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SRI International

Final Technical Report
Covering the Period 1 October 1987 to 30 September 1988

December 1988

ENHANCED HUMAN PERFORMANCE INVESTIGATION (U)

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Prepared for:

Peter J. McNelis, DSW
CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE

SRI Project 1291

SG1A

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MURRAY J. BARON, Director
Geoscience and Engineering Center

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I INTRODUCTION (U)

A. (U) Overview

(S/NF) In accordance with the requirements set forth under the program "Enhanced Human Performance Investigations" (Contract No. DAMD17-85-C-5130), this document provides a progress update for work performed by SRI International during Fiscal Year (FY) 1988. The aim of the five-year program (FY 1986-1990) is to provide research and development in the area of psychoenergetics as a means for enhancing human performance in military applications.

B. (U) Definitions

(U) Psychoenergetic phenomena are defined here as direct interactions between human consciousness and the environment which can be observed and recorded although the mechanism is unexplained. These human capabilities fall into two main categories: (1) the acquisition of information, and (2) the production of physical effects. These can be further defined as:

- Remote Viewing (RV)/Extrasensory Perception (ESP) - The ability to gain access, by mental means alone, to concealed data or remote sites.
- Remote Action (RA)/Psychokinesis (PK) - The ability to influence, by mental means alone, physical or biological systems.

C. (U) Program Scope

(S/NF) This program is designed to provide the necessary foundation to assess various aspects of psychoenergetics with the DoD's needs in mind. The program is highly diverse and interdisciplinary; it spans many fields and research facilities, personnel, and consultants. Furthermore, it initiated an in-depth investigation into the neurophysiological aspects of psychoenergetic phenomena.

D. (U) Program Objectives

(S/NF) The program has four basic objectives: (1) to document that psychoenergetic phenomena are real and reproducible; (2) to determine the mechanism(s) underlying these

(S/NF)

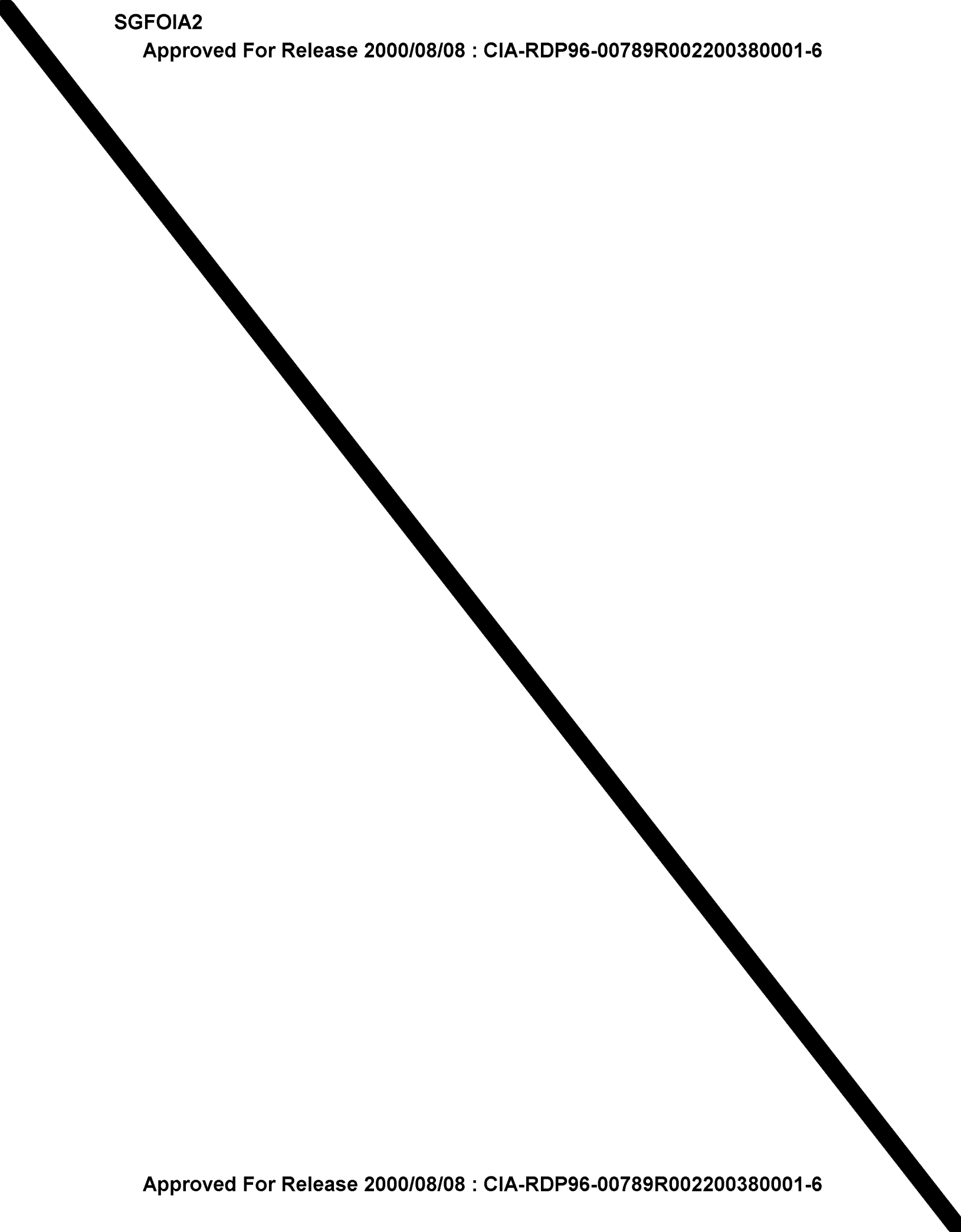
phenomena; (3) to develop practical applications of the findings for the DoD; and (4) to bring the field of psychoenergetics into the mainstream of human performance research, by providing a scientific foundation equivalent to that of the rest of the performance research field. In the minds of some, there is no doubt that psychoenergetic phenomena are real and reproducible. In the minds of many others, both scientific professionals and informed lay persons, this is not the case.

