Towards General Experimentation and Discovery in "Conditioned" Laboratory Spaces,

Part I: Experimental pH-Change Findings at Some Remote Sites

by

W. A. Tiller, Ph.D.[1], W.E. Dibble, Jr., Ph.D.[1], R. Nunley, Ph.D.[2], and C. N. Shealy, M.D., Ph.D.[3]

[1]William A. Tiller Foundation for New Science, Payson, AZ.
[2]University of Kansas, Lawrence, KS and Holos University Graduate Seminary, Fair Grove, MO.
[3]Holos University Graduate Seminary, Fair Grove, MO.

Keywords: consciousness, meditation, space-conditioning, pH, IIED, entanglement

Abstract

To "condition" a laboratory space means to raise the electrodynamic state of that space to one where not only are electric current, electric dipole and magnetic dipole effects important to material properties but magnetic current effects and human consciousness effects become important also. The "conditioning" process itself occurs through the agency of placing a small, electronic device, that has undergone a unique human consciousness-induced processing procedure, in that space in the electrically turned-on state for a period of close to 3 months. Such a device has been labeled an IIED (Intention Imprinted Electrical Device) and it's unique intention imprint is imbedded in the device via a meditative state process. An initial 3 year study using such devices in a Minnesota laboratory on specific

property changes of both inanimate and animate materials was robustly successful (large effect sizes at $p<0.001$).

Here, via a pH-increasing IIED and purified water, at both a new Arizona laboratory plus remote laboratories in Kansas and Missouri, we show that the initial Minnesota results for water can be satisfactorily reproduced by others when the essential protocol is followed. In addition, we show that a remarkable macroscopic information entanglement process occurs between measurements at IIED sites and control sites located ~2 - 20 miles away from the IIED sites.

This new data shows that human consciousness, at least under some conditions, can strongly influence well-designed target experiments in physical reality.

Introduction

From January, 1997 to January, 2000, the first two authors were experimentally probing the nature of physical reality via the use of IIEDs (Intention Imprinted Electrical Devices) designed for specific target experiments (Tiller, 1997; Dibble and Tiller, 1999; Dibble and Tiller, 2000; Kohane and Tiller, 2000a; Kohane and Tiller, 2000b; Kohane and Tiller, 2000c; Kohane and Tiller, 2001; Tiller et al., 1999; Tiller et al., 2000a; Tiller et al., 2000b; Tiller and Dibble, 2001; Tiller et al., 2001a; Tiller et al., 2001b). These devices were designed to significantly alter the measured properties of inanimate and animate materials. The target materials selected for this study were (1) water, (2) the liver enzyme, alkaline phosphatase (ALP), (3) the coenzyme, nicotinamide adenine dinucleotide

(NAD), (4) the main cell energy storage molecule, adenosine triphosphate (ATP) and (5) living fruit fly larvae, *drosophilae melanogaster*.

By comparing the separate influence of two physically identical devices, one unimprinted and the other imprinted via a unique meditative process, we were able to demonstrate a robust influence of human consciousness on these five materials. In particular, by just placing the designated IIED for a particular target experiment ~6" from the experimental apparatus and turning it on (total radiated EM energy less than ~1 microwatt), the following was observed: (1) a shift in pH of purified water, in equilibrium with air, either up or down by one full pH-unit (a total swing of H^+ concentration by 10^2), with a measurement accuracy of ±0.01 pH units and with no intentional chemical additions to the water, (2) an increase in the thermodynamic activity of ALP, NAD and ATP by a significant degree (effect sizes ~10 – 25) at high statistical significance ($p<0.001$), and (3) a reduction of the larval development time by ~15% - 25% at $p<0.001$. A totally unexpected and critically important phenomenon arose during repetitive conduct of any of these IIED experiments in a given laboratory space. It was found that, by simply continuing to use an IIED in the laboratory space for approximately 3 – 4 months, the laboratory became "conditioned" and the state of that "conditioning" determined the robustness of the above-mentioned experimental results. Our interpretation of this effect is illustrated in Figure 1 (reimprinting at 3 months and 6 months is needed for some spaces to sustain the upper plateau).

Let us suppose that we have some generalized physical measurement, M, of magnitude, Q_M (this might be pH, electrical conductivity, etc.). From Figure 1, we note that, for IIED processing times less than t_1, no meaningful change is detectable by our measurement instruments and $Q_M = Q_{M0}$.

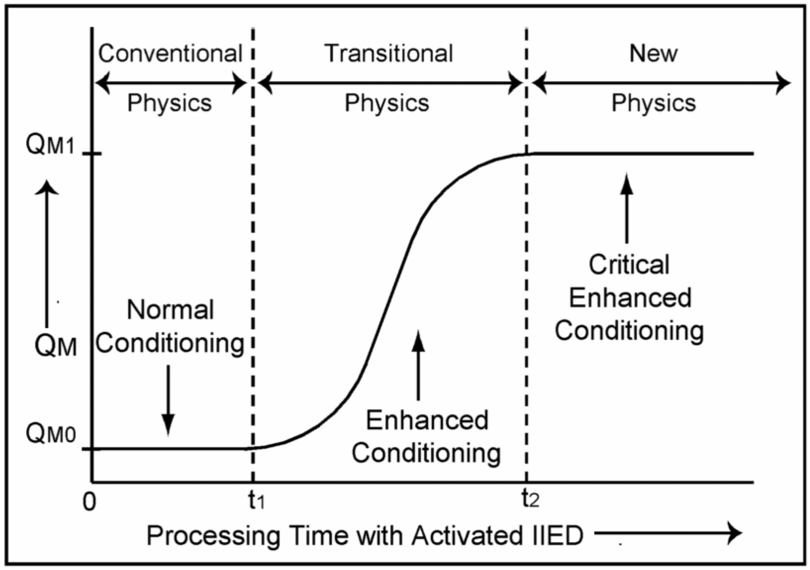

Figure 1. ***For any typical physical measurement, Q, the qualitative magnitude, Q_M, changes with IIED processing time.***

However, for processing times between t_1 and t_2, a variety of transitional behaviors (many of an oscillatory nature) are observed for Q_M. For processing times longer than t_2, the space conditioning seems to have reached a stable plateau wherein, even with the IIED removed from the space and stored in an electrically-grounded Faraday cage, the degree of conditioning seems to remain fairly constant for very long periods of time in that locale (for over 2 years and still going in one of our locales). In our purified water experiments locale, after time t_1, we began to observe oscillations in air temperature, water pH, water electrical conductivity and DC magnetic field polarity effects on water pH. In "unconditioned" locales, no such oscillations or other anomalous effects were observed.

After starting these experiments at Stanford University, they were moved to a Minnesota facility where we had more space. There, over a 3 year period, we were able to "condition" four different locales separated from each other by ~100 ft. to 900 ft. This was done simply by running an IIED continuously in each locale for ~3 – 4 months. After the initial induction period of ~1 – 2 months illustrated in Figure 1, anomalous measurement phenomena began to appear. Air and water temperature oscillations, pH-oscillations, electrical conductivity oscillations, etc., with both large amplitudes (~10^2 – 10^3 times our measurement accuracy) and great periodicity in the ~10 minute to ~100 minute range developed. These oscillation were sustained by the locale, even after removal of the IIED. The key experiment revealing a fundamental change in the electromagnetic nature of the space associated with the conditioning process was a DC magnetic field polarity experiment (Tiller et al., 2001b). Since our normal laboratory state involves only magnetic dipoles and thus the magnetic force is proportional to the gradient of $\overline{\mathbf{H}}^2$, polarity of the field applied to a jar of water should not influence the measured pH. This behavior is exactly what we found in an unconditioned space. This experiment consisted of placing a DC magnet under and axially aligned to the water vessel for pH-measurement first with one pole pointing upward for several days and then with the other pole pointing upward for several days while continuous pH-measurements were made. No effects on pH were seen in unconditioned spaces. However, ΔpH values as large as 3/4 pH units have been observed when the same experiment was carried out in a "conditioned" space. Our presumption is that any measurable $\Delta pH \neq 0$ indicates some involvement with magnetic monopoles functioning at the level of the physical vacuum.

In July, 2000, a new laboratory (~1000 sq. ft.) was set up in Payson, AZ in order to continue this line of research. Previous research using IIEDs at the Minnesota sites suggested that the first prerequisite for successful research in the IIED area is to "condition" the laboratory space. To accomplish this in our new Arizona lab space, special "space conditioning" IIEDs were created by our usual procedure (see Appendix I for details) and simultaneously placed and turned on at six different locations in this laboratory (see Figure 2). This occurred the morning of March 15, 2001. The difference between the Payson, AZ lab site conditioning compared to the Minnesota sites conditioning was the Arizona site used 6 simultaneous "space conditioning" IIEDs, whereas only a single, pH-increasing IIED was used for each of the Minnesota sites, and the intention imprint for these new IIEDs was "to increase the EM gauge symmetry so that any psychoenergetic experiment subsequently conducted in that space would be significantly benefited".

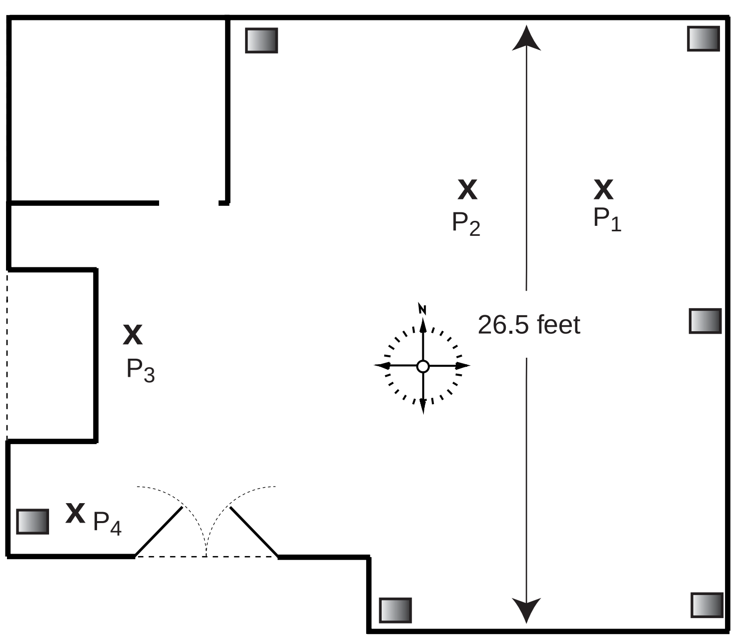

Figure 2.

