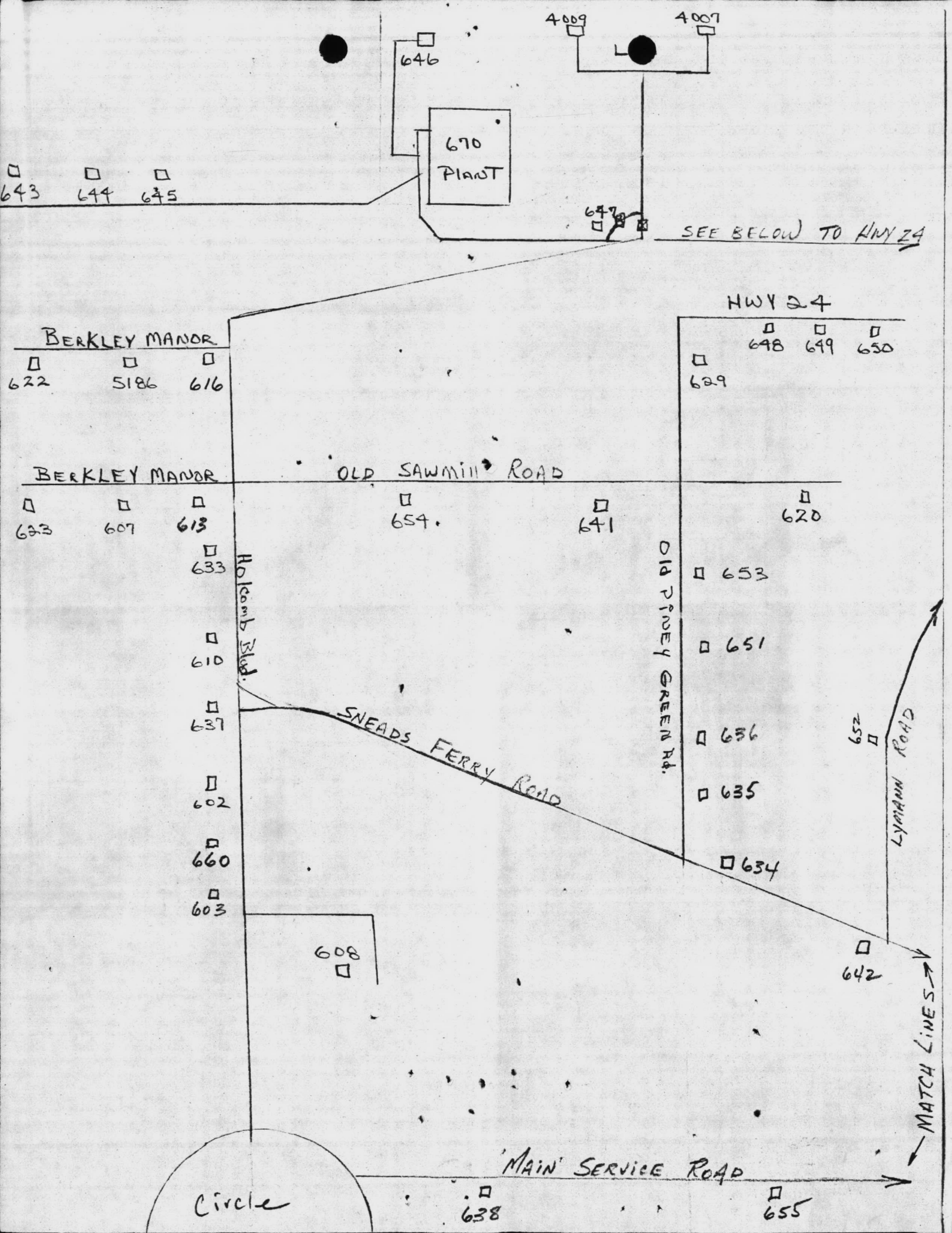
End (1)

CHANGED WEEKLY PENDING MORE INFORMATION ABOUT A SAFE METHOD TO DESTROY THE AMOEBAE. SELF CONTAINED EYEWASH UNITS SHOULD BE USED ONLY IN REMOTE AREAS WHERE INSTALLATION OF A PORTABLE WATER DISTRUBUTION SYSTEM IS NOT FEASIBLE.

5. ALL NAVMEDCOM ACTIVITIES WITH EYEWASH STATIONS SHALL MAINTAIN A LOG OR OTHER RECORD SUCH AS A CARD ATTACHED TO EYEWASH STATIONS, WITH THE DATE AND INITIALS OF THE TESTOR. IN AN AREA WITH SEVERAL EYEWASH STATIONS A LOG MAY BE MAINTAINED BY THE SUPERVISOR OF THE AREA WITH THE TEST DATES AND THE NAME(S) OF THE PERSONS CONDUCTING THE TESTING. ALL EYEWASH STATIONS SHALL BE FLUSHED FOR A MINIMUM OF THREE (3) MINUTES PER WEEK.