E. (U) Program Resources

(U) To meet the above objectives, the SRI program uses both in-house and external expertise. For over a decade, a core group of researchers at SRI has been studying a wide variety of subjects in psychoenergetics—augmented by access to centers that specialize in related topics.

(U) Some of the work is subcontracted to institutions and consultants who have a demonstrated track record in this research area. Other subcontractors may have had no association with this field but, because of their specific area of expertise, can make valuable contributions to our program goals. Thus, the widest possible interdisciplinary viewpoints are available to the program, and the mixture of resources ensures that peer group review and scientific interactions are maximized. Subcontractors and consultants currently include personnel from Psychophysical Research Laboratories and Los Alamos National Laboratory (LANL),* plus consultants having expertise in specific areas of interest to the program.

* (U) The project does not have a technical subcontract with LANL for administrative reasons only. The sponsor has let a separate contract that is technically supervised by SRI.



C. (U) Progress to Date for Each Objective/Task

(U) The progress to date for each Objective and Task in the Statement of Work is described below.

1. (U) Objective A, Task 1--Statistical Protocols and Research Design

(U) In June, we sent four separate protocols to the Scientific Oversight Committee (SOC) for review. They were:

(1) An RV experiment to be conducted at Los Alamos National Laboratory.

(2) A hypnosis experiment to be conducted at SRI.

(3) A mass screening procedure.

(4) A neurophysiological investigation using magnetoelectroencephalography techniques.

Because we did not receive any comments back from the SOC on these protocols, we proceeded with the various experiments as stated.

2. (U) Objective A, Task 2--Access to Ongoing Experiments

(U) During the year, three members of the SOC, Dr. M. Wartell, Dr. B. Skyrms, and Dr. R. Morris, paid site visits.

3. (U) Objective A, Task 3--Critical Review.

(U) In order to review the year's work, SRI International hosted a two-day conference for the SOC on November 3 and 4, 1988. Their comments and SRI's responses can be found in the Appendix.

4. (U) Objective B, Task 1--Identify New and "Excellent" Remote Viewers

(U) During FY 1988, SRI screened a total of 196 individuals from SRI, the federal government, the U.S. Geological Survey, and the Society for Scientific Exploration for remote viewing ability. The video disk technology and protocol that were developed during FY 1987 were used in this effort.

(S/NF) Of the 196 individuals who participated in the first-level screening, 16 were selected for a second-stage screening that involved 8 trials under SRI's normal remote viewing protocol. Of these, 2 produced excellent results and have subsequently been invited to join the research effort as part-time viewers.

5. (U) Objective C, Task 1--Obtain Successful Replications Of RV

(U) This task was abandoned by agreement with the sponsor in order to focus more attention on Objective D, Task 1.

6. (U) Objective D, Task 1--Determine Physiological Indicators Of RV

(U) A contract was let to Los Alamos National Laboratory in order to determine whether there are neurophysiological indicators of remote viewing. Two protocols were designed that represented replications of earlier work. One was a remote-conditioning design where a viewer received a direct stimulus (light) after a remote light had flashed. The second was a replication of earlier SRI work in which it was found that one individual exhibited significant alpha blocking as the result of a remote stimulus (light).

(S/NF) Six individuals participated in experiments conducted at Los Alamos. Some of them exhibited a response to a remote stimulus approximately 100 ms after the onset of the stimulus. Given the shielding environment, it remains possible that the central nervous systems of these individuals are sensitive to high-frequency electromagnetic radiation. High-frequency radiation should be shielded in any further investigations.

(S/NF) All of the three individuals who participated in the SRI replication attempt demonstrated significant changes in alpha power across the remote stimulus boundary.

7. (U) Objective E, Tasks 1 and 2--Determine The Effects Of Robust Feedback On RV Quality

(U) We have used the data from the second-level screening screening task (Objective B, Task 1) to examine the role of robust feedback on RV performance.

(S/NF) The data from 85 second-level screening remote viewings were used in the analysis. One of the target categories, Natural, showed a significant tendency over the other categories (Military, Science/Industrial, and Projects) to produce better remote viewing. One single target in the Projects category (Deep Quest—an underwater scene and submersible) also showed a significant tendency to be "visible."

(S/NF) We have examined the possibility that such results could arise because of a judging preference for more interesting targets. In one case, there was bias against one of the less interesting targets, but judging biases are unable to account for the target preferences. As was found in other laboratories, it appears that moving targets with complete (video and audio) feedback provide the best RV targets, static images with no audio feedback the worst.

8. (U) Objective E, Task 3--Determine The Effects Of Hypnosis On RV Quality

(U) During FY 1987, we found that significant remote viewing was observed after a hypnotic recall of an earlier viewing against the same target. In FY 1988, remote viewing sessions were conducted while the viewers remained in trance. The idea was to determine if factors that lead to noise in the response could be reduced or eliminated using hypnosis.

