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POSSIBLE PHOTON PRODUCTION DURING A REMOTE VIEWING TASK: A REPLICATION EXPERIMENT

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ABSTRACT

Attempting to verify a claim by the Chinese that light is emitted in the vicinity of correctly identified remote viewing (RV) target material, we repeated an experiment first published in FY 1984. In that earlier experiment, a state-of-the-art, ambient temperature, photon counting system was used to monitor the target material (35-mm slides of *National Geographic* Magazine photographs). The statistical measure derived from the photon counting apparatus in that study showed a significant positive correlation with the RV results ($p \leq 0.035$). That is, when the remote viewing was good, there was an increase in the signal detected by the photon counting system. In addition, we observed two anomalous pulses having a signal-to-noise ratio of about 20:1 to 40:1. In the present experiment (FY 1987), we improved all hardware aspects of the previous work, substantially reducing the background noise level and improving shielding against artifact. In addition, analysis of the remote viewing indicates that three out of the four viewers produced independently significant results. Our analysis of the photomultiplier tube (PMT) data shows no evidence of any anomalous high count rate pulses, no evidence of any effect on the PMT output during the RV session, and no evidence of any significant correlation between RV performance and PMT output. We conclude that (1) the effect proposed by the Chinese is artifactual in nature.

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I INTRODUCTION

We have conducted an experiment to determine whether there may be detectable physical effects that can be correlated with remote viewing.*

A remote viewing (RV) experiment consists of four basic elements:

- A target consisting of outdoor scenes, including natural and manmade features. For convenience, experimental targets are pictures taken from *National Geographic* Magazine.
- An individual who intends to describe the target.
- A feedback procedure that displays the target.
- An *a priori* defined analysis procedure to determine if the target has been accurately described.

A single trial that encompasses these elements might proceed as follows. Using a random number generator, one target is chosen from a pool of 112, and the viewer is asked to describe it without seeing it. After the session, the target photograph is displayed to the viewer as feedback. The description is analyzed using a Figure of Merit (FM) technique to provide a statistically meaningful evaluation.[1,2†]

The experiment described in this report is a follow-on to an FY 1984 program that investigated possible photon production during a remote viewing task.[3] In the FY 1984 program, we conducted a conceptual replication of work published by the People's Republic of China. The Chinese claimed that anomalous high rate signals from a photomultiplier tube (PMT) are observed during sessions in which an RV-like ability known as "exceptional vision" was successfully employed to identify Chinese language characters concealed in the PMT housing.[4,5] Specifically, we experimentally examined the possibility that light is emitted in the vicinity of correctly identified remote viewing target material.

During the 1984 study, four viewers were asked to contribute six viewings each. The targets were 35-mm slides of *National Geographic* pictures of outdoor scenes concealed within a PMT housing. Our experiments produced a significant positive correlation ($p \leq 0.035$) between

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* This report constitutes the deliverable for FY 1986, Objective E, Task 1, detailing an experiment to determine fundamental parameters of feedback, shielding and limits of spatial resolution for RV.

† References are listed at the end of this report.

the quality of the remote viewing and the output of the PMT and two apparent anomalies (high count rate pulses) during RV periods. In our discussion of the FY 1984 results, we pointed out that a follow-on experiment was required, which would remove possible sources of artifact, reduce the PMT noise, and be conducted with more experienced viewers. We addressed all of these areas in the present experiment.

II METHOD OF APPROACH

A. Hypotheses and Variables

In the absence of light leaks or environmental interference, we wish to determine the degree to which the output of a PMT focused on the RV target slide is positively correlated with the quality of RV, as determined by FM analysis. The dependent variable in the RV portion of this experiment is the overall measure of the remote viewing, i.e., the FM. The dependent variable for the correlation portion of the experiment is the linear correlation (logistic) coefficient between the FM and PMT output.

To demonstrate that statistically significant remote viewing had occurred, we required that the FM for a given session exceed a critical value for which the associated probability is $\leq$ 0.05. The critical value of the FM was determined from the mean-chance-expectation for each viewer's session. To claim evidence for a statistical anomaly, we required that the observed linear correlation coefficient between the FM and the PMT output be significantly different from the expected lack of correlation. To declare that the experiment had confirmed the hypothesis, we required that the probability of observing the linear correlation coefficient calculated for the data from 24 viewings (4 viewers, 6 viewings each) must be $p \leq 0.05$.