BT


OBSERVATION MOUND
632
640
639
662
661
628
TO ONSLOW BEACH
TO CHB
LANDFILL
609
MAIN SERVICE ROAD
MATCH LINE
909
MATCH LINE


4009
4007
646
670
PLANT
643
644
645
647
SEE BELOW TO HWY 24
HWY 24
BERKLEY MANOR
622
5186
616
648
649
650
629
BERKLEY MANOR
OLD SAWMILL ROAD
623
607
613
654
641
620
633
Holcomb Blvd.
OLD PINEY GREEN Rd.
653
610
651
637
SNEADS FERRY ROAD
636
652
LYMANN ROAD
602
635
660
634
603
608
642
MATCH LINES
'MAIN' SERVICE ROAD
Circle
638
655

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

5100
MAIN

DATE: SEP 0 3 1986

FROM: Base Maintenance Officer

TO: Distribution List

SUBJ: POTENTIAL FIRE HAZARD

Ref: (a) LANTNAVFACENGCOM msg 251902Z

1. Per the reference, a potential fire hazard exists when disinfectant (pine oil), detergent, general purpose, NSN 6840-00-687-7904 manufactured by Lighthouse for the Blind is used on hot surfaces. The product contains terpene alcohols, oil fatty acids, anhydrous soap and has a flashpoint of 190 degree fahrenheit.

2. Users of the product should be advised that when it is used on hot surfaces it will ignite and burn easily. Extreme care should be exercised and the potential of a fire hazard should be avoided. There are no warnings listed on containers. Wide dissemination to any known user is requested.

S. L. Marsicano
S. L. MARSICANO
By direction

DISTRIBUTION: A

Leaders

Notify All Plants

Initial

H.P.
T T
M.P.
MCAS
RR
C.H.B

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

H.B.
POST ON B.B.

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 9 January 1985

FROM: Water Treatment Operator Foreman

TO: All Water Treatment Personnel

SUBJ: Use of Gas Mask, Policy, Re-iteration of

1. The Utility Director has expressed concern that some personnel are not using gas masks while changing chlorine, checking for chlorine leaks, etc. as required by Stand Operating Procedures.

2. Gas masks are not being maintained in a clean and working condition.

3. Commencing immediately, any personnel found changing chlorine or attempting to change chlorine or securing chlorine leaks or in chlorine room while chlorine is leaking with out a gas mask and/or in operating condition will be given disciplinary action.

4. Gas masks will be maintained in a clean and operable condition. This can be accomplished by washing with mild soap and warm water, wipe dry and reinstall in gas mask protective container. If oxygen supply is below 50%, contact leader for refill.

5. All personnel should be familiar with the operation of gas masks available. If any personnel are not, contact me immediately for operational procedures.

B. M. FRAZELLE, II

☆U.S. GOVERNMENT PRINTING OFFICE: 1982-505-106:8483

Foreman Shop 83

UNITED STATES MARINE CORPS
Base Maintenance Division
Marine Corps Base
Camp Lejeune, North Carolina 28542

IN REPLY REFER TO
MAIN/RES/jik
5100/431
OCT 1 9 1983

From: Base Maintenance Officer
To: All Supervisors

Subj: Personnel Protective Equipment; non-utilization of

Ref: (a) MO 5100.1B

1. It is being brought to my attention that personnel protective equipment is not being utilized by employees when engaged in work requiring its use. In several instances this has resulted in lost time injuries at considerable expense to the government.

2. It is my intention to enforce the Base Maintenance policy set forth in the reference and as supervisors, I recommend you ensure compliance with both your responsibilities and the safety standards outlined in the order.

3. Effective immediately appropriate disciplinary action will be recommended for any employee or supervisor when there is an apparent disregard of either the compliance or enforcement of safety practices or procedures.

J. T. Marshall

J. T. MARSHALL

Bldg 670

**UNITED STATES MARINE CORPS**
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

MO 6260.1
MAIN/rsm
21 Oct 85

MAINTENANCE ORDER 6260.1

From: Base Maintenance Officer
To: Distribution List

Subj: Standing Operating Procedures for Respiratory Protection

Ref: (a) BO 6260.5

Encl: (1) Respiratory Protection Selection Guide

1. Purpose. To establish procedures for the selection and use of respirators in accordance with the reference.

2. Responsibilities

a. Supervisor Responsibility

(1) Respirators shall be provided by Base Maintenance when such equipment is necessary to protect the health of the employee.

(2) Base Maintenance shall provide the respirators which are applicable and suitable for the purpose intended.

(3) Supervisory personnel shall periodically monitor the use of respirators to ensure that they are worn properly.

(4) Supervisory personnel shall ensure that maintenance of respirators are carried out to ensure that each respirator wearer is provided with a respirator that is clean and in good operating condition. Maintenance shall included:

(a) Wasning, sanitizing, rinsing and drying.

(b) Inspection for defects of respirators.

(c) Replacement of worn or deteriorated parts.

(d) Repair, if necessary.

(e) Storage to protect against dust, sunlight, excessive heat, extreme cold, excessive moisture, damaging chemicals and physical damage.

(5) Supervisory personnel will instruct employees thoroughly in the safe practices applicable to the operations performed and enforce the observance of all respiratory regulations.

(6) Supervisors will ensure personnel receive annual respirator training and physical examinations.

(7) Supervisors will ensure that respirator facepieces of more than one size shall be available to provide a proper fit.

(8) Supervisors will receive adequate training by Base Safety to ensure the proper use of respirators.

(9) Supervisors will ensure that employees receive pre-placement and annual physical examinations to determine their ability to perform assigned duties with respiratory protection.

(10) Supervisors should maintain a record of inspection dates and findings for respirators maintained for emergency use.

3. Employee Responsibility

(1) The employee shall use the provided respiratory protection in accordance with instructions and training received from Base Safety and supervisors.

(2) The employee snall guard against damage to the respirator.

(3) The employee shall report any malfunction of the respirator to the supervisor immediately.

(4) The employee will be required to check the seal of the respirator prior to entering a narmful atmosphere.

(5) Employees with facial hair that comes between the sealing periphery of the facepiece or interferes with valve function will not be permitted to wear a respirator. The absence of one of both dentures can seriously affect the fit of a facepiece.