(S/NF) Two viewers (one experienced and one not) participated in the experiment. The results failed to meet statistical significance, and the qualitative assessment of the viewings was in agreement with the statistical result. We conclude that conducting remote viewing experiments with the viewers in trance does not decrease or eliminate the confounding noise.

9. (U) Objective E, Task 4--Determine The Source Of "Mental Noise" In Binary Psychoenergetic Tasks

(S/NF) During the FY 1986 effort we conducted a formal series of 50 binary trials using a forced-choice protocol. One selected viewer (V002) produced a hitting rate of 64% ($p \leq 0.033$) and an effect size of $r = 0.26$. These data were collected after a number of exploratory trials that were conducted earlier in that year, but this formal result was declared to be a fiducial point (i.e., relative baseline) with which to measure any future progress.

(S/NF) During FY 1987, 327 binary trials were conducted to see if V002 could sense if he were in psychoenergetic contact with the intended target, and 1341 trials were conducted to if V002 could predict in advance his hitting rate. V002 was unable to accomplish the latter task, but but he was able to sense contact with the target in the former task. The effect sizes (i.e., a measure of psychoenergetic magnitude) that were observed for the in-contact and not-in-contact conditions were identical ($r = 0.2$), while for the uncertain case chance hitting was observed ($r = 0.09$).

(S/NF) During FY 1988, 477 binary trials were conducted with the same viewer, in order to determine (subjectively) the source of mental noise in binary remote viewing. The excess hitting rate involved periods of growth followed by periods of consolidation. One period (68 trials) showed a marked decline. This was the only period during which V002 attempted a large number of trials at one sitting. V002's hitting rate (computed in trial increments) showed a strong, but not significant, increase. According to V002's subjective impression of his own internal mental processes, the sources of noise include (but are not limited to) beliefs about the target, imagination, and comparison with past experiences.

(S/NF) At the end of FY 1988, V002 participated in another formal series of 50 trials each. He produced a hitting rate of 76% ($p \leq 1.53 \times 10^{-4}$) for an effect size of 0.51.

(S/NF)
Assuming that the fiducial value of 64% hitting rate was the true rate in FY 1986, then the FY 1988 result is significantly greater ($p \leq 0.038$).

(S/NF) Given that there was a significant enhancement in hitting rate during the formal trials, and that in FY 1988 there was a strong improvement in hitting rate during the exploratory phase, it is possible, then, to conclude that some of the sources of noise found by V002 might be valid. Although it is unlikely (because of the decline effect) that practice can account for the improvement, we are unable to rule it out with the current protocol. The challenge for future research is to develop a protocol to test specific sources of noise.

10. (U) Objective F, Task 1--Determine Appropriate Parameters For Fuzzy Set RV Analysis

(S/NF) All of the remote viewings conducted during FY 1987 that used *National Geographic* magazine have been reanalyzed during FY 1988. The analysis of these data used a subjective rank-order technique. For each RV response, the intended target and 6 decoys were ranked in order from most to least correspondence. The combined average sum-of-ranks was 3.781 where the expected average was 4.00 ($z = 1.87$; $p \leq 0.031$). Thus, even including the real-time versus precognition experiment which failed to reach independent statistical significance, the total RV effort for FY 1987 showed statistical evidence for remote viewing.

(U) One of the most pressing problems in remote viewing is to determine the quantitative amount of information that is transferred. Before any basic physics model of remote viewing can be developed, it is critical to know the amount of information. There have been a number of attempts to quantify the information content in natural scenes in the past, but none of them appeared to work as a description of even that target portion of the remote viewing. It is an even more difficult problem to codify the information content in natural language (i.e, the response).

(U) A number of attempts were made during FY 1988 to use various entropy encodings in order to discover what is required for more precise determinations. None of the attempts produced satisfactory results. We speculate that there may by a fundamental limit to information encoding of an RV experiment. The limit arises in that is appears impossible to tell whether a particular target element is sensed by RV techniques or is simply due to a natural bias on the part of the viewer. It may be possible, however, to construct an information encoding based on a measure of average response bias. Much more work is needed before an accurate encoding is possible.

III PROBLEM AREAS (U)