Location of conditioning IIEDs (shown as small boxes) plus 4 pH-monitoring stations (designated by Xs) in the Payson lab (drawn to scale).

Since the general scientific method requires that others be able to reproduce our experimental results anywhere on the planet provided they closely follow our protocol, we sought and found research funds to "condition" several external sites following the Minnesota procedure utilizing a single pH-increasing IIED. See Figure 3 for the relative location of these various sites. At the point in time of this initial writing, two of these external sites have completed several months of "conditioning" so we are in a position to report on the experimental results found at their locations. In addition, a pH-increasing IIED was turned on at the Payson, AZ lab site on July 25, 2001 and an external site ~2 miles away was rented (~November 1, 2001) as a control site for the entire study.

From all of these various sites, there is abundant data to report and that is the main purpose of this paper. Including control sites (3) and several pH-measurement stations (4) in the Payson, AZ lab, we report on data gathered from more that 9 different sites. Interestingly, a common pattern of pH-behavior variation with time was observed at most of these sites and this behavior forms the basis for Part II of this series (Tiller and Dibble, 2004). In addition to fulfilling the "data reproducibility" requirements of the scientific method at the two main remote sites (~2000 miles away from Payson, AZ), a curious type of "information entanglement" seemed to occur between these various sites and the Arizona lab site. We report on some of these pH-entanglement observations and on the difficulty of maintaining unaltered control sites in this paper.

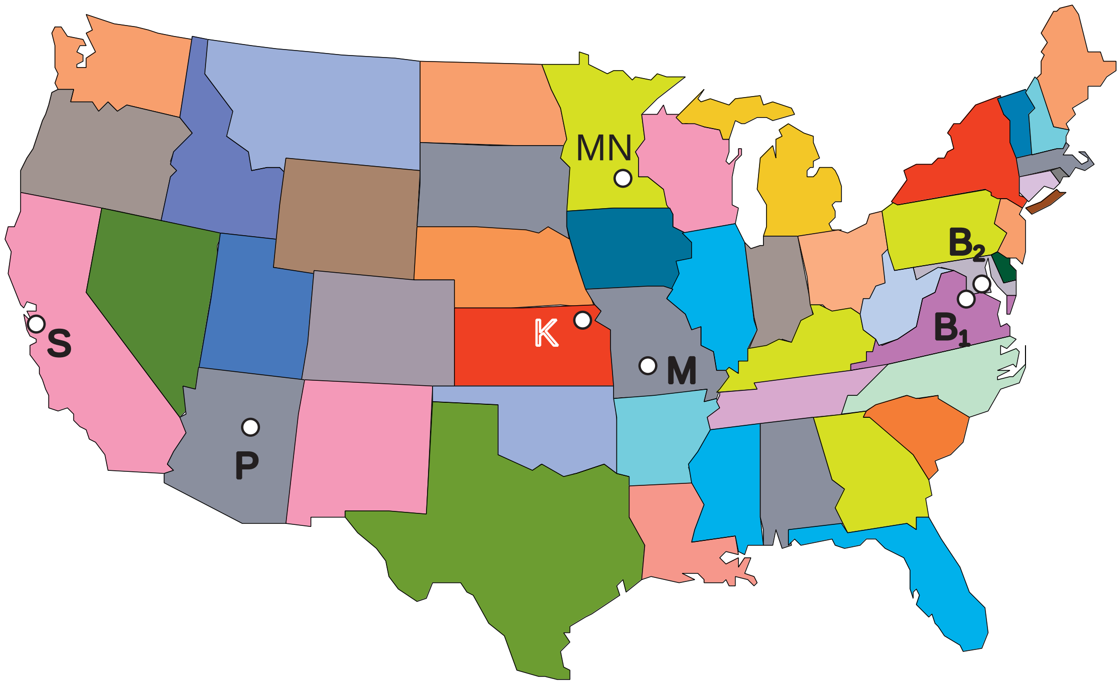

Figure 3. *Geographical location of the various experimental IIED-sites involved in the "remote-sites" experiment.*

1. P = Payson, AZ master site (06/00-present)
2. S = Stanford, CA site (01/97-09/97)
3. MN = Minnesota site (09/97-03/00)
4. K = Kansas site (12/01-present)
5. M = Missouri site (12/01-present)
6. B_1 = Bethesda, MD site (4/02-present)
7. B_2 = Baltimore, MD site (4/02-present)

Experimental

Creating and Stabilizing an IIED

One takes two identical electronic devices in plastic cases (~7" x 3" x 1" in size; see Appendix I for details), wraps one in aluminum foil and places it in an electrically grounded Faraday cage. This becomes the control device. The other device with its power transformer is placed on a table top, plugged into a wall power outlet and turned on. Sitting around the table are four well-qualified meditators who imprint a single, specific intention into the device from a deep meditative state (see Appendix I for the details of this process). After the intention imprinting and information sealing step, this device is turned off and is now called an IIED. It is then immediately wrapped in aluminum foil and placed in its own electrically grounded Faraday cage (FC).

In the early days, we did not perform the aluminum foil wrapping and grounded FC storage procedure. However, we found that we could take the control and IIED in the electrically "off" state, separate them by ~100 meters and, via some unknown mechanism, the intention imprint would transfer from the IIED to the control device so we would lose our "control" within a few days to a week. Via the aluminum foil wrapping, we presumed that this would block optical electromagnetic (EM) information transfer. Via the FC enclosure, we presumed that this would block EM radio waves, microwaves and gigahertz waves so as to further reduce information transfer between the two devices. With these procedures, although we were unable to block low frequency EM information transfer, we were able to maintain a viable intention imprint in the IIED for ~3 months. This procedure allowed serious experimentation with IIEDs to be pursued.

This information transfer process between the two devices, even in the electrically-off state, heralds the presence of a new communication channel other than sound and EM that is yet to be understood and harnessed.

Experimental Methods for pH-Measurement

The pH-measurement techniques used in theses studies were all developed for use in the measurement of the pH of purified water in equilibrium with the atmosphere. One reason for using purified water in equilibrium with air for our pH studies was that the equilibrium pH at a given water temperature (in a normal, unconditioned environment) can be readily calculated from thermodynamic data for water and CO_2 species dissolved in water. Another is that evaporation (which is unavoidable in order to maintain equilibrium with air in long-term studies) does not change the composition and, consequently, the pH of purified water. Thus, we chose measuring the pH of purified water because of its ease of use and ready availability by many different experimental participants at many different sites. The pH of purified water in equilibrium with air at 25° C. is ~ 5.66.

The type of water used in these studies was mostly ASTM type I for the Payson, AZ laboratory. It was prepared in our on-site water purification system (see Appendix I for details). For all the remote sites, except in the very early days, HPLC grade water (also type I) was delivered to each remote site directly from Fisher Scientific. Three types of pH measurement sensors were used. 95-99% of the measurements were performed using combination (a sensor electrode plus internal reference electrode), glass electrodes from various manufacturers. For all remote sites, the ThermoOrion SensorLink® pH-measurement system was employed along with glass pH-electrodes to monitor both pH and water temperature (Thermo Electron Corporation, 500 Cummings Center, Beverly, MA 01915, www.thermoorion.com). In addition, two "batch" methods were employed intermittently to check the pH results of the continuously electronically monitored glass electrodes – a spectrophotometric method (Payson, AZ lab only) and a pH-sensitive paper method. For these methods, an aliquot of solution was required for each measurement; thus, continuous monitoring of pH was not possible using these techniques. In all cases using these additional techniques, selected water samples were collected from their containers at the end of the pH-experiments monitored continuously via glass electrode. The spectrophotometric method for pH measurements employed a LaMotte SmartSpectro® spectrophotometer (LaMotte Company, 802 Washington Ave., Chestertown, MD 21620, www.lamotte.com). Various pH-sensitive papers ("litmus") were also used.

The measurement protocol involved placing the glass pH-electrode and temperature probe in a 250 ml polypropylene bottle filled with purified water (after proper calibration of the pH-electrode using pH-buffers). The water container was then packed or covered closely with lint-free tissue paper being careful not to disturb the operation of the probes. Computer monitoring of the probe outputs commenced immediately using a sample interval of one minute. Data collection was performed daily or at most bi-weekly at some remote sites where the sample interval was longer (usually 3 minutes).

A Brief Description of the pH-Measurement Sites:

(1) The four Payson, AZ lab site positions for pH-measurement are shown with X's in Figure 2. Each measurement station consisted of a vessel of water containing both a pH electrode and a temperature probe connected to an electronic display instrument and a computer monitor as illustrated in Figure 4. Air temperature in this well-insulated lab was thermostatically controlled and independently measured. During the initial lab

conditioning phase (03/15/01 to 7/01/01), perhaps because we ran 6 IIEDs simultaneously or because this was a new and very rich imprint, we observed remarkable interference effects which ultimately led to a very heterogeneous spatial distribution of general "conditioning" and a wide variety of anomalous measurement behavior.

(2) Two Payson, AZ remote sites were utilized. One, labeled the "Garage", was located about 100 yards in a northwesterly direction from the lab. Both pH and water temperature were monitored on a table-top at this site which exhibited large diurnal swings of air temperature. The second site, labeled "Main Street", was located about two miles in a westerly direction from the lab. This site was thermostatically controlled and contained two rooms that we labeled north and south. At neither remote site was any IIED ever used. The water used was ASTM-I purified water prepared in our lab. Data gathering at these remote sites (as well as at our four in-lab stations) was performed by our technician on a ~daily basis.