(6) Employees using a respirator equipped with a full facepiece, helmet, hood or suit will not be allowed to wear contact lens. A proper seal cannot be established if the temple bars of eyeglasses extend through the sealing edge of the full facepiece. If corrective spectacles are required, they will be worn so as not to affect the fit of the facepiece.

3. Training. Each respirator wearer will be given training which snall include explanation and discussion of:

a. The respiratory hazard if the respirator is not used properly.

b. The need for respirators to provide protection.

c. The reason for selecting a particular type of respirator.

d. The function, capabilities and limitations of the selected respirator.

e. The proper wearing of the respirator.

f. The method of donning the respirator and checking its fit and operation.

h. Respirator maintenance.

i. Recognizing and handling emergency situations.

Each respirator wearer shall be retrained at least annually.

4. Selection of Respirator. The selection of a proper respirator for any given situation shall require consideration of the following factors:

a. The nature of the hazard.

b. The characteristics of the hazardous operation or process.

c. The location of the hazardous area with respect to a safe area having respirable air.

d. The period of time for which respiratory protection may be provided.

e. The activity of workers in the hazardous area.

f. The physical characteristics, functional capabilities and limitations of respirators of various types.

g. The respirator-protection factors and respiratory fit.

# RESPIRATORY PROTECTION SELECTION GUIDE

| JOB/MATERIAL | CARTRIDGE COLOR CODE | APPROVED RESPIRATOR | NSN |
|---|---|---|---|
| ORGANIC VAPORS<br>SOLVENTS, PAINTS<br>DEGREASERS, THINNERS<br>DRY CLEANING SOLVENT<br>PD 680<br>CLEANING PAINT BRUSHES<br>BRUSH OR SPRAY PAINTING<br>SPRAY CAN PAINTING<br>FUEL VAPORS<br>ENAMEL AND ACRYLIC PAINTS | BLACK | DISPOSABLE 3M #8741 ORGANIC VAPOR/SPRAY PAINT ASSEMBLY WITH PRE-FILTERS * | 4240-01-131-9722 |
| | | DISPOSABLE NORTON #10041M ORGANIC VAPOR MASK WITH PRE-FILTERS * | OPEN PURCHASE |
| | | DISPOSABLE ORGANIC VAPOR RESPIRATOR 3M #8712 WITHOUT PRE-FILTERS | 4240-01-074-8930 |
| GRINDING/CHIPPING<br>FLAP BRUSHING<br>FIBERGLASS WORK<br>WOOD SANDING, COAL DUST<br>SAW DUST<br>NUISANCE DUSTS<br>ASBESTOS - LOW LEVELS<br>METAL DUSTS (LEAD)<br>ASBESTOS - HIGH LEVELS (RIP-OUT) | GRAY TOP CARTRIDGE<br>WHITE PAPER | DUST/MIST/FUME DUAL FILTER (CARTRIDGE MASK) | 4240-00-099-6939 |
| | | DISPOSABLE DUST MASK 3M #8710 | 4240-00-629-8199 |
| | | DISPOSABLE DUST/MIST MASK 3M #9910 | 4240-01-081-6433 |
| | | FULL FACEPIECE SUPPLIED AIR RESPIRATOR | 4240-00-275-3178 |
| WELDING - METAL FUMES<br>BRAZING<br>SOLDERING<br>CUTTING METALS | PAPER<br>GRAY TOP CARTRIDGE | DUST/MIST/FUME DUAL FILTER (CARTRIDGE MASK) | 4240-00-099-6939 |
| | | DISPOSABLE 3M #9920 DUST/MIST/FUME MASK | 4240-01-108-4171 |
| BERYLLIUM METAL DUST<br>TICONIUM PROSTHETICS<br>S-3/F-14 BRAKE PARTS<br>CADMIUM DUST | MAGENTA (PURPLE) | HEPA CARTRIDGE TYPE | OPEN PURCHASE |
| | | DISPOSABLE 3M #9940<br>DISPOSABLE NORTON #10030M | OPEN PURCHASE |
| PESTICIDES | BLACK CARTRIDGE WITH PRE-FILTER | PESTICIDE CARTRIDGE TYPE | 4240-01-035-9250 |
| | | DISPOSABLE 3M #8751<br>DISPOSABLE NORTON #10041M | OPEN PURCHASE |
| CONFINED SPACE ENTRY & STAND BY, OXYGEN DEFICIENCY ATMOSPHERE | | SELF-CONTAINED BREATHING APPARTUS | OPEN PURCHASE |
| BATTERY CHARGING<br>ACID MISTS<br>ACID CLEANING | WHITE YELLOW** | ACID-GAS CARTRIDGE TYPE<br>DISPOSABLE 3M #8714<br>DISPOSABLE NORTON #10002M | OPEN PURCHASE |

* PRE-FILTERS ONLY REQUIRED FOR SPRAY PAINTING OPERATIONS
** ORGANIC VAPOR-ACID GAS COMBINATION CARTRIDGE

NOTE: ITEMS PROVIDE MINIMUM PROTECTION FOR AIR CONTAMINATE LISTED. CONSULT LOCAL INDUSTRIAL HYGIENIST FOR ASSISTANCE IN SELECTION IF NEEDED. USE OF DISPOSABLES HIGHLY RECOMMENDED TO SAVE ON CLEANING, MAINTENANCE AND SPARE PARTS COSTS AND MANHOURS. DISPOSABLES USUALLY FOUND MORE COST EFFECTIVE THAN DUAL CARTRIDGE TYPE REPLACEABLE CARTRIDGE RESPIRATORS.