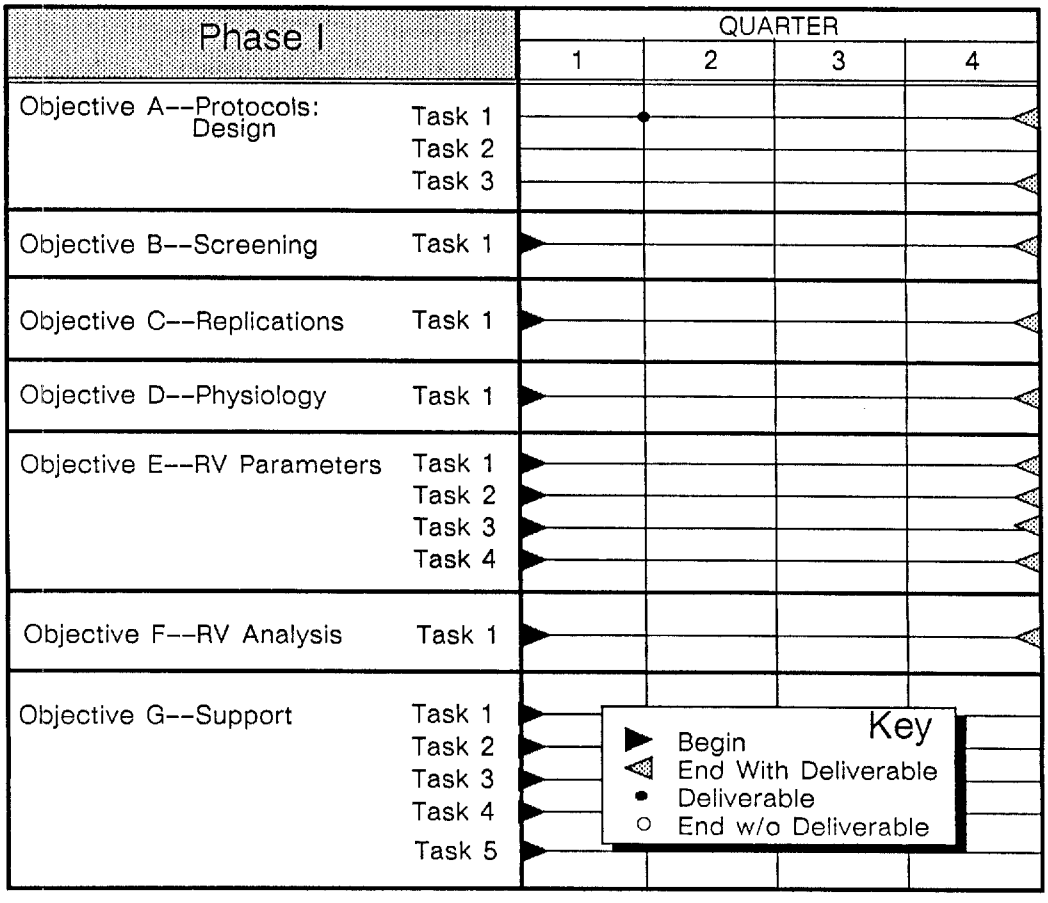
(U) There have been no major problems during FY 1988. We encountered a minor problem with the contract to Los Alamos. We were delayed in starting until April, 1988, because of administrative problems. We also encountered one technical problem in that one visit to Los Alamos produced no data because there was a computer failure. Throughout the year we encountered some difficulty in scheduling large groups of individuals for the mass screening task.

IV PROJECT MILESTONE CHART (U)

(U) Table 2 is the overall project milestone chart for FY 1988.

Table 2

(U) ENHANCED HUMAN PERFORMANCE INVESTIGATION--FY 1988



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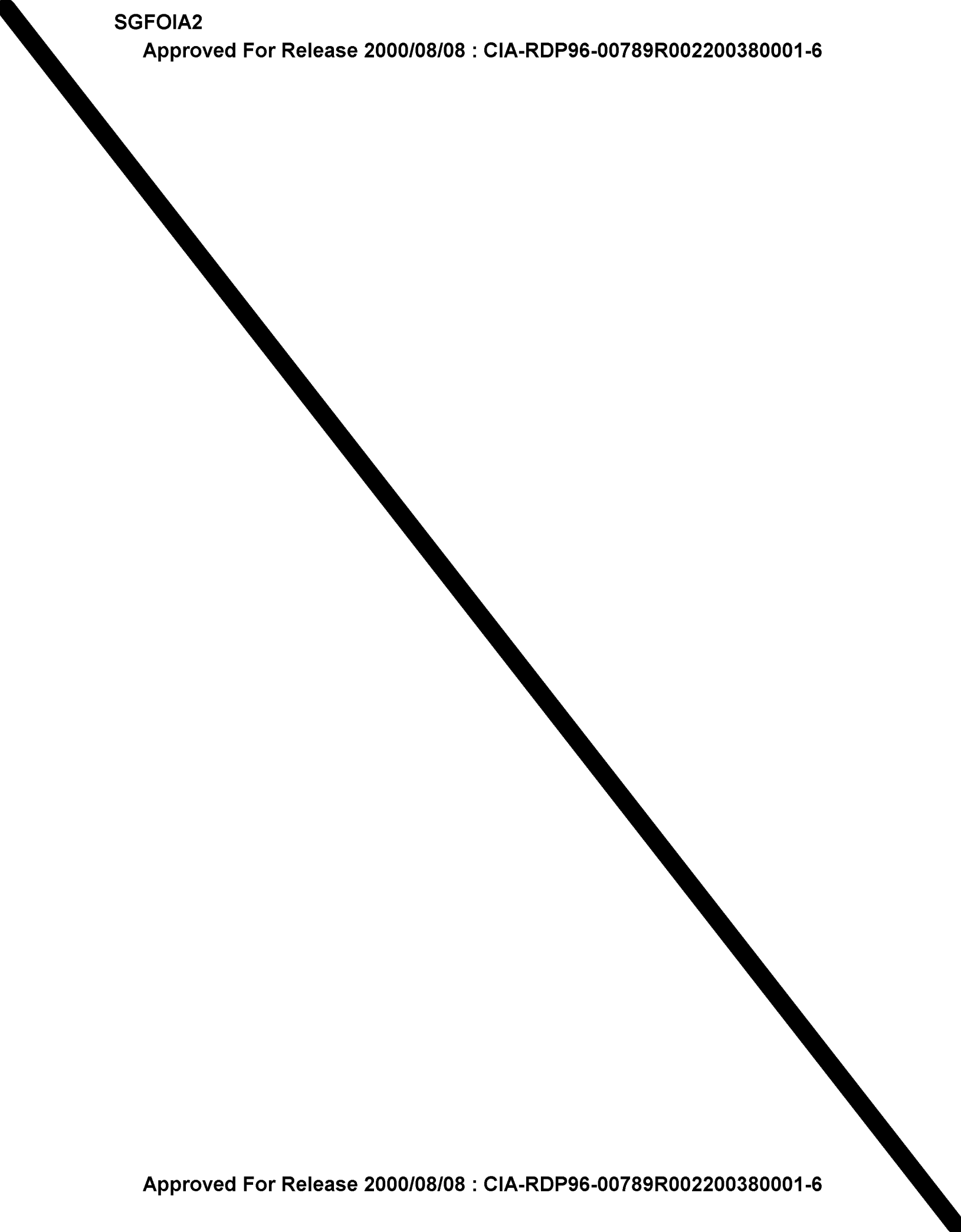