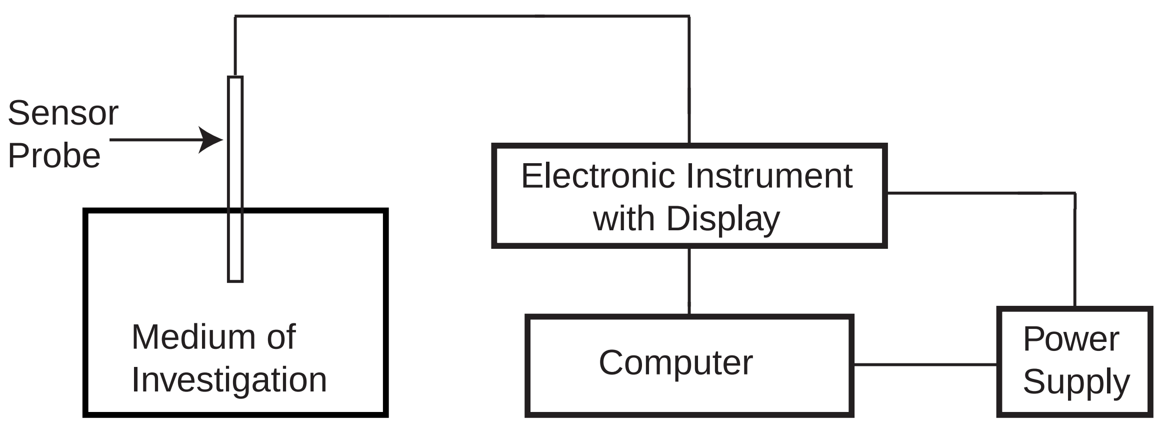

Figure 4. Schematic for the experimental set-ups in the Payson laboratory.

(3) The main Kansas site was operated by Professor Robert Nunley at his Sonrisa Ranch location. It was installed early in November, 2001 but didn't become operational with this pH-increasing IIED until ~12/01/01. Initial pH measurements at this site indicated that some measurable degree of "conditioning" existed in the space prior to turning on this IIED. Initially, the water used was ASTM-I purified water from our Payson, AZ lab, the data was gathered daily and a regular computer link set-up for data transfer to the Arizona lab was set in operation. A control site was initially set up at the University of Kansas, about 20 miles away, in Professor Nunley's office. However, after ~1.5 months it became clear that this was not satisfactory as an "isolated" control site so a second control site, rarely visited by humans, was set up in the University neighborhood.

(4) The main Missouri site was set up at Dr. Shealy's clinic in Springfield early in November with the first control site being set up at Brindabella Farms about 20 miles away. Dr. Shealy's technician, who monitored the two sites on a daily basis, was in computer linkage with the Arizona lab and used Payson, AZ lab water in the measurement vessels. Even though no IIED was present and no one else was using the control site, it showed evidence of growing conditioning. This caused us to move the control site to a second Brindabella Farms location but the "control" problem appeared there as well. Finally, we sought a third control site somewhat away from Brindabella Farms.

By mid-January, 2002, we had seen pH-data anomalies appearing in the Missouri clinic data that were remarkably similar to some that had appeared previously at the Payson, AZ lab. We had also seen evidence of an "experimenter effect" between the technician gathering the measurement data and the Missouri data. This and other small perturbations of the various data streams caused us to seriously speculate on the possibility of information entanglement, via a presently unrecognized information transfer channel in spacetime, between all of the external sites and the Payson, AZ laboratory.

To correct, or at least minimize, linkage between the Payson, AZ laboratory and all remote sites and to reduce the "experimenter effect", we instituted the following procedures by mid-February, 2002: (1) no direct electronic linkage was to occur between any external site and the Arizona laboratory, (2) stop using Payson, AZ lab water at any external site. Instead, ship purified water directly from Fisher Scientific to these sites and (3) shift the data gathering from a daily basis to a two-week basis. This allowed us to insert fresh water into the measurement vessels on a 2-week cycle and re-calibrate the pH-electrode with no intermediate human visits, and pick up the prior two week data-history to be mailed to the Arizona laboratory for analysis. This new protocol continued through the rest of the site-conditioning phase at which point the IIEDs were removed and placed in Faraday cages (on ~04/15/02). Measurement continued for the subsequent 6 weeks to see if any significant change occurred in the "state of conditioning" signatures. This paper only includes data gathered prior to 04/15/02. For ease in cataloging all this external site data, Table 1 defines the site designation label for each site.

Table 1: Measurement Site Designation Labels

		Comments
P_1	Payson, AZ Lab, ASTM-I water	
P_2	Payson, AZ Lab, ASTM-I water+0.4% Silica gel	Exponential pH-increase not observed
P_3	Payson, AZ Lab, ASTM-I water	
P_4	Payson, AZ Lab ASTM-I water	
P_5	Payson, AZ Main Street Site, ASTM-I water	
P_6	Payson, AZ Garage Site, ASTM-I water	Exponential pH-increase not observed
K_1	Kansas IIED Site	
K_2	Kansas Initial Control Site	
K_3	Kansas Final Control Site	
M_1	Missouri IIED Site	
M_2	Missouri Initial Control Site	
M_3	Missouri Second Control Site	
M_4	Missouri Final Control Site	Linear & Exponential pH-increases

Results

1. Before we installed a single pH-increasing IIED on 07/25/01 at location P_3 in Figure 2, a wide variety of pH measurements from the P_1 monitoring station, taken between 04/11/01 and 07/01/01 (see Figure 5a), all showed an initial decay to the theoretical value and hovered around that value over time (each vertically descending line in Figure 5a represents a separate measurement). On the other hand, Figure 5b shows that, for the period 08/15/01 to 03/27/02, all the pH-curves from the P_1 monitoring station exhibited pH increases well above the theoretical value.

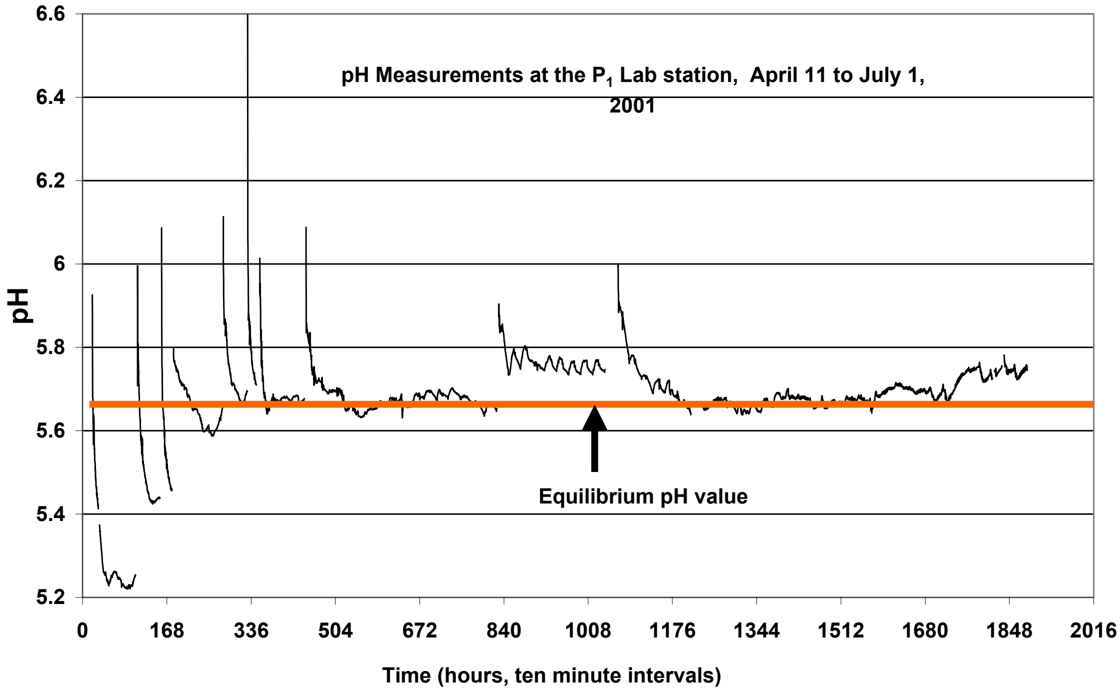

Figure 5a. ***pH vs. time plots for P_1 station, shown in Figure 2, for the period prior to installation of a pH-increasing IIED. Sharp downward drops represent change to new water and pH electrode recalibration.***

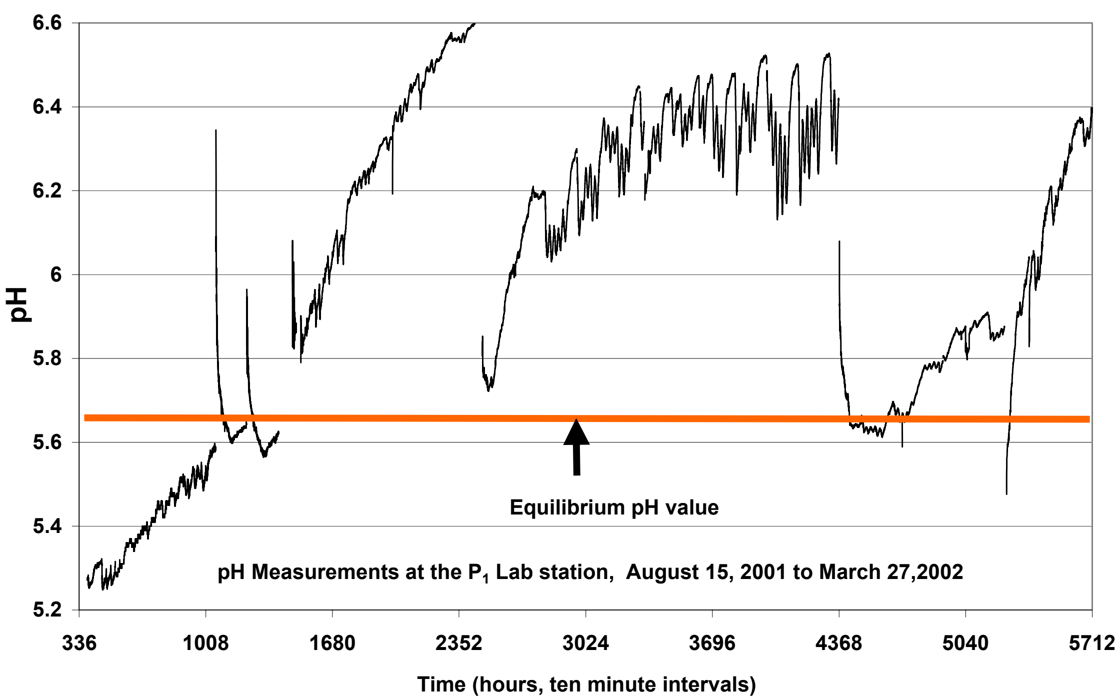

Figure 5b. ***pH vs. time plots for P_1 station, for the period after installation of the pH-increasing IIED. Data gap drops represent change to new water and pH electrode recalibration.***

2. One of the most important findings of this study is that, at almost all sites, when fresh water was placed in the pH-monitoring vessel and continuously monitored for two weeks, the pH-dependence on time exhibited an approximate exponential behavior; i.e.,

$$pH(t) = pH_0 + \Delta pH\,(1 - e^{-\beta t}). \quad (1)$$

Here, pH_0 is the site temperature theoretical value that we initially measure at what we call $t=0$. The magnitude of ΔpH is observed to grow with "conditioning" time and, in any one two-week cycle, is the asymptotic pH change as $t \rightarrow 2$ weeks; it, of course, changes from site to site and from cycle to cycle as does the value of β. Figures 6a and 6b, respectively, provide examples of Equation 1 behavior. Figures 7a and 7b, respectively, provide values for ΔpH and β for the various sites listed in Table 1 and for the time interval indicated.