In addition to reexamining the principal result of the FY 1984 experiment, we also planned to look for possible effects on the PMT output during the RV session, independent of the FM correlation.

We hypothesized that the PMT output for a given viewer's set of sessions would be significantly different from the corresponding set of local control trials. To confirm this hypothesis, a t-test comparing the PMT output for the RV session with that for local control trials must demonstrate a significant difference ($p \leq 0.05$.)

B. PMT Hardware

We used the photomultiplier tube light detector system and remote viewing procedure from the 1984 study, incorporating certain improvements as described below. The set of 112 35-mm slides of *National Geographic* Magazine sites was again used as our target material.

The PMT housing and slide holder were light-tight and constructed of metal that was grounded and shielded against rf, magnetic, and electrostatic fields. Our entire PMT housing was further enclosed in a standard photographer's film changing bag so that the slide selection remained blind.

A light-tight slide holder, which could be opened and closed easily, was fabricated and fitted to the end flange of the PM tube housing. The holder was positioned the slide within approximately 2.5 cm of the active surface of the tube. This distance is 1.5 cm greater than in the 1984 study because the new cooled tube housing had a quartz window to provide thermal insulation while allowing optical transparency into the UV.

The PMT was selected to have an active area equal to or greater than the film area of the slide. In addition, we required the tube to be sufficiently broad band and sensitive so as to equal or surpass the device used in the first experiments by the Chinese. We also required the dark count (background) rate to be as low as possible. To achieve this goal, we added cooling so that the PMT was cooled and the temperature stabilized at $-20\,^{\circ}$C ($\pm 1^{\circ}$). This modification reduced the overall dark count noise by a factor of approximately 50 from the earlier study, and eliminated slow changes in the count rate caused by ambient temperature drift.

All critical pieces of electrical apparatus were isolated from common mode and differential mode noise. Because the power requirements for the key experimental apparatus were too great to make battery power a reasonable option, we surveyed the available ac voltage regulators and transient suppressors. We selected a Topaz power conditioner as having the most modern design and providing the best specifications for transient suppression (1 kHz to 10 MHz per IEEE Standard 587), for voltage regulation (+4% to −8% for a +15% to −25% variation about 120 V), and noise rejection (130-dB common mode, 58-dB normal mode at 10 kHz).

Low level signals from the PMT to the preamplifier and preamplifier to amplifier were more heavily shielded than in FY 1984; the preamplifier was close coupled to the PMT and the signal from the preamplifier was conducted through semi-rigid coaxial cable, which provides good electromagnetic interference attenuation up to GHz frequencies.

C. Signal Processing

The output of the PMT was processed and displayed by state-of-the-art instrumentation used in nuclear radiation spectroscopy. We selected the multichannel scaling (MCS) mode of signal processing as the most appropriate for our experiment. In this type of data acquisition, the amplified pulses from the PMT were counted for a specific length of time (dwell time), and the resulting total was stored and displayed in a single bin (channel). This process was repeated for each of 1024 channels. In this fashion, a histogram was accumulated showing the tube count rate as a function of time over a single viewing trial (~17 minutes). We call this particular time record of PMT output a *spectrum*.

Because the voltage output of a photomultiplier tube is directly proportional to the intensity of the incident light source, we elected to set two windows on the PMT signal. One window displayed the entire voltage range output, which is dominated by numerous small amplitude background pulses. We designated this window Region I. The window for Region II was adjusted to show only large voltage pulses. In this fashion, we were able to monitor the system for two possible outcomes:

- A significant increase in the number of small amplitude pulses.
- An increase in the frequency of relatively rare, large amplitude events.

The original Chinese claim was that an individual having "exceptional vision" (an ability roughly equivalent to remote viewing) could produce an anomalous signal from the PMT consisting of mainly large amplitude pulses.

Because the PMT was in total darkness and no light emitting materials were included in the sample chamber, virtually all background counts were due to thermionic emission at the photocathode or dynodes.[6] A photon striking the photocathode will produce a signal that is indistinguishable from that resulting from thermionic emission. Therefore, one cannot say conclusively whether a statistically significant increase in count rate (above background) is caused by enhanced thermionic emission or photon production. For simplicity, we have referred to the putative effect in this report as "photon production," and have calculated our results assuming that photons are striking the photocathode in the PMT.