APPENDIX

A POSTERIORI ASSESSMENTS OF THE SCIENTIFIC OVERSIGHT COMMITTEE*

(This Appendix is Unclassified)

*The SOC members were requested to complete a "Reviewer's Comments" sheet (see example on next page) for each task that they had elected to review. This Appendix provides a verbatim, unedited transcription of the reviewers' (mostly handwritten) comments on a task-by-task basis. SRI responses have been appended to the reviewers' comments where appropriate.

SOC Reviewers' Comments, Objective E, Tasks 1 and 2

(Feedback And Target Dependencies In Remote Viewing Experiments)

(verbatim transcription--not edited)

NAME: Herb Ley

Comments:

1. This report appears abridged with only the title page, one full page of text and a short paragraph at the top of page 3. The information provided is inadequate for any assessment.

Recommendation: Yes November 1, 1988

NAME: Robert Morris

Comments:

1. They seem adequate for the task. No problems.
2. These findings raise the question of how the various target pools may be deployed in the future, e.g., do you focus on the natural targets, where success is best, and shift later to client-centered material, or do you keep client-centered material in at the start, figuring that you want to know early on who will be good with that material? I lean towards the former.

Recommendation: Yes November 4, 1988

NAME: James Press

Comments:

1. This was just a description of the target pool used for mass screening. There was no description of feedback, or of target dependencies. The effort seems admirable - but I guess if would be hard to analyze the results because of statistically confounding factors.

Recommendation: Yes November 1, 1988

NAME: **Brian Skyrms**

Comments:

1. Research design is good. To test the overall feedback hypothesis. Results negative. There are no hard conclusions drawn, about the hypothesis about the "viewability" of different kinds are targets. Could be tested in the future, with an experiment carefully designed to do that.

Recommendation: Yes

November 3, 1988

NAME: **Mike Wartell**

Comments:

1. Design, protocols – all are satisfactory. Results appropriate.

Recommendation: Yes

November 3, 1988

NAME: **Chris Zarafonetis**

Comments:

1. Well done. The approach is described and findings are given in relevant Objective/Task studies reports.

Recommendation: Yes

November 4, 1988

NAME: **Phil Zimbardo**

Comments:

1. This is an excellent improvement in procedure, more technically/"cosmetically" sound and preferred by RV subjects.
2. For future research, target pool should eliminate those with low hit rates and utilize those with highest hit rates (for category type) and target.
3. Page 3 – Please elaborate and detail what "certain characteristics" enhance RV quality. Need to develop optimal protocol materials.

Recommendation: Yes

November 4, 1988

SOC Reviewers' Comments, Objective E, Task 3

(The Effects Of Hypnosis On Remote Viewing Quality)

(verbatim transcription--not edited)

NAME: **Herb Ley**

Comments:

1. The study described in this task is straightforward, and the research design and statistical analyses are appropriate for the hypothesis. The sample size of two seems rather small, but is compensated for, I suspect, by the data available on these two persons from prior studies. No results were presented in the report, so I cannot comment on them or on conclusions.

2. I was impressed by the comments on page 2 under "Objective" that the monitor had observed the viewer to be in a more internally focused and relaxed state after hypnosis than during the control period. The same observation has been made by their practitioners for both meditation and prayer. However, "meditation" and "prayer" have different meanings to different people, and would be almost impossible to apply to a controlled scientific study. There is sufficient data on hypnosis to place it in a more objective category of variables for study. You did well to use a professional for induction of hypnosis. The point I object to in the report is the use of the word, "trance." That word may be replaced by the phrase, "altered state of consciousness," or ASC if you prefer, to minimize the undesirable connotations of the word, "trance." Why don't you discuss that with Ornstein?

Recommendation: Yes November 1, 1988

NAME: **Robert Morris**

Comments:

1. The research design could have used relaxation as a control condition rather than proofreading. Proofreading is a different category of experience altogether. The protocol and analysis seem fine. The conclusions offer interesting possibilities, but the concept of displacement has some difficulties.

2. Basically, you are using hypnosis to accomplish something, to be helpful in aiding some aspect of psi-mediated information processing. So why not see if there is any evidence that it has an effect upon information processing, and if greater effects are associated with stronger psi performance. If so, you have learned something and can then go on to tease out whether expectation (not ruled out in this study) or some aspect of hypnosis contributed to psi directly or some other process which in turn affected psi.

Recommendation: Yes November 4, 1988

NAME: **James Press**

Comments:

1. Page 2 – Why is the fact that "the subject was not blind to experimental condition" considered a design flaw? If the subject had no psychic ability, so what if he knew why he was being hypnotized?