ENCLOSURE (1)

Enclosure (1) provides examples of respirators designed for specific applications. The Commanding Officer, Naval Hospital in conjunction with Base Safety will recommend respiratory protection equipment for personnel, based upon the nature and degree of the hazard involved, in accordance with current National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) approval/certification.

5. Confined Spaces. All confined spaces shall be considered to be immediately dangerous to life or health unless proven otherwise. Before a person is allowed to enter a confined space, tests will be conducted by the cognizant Industrial Hygienist or the Base Gas Free Engineer to determine the concentration of any known or expected flammable or toxic contaminant present. A person will not be allowed to enter a confined space without wearing the proper type of respirator. A standby person shall be present in a safe area with proper equipment, available to assist the respirator wearer in case of an emergency.

6. Applicability. Effective upon receipt, Branch and Section heads, supervisors, foremen and maintenance personnel will ensure compliance with these procedures within their area of responsibility.

W. M. RICE

DISTRIBUTION: A

Copy to: Ea Bulletin Board

OPNAV 5216.144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 7 November 1985

FROM: Utilities Systems General Foreman

TO: All Water and Wastewater Plant Employees

SUBJ: MO 6260.1

1. Effective immediately, MO 6260.1, dtd 21 October 1985, shall be adhered to by all personnel.

W. R. PRICE

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

MO 6260.1
MAIN/rsm
21 Oct 85

MAINTENANCE ORDER 6260.1

From: Base Maintenance Officer
To: Distribution List

Subj: Standing Operating Procedures for Respiratory Protection

Ref: (a) BO 6260.5

Encl: (1) Respiratory Protection Selection Guide

1. Purpose. To establish procedures for the selection and use of respirators in accordance with the reference.

2. Responsibilities

a. Supervisor Responsibility

(1) Respirators shall be provided by Base Maintenance when such equipment is necessary to protect the health of the employee.

(2) Base Maintenance shall provide the respirators which are applicable and suitable for the purpose intended.

(3) Supervisory personnel shall periodically monitor the use of respirators to ensure that they are worn properly.

(4) Supervisory personnel shall ensure that maintenance of respirators are carried out to ensure that each respirator wearer is provided with a respirator that is clean and in good operating condition. Maintenance shall included:

(a) Washing, sanitizing, rinsing and drying.

(b) Inspection for defects of respirators.

(c) Replacement of worn or deteriorated parts.

(d) Repair, if necessary.

(e) Storage to protect against dust, sunlight, excessive heat, extreme cold, excessive moisture, damaging chemicals and physical damage.

(5) Supervisory personnel will instruct employees thoroughly in the safe practices applicable to the operations performed and enforce the observance of all respiratory regulations.

(6) Supervisors will ensure personnel receive annual respirator training and physical examinations.

(7) Supervisors will ensure that respirator facepieces of more than one size shall be available to provide a proper fit.

(8) Supervisors will receive adequate training by Base Safety to ensure the proper use of respirators.

(9) Supervisors will ensure that employees receive pre-placement and annual physical examinations to determine their ability to perform assigned duties with respiratory protection.

(10) Supervisors should maintain a record of inspection dates and findings for respirators maintained for emergency use.

3. Employee Responsibility

(1) The employee shall use the provided respiratory protection in accordance with instructions and training received from Base Safety and supervisors.

(2) The employee shall guard against damage to the respirator.

(3) The employee shall report any malfunction of the respirator to the supervisor immediately.

(4) The employee will be required to check the seal of the respirator prior to entering a harmful atmosphere.

(5) Employees with facial hair that comes between the sealing periphery of the facepiece or interferes with valve function will not be permitted to wear a respirator. The absence of one of both dentures can seriously affect the fit of a facepiece.

(6) Employees using a respirator equipped with a full facepiece, helmet, hood or suit will not be allowed to wear contact lens. A proper seal cannot be established if the temple bars of eyeglasses extend through the sealing edge of the full facepiece. If corrective spectacles are required, they will be worn so as not to affect the fit of the facepiece.

3. Training. Each respirator wearer will be given training which shall include explanation and discussion of:

a. The respiratory hazard if the respirator is not used properly.

b. The need for respirators to provide protection.

c. The reason for selecting a particular type of respirator.

d. The function, capabilities and limitations of the selected respirator.

e. The proper wearing of the respirator.

f. The method of donning the respirator and checking its fit and operation.

h. Respirator maintenance.

i. Recognizing and handling emergency situations.

Each respirator wearer shall be retrained at least annually.

4. Selection of Respirator. The selection of a proper respirator for any given situation shall require consideration of the following factors:

a. The nature of the hazard.

b. The characteristics of the hazardous operation or process.

c. The location of the hazardous area with respect to a safe area having respirable air.

d. The period of time for which respiratory protection may be provided.

e. The activity of workers in the hazardous area.

f. The physical characteristics, functional capabilities and limitations of respirators of various types.

g. The respirator-protection factors and respiratory fit.