A multichannel analyzer (MCA) received, sorted, and stored the signals coming from the two windows. A third MCA input came from a signal generator that could be triggered by a microswitch in the adjoining RV room. That switch was used to mark the beginning and end of data taking in the RV session. Details of the session are contained in the methodology section below. A schematic diagram of the equipment used is shown in Figure 1.

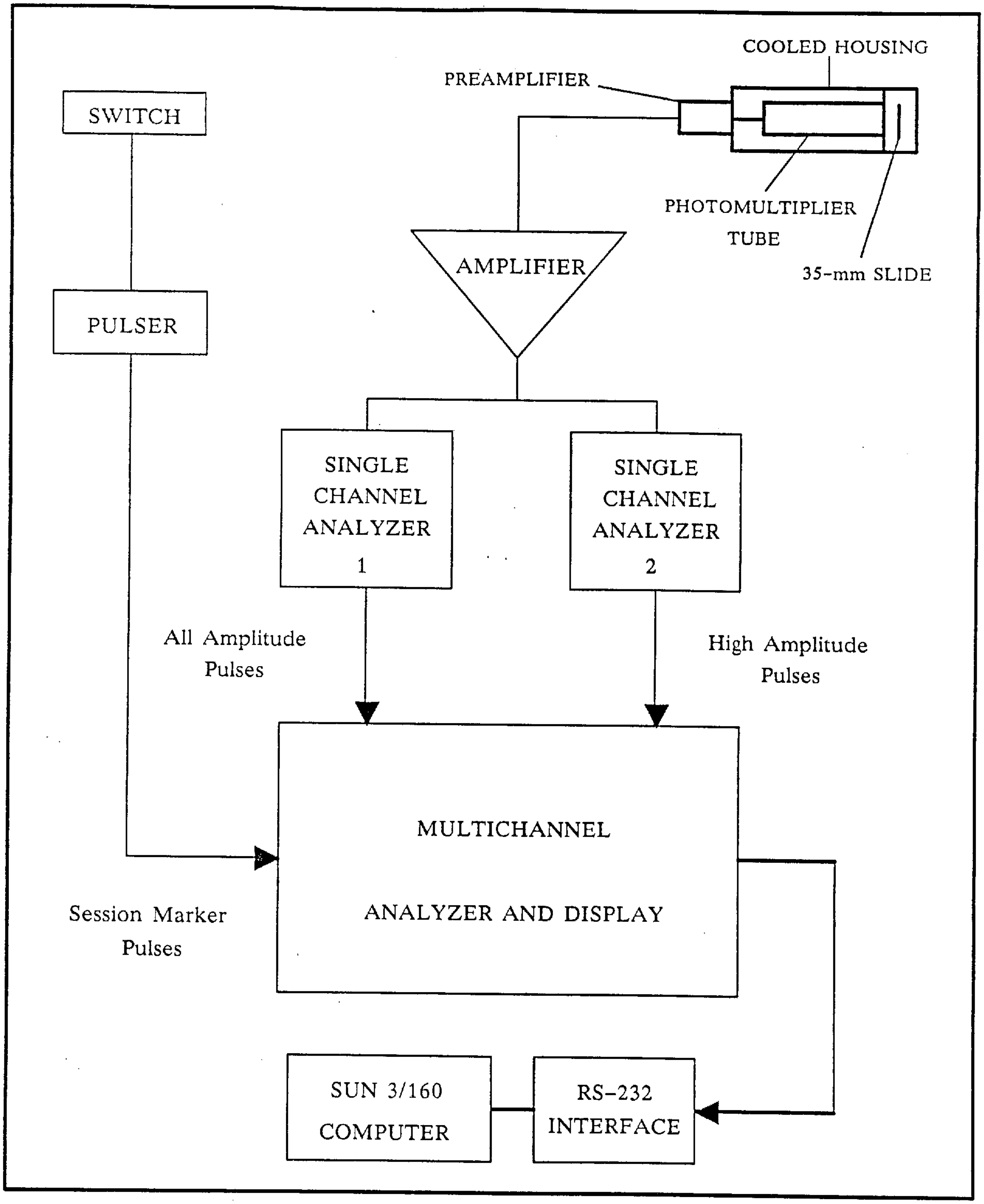

FIGURE 1 SCHEMATIC DIAGRAM FOR PHOTON PRODUCTION EXPERIMENT

Following an experimental session, the data collected by the MCA were transferred to a Sun Microsystems 3/160 computer via an RS-232 interface. In our FY 1984 study, the count rates during control periods in our two regions of interest were approximately 300/second and 10/second, respectively. By cooling the T to $-20\,^{\circ}$C, we were able to reduce the average count rates in the respective regions of interest to 5/second and 0.7/second. Because a single photon can produce a count, we were sensitive to a 1σ increase of approximately $\sqrt{N}$ photons, where N is the count rate. This figure would correspond to about 2 to 3 excess counts in Region I and less than 1 excess count in Region II.

D. Experimental Methodology

The slides that served as the targets during the session were prepared from a pool of 112 *National Geographic* Magazine photographs. Each slide was placed in a separate opaque envelope marked with an identification number. Prior to each session, four slides were selected from the target pool by a computer generated pseudorandom number generator (PRNG). All four slide envelopes were placed in the changing bag with the PMT housing, then shuffled. One envelope was selected in a blind fashion; the slide was removed and then placed into the special holder covering the PMT. That procedure ensured that the slide selected was unknown to everyone.

Four viewers were asked to contribute six viewings each. In this experiment, the personnel consisted of four of the best available viewers participating in ongoing RV programs at SRI.

The photomultiplier tube and preamplifier, the instrumentation for amplifying and counting the PMT signals, and the computer were all located in a locked instrumentation room adjacent to the RV session room. The only instrumentation in the RV room was the microswitch used to signal the start and finish of an RV data acquisition period.

Prior to the arrival of a viewer, the experimenter selected the four slides using the PRNG, checked the equipment for proper functioning, shuffled the envelopes inside the PMT housing bag, and loaded the target slide. In addition, the experimenter recorded a control session under exactly the same conditions as an experimental session except for the absence of the viewer. We designated these as "local" control sessions. In the statistical analysis, these control sessions (taken before and after the RV session) serve as the baseline against which the experimental session was compared.