2. Section F – There is no explanation for how a p–value was computed for each viewer of his 16 trials. I suspect independence is required, but the trials are not mutually independent.

Recommendation: Yes November 1, 1988

NAME: **Brian Skyrms**

Comments:

1. This was a more or less exploratory experiment with negative results. Further research along this lines should be given low priority.

Recommendation: Yes November 4, 1988

NAME: **Yervant Terzian**

Comments:

1. Page 2, paragraph 1 – Do we understand hypnosis?

2. Page 2, paragraph 2 – significant (?).

3. Page 3, paragraph 1, second sentence – Could also minimize! Since we do not understand the causes!

4. Page 4, 4th full paragraph – Question second sentence.

5. Page 5, first paragraph – Re. word communicate in line 6 – was this verbal?

6. Page 5, Figure 1 – Re. RV 15–30 minutes – per target?

7. Page 5, last paragraph, second sentence – better way? Results?

Recommendation: Yes November 7, 1988

NAME: **Mike Wartell**

Comments:

1. Design protocols for purpose of the experiment are satisfactory. Suggest discontinuing trance RV aspect and, if this approach is to be continued, emphasize post hypnotic suggestion approach.

Recommendation: Yes November 3, 1988

NAME: **Chris Zarafonetis**

Comments:

1. This report provides a very good review of prior literature concerning studies utilizing hypnosis in association with psychic tests. There were past reports which indicated a possible enhanced effect for RV under the hypnotic condition. Although the findings were not statistically significant, some flaws in the protocol were noted and further studies should not be ruled out.

Recommendation: Yes November 4, 1988

NAME: **Phil Zimbardo**

Comments:

1. Interesting attempt.
2. I would have preferred that we use only subjects who scored 12 – top of the line – to start with. Yes, I agree with your page 8 inference.
3. Page 8 – Yes, there should have been more hypnosis–RV training trials.
4. Page 3 – Spelling error.
5. In general, the hypnosis training and its application were good and warranted, but better approach is suggested on page 9. Continue with pilot study procedure to use hypnosis for "clearing up the subject's mental state," so he/she can focus better on RV target.

Recommendation: Yes November 4, 1988

SOC Reviewers' Comments, Objective E, Task 4

(Forced-Choice Remote Viewing)

(verbatim transcription--not edited)

NAME: Robert Morris

Comments:

1. The procedures for the first and last blocks of 50 trials seem solid in general, although in the future small daily variations should probably be minimized or at least declared in advance. Also, the assignment of targets should be scrambled so viewer gets no cues about the behavior of the RNG, since he gets trial by trial feedback.

2. The curve on page 14 should be analyzed in more detail, and discussion made of the sizable slump in performance midway through. There could be personal life variables overlaying it. Also, it is not clear from this information whether or not learning took place. Changes in performance should be examined in the light of such factors or changes in strategy and trials per day, as well. Also, some aspects of procedure should be more thoroughly explained, as noted in the margins.

3. More should be done to develop aspect of the viewer's technique that could allow application to others. I think the viewer needs to be involved in this, at least to some extent. The final performance was impressive and should be followed up on.

Recommendation: Yes November 4, 1988

NAME: James Press

Comments:

1. Viewer should <u>not</u> be permitted to choose targets.

2. Viewer should be assigned a daily number of trials, preferred to be the same each day. The 50 trials experiment should be repeated.

3. Experiment should be constructed in which the same viewer is used in 50 forced choice trials and another 50 in non-forced choice binary trials, and the 2 sets of results could be compared to suggest evidence for which task is harder.

Recommendation: Yes November 4, 1988

NAME: **Brian Skyrms**

Comments:

1. The first experiment is well-designed and carefully done, as a demonstration of RV ability. Source of noise not really determined.

2. A tighter protocol. Future replications could be made even were airtight as follows: Give the subject a computer and modem. Let him call up and establish link with your computer; type in the two possible targets. Your computer selects one and puts the image in video; his computer signals him in 1 minute and he types in his selection. This is logged by your computer and correct selection is sent to him. End trial! No human here need know anything during the trial.

Recommendation: Yes November 3, 1988

NAME: **Yervant Terzian**

Comments:

1. Page 2, paragraph 1 – Re. Ryzl demonstration – has it ever been repeated.

   Page 2, paragraph 1, line 9 – Re. "it is possible to increase the single-bit hitting rate..." Is this a general statement or applies to a few cases?

2. Page 3, second bullet – (illegible).

3. Page 3, B., line 4 – typo.

4. Page 4, 4th bullet – "could begin" – in a few seconds.

5. Page 4, 5th bullet – "responded verbally" – in a few seconds.

6. Page 4, last paragraph, first sentence – Were the phone calls recorded? That is does the "raw data" exist?

7. Page 5 – Are the experimental results available if one wanted to re-analyze the data? Were there <u>any</u> trials eliminated, perhaps because of some anomaly of the protocol?

8. Page 7, B. 1., paragraph 1 – What is "exploration phase"? Why not count this with paragraph 2?

9. Page 8, 1., paragraph 2 – Vague.

10. Page 8, Table 1 – I suspect no effect! Possibly insufficient data.

11. Page 10, 2. 2. – "...because he felt he was nearing an understanding about internal processes,..." What does he mean?

12. Page 14, Figure 3 – Re. 537B peak. If this means 70 to 80% correct answers for about 100 trials, it is important to note! But for real conclusions lots of further data is needed.