## RESPIRATORY PROTECTION SELECTION GUIDE

| JOB/MATERIAL | CARTRIDGE COLOR CODE | APPROVED RESPIRATOR | NSN |
|---|---|---|---|
| ORGANIC VAPORS<br>SOLVENTS, PAINTS<br>DEGREASERS, THINNERS<br>DRY CLEANING SOLVENT<br>PD 680<br>CLEANING PAINT BRUSHES<br>BRUSH OR SPRAY PAINTING<br>SPRAY CAN PAINTING<br>FUEL VAPORS<br>ENAMEL AND ACRYLIC PAINTS | BLACK | DISPOSABLE 3M #8741 ORGANIC VAPOR/SPRAY PAINT ASSEMBLY WITH PRE-FILTERS * | 4240-01-131-9722 |
| | | DISPOSABLE NORTON #10041M ORGANIC VAPOR MASK WITH PRE-FILTERS * | OPEN PURCHASE |
| | | DISPOSABLE ORGANIC VAPOR RESPIRATOR 3M #8712 WITHOUT PRE-FILTERS | 4240-01-074-8930 |
| GRINDING/CHIPPING<br>FLAP BRUSHING<br>FIBERGLASS WORK<br>WOOD SANDING, COAL DUST<br>SAW DUST<br>NUISANCE DUSTS<br>ASBESTOS - LOW LEVELS<br>METAL DUSTS (LEAD)<br>ASBESTOS - HIGH LEVELS (RIP-OUT) | GRAY TOP CARTRIDGE<br>WHITE PAPER | DUST/MIST/FUME DUAL FILTER (CARTRIDGE MASK) | 4240-00-099-6939 |
| | | DISPOSABLE DUST MASK 3M #8710 | 4240-00-629-8199 |
| | | DISPOSABLE DUST/MIST MASK 3M #9910 | 4240-01-081-6433 |
| | | FULL FACEPIECE SUPPLIED AIR RESPIRATOR | 4240-00-275-3178 |
| WELDING - METAL FUMES<br>BRAZING<br>SOLDERING<br>CUTTING METALS | PAPER<br>GRAY TOP CARTRIDGE | DUST/MIST/FUME DUAL FILTER (CARTRIDGE MASK) | 4240-00-099-6939 |
| | | DISPOSABLE 3M #9920 DUST/MIST/FUME MASK | 4240-01-108-4171 |
| BERYLLIUM METAL DUST<br>TICONIUM PROSTHETICS<br>S-3/F-14 BRAKE PARTS<br>CADMIUM DUST | MAGENTA (PURPLE) | HEPA CARTRIDGE TYPE | OPEN PURCHASE |
| | | DISPOSABLE 3M #9940<br>DISPOSABLE NORTON #10030M | OPEN PURCHASE |
| PESTICIDES | BLACK CARTRIDGE WITH PRE-FILTER | PESTICIDE CARTRIDGE TYPE | 4240-01-035-9250 |
| | | DISPOSABLE 3M #8751<br>DISPOSABLE NORTON #10041M | OPEN PURCHASE |
| CONFINED SPACE ENTRY & STAND BY, OXYGEN DEFICIENCY ATMOSPHERE | | SELF-CONTAINED BREATHING APPARTUS | OPEN PURCHASE |
| BATTERY CHARGING<br>ACID MISTS<br>ACID CLEANING | WHITE YELLOW** | ACID-GAS CARTRIDGE TYPE<br>DISPOSABLE 3M #8714<br>DISPOSABLE NORTON #10002M | OPEN PURCHASE |

* PRE-FILTERS ONLY REQUIRED FOR SPRAY PAINTING OPERATIONS
** ORGANIC VAPOR-ACID GAS COMBINATION CARTRIDGE

NOTE: ITEMS PROVIDE MINIMUM PROTECTION FOR AIR CONTAMINATE LISTED. CONSULT LOCAL INDUSTRIAL HYGIENIST FOR ASSISTANCE IN SELECTION IF NEEDED. USE OF DISPOSABLES HIGHLY RECOMMENDED TO SAVE ON CLEANING, MAINTENANCE AND SPARE PARTS COSTS AND MANHOURS. DISPOSABLES USUALLY FOUND MORE COST EFFECTIVE THAN DUAL CARTRIDGE TYPE REPLACEABLE CARTRIDGE RESPIRATORS.

ENCLOSURE (1)

Enclosure (1) provides examples of respirators designed for specific applications. The Commanding Officer, Naval Hospital in conjunction with Base Safety will recommend respiratory protection equipment for personnel, based upon the nature and degree of the hazard involved, in accordance with current National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) approval/certification.

5. Confined Spaces. All confined spaces shall be considered to be immediately dangerous to life or health unless proven otherwise. Before a person is allowed to enter a confined space, tests will be conducted by the cognizant Industrial Hygienist or the Base Gas Free Engineer to determine the concentration of any known or expected flammable or toxic contaminant present. A person will not be allowed to enter a confined space witnout wearing the proper type of respirator. A standby person shall be present in a safe area with proper equipment, available to assist the respirator wearer in case of an emergency.

6. Applicability. Effective upon receipt, Branch and Section heads, supervisors, foremen and maintenance personnel will ensure compliance with these procedures within their area of responsibility.

W. M. RICE

DISTRIBUTION: A

Copy to: Ea Bulletin Board

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 24 September 1985

FROM: Foreman, Water Treatment

TO: All Water Treatment Plant Personnel

SUBJ: Chlorine Gas Mask; use of

1. New Wilson respirators have been issued to all water treatment plants replacing the old canister types. The respirators will be used when changing chlorine cylinders and will be on the employee's face in working order whenever chlorine is changed.

2. If while changing chlorine a leak developes or any other time a leak in chlorine is detected the self contained breathing apparatus (Scott or Survivair) will be utilized to shut off chlorine, repair, etc.

3. These directives are for your protection. The new Wilson respirator is only good up to 10 p.p.m. chlorine and will not sustain life in a heavily concentrated chlorine environment. When a leak developes there is no way to determine what concentration chlorine is present so it is imperative that you wear the self contained breathing apparatus.