After the arrival of the viewer, 3 minutes of data were collected before beginning the RV session. Each time the viewer was ready to give a response in the RV session, the experimenter marked that time with a press of a microswitch. Closing the switch sent a brief series of TTL logic pulses which registered in the MCA memory. After the response, the experimenter again closed the switch for 1 to 2 seconds. These two bursts of pulses clearly defined the period of RV effort for future analysis of the PMT output. A series of several such efforts using corresponding marker pairs was typically generated during each 17-minute viewing. This procedure was followed twice (i.e., viewings were conducted two at a time). Following the session, the accumulated data were automatically read out into the computer memory. Once this process was begun, the experimenter removed the target slide from its holder and displayed it (as feedback) to the viewer using a slide projector.

Following the departure of the viewer, the experimenter recorded another local control session, and then transferred all data from the computer hard disk to magnetic tape. Following the manufacturer's recommendations, all of the principal hardware (PMT, amplifier, MCA, etc.) remained on continuously.

E. Control Sessions

Prior to any RV data collection, 50 control sessions were recorded with no one present in the experimental area. After the completion of all RV sessions, another 50 control sessions were recorded. We have chosen to call these "global" control sessions to distinguish them from the data collected before and after each RV session. As discussed elsewhere in this report, these 100 sessions allowed us to examine the parent distribution of dark counts, and provided a good record of the maximum count rates observed under normal conditions.

As described, the experimenter also recorded a control session under exactly the same conditions as an experimental session except for the absence of the viewer, before and after the RV session. These sessions were designated as "local" controls and are the baseline against which the experimental session was compared.

F. PMT Data

During a 17-minute RV trial, the typical data recorded from the PMT consist of three count rate records (we designate these as *spectra* for convenience. These three spectra are displayed concurrently. Each spectrum has a common x-axis of 1024 channels. In order to accommodate a 17-minute trial, the dwell time was set at 1 second/channel. The first spectrum displayed all pulses from the PMT, regardless of their amplitude, that were detected during each 1-second counting period. The second spectrum displayed only those pulses--detected in the same 1-second interval--whose amplitude exceeded a preset threshold which was adjusted to eliminate all but the largest pulses. This amplitude discrimination was accomplished using a single channel analyzer (SCA) whose settings were the same as in the FY 1984 experiment. The remaining spectrum represented RV session dependent timing markers. For the all-amplitude pulse case, the average counting rate was about 5 counts per channel (1 second). Average rates in the high-amplitude spectrum were about 0.7/channel.