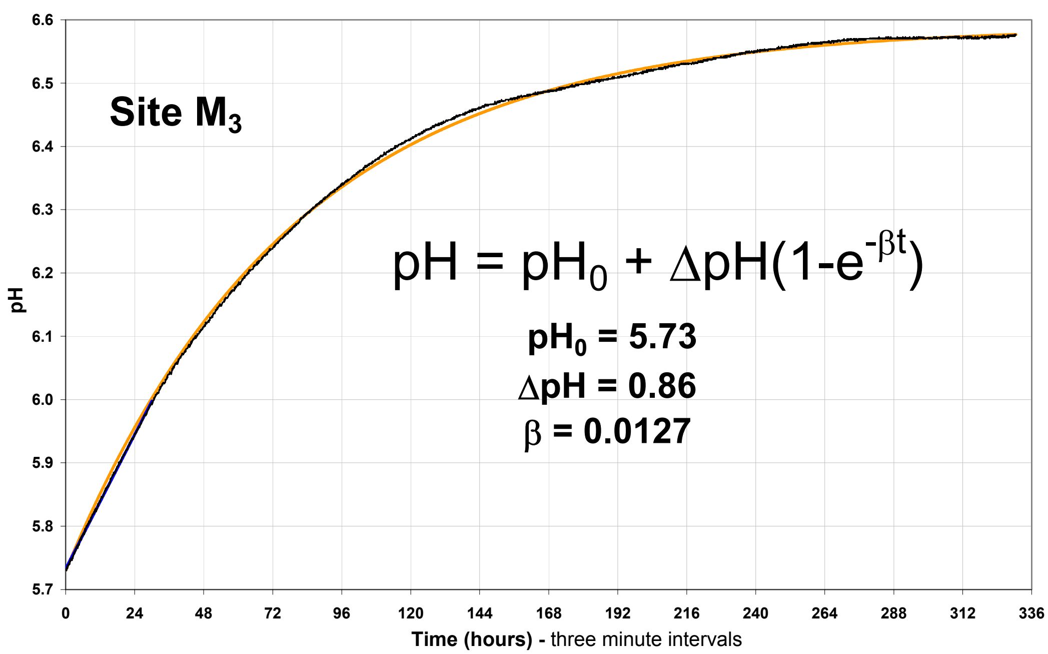

Figure 6a. ***pH vs. time plot for site M_3. Example of exponential data with fitted curve (light). Initial 30 hours of data exhibits linear behavior (February 15 - March 1, 2002 period). The fit is so close; the two curves are barely distinguishable from each other.***

Table 2 lists the time intervals for this data from each site.

Not all sites exhibited Equation 1-type behavior. Site M_3 exhibited an initially linear behavior with time of the form

$$pH(t) = pH_1 + \gamma t \qquad (2)$$

At this site, the pH-time course was nearly perfectly linear for the initial part of the measurement (one-minute sampling interval) but eventually became exponential. The Missouri control site, M_3, gave $pH_1 = 5.76$ and $\gamma = 0.0022$ for the experimental time period 02/01/02 to 02/15/02 (initial linear period of 116 hours with $R^2 = .997$). These values changed to $pH_1 = 5.73$ and $\gamma = 0.0088$, for the following 2-week period (30 hours with $R^2 = .999$). In the final 2-week cycle, these values became $pH_1 = 5.72$ and $\gamma = 0.0081$ (13 hours with $R^2 = .999$). Similar linear time-behavior was observed by one of Tiller's recent Stanford Ph.D. student's theses (Yamashita et al., 2003) where it was found that γ increased with increase of local $\overline{\mathbf{B}}$-field strength, for both AC and DC fields, and also with convective stirring. In addition, since for $\beta t << 1$ in Equation 1, pH(t) becomes Equation 2, one expects to find $\gamma \sim \beta \Delta pH$. It should be noted here that not all sites exhibited exponential or linear pH-time behavior. Site P_2, for example, did not show either behavior probably because of pH-buffering via ion exchange reactions between water and the silica gel used only at that site.

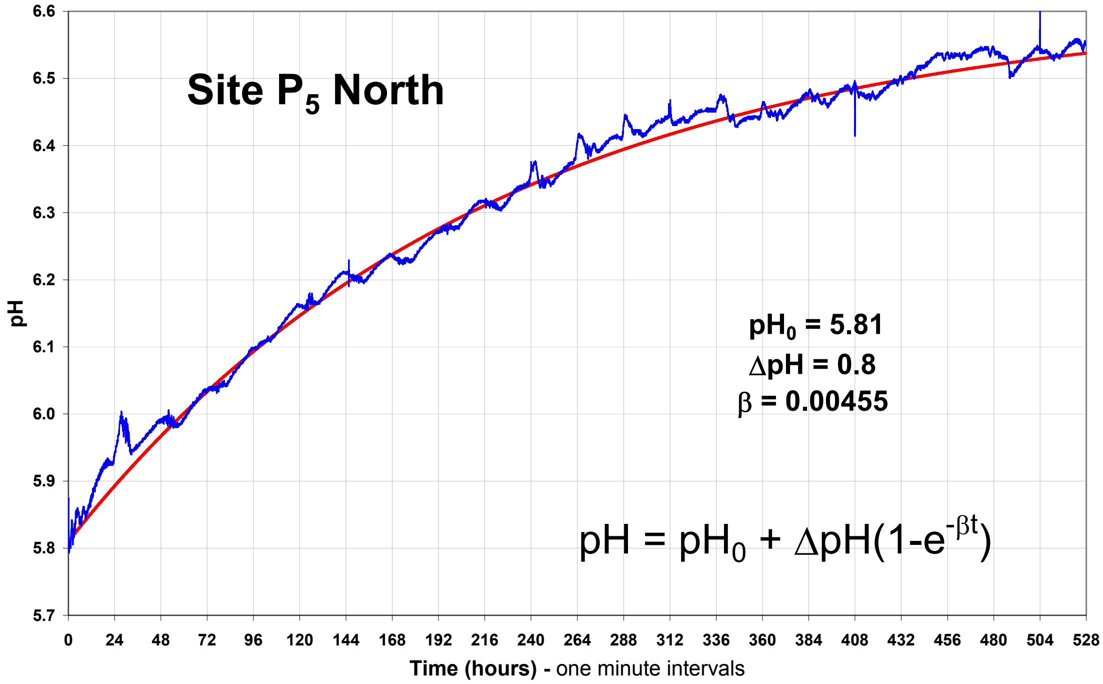

Figure 6b. Example of exponential pH increase at site P_5. This site is typical of conditioned sites affected by pH-temperature entrainment wherein more pH variation than that observed in Figure 6a is noted (February 6 - 27, 2002 period).

Table 2: Time Intervals for the Figure 7 site data

Site	Time Interval of Data Gathering
M_1	2/19 to 3/5, 2002
M_2	1/2 to 2/1, 2002
M_3	3/25 to 4/8, 2002
K_1	2/3 to 3/4, 2002
K_2	1/18 to 1/27, 2002
P_1	3/9 to 3/14, 2002
P_3	12/30/2001 to 3/3/2002
P_4	10/7 to 11/12, 2001
P_7	2/15 to 3/24, 2002
North P_5	2/6 to 2/27,2002
South P_5	12/21/2001 to 1/2/2002

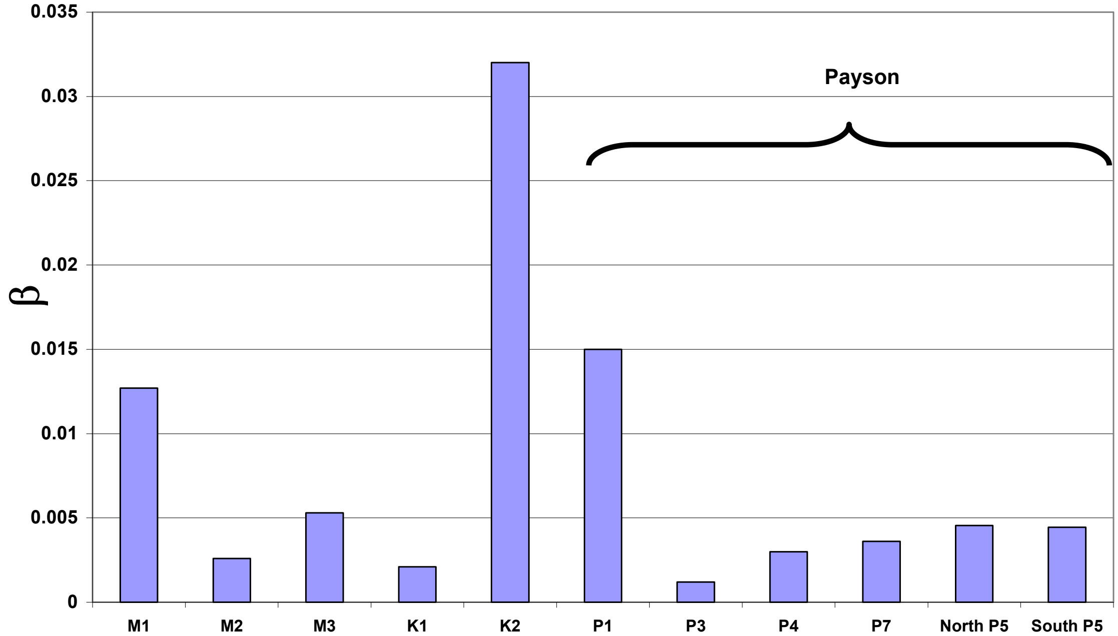

Figure 7a. ***Bar chart showing ΔpH values from Equation 1 for the listed sites exhibiting exponentially increasing pH values.***