4. The Wilson respirator will only be used for changing chlorine. These directives will be strictly adheared to.

Byron M. Frazelle

BYRON M. FRAZELLE

☆U.S. GOVERNMENT PRINTING OFFICE: 1982-505-106:8463

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

670

DEPARTMENT OF THE NAVY
*Memorandum*

DATE: 18 May 1984

FROM: Water Plant Operator Foreman

TO: All Water Treatment Personnel

SUBJ: Unloading of bulk supplies; receipts for

1. Problems are still arising with the unloading of chemical bulk supplies such as lime, and salt. Truck drivers are informing operators and other personnel that the weigh station is closed; that they are not getting weight certificates from the weigh station, etc.

2. Commencing immediately you will not unload a truck of salt or lime unless you have in your possession a weight certificate from the weigh station located aboard Camp Lejeune. The certificate is titled "WEIGHT CERTIFICATE (MCBCL 4600/2)".

3. This WEIGHT CERTIFICATE (Copy) will be sent to Bldg. 670 as soon as poosible for record keeping.

4. If the truck driver does not have a weight certificate as listed above, YOU WILL NOT LET HIM UNLOAD. You will inform the driver of this and ask him to wait. You will then call 5988, 1081 or 2069 and inform the Leader of the situation. The Leader will then call the weigh station, Phone No. 1778 giving the weigh master the truck number that is trying to unload and ascertain if in fact he has weighed in. The Leader will then call you back and tell you if it is all right to unload the truck. The Leader will then log in the appropriate information in the Check-in book located on the desk at Bldg. 670.

5. Personnel will then log in all information on Plant Log Sheets; this includes truck number, time in and time out, and date and material received.

6. This has become necessary to preclude paying for bulk supplies we do not receive. Since all personnel have been notified of this before, disciplinary action may be recommended for failure to carry out these instructions.

B. M. FRAZELLE II

☆U.S. GOVERNMENT PRINTING OFFICE: 1982-505-106:8483

BASE MAINTENANCE DIVISION
Marine Corps Base
Camp Lejeune, North Carolina 28542

MAIN/BMF/spk
5000
9 May 1983

From: Water Treatment Plant Operator Foreman
To: Water Treatment Plant Leaders

Subj: Clarification of Duties of Water Treatment Plant Operator Leaders

1. Since the Water Treatment Plant Operator Leader positions have been established and personnel assigned to shifts, many questions have arisen concerning their duties, responsibilities and authority. The following information is provided to clarify these questions.

2. The Leaders are tasked with the responsibility of the smooth operation of the water treatment facilities. They have basically the same responsibility and authority that I have with the exception, they cannot grant leave, give disciplinary action (but can recommend), and fill out performance appraisals. This authority does not eliminate each individual operator from his responsibility of operating each plant, correcting problems, and notifying the leaders of problems arising, etc.

LEADERS RESPONSIBILITY AND AUTHORITY INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING:

A. Passing on to others the instructions received from supervisors, getting work started, assigning tasks to be performed, etc.

B. Seeing to it that needed supplies are provided.

C. Obtaining needed information from supervisors on problems that come up during the work period.

D. Maintains current knowledge and answers questions of other workers on procedures, policies, written instructions, and other directives.

E. Sees to it that there is enough work to keep everyone busy.

F. Checks work in progress to see whether the supervisors' instructions procedures, methods, and deadlines are met.

G. Assures safety and housekeeping rules are followed.

H. Reports to Supervisor on status of work, progress, and causes of work delays.

3. Leaders then basically have the same authority that I have with the exception of those outlined in paragraph 2 above. Each employee should abide by the information and directions given them by the Leader on duty.

4. In my opinion the water treatment branch has the best group of people employed on Camp Lejeune. Let each of us strive to be as industrious and efficient as we can and continue to have the best working environment aboard the Base. If problems arise, please notify me immediately.

Byron M. Frazelle II

BYRON M. FRAZELLE, II

UNITED STATES MARINE CORPS
Base Maintenance Division
Marine Corps Base
Camp Lejeune, North Carolina 28542

IN REPLY REFER TO
5100
MAIN
7 AUG 1984

MEMORANDUM

From: Base Maintenance Officer
To: Distribution List

Subj: CONFINED SPACE ENTRY PROGRAM

Ref: (a) Training Session held 2 Aug 84

1. As a result of the reference, and pending publication of a base order on the Confined Space Entry Program, the following guidelines are issued:

a. The Gas Free Engineer will be notified and appropriate clearance received for:

(1) All work in confined spaces which will involve "hot work."

(2) All work in confined spaces which will require prolonged or extensive repairs or replacement of parts.

(3) Any situation involving work or entry into a confined space in which the safety of employees is questionable.

b. After duty hours/weekends, the night foreman/duty NCO will call the Gas Free Engineer (Mr. Tex Ritter, telephone 329-3701) prior to initiating any work noted in paragraph 1a above. In the event the Gas Free Engineer cannot be reached, the Fire Department will be called.

2. Equipment requirements will be forwarded to the Assistant Base Maintenance Officer not later than 15 August 1984.

F. E. Cone
F. E. CONE
By direction

Distribution: A
Base Safety Manager

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

670 ; Leaks

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 31 December 1985

FROM: Foreman, Water Treatment

TO: All Personnel, Courthouse Bay Water Treatment Plant

SUBJ: ONSLOW BEACH BACKWASH HOLDING POND

1. The analysis of the Suspended Solids test in October for subject pond indicated it was 95. This is a violation of NPDES Permit and has to be reported by the Commanding General, MCB to the State of N.C. The reason the pond violated the NPDES permit is because it was pumped to low.