With the dark count stability provided by the temperature controlled PMT, it was possible to collect meaningful baseline data. We accumulated one baseline for each RV session. Because two viewings were always carried out at each meeting, one control session was taken before and one after the entire RV period.

Our planned statistical analysis procedure was very similar to that used in 1984: a linear correlation coefficient was computed between the FM and the number of excess ($> \mu \pm 1.65\ \sigma$) pulses from the All-Pass and High-Pass PMT data. Many viewers report perceiving RV data during rest periods as well as ostensible effort periods. Accordingly, we examined correlations between FMs and the entire RV session PMT output, as well as the RV data acquisition periods indicated by the microswitch closures. Because the average pulse rate during this experiment was considerably less than in 1984, a t-test comparing the average count rates in the control trials and RV trials was used to determine whether there was any significant increase in the count rate regardless of the FM. A second analysis program searched the RV sessions for unusually high or low pulse rates (as compared with the baseline data).

III RESULTS

A. Remote Viewing Results

Each RV session was judged using an FM analysis. The FM is defined as the product of two measures: accuracy and reliability. The accuracy of an RV response is the fraction of the target material that is described correctly. Reliability is the fraction of the response that is correct. Tables 1 through 4 show the RV results for each trial. The session number (9001.cr, for example) incorporates a code for each viewer as well as the chronological sequence of viewings.

Table 1

REMOTE VIEWING RESULTS FOR VIEWER 009

Session	Figure of Merit	p-value
9001.lg	0.5714	0.0238
9002.lg	0.3810	0.1961
9003.lg	0.4444	0.0497
9004.lg	0.3333	0.3650
9005.lg	0.0667	0.9233
9006.lg	0.3556	0.2697
Overall p $\leq$ 0.0450		

Table 2

REMOTE VIEWING RESULTS FOR VIEWER 105

Session	Figure of Merit	p-value
9001.rs	0.4571	0.0412
9002.rs	0.1667	0.3486
9003.rs	0.1600	0.3618
9004.rs	0.3333	0.1039
9005.rs	0.0000	1.0000
9006.rs	0.3810	0.0475
Overall p $\leq$ 0.0488		

Table 3

REMOTE VIEWING RESULTS FOR VIEWER 177

Session	Figure of Merit	p-value
9001.hs	0.4444	0.2430
9002.hs	0.1143	0.9579
9003.hs	0.3810	0.2978
9004.hs	0.5000	0.2392
9005.hs	0.5952	0.0677
9006.hs	0.6429	0.0136
Overall p $\leq$ 0.0385		

Table 4

REMOTE VIEWING RESULTS FOR VIEWER 807

Session	Figure of Merit	p-value
9001.cr	0.0000	1.0000
9002.cr	0.3333	0.2267
9003.cr	0.5208	0.0240
9004.cr	0.0833	0.7494
9005.cr	0.3750	0.1321
9006.cr	0.1333	0.5911
Overall p $\leq$ 0.1895, n.s.		

From the FM analysis performed for our FY 1984 experiment, we determined that by computing the p-value for each FM we could determine an average p for each viewer and for all sessions combined. The overall probability of obtaining that average p-value was then calculated, either by an exact method for small numbers of sessions[7] or by using the central limit theorem for greater than 20 sessions.[8] In the current analysis, an additional test of significance, the Fisher Chi-square technique,[8] has been added to supplement the probability associated with average p-value for a given series.

The overall p-values given for each viewer's series as shown in Tables 1 through 4 were calculated using the Fisher Chi-square technique. Averaging all p-values for all sessions yielded p(avg.) = 0.3437. Using the central-limit theorem, the probability associated with that average value is $p \leq 0.004$. Using the Fisher Chi-square method, a p-value of $\leq$ 0.0036 was calculated for all 24 sessions, indicating good agreement between techniques. We observed that three out of the four viewers independently produced significant results. Such an outcome is an extremely rare event. If the probability of success is $p \leq 0.05$, the binomial probability of obtaining three out of four successful results is $p \leq 0.00048$. These individual and overall remote viewing results are substantially better than were achieved in the FY 1984 study.