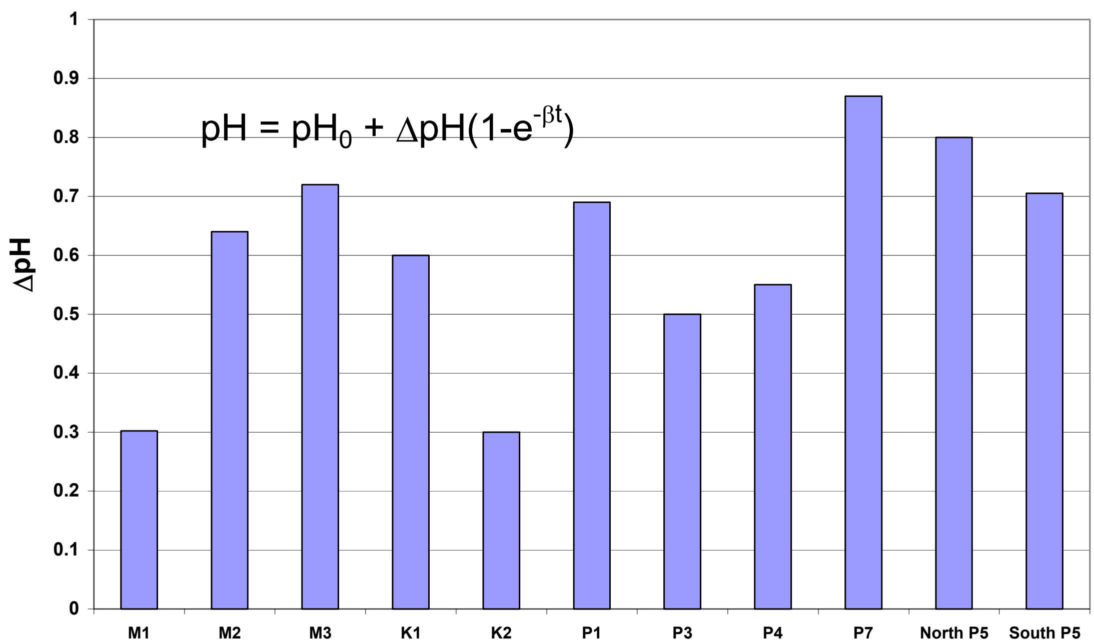

Figure 7b. ***Bar chart showing ß values from Equation 1 for the listed sites exhibiting exponentially increasing pH values.***

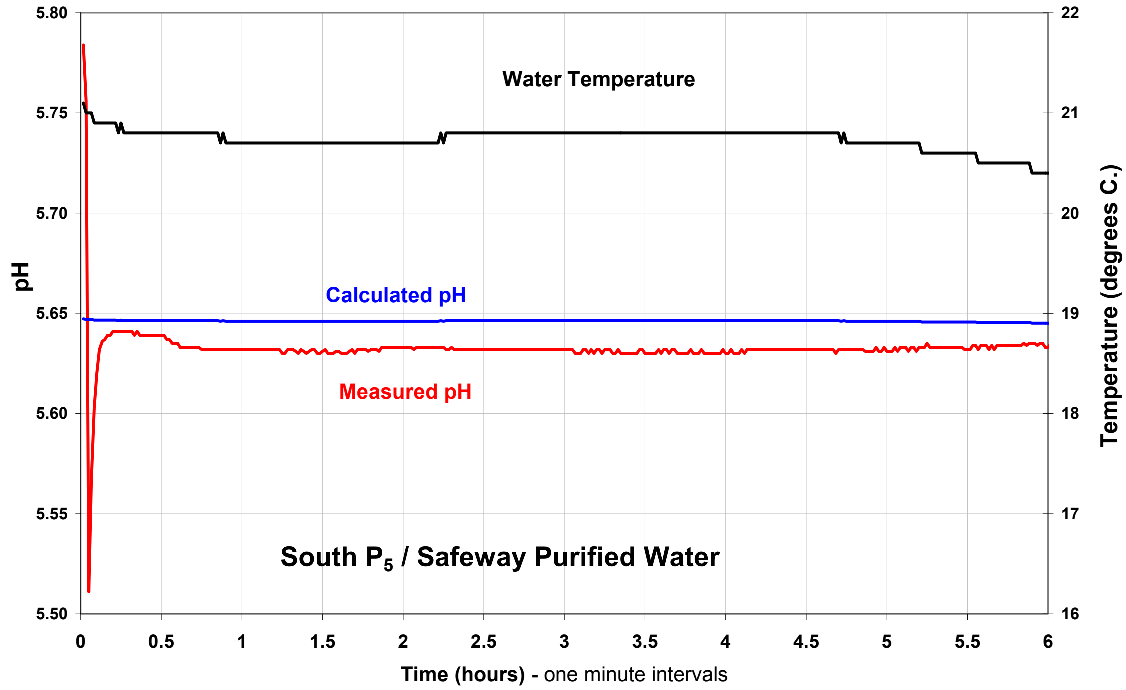

Figure 8a. ***pH and temperature time course for measurements on Safeway™ deionized water at site South P_5 (February 27, 2002).***

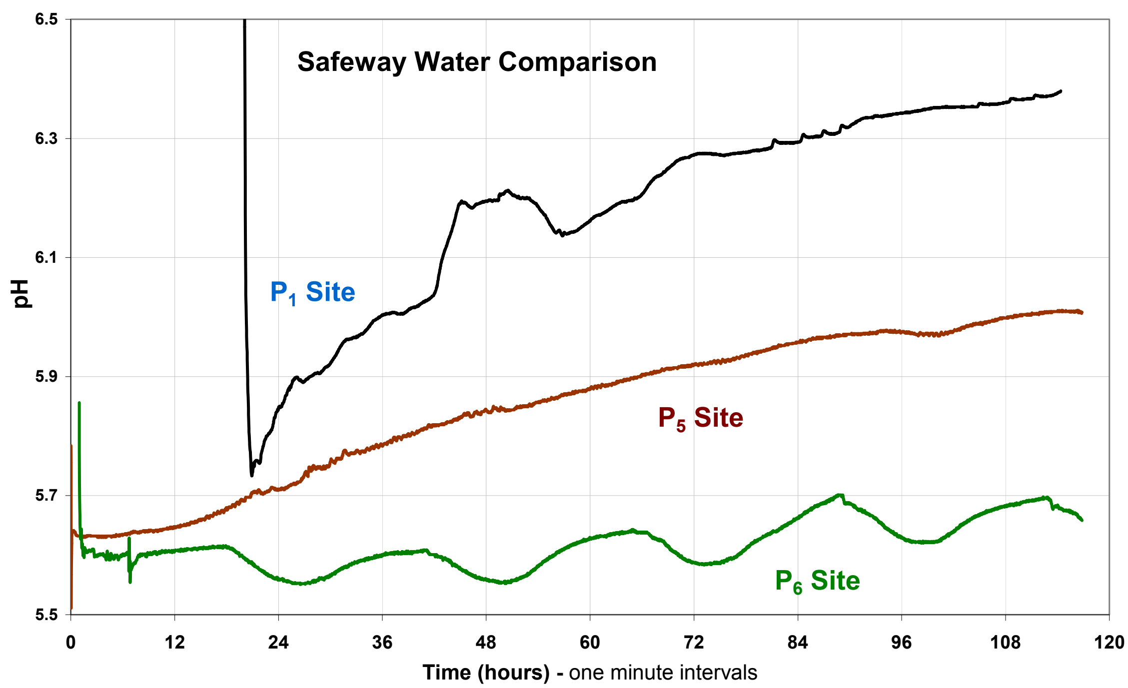

Figure 8b. ***pH vs. time for the three site pH measurements using Safeway™ deionized water. (February 27 - March 4, 2002 period).***

3. To investigate possible effects of the water source on our experiments, we purchased deionized water from a local market (Safeway) and measured its pH at three Payson, AZ locations, P_5, P_6 and P_1 in that order. Orion pH electrodes, calibrated using Orion dilute solution buffers, were used at each site. Immediately after acquiring this water, it was placed in three plastic bottles and taken to these three sites. Figure 8a illustrates the pH-

measurement at site P_5 for the first 6 hours. Here, any deviation from the equilibrium pH-value was less than the uncertainty in pH buffer values for this period (± 0.02 pH units).

Figure 8b shows the time variation of pH measured at sites P_5, P_6 and P_1 over a period of ~5 days. At site P_5, the pH began increasing only after the ~6 hr induction period shown in Figure 8a and, for the next ~18 hour period, exhibited concave-upwards behavior before turning over and becoming concave downwards. Site P_6 also exhibited a flat pH profile, close to the equilibrium value, for the first 6 hours whereas, at site P_1, the pH did not even drop to the equilibrium value before it began climbing in approximate accordance to Equation 1.

The site P_6 results are particularly interesting in that, after an initial flat region, the pH undergoes undulations related to large diurnal temperature excursions. Figure 8c shows a high negative correlation between the theoretical pH-value and the measured pH-value. Such a high negative correlation between these two pH-values is only seen in "conditioned" spaces.