2. Henceforth the following will be strictly adhered to:

a. The backwash pond does not have to be pumped weekly. The only time a Suspended Solids test is needed is when the pump is on, i.e. whenever you are lowering the water level in the pond or any other time you are running the pump.

b. Do not pump pond level down unless the water level in the pond is at least 2 feet from the top of the pump station located in the backwash pond.

c. A p.H. sample is not needed weekly on the pond. You only need to collect a p.H. sample when the pump on the pond is on.

3. To repeat: Only pump the pond when the water level is 2 feet from the top of the pump station. Do not collect any sample unless pond is being pumped. Continue to try to pump pond on Tuesday when the pond needs pumping. The pond can be pumped on other days in the week but remember whenever you are pumping make sure a p.H. sample and a SS sample are collected and turned into the Lab for analysis.

4. If there are any questions concerning the above call me at once.

MACK FRAZELLE

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

Leaders Read & Remember —670

# MERCURY SPILL
# STANDING OPERATING PROCEDURES

Subject: Standing Operating Procedure - Mercury Spill Cleanup
Purpose: To publish a standard procedure for the cleanup of mercury spills.

1. Responsibility:

a. The Industrial Hygiene Section is responsible for:

(1) Monitoring the contaminated site before and after cleanup.

(2) Making recommendations for cleanup.

(3) Recommending use of protective equipment for area control and personal control measures.

(4) Providing an industrial mercury vacuum for large spills contact Industrial Hygiene, extension 2707.

b. The Chemist, Utilities Branch is responsible for:

(1) Ensuring that proper equipment and protective equipment is provided for Steam, Water and Wastewater Sections.

(2) Ensuring that proper cleanup equipment and protective equipment is utilized by cleanup personnel.

(3) Coordinating the disposal of mercury obtained from spill with Defense Reutilization Marketing Officer (DRMO) representatives.

c. Instrument Mechanics from steam, water and wastewater are responsible for cleaning up mercury spills in their sections.

2. General:

a. The area in which the spill occurs should be isolated (roped off) until cleanup is completed and monitoring indicates safe exposure levels.

b. Contact will be made with the Industrial Hygiene Section, as soon as possible, whenever a spill occurs at extension 2707. Industrial Hygiene hours 0800-1600, Monday through Friday.

c. Mercury spill will be cleaned up by an Instrument Mechanic from the section involved. If spill is considered to be major, Industrial Hygiene Section will assist with cleanup.

d. Mercury will be disposed of according to guidelines set forth by the DRMO representatives, by the Utilities Chemist.

3. Cleanup and Safety Equipment

a. Mercury spill Cleanup Kit including:

(1) Butyl or latex gloves
(2) Safety goggles
(3) Tyvek suit with shoe covers
(4) Suction device or aspirator fitted with mercury trap
(5) Scoop bottles
(6) Plastic bags with ties and labels

b. Respirator for confined area spills:

(1) Positive pressure self contained breathing apparatus
(2) Positive pressure supplied air respirator
(3) Mercury vapor respirator filters (3M Company)

c. Mercury Decontaminant

d. Industrial mercury vacuum cleaner for major spills. This can be obtained from Industrial Hygiene Section, extension 2707.

4. Cleanup Procedure:

a. The area in which the spill occurs should be isolated (roped off) as soon as possible.

b. The spill should be reported to the Industrial Hygiene Section, extension 2707, as soon as possible so monitoring and cleanup procedures can be implemented. Industrial Hygiene's hours are 0800 to 1600, Monday through Friday.

c. All personnel should be cleared from the immediate spill area except for those involved in the cleanup. No smoking, eating, or drinking is allowed in the spill area. Cleanup personnel should wear self contained breathing apparatus or other approved respirator. The choice of respirator will be dependent upon concentration of vapor.

d. Protective gloves, goggles, and clothing should be worn. Tyvek coveralls are satisfactory as whole body protection.

e. No sweeping or blowing of mercuy is permitted; gather up as many globules as possible by vacuuming. Globules caught in cracks or recesses may be collected with a suction device fitted with a mercury trap. A magnifying glass will be useful in locating minute globules. A scoop can be used to pick up all but the smallest globules. Scoops which can not be decontaminated should be disposed of as a hazardous waste.

f. After all visible globules have been picked up, cover

the spill surfaces with generous quantities of welted decontaminant mixture to convert mercury not removed by the previous techniques. Leave the decontaminant mixture on the surface overnight to obtain maximum conversion of mercury. The mixture should be worked into cracks and crevices. Vertical surfaces such as walls, cabinet sides, and furniture legs should be checked for mercury.

g. After the mercury concentration has fallen to a safe level, not greater than 0.05 $mg/m^3$, the spill area should be scrubbed with soap and water and rinsed.

h. Sensible personal hygiene practices during and after clean-up are important. Since mercury can be absorbed through the skin, care should be taken not to handle contaminated components directly. Exposed skin should be throughly washed with soap and water. Contaminated clothing should be placed in double plastic bags for later monitoring and disposal.

HARRY PEPPER & ASSOCIATES, INC.

ENGINEERING CONTRACTORS

## EMERGENCY PHONE NUMBERS

| | | |
|---|---|---|
| Earl Haley | Superintendent | |
| John Muter | Field Engineer | 455-1393 |
| Phil Reese | C.Q.C. Officer | 1-298-4416 |
| Randy McDonald | Field Supervisor | 1-327-2785 |
| Clyde Jenkins | Mechanical Supervisor | 347-4338 |
| Ken Cruikshank | Labor Foreman | 346-2910 |

119 WEST EIGHTH STREET • P.O. BOX 3007 • JACKSONVILLE, FL 32206 904/356-3954

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

670

# Memorandum

DATE: 26 September 1986

FROM: Water Treatment Operator Foreman

TO: All Water Treatment Plant Leaders

SUBJ: HAULING CATALYST; ACTION REQUIRED

1. Commencing 1 October 1986, a ticket will have to be called in for each plant catalyst is being hauled from.

2. In order for Roads and Grounds to plan catalyst hauling, leaders will have to ascertain the amount of catalyst to be hauled. Leaders will call lime softening plants on Fridays and Wednesdays and relay information to Sally for the number of loads of catalyst to be hauled. Sally will turn in tickets accordingly.