B. PMT/RV Correlation Results

As described, the basic data unit was a 17-minute session during which 1024 channel records of output were collected simultaneously in three records. Each channel contains the number of pulses recorded during a one-second counting period. For a given session, one of the three records contains the All-Pass PMT data and one the High-Pass PMT data. For the RV sessions, the third data record contains the markers that indicate the beginning and the end of RV effort periods.

In order that we could characterize the overall behavior of the system, we collected 50 sessions, with no one present, both before and after the entire series of RV effort sessions. These were designated as the global control sessions. To characterize the behavior of the system at time of the RV, one local control trial was conducted both before and after each set of two consecutive RV sessions.

1. Global Control Data

An error in the data storage program caused the data from the 50 global control trials following the entire series of RV sessions to be lost, leaving only the pre-experiment global controls. Given the stability of the temperature controlled PMT housing, this set of approximately 50,000 counting periods appears sufficient to characterize the long-term behavior and general pulse distribution of the system. In addition, bracketing the RV sessions with two local control trials serves to detect any short term fluctuations in the system behavior. As described, the local trials served as the statistical baseline for calculating possible effects on the PMT during the RV session, regardless of the FM correlation.

The number of counts/channel for the All-Pass mode ranges from 0 to 84, with a mean of 4.615 and a standard deviation of 3.471; the values for the High-Pass mode range from 0 to 15, with a mean of 0.700 and a standard deviation of 0.921. The distribution of the global control data exhibits a long tail which is undoubtedly due not only to thermionic emission but also to the relatively rare dark count processes mentioned in the PMT literature.[6] Suppression of these sources of dark noise is possible, but sufficiently difficult and expensive to be unwarranted at this stage of investigation.

2. Local Control Data

All of the RV trials were conducted in pairs, one about 30 minutes after the other. Both before and after each set of two RV trials, a local control trial was collected to characterize the system's short term behavior. We observed statistically large differences between the means of the global and local control runs, but normal aging of the PMT or very slow temperature drifts across hours of operating time could easily account for this difference.

The principal effects we wish to examine are (1) correlations between RV quality (FM) and pulse rate, and (2) changes in pulse rate between control and RV sessions. From the above analysis, it is obvious that the *a priori* decision to use the local control data as the baseline to analyze the RV data was correct.

3. RV Session Data

Data were collected for each RV trial that marked the beginning and end of effort periods during the session so that the periods of viewing could be isolated in the analysis. Thus, for each RV session, there are four distinct sets of data: either the entire RV session or just the effort period, and for each, either the All-Pass or the High-Pass mode.

As in the FY 1984 experiment, we selected the "excess counts" measure as the quantity most appropriate for our statistical analysis. The excess counts is the number of channels in a given session data record with a count rate greater than a critical value. That value is determined from the distribution of counts per channel of the preceding and the following local control trials. The critical count rate is chosen so that the area from that value to infinity represents 5% of the area under the local control distribution curve. Since the hypothesized effect results in increased photon production, the excess counts measure will identify significant fluctuations in the high count rate events ($p \leq 0.05$). In the All-Pass mode, the critical value ranges from 11 to 14; for the High-Pass mode, the cutoff value was 3 for all RV trials.

Once the critical value had been determined for each RV session, the number of excess counts was tabulated for each viewer's group of six sessions. We then employed a paired t-test to compare the RV excess counts value to the appropriate local control trials. Only one set of data out of 20 showed a significant result; thus, the conclusion is that no significant effect is present in the excess counts measure overall.

We also examined the possibility that some RV interaction with the PMT may have produced an anomalous high pulse rate event as claimed by the Chinese. We compared the maximum count rates observed in any RV session (All-Pass, 48 counts/second; High-Pass, 9 counts/second), with the maximum count rates in the local control trials (All-Pass, 58 counts/second; High-Pass, 14 counts/second). It is obvious from these data that no unusual interaction occurred during the RV session.

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4. RV/PMT Correlation Data

Our principal hypothesis was: There is a correlation between increased PMT count rate and the quality (FM) of the associated RV. Four sets of linear correlations were done for each of the four viewers (i.e., All-Pass and High-Pass for effort periods and total session). Because the claim was that the RV would result in an increased count rate, we were able to specify the direction of the interaction and therefore are justified in conducting a one-tailed analysis. No evidence of correlation was apparent for any measure. We conclude, therefore, that there is no significant interaction between the quality of RV and PMT output.