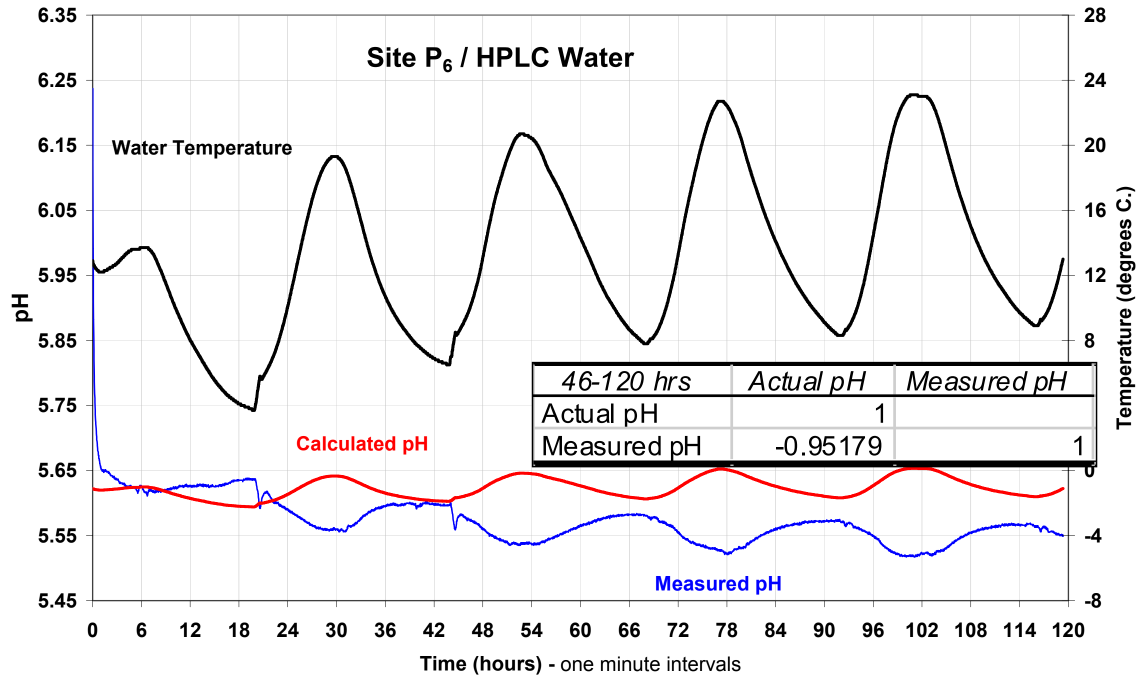

Figure 8c. ***pH and temperature vs. time measurements on HPLC water at site P_6. The correlation coefficient between calculated and measured pH is shown in the inset (March 8-13, 2002 period).***

4. An illustration of the "experimenter" effect is seen in Figures 9. In Figure 9a, at sites P_1 and P_4, the highly correlated drops in pH occur every time the raw data is accessed to make these plots. Figure 9b shows a negative correlation between the diurnal water temperature variations and the measured pH at site P_4. However, this strong inverse correlation occurs only when people enter the space. One notes that, over the weekend when no human entered the lab, no pH drops occurred even though the water temperature oscillations were present. Similar data disturbances were observed for the Missouri and the Kansas sites.

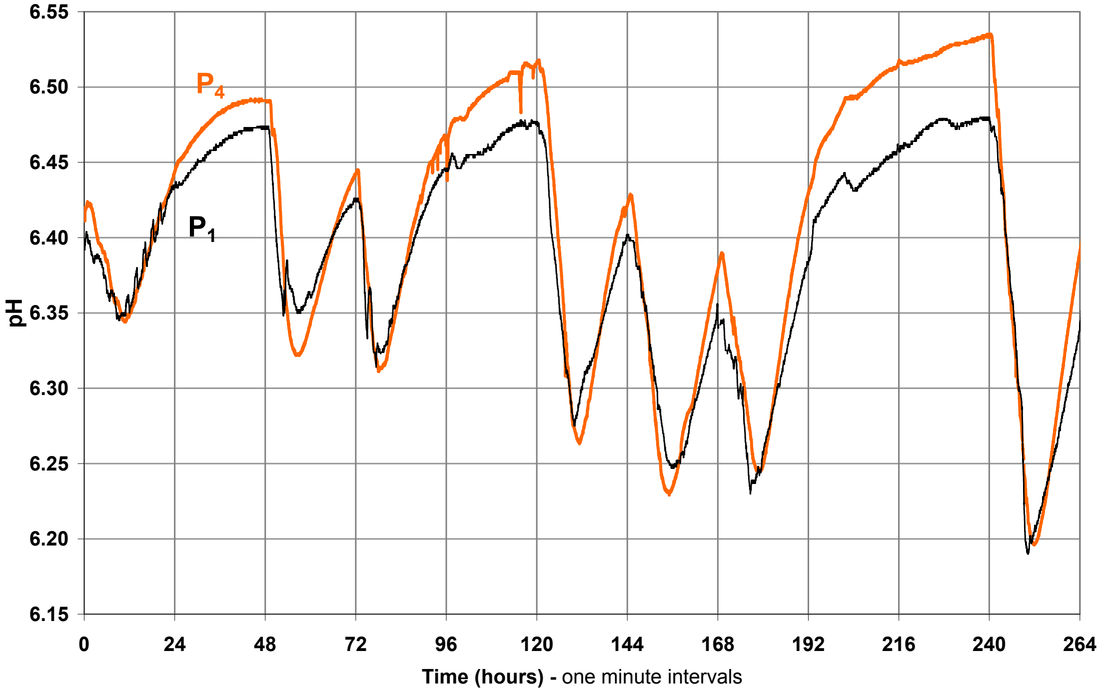

Figure 9a. ***pH vs. time plots for two stations, P_1 and P_4, in the Payson lab. The pH drops occur <u>only</u> when the results here, represent a short segment of the data shown in Figure 5b (December 28 - January 7, 2002 period).lab is entered and the data is collected. The P_1 station,***

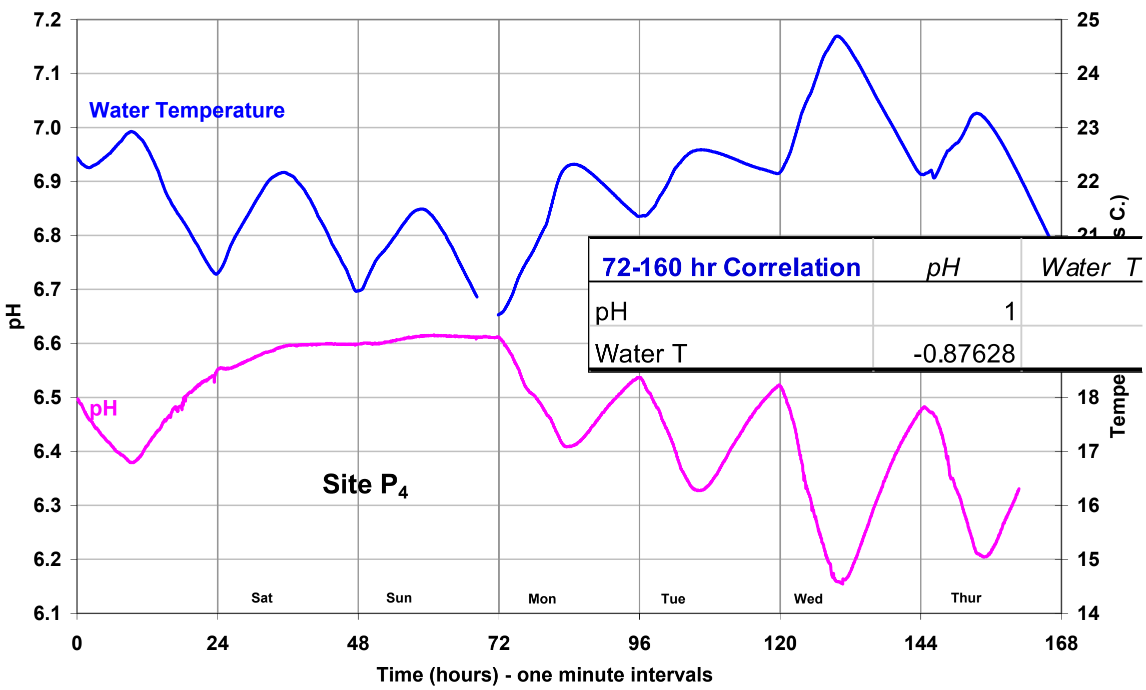

Figure 9b. ***pH and temperature vs. time for the P_4 station in the Payson Lab. Again, the pH drops occur <u>only</u> when the lab is entered and the data is collected which did not occur over the weekend of January 12-13 (January 11-18, 2002 period, inset is the T-pH correlation coefficient).***

5. A pH-sensitive paper ("litmus") test of pH for this water during a typical two-week measurement cycle yields the temperature-dependent theoretical value, pH_0, at both $t=0$ and $t= 2$ weeks whereas the electronic pH-measurement showed the time-dependence noted in (1). Repetitive two-week cycles yielded essentially the same behavior so there is nothing wrong with the electronics as only the water is changed; i.e., ΔpH measured electronically between the two-week old water for cycle n was ~0.8-1.0 pH-units higher than the new water $t=0$ value for cycle ($n+1$) even though only ~1 hour had elapsed. Use of a spectrophotometric pH-measurement technique at the Payson, AZ lab led to nearly the same behavior as the electronic technique. Thus, although all three techniques measure H^+ concentration, only two of them involve electronic circuitry for the information processing and these are the two that provide data conforming to Equations 1 and 2.

6. Placing our water vessel in a mu-metal, double-walled cylinder which, in turn, waslaced within a large, mu-metal box (~5 feet on the side) also led to a linear and an exponential time-dependence for pH-measurement at the Payson, AZ lab site. This large mu-metal box was located in the machine-shop space just outside and to the south of the conditioned lab depicted in Figure 2.

Discussion

In this paper, we have assembled only a small portion of the data gathered in this "remote site" study. Here, we have focused only on the pH-change response at the IIED sites and their control sites to use of a pH-increasing IIED.

The key findings of the present work are:

(1) pH increases occurred at all treatment sites in response to the presence of a pH-increasing IIED. Further, the time-dependence of these pH increases was largely of an exponential nature (see Equation 1) with the ΔpH increasing with length of IIED conditioning time.

(2) The measured pH also increased at the control sites, mostly in this exponential fashion, but generally not as greatly as at the IIED treatment sites. However, at the M_3-site it eventually increased even more than 1 pH unit.

(3) Monitoring at site P_1 in the Payson laboratory showed that, even though the entire laboratory space was conditioned in a general sense, the laboratory exhibited normal pH behavior (Figure 5a). However, shortly after treatment by a pH-increasing IIED, it began to exhibit the Equation 1 anomalous behavior (Figure 5b).

(4) The pH(t) profile exhibited strong perturbations associated with an experimenter entering the room to access the computer-stored raw data. Smaller magnitude perturbations occurred for a variety of other reasons.

(5) The type of water used in the pH-measurement vessels created an initial transient behavior lasting ~1 day before the onset of typical Equation 1-type behavior.

(6) A variety of less well-defined data signatures suggested an "information entanglement" type of condition existed between the Payson lab and all the remote sites. The initial use of Payson lab purified water at these remote sites was thought to be a contributing factor in this "information entanglement".