3. Tickets will also be needed for sand hauling and days we change all catalyst in spiractors. If Friday notice becomes too far in advance for actual catalyst needs, a change of hauling days may be required.

B. M. FRAZELLE, II

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

OPNAV 5216/144A (Rev. 8-81)
S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

# Memorandum

DATE: 15 August 1986

FROM: Foreman, Water Treatment

TO: Director, Utilities

SUBJ: Operational Water Reports, Request For; information concerning

Ref: (a) Mr. F. Hill's ltr of 16 April 86 to CG,MCB, Camp Lejeune, N. C.

1. On 14 August 1986 a meeting was held between Mr. Fred Hill, Water Plant Consultant, N. C. Department of Human Resources and myself. The purpose of this meeting was to discuss the submission of Water Treatment Reports to the N. C. Department of Natural Resourses as requested by the reference. Mr. Hill requested that the following information be sent to the Water Supply Branch, Division of Health Services, Raleigh, N. C. The report will include the below listed information; will be submitted per plant; and be submitted prior to the 10th day of the following month.

DATA TO BE SUBMITTED

a. Total Water Pumped in MGD, Daily
b. Hours Plant Operated, Daily
c. Backwash Water Used in Gallons, Daily
d. Turbidity, p.p.m. (Only on Lime Softening Plants) Daily
e. Chlorine Used in Lbs., Daily
f. Lime Used in Lbs., Daily
g. Phosphate Used in Lbs., Daily
h. Fluoride Used in Lbs., Daily
i. p.H. of Raw, and Finished Water, Daily
j. Hardness of Raw, Treated and Delivered Water, p.p.m., Daily
k. Alkalinity of Raw , Filtered and Delivered Water, p.p.m., Daily
l. Free Chlorine Residual, Treated and Delivered Water, p.p.m. Daily
m. Fluoride Residual, p.p.m. (Only on plants adding Fluoride), Daily

NOTE: THOSE READING TAKEN MORE THAN ONCE DAILY WILL REQUIRE AVERAGING FOR THIS REPORT. LIME, FLUORIDE MACHINE ON CONTINUOUS FEED WILL REQUIRE WEIGHING MATERIAL AND CALCULATED DATA SUBMITTED. THIS WILL ALSO REQUIRE WEIGHING MATERIAL EACH TIME FEEDER IS CUT UP OR DOWN AND LENGTH OF TIME RECORDED FOR EACH SETTING.

2. It should be noted that this report will require an extreme amount of manhours to prepare, maintain and submit.

B. M. FRAZELLE

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 — 505-012/18049

BLDG. 670 - RUNNING AND SERVICE PROCEDURES FOR GENERATOR & GAS AUX MOTORS.

Generators and Gas auxiliary motors are to be run once a week on Thursdays UNDER A LOAD for at least 30 minutes or more.

Service generators and gas auxiliary motors by:

1. Check oil
2. Check water level in radiator
3. Check battery level
4. check gas AFTER use.

To run generator:

1. Crank generator - make sure it is putting right amount of volts out (480 volts). Let it run until it warms up.
2. Go to wall and pull transfer switch level from commercial to off and then to generator.
3. Go back to generator and throw switch underneath control panel to on.
4. Run generator for at least 30 minutes or more UNDER A LOAD.
5. To switch back to comercial power:
   a. Throw switch underneath control panel to off.
   b. Go back to transfer panel on wall, switch level to off, wait 2 minutes and put switch up to commercial.

Well men will run their auxiliary motors on Thursday and Fridays UNDER LOAD!

| REMOTE DATA FAILS | | | | | WELL SITES | |
|---|---|---|---|---|---|---|
| R 1 DF | 643 | Well | | | 1 | NEW well 698 |
| " 2 " | 644 | " | | | 2 | " " 699 |
| 3 | [illegible] | ONSLOW BEACH | | | 3 | 700 |
| 4 | 646 | | | | 4 | 701 |
| 5 | 647 | | | | 5 | 703 |
| 6 | 648 | | | | 6 | 704 |
| 7 | 649 | | | | 7 | 705 |
| 8 | 650 | | | | 8 | 706 |
| 9 | NEW WELL | 1 | -698 | | 9 | 707 |
| 10 | " " | 2 | -699 | | 10 | NEW Well 708 |
| 11 | | 3 | -700 | | 11 | WELL 643 |
| 12 | | 4 | -701 | | 12 | 644 |
| 13 | | 5 | -703 | | 13 | 645 |
| 14 | | 6 | -704 | | 14 | 646 |
| 15 | | 7 | -705 | | 15 | 647 |
| 16 | | 8 | -706 | | 16 | 648 |
| 17 | | 9 | -707 | | 17 | 649 |
| 18 | | 10 | -708 | | 18 | 650 |
| 19 | TTET | | | | | |
| 20 | MFPET | | | | | |
| 21 | PPET | | | | | |
| 22 | BMET | | | | | |
| 23 | MPET | | | | | |
| 24 | TT PUMP STATION | | | | | |