13. Page 14, first paragraph – "...there is a clear indication of..." But not generalization since too few points.

14. Page 14, second paragraph – "...it represented a transition between three dimensional to two dimensional targets." Who made this choice?

15. Page 15, line 3 – "...there is suggestive evidence that V002 is in internal contact with sources of internal noise." Not yet!

16. Page 18, line 4 – Re. "a significant increase..." With only 2 points in the data! 64% and 76%.

17. Page 20, paragraph 2 – Re. "...it is clear that V002 has produced significant increases..." Not really, unless this trend continues.

18. Page 20, paragraph 3 – Important.

19. Increase data base to verify "learning curve."

20. Use more individual independently.

21. Record (tape) the raw data, use data with other individuals, or better yet with groups – even the advisory council!

Recommendation: Yes November 7, 1988

NAME: **Mike Wartell**

Comments:

1. As pointed out in discussion, the protocols are not pristine; however, the final results are interesting. Yet, I find myself wondering after the final results are in, "So what, where does this lead?" Is this a highly personal approach that's been encountered and developed, or does it have some more far reaching use?

2. Additionally, the question of whether learning has occurred presumes a baseline knowledge level before learning has occurred. That is not well shown, and there are many other variables which might impinge. There should also be a more extensive set of 50 unit trials to expand the data base and assure that the "knowledge increase" is stable.

3. Discussion indicated that there were even further problems with the protocols including who was choosing targets.

Recommendation: Yes November 3, 1988

NAME: **Chris Zarafonetis**

Comments:

1. This report deals with findings of a protocol involving 1 person who underwent long-term RV testing. The subject is well-known for his experience in this field. The results are striking. Efforts to reduce or eliminate inadvertent cuing were carefully made.

2. One caution – Subject's name should not appear in report, on viewgraphs, etc. (confidentiality, privacy issue).

Recommendation: Yes November 4, 1988

NAME: **Phil Zimbardo**

Comments:

1. Question. Was procedure tape recorded, since it was all by phone. Essential for replication.

2. Target selection must be determined by computer, not by staff researcher – eliminate the human source of intervention.

3. Unclear what page 4 sentence means, that "range of target material was selected by V002." Clarify. Why necessary.

4. V002's data are impressive and worth repeating. Under more structured conditions. Fixed, a priori criteria for number trials per day – can be range (e.g., 3–6).

5. Do not call the obtained curve a learning curve. It is clearly an enhanced performance curve. But we can not infer learning from performance without additional data that are essential to rule out straight motivation, habituation, etc. Effects that are non-learning effects (also the decline from trial 250+ to 350+ – violates any learning changes assumptions).

6. Why must viewer select target pairs? He also repeats target pairs – should be rule against it.

Recommendation: Yes November 4, 1988

SOC Reviewers' Comments, Objective F, Task 1

(Applications Of Fuzzy Sets To Remote Viewing Analysis)

(verbatim transcription--not edited)

NAME: Robert Morris

Comments:

1. This is a statistical protocol and analysis tool which seems to me an excellent step forward, producing a flexible tool albeit with a lot of initial effort.

Recommendation: Yes November 4, 1988

NAME: Brian Skyrms

Comments:

1. More theoretical work needed here.

Recommendation: Yes November 3, 1988

NAME: Mike Wartell

Comments:

1. This approach appears to be a good attempt to solve the problem at hand, but refinement is critical, and the approach needs to be extended.

Recommendation: Yes November 4, 1988

NAME: Phil Zimbardo

Comments:

1. This continues to be one of the most promising developments from this project. It has widespread applications across many disciplines and data domains. The work to date is conceptually creative, thorough, insightful and clearly focused on operational utility. This should remain a high priority item for FY 89. (I am not qualified to assess the mathematical component of this analysis).
2. See page 8 - grammar.
3. Agree with conclusion 2, page 8.
4. Agree with conclusion 4 - who is that person?

Recommendation: Yes November 4, 1988

SOC Reviewers' Comments, Objective I, Task 1

(Meta-Analysis of Forced-Choice Precognition Experiments)

(verbatim transcription--not edited)

NAME: Robert Morris

Comments:

1. This report is a valuable application of meta-analytic techniques to an important body of data. Its extension to assessing favorable conditions and flaw analysis is very important.

2. The author should describe the basis for declaring that a given study is a precognition study and warrants its inclusion. He should also clarify on what basis he decided that experimenter's expectation was for psi missing as opposed to chance or merely less positive results for condition B versus condition A. There are some additional analyses that now could be done on these data, and they are noted in the margins. The data amendable to IDS interpretation could also be added.

Recommendation: Yes November 4, 1988

NAME: James Press

Comments:

1. A great deal of effort has been extended in this endeavor. Mean 3 scores are reported, and Std Dev from the mean which is more than three times the mean, so the mean doesn't look very impressive. Moreover, no standard deviations are given for the various studies, nor other measures of the distribution of results in the various studies. Only the mean 3 score is given. An effort was made to study "quality" of the studies (page 13), and each study was giving a quality rating. But all studies were jointly evaluated in the meta analysis, good and bad, so what's the conclusion? What does it mean to merge results of good and bad studies? Hard to evaluate this in available time.

Recommendation: Yes November 4, 1988

NAME: Brian Skyrms

Comments:

1. A careful review of the literature, but I'm not sure what it proves. What is the real theoretical status of the "quality rating"?