Since the FM is bounded [0, 1] and not normally distributed, we performed a logistic regression analysis as well. Again, no statistically significant correlations were observed.

For completeness, we reanalyzed the FY 1984 data using a logistic regression. As reported earlier,[3] we see a significant correlation between RV quality and PMT "noise" for the High-Pass data.

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IV DISCUSSION AND CONCLUSIONS

We conducted a replication of experimental work published in FY 1984 in which we examined the possibility that light is emitted in the vicinity of correctly identified RV target material. In FY 1984, the statistical measure derived from the photon counting apparatus showed a significant correlation with the RV results ($p \leq 0.035$, or $p \leq 0.012$ using logistic regression). That is, when the RV was good, there was an increase in the signal detected by the photon counting system. When the viewing was less accurate, a smaller signal was detected by the counting system. Out of 22 viewings, we recorded two that contained a photon counting anomaly having a signal-to-noise (S/N) ratio of about 20–40:1, far below the 100–1000:1 anomalies reported in the Chinese literature that led to our original study.

In our FY 1984 experiment we concluded that:

> "Since we observed both statistical correlations and two suggestive anomalies, we have concluded that there is sufficient evidence to justify another set of experiments. To carry out a more definitive investigation, those experiments should be conducted with the following improvements:
>
> - Add more-experienced viewers to the initial group.
> - Cool and temperature stabilize the PM tube to reduce background noise count rates.
> - Introduce yet more stringent electrical isolation from the environment to further reduce the possibility of artifacts from electrical transients."

In our present experiment we have satisfied all of the foregoing recommendations and have improved all aspects of the previous work--including the quality of RV, background noise level, and shielding against artifact.

A. PMT Anomalies

The most extraordinary original claim of the Chinese researchers was that very high count rate signals (10^3 to 10^5 counts/second) were observed to be correlated with correct "exceptional vision"--a remote viewing-like ability exhibited by selected Chinese participants). In both of our replications of that work, we have obtained good statistical evidence of RV. However, from the analysis of distribution of pulse rates in the current experiment, it is clear that we have not observed any photon counting anomalies that can be considered extraordinary when compared with long-term control trials. It is true that the RV sessions contained occasional pulse rates which, when compared to typical noise background, had an S/N ratio of about 10:1 ($\sim$ 50 counts/second, maximum). Because the variance in the count rates is very small, these pulses are statistically improbable. However, the discussion of PMT dark count processes demonstrates that such occasional relatively low-rate events are not unknown or unanticipated. We have demonstrated that such events also occurred in control periods when no RV sessions were being conducted. It is our opinion that the higher rate events observed in our earlier experiments and in the Chinese work were the result of transients in the experimental apparatus, which have now been suppressed through the use of power conditioning, hardening against electromagnetic interference, and temperature stabilization.

In 1985, SRI had an opportunity to interview Xu Hong Zhang, one of the principal experimenters in the original Chinese work. When questioned closely about the actual experimental protocol and instrumentation he described his technique of drilling a hole in the photomultiplier tube housing to "let the psi in." Even though the housing was enclosed in a multilayer opaque cloth bag, the hole obviously completely violated the physical and electromagnetic integrity of the housing. There can be little remaining doubt that the Chinese observations were artifactual in nature.

B. RV/PMT Output Correlations

Despite the lack of any anomalous large-scale PMT counting events attributable to RV, the FY 1984 study produced a statistically significant correlation between FM and PMT output. That correlation at least conceptually paralled the Chinese claim, and appeared less likely to be artifactual in origin since the correlation was obtained across data generated by 4 viewers and 22 RV sessions. In repeating the FY 1984 experiment, our principal assumption was as follows: If the RV process did in some way interact with the PMT system, then reducing the noise of the PMT system should dramatically enhance the signal and, therefore, the correlation. Several techniques were used to reduce the background count rate by a factor of 60 in the All-Pass mode and at least an order of magnitude in the High-Pass mode. Despite this noise reduction, and substantially better remote viewing, the RV/PMT correlation was not enhanced. As the analysis demonstrates, the correlation disappeared entirely.

The most obvious explanation of the difference in outcome is that the FY 1984 correlation results were simply fortuitous.

VI ACKNOWLEDGMENTS

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