(7) pH measurement using two different digital electronic techniques revealed this anomalous pH behavior in a pH-increasing IIED conditioned space. However, a purely chemical test using litmus paper revealed only the temperature-determined, theoretical value for the pH.

(8) Magnetic screening via μ-metal does not shield a pH-measuring vessel from this seemingly anomalous pH-behavior in a conditioned space environment.

In the earlier Minnesota laboratory experiments (Tiller and Dibble, 2001; Tiller et al., 2001b) perhaps the key experiment for revealing something about the fundamental nature of an IIED-conditioned space, in comparison to a normal, unconditioned space, was the DC magnetic field polarity experiment. This experiment, which simply involved placing a disk-shaped magnet underneath and axially-aligned with the pH-measurement vessel for a period of 4-5 days while continuously recording pH(t), and then turning the magnet over for an additional 4-5 days of continuous recording, showed that the up-directed pole of the magnetic field (south or north) significantly influenced the magnitude of the measured pH.

This experimental observation is impossible to explain if the space had maintained its original U(1) electromagnetic (EM) gauge symmetry state because, in the U(1) state, one has an electrodynamics built on the presence of only electric monopoles (single + or single - electric charges), electric dipoles and magnetic dipoles. From the latter, reversing the polarity of a DC magnetic field should produce no changes since the magnetic force is proportional to the gradient of the square of the magnetic field ($\underline{H}^2$ or $\underline{B}^2$) and the field polarity shouldn't matter ($(+2)^2 = (-2)^2 = 4$). Thus, somehow the IIED conditioning process alters the EM gauge symmetry state of the laboratory space to a level where magnetic monopoles (either north or south pole magnetic charge) are accessed. In more exotic theoretical physics texts, one finds that an EM gauge symmetry level exists wherein both electric and magnetic monopole species are stable and naturally coexist (Tiller et al., 2001b). This level is called the SU(2) EM gauge symmetry level and it also has a higher thermodynamic free energy per unit volume than the U(1) EM gauge symmetry level.

In addition to the DC magnetic field polarity experiment, Chapter 6 of Tiller et al., 2001b also reveals experimental data supporting the following two postulates that are relevant to this paper.

(1) The magnetic monopoles function at the level of the physical vacuum but are not <u>measurement accessible</u> if the laboratory space remains in the U(1) EM gauge symmetry state and

(2) The degree of "conditioning" of a space depends largely on four main factors, (a) Q_{LS}, the history of the local space and objects in the local space, (b) Q_D, the intention imprint "charge" remaining in the IIED, (c) Q_E, the consciousness and biofield strength of

experimenters or other people occupying the laboratory space and (d) Q_{eq}, the level of potentization of the measurement equipment in the space.

Our working hypothesis is that the device imprinting process raises the IIED to the SU(2) EM gauge symmetry level and, as such, it is at a higher thermodynamic free energy per unit volume than that of the U(1) state. Thus, via the fields operating at that level of reality, it can thermodynamically perform useful work on a surrounding U(1) EM gauge symmetry domain which is stuck at a lower thermodynamic free energy per unit volume condition. This is the rationale used (Tiller and Dibble, 2001; Tiller et al., 2001b) to explain why special shielding procedures were needed to reduce information transfer between an IIED in the electrically "off" state and a control device in the electrically "off" state. One also presumes that this information transfer process is related to magnetic monopole behavior that generates an entirely new type of field and photon spectrum in human experience and, further, it is a root cause of the "information entanglement", noted in this paper, to occur between IIED sites and supposed control sites located ~2 miles - 20 miles away. In other unpublished work, this distance has been extended to ~2000 - 8000 miles.

The importance of all this to the JCAM readership cannot be overemphasized, even though we do not yet know how to control the information entanglement process. Fundamentally, it appears that the IIED procedures allow one to condition any type or volume of space to a higher EM gauge symmetry level and our measurement techniques allow one to track some identifier of that state. It appears then, that one can "tune" the conditioned space to serve a specific intention use at a high level of enhanced performance. At present, four different, specific IIEDs are in use at four different remote sites to probe the efficacy of this hypothesis: (1) significant free-radical concentration reduction in humans because of time spent in such a tuned, conditioned space, (2) projection/stimulation of remote healing to identified humans at identified remote sites from a uniquely tuned, conditioned space, (3) significant increase of Ca^{++} sparking rate in excised rat heart muscle cells and (4) significant increase in Interleukin-6 secretion rate from a special cell line associated with time spent in such a tuned, conditioned space as in (2) and (3).

Returning to our discussion of the 8 key experimental findings of this paper, items 1-3 indicate that reproducibility by others of the basic pH-enhancement is readily achievable provided that we supply the pH-increasing IIED. Unfortunately, we have not yet discovered a procedure for maintaining a U(1) EM gauge symmetry control site that is a recognized part of our experimental system. Further, although most of these control sites attain pH-levels slightly below the targeted $\Delta pH = +1.0$ pH units for the IIED sites, one of these sites, M_3, eventually achieved ΔpH-values of ~1.4 - 1.7 pH units. Other anomalous findings at site M_3 included very high amplitude air, water temperature and pH-oscillations similar to those observed in the Minnesota lab much earlier in the research. Interestingly, M_3 was the only control site that was in a small room situated entirely below ground level. Finally, item 3 shows that a conditioned space can be at a general higher EM gauge symmetry level and yield normal pH-behavior; however, when it is then specifically tuned via a pH-increasing IIED, it very quickly exhibits pH-behavior consistent with this tuning.

Item 4 regarding the strong "experimenter" effect that manifests in a conditioned space is an important fact that one must always be aware of. Over time, it was noted that the Payson, AZ laboratory had become a sensitive detector of energy/consciousness emissions/absorptions from humans in the vicinity of the laboratory, a fact that will be discussed at more length elsewhere (Tiller et al., 2003). Interestingly, at site M_1, with the door kept closed, when HOLOS University held its first graduation ceremony in a different part of the building, the automatically recorded pH-measurement data showed a strong anomalous signal during the entire period of the festivities and only during this time period. A key observation relative to this pH detector is the direction of pH change that characterizes these pH signals. The pH always drops toward the equilibrium pH value for pure water when the human emission occurs that is picked up by this particular detector (Tiller et al., 2003). After the emission event, the pH tends to return to the previous level. Since the intention broadcast by the IIED was to increase the pH of water, the human interaction apparently suspends the effect of the IIED allowing the pH level to move temporarily toward the U(1) state equilibrium value. We postulate that pH dropping below the equilibrium value caused by a pH-decreasing IIED would produce the opposite result.

Item 7 is a particularly interesting result in that it suggests that an experimental measurement consists of two parts, one which is uniquely U(1) EM gauge state limited while the other is strongly consciousness determined via the IIED-determined elevation of the EM gauge symmetry state. This consciousness-influenced part appears to be particularly associated with electronic and digital systems. Perhaps we have developed a type of hybrid digital consciousness with these IIED procedures.

Item 8 once again brings magnetism to our attention as an important factor in the conditioning process. Some type of magnetic monopole behavior may occur at the vacuum level to change the local value of magnetic flux density in ways that penetrate a material with a history of shielding magnetic fields.

Acknowledgements

We wish to thank Ditron, LLC and the Samueli Institute for partial support of this work. We also wish to thank the JCAM reviewers of this paper for their very helpful comments.

References

Dibble WE Jr and Tiller WA. Electronic device-mediated pH changes in water. Journal of Scientific Exploration 1999;13, 2:155-176.

Dibble WE Jr and Tiller WA. Development of pH and temperature oscillations in water containing $ZnCO_3$ crystallites using intention imprinted electronic devices. Subtle Energies and Energy Medicine 2000;8, 2:175.

Kohane MJ and Tiller WA. Energy, fitness and information – augmented electromagnetic fields in *Drosophila Melanogaster*. Journal of Scientific Exploration 2000a;14, 2:217.

Kohane MJ and Tiller WA. Anomalous environmental influences in *in vitro* enzyme studies, Part 1: Some Faraday cage and multiple vessel studies. Subtle Energies and Energy Medicine 2000b;11, 1:75.

Kohane MJ and Tiller WA. Anomalous environmental influences in *in vitro* enzyme studies, Part 2: Some electronic device effects. Subtle Energies and Energy Medicine 2000c;11, 2:99.

Kohane MJ and Tiller WA. Biological processes, quantum mechanics and electromagnetic fields: The possibility of device-encapsulated human intention in medical therapies. Medical Hypotheses 2001;56, 6:598-607.

Smith CW. Is a living system a macroscopic quantum system? Frontier Perspectives 1998;7:1.

Tiller WA. Science and Human Transformation: Subtle Energies, Intentionality and Consciousness. Walnut Creek, CA: Pavior Publishing, 1997: 264-273.

Tiller WA, Dibble WE Jr and Kohane MJ. Towards objectifying intention via electronic devices. Subtle Energies and Energy Medicine 1999;8, 2:103-123.

Tiller WA, Kohane MJ and Dibble WE Jr. Can an aspect of consciousness be imprinted into an electronic device? Integrative Physiological and Behavioral Science 2000a;35, 2:140.

Tiller WA , Dibble WE Jr and Kohane MJ. Exploring robust interactions between human intention and inanimate/animate systems, Part I: Experimental. Frontier Perspectives 2000b;9:6.

Tiller WA and Dibble WE Jr. New experimental evidence revealing an unexpected dimension to materials science and engineering. Materials Research Innovations 2001;5:21-34.

Tiller WA , Dibble WE Jr and Kohane MJ. Exploring robust interactions between human intention and inanimate/animate systems, Part II, Theoretical. Frontier Perspectives 2001a;10:9.

Tiller WA, Dibble WE Jr and Kohane MJ. Conscious Acts of Creation: The Emergence of a New Physics. Walnut Creek, CA: Pavior Publishing, 2001b.

Tiller WA, Dibble WE Jr and Krebs CT. Instrumental response to advanced kinesiology treatments in a "conditioned" space. Subtle Energies and Energy Medicine, 2003, in press.

Tiller WA and Dibble WE Jr. Towards general experimentation and discovery in "conditioned" laboratory spaces, Part II: pH-change experience at four remote sites, one year later. Submitted to J Altern Complem Med, 2004.