Recommendation: Yes November 3, 1988

NAME: Mike Wartell

Comments:

1. Good study. Seems carefully done. Interesting result.

Recommendation: Yes

November 4, 1988

NAME: Phil Zimbardo

Comments:

1. This is a superb example of meta-analysis that helps to clarify some of the central issues in F.C. precog experiments (what variables co-vary with study outcome, etc.) and to yield some strong support for significant effect of directional hitting.

2. Excellent attempt to quantify study quality.

3. Also this analysis dispels several myths promoted by critics of parapsychology, e.g., that effects disappear as methodological rigor increases, or that selective reporting affects the cumulative significance of precog. studies.

4. Page 4 - type - of omitted.

Recommendation: Yes

November 4, 1988

REVIEWER'S COMMENTS

The attached report titled:

_____

_____

has been reviewed by the undersigned.

My assessment of the research design, statistical protocols employed, the analyses of the data, and conclusions reached in this report is as follows:

Additional comments:

_____

SIGNED

_____

DATE

General Response to the Scientific Oversight Committee's Comments

NAME: Edwin C. May, SRI International

Comments:

1. All the technical suggestions by the SOC have been incorporated in the FY 1988 final reports.

2. All the positive comments are appreciated, and require no response from SRI.

3. Two specific items have been addressed in response to Professor Zimbardo's comments. Both of his comments reflect a general feeling of the Committee at large. Therefore, SRI provides a general response.

4. Given that SRI is researching a controversial area, it is always tempting to think of each experiment as an attempt at proof-of-principle. In all cases except the forced-choice remote viewing, the protocols were designed to answer specific questions *assuming* the existence of an anomaly. The formal protocols are designed to eliminate all sources of known sensory leakage, but are not as complete as they would be in a proof-of-principle experiment.

5. Many of the suggestions for improvement of protocols toward proof-of-principle, are being incorporated in the design of the FY 1989 experiments (e.g., multiple judges and across-analyst reliability measures).

SOC Reviewers' Comments, Objective A, Task 3

(Final Technical Report, Enhanced Human Performance Investigation)

(verbatim transcription--not edited)

NAME: Robert Morris

Comments:

1. This report essentially is a summary of the other reports. It seems a fair, accurate representation of the information contained in them.

Recommendation: Yes November 4, 1988

NAME: Michael Wartell

Comments:

1. Straightforward oversight description. I still believe that even more emphasis needs to be placed on screening and focus should be brought to bear on that in the main.

Recommendation: Yes November 3, 1988

NAME: Chris Zarafonetis

Comments:

1. This is a good summary/overview and review of progress to date. The Program objectives and resources are delineated and progress noted briefly since the study findings are given in detailed, specific reports which are also available and reviewed by me.

Recommendation: Yes November 4, 1988

NAME: Phil Zimbardo

Comments:

1. This is an overview only; it is a clear, concise summary of research progress.
2. See page 6 for grammar error (last paragraph, line 4, data does should be changed to data do).
3. There should be added a section on problems of interpretation, conceptual/empirical problems facing the staff.

Recommendation: Yes November 4, 1988

SOC Reviewers' Comments, Objective B, Task 1

(Mass Screening For Psychoenergetic Talent Using A Remote Viewing Task)

(verbatim transcription--not edited)

NAME: Herb Ley

Comments:

1. Research design and statistical protocol were appropriate to the goal of the study. As noted under "Method of Approach" screening of large groups of people poses both logistical and support problems, but those problems must be faced, perhaps with an accepted penalty of missing a group of persons with RV talent in order to identify the small proportion of persons from the group who have significant RV potential. The analysis of the results of screening was clear, and the conclusions, i.e., the selection of two persons, followed from the analysis.

2. The "yield" from this screening effort was two of 154 persons, or 1.3%. This seems to be a small yield, but lacking any good measures of the distribution of RV talent in the general population, I have to accept it. I have two questions which I doubt can be answered, but, rather, than be bashful, I'll ask then anyway. Do you have any measure of whether the four groups of subjects were more sympathetic to the RV concept than the general population? Have you considered taking two more persons of the selected group of 18 with the best scores for further tests? I understand and admit my motivation: I would like to see the "yield" increased, if possible, and not discard persons with RV talent that could be further developed.

Recommendation: Yes November 1, 1988

NAME: Robert Morris

Comments:

1. The research design seems clean. I have noted some places where additional procedural descriptions would help clarify things. Data analysis and statistical protocols seem fine. I think the overall procedure is probably conservative and may exclude some potentially good RV participants.

2. I think group testing should be eliminated where possible. It is not known as a psi-conducive environment (see Honorton Meta-analysis report) and does not resemble the later testing or performance circumstances. Note that for the one group where individual testing was used, the yield is higher.

Recommendation: Yes November 4, 1988

NAME: James Press

Comments:

1. Explain what a "carefully constructed target pool" is (page 2., A.).
2. What were the "independent trials," were they different subjects or different trials with the same subject (page 2., A.).
3. The 28 combined trials (page 4) are not mutually independent. The 20 are correlated (since they are performed by the same subject) and the 8 are correlated.
4. The p-value of 0.007 (page 4) is problematical because of both the dependence and "the visual correspondence method of judging."
5. It was not clear how many viewers total we started with from all groups, and successively eliminated until 2 were left with "significant level of ability at p = 0.05." The rate of finding good viewers should be a fundamental output of this research, and you didn't report it.

Recommendation: Yes

October