Yamashita M, Duffield C and Tiller WA. DC magnetic field and electromagnetic field effects on the pH and ORP equilibrium rates of water, Part I: Purified water. Submitted to Langmuir, 2003.

Appendix I

Some Device Essentials, The Imprinting Process and Water Purification Procedures

The Host Devices: The physical size of the plastic case housing the electronics is ~ 7 in. x 3 in. x 1 in. The electric circuits utilized are quite simple (see Figure A1). They basically involve only an EEPROM (Electrically Erasable Programmable Read Only Memory) component (not conventionally connected into the circuit), an oscillator component (1-10 MHz range), no intentional antenna and either line voltage or battery power supply. We utilized both single oscillator devices (7.3 MHz) and three-oscillator devices (5.0, 8.0 and 9.3 MHz). The radiated electrical power for these devices was less than the order of ~ 1 microwatt and they were generally placed at a distance of ~ 3 in. - 6 in. from the target experiment. These devices were designed to be almost identical to a commercial device (Clarus Products International, LLC, 1330 Lincoln Avenue, Suite 210, San Rafael, CA 94901, www.clarus.com) that is readily available so that other investigators might more easily attempt to reproduce our experimental results.

Device Isolation and Storage: Early on in this experimental program, it was discovered that, even in the switched-off state, some form of information leakage was occurring between the imprinted device (IIED) and the unimprinted control device. This manifested as a temporally decreasing difference in the results found when these two types of devices were separately used in a particular target experiment so that, in essence, we lost our control after some relatively short period of time. The resolution of this difficulty, for the entire course of the present experiments, was to store each device with a unique category of imprint in its own electrically-grounded Faraday cage after first completely wrapping it in aluminum foil. Although not perfect, this procedure has allowed the intention charge to remain stored in the IIED for ~ 3-4 months and appears to have significantly diminished unwanted communication between the imprinted and unimprinted devices.

The Faraday cages were constructed from a fine mesh copper screen (0.16" grid) in a cylindrical geometry with diameters from 6 in. to 18 in. (mostly 12 in.) and with a close-fitting cylindrical cap that would close the top and slide down the side-wall about 6 in. Theoretically, such cages screen out the intensity of radio and higher electromagnetic (EM) frequencies by about a factor of about 10. At the very high frequency end, EM-wavelengths smaller than the copper mesh size can readily pass into the interior of the cage and this is why we always wrap the devices in Al-foil (to stop such photons). At the very low frequency end (~ 60 Hz and below), the EM skin depth in copper is so large that our type of cages are only minimally effective for EM-shielding. We did not seriously study the effectiveness of magnetic shielding, via the use of mu-metal containers, during this study but the data we do have suggests that it is not an effective shield. In related studies, Smith (1998) has found that mu-metal shielding of the geomagnetic field erases both his specific electromagnetic frequency imprints in water as well as homeopathic potentials in water. In his studies, the imprinting threshold was found to be ~ 360 nT (nanotesla). As a final point on this topic, when one makes measurements using probes located inside the Faraday cage and recording instruments outside the Faraday cage, the overall EM-shielding effectiveness is reduced.

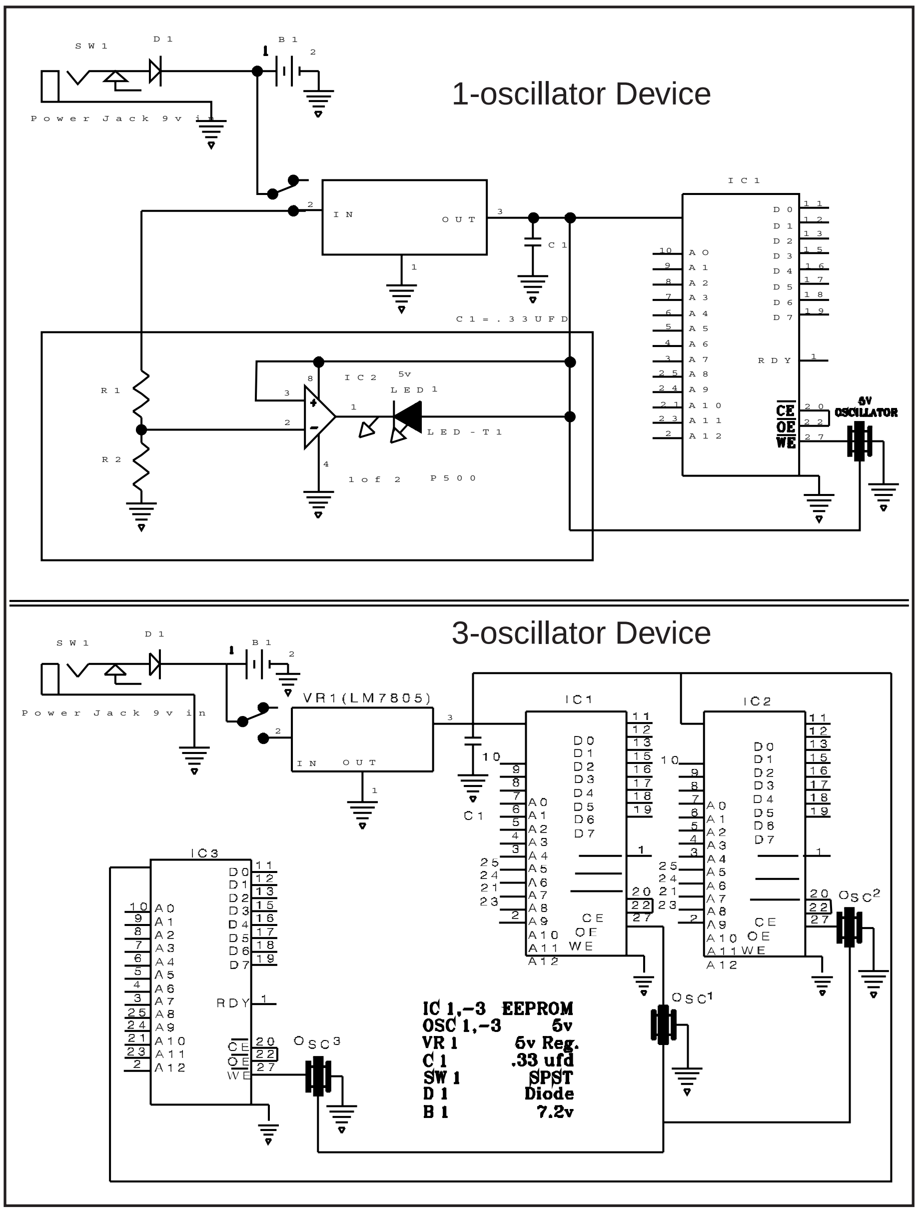

Figure A1. ***Circuit diagrams for the electronic devices used as host devices for intention imprinting.***

<u>The Imprinting Process</u>: The actual imprinting procedure for a particular target experiment was as follows: (a) place the single-oscillator or three-oscillator device, along with its current transformer (plugged in and turned on), on a table around which the imprinters sit, (b) for the Minnesota experiments, four people (two men plus two women) who were all accomplished meditators (decades of regular practice), coherent, inner self-managed and readily capable of entering an ordered mode of heart function plus sustaining it for an extended period of time, sat around the table ready to enter a deep meditative state, (c) a signal was then given to enter such an internal state, to mentally cleanse the environment and then create a sacred space for the intention (requiring about 10 to 15 minutes). Then, a signal was given by one of the four to put attention on the table-top objects to mentally erase any prior imprints from the device, (d) after 3 or 4 minutes, another signal was given by one of the four to begin focusing on the specific prearranged intention statement (it was read aloud by one of the four) for about 15 minutes and then abruptly released, (e) next, a final signal was given to shift focus to a closing intention designed to seal the imprint into the device and minimize leakage of this essential energy/information from the device (requiring about 5 minutes) and (f) since this completed the process, the four people withdrew from the meditative state and returned to their normal state of consciousness. It should be obvious to the reader that a wide variety of options and variants exist with respect to the erasing, imprinting and sealing phases of the overall treatment process for these devices; e.g., only two people were used to imprint the six devices for initial conditioning of the Payson, AZ laboratory; now we utilize 6 people in the imprinting process.

The specific intentions for the four initial target experiments are given below:

1. **Water Studies**: To activate the indwelling consciousness of the system so that the IIED decreases (or increases) the pH of the experimental water by one pH unit compared to the control; i.e., increase (or decrease) the H^+ content of this water by a factor of 10.

2. **In Vivo Fruit Fly Studies**: To synergistically influence (a) the availability of oxygen, protons and ADP (adenine diphosphate), (b) the activity of the available concentration of NAD (nicotinamide adenine dinucleotide) plus (c) the activity of the available enzymes, dehydrogenase and ATP-synthase, in the mitochondria so that the production of ATP (adenine triphosphate) in the fruit fly larvae is significantly increased (as much as possible without harming the life function of the larvae) and thus the larval development time significantly reduced relative to that with the control device.

3. **In Vitro Enzyme Studies**: To activate the indwelling consciousness of the device so as to increase by a significant factor (as much as possible), the thermodynamic activity coefficient of the specific liver enzyme, alkaline phosphatase (ALP). This activity coefficient increase is to occur relative to the same type of experiment conducted with an unimprinted device.

Characteristics of Type I Purified Water

Purified, reagent grade water is broken down into four types: Type I, Type II, Type III, or Type IV. Type I, or ultrapure water, is the most pure. Five major standards organizations, CAP (College of American Pathologists), NCCLS (National Committee for Clinical Laboratory Standards), ASTM (American Society of Testing and Materials), USP (United States Pharmacopoeia), and ISO (International Organization for Standardization) define the characteristics of these water types. Type I water has varying qualities depending on which guidelines are used.

The various water types are defined in terms of specific resistance (megohm-cm), specific conductance (microhms per centimeter), total silica, total organic carbon (TOC), and bacterial count, among other attributes. ASTM Type I water has a specific resistance of at least 18 megohms-cm, a maximum TOC of 100 ppb (parts-per-billion), a maximum dissolved silica content of 3 ppb and a maximum bacterial colony count of 10/liter. Purified water produced by the water polishing apparatus we used typically exceeded the ASTM standards for Type I water. The manufacturer claims the unit we purchased produced water with a TOC of less than 5 ppb with a maximum specific resistance of 18.3 megohm-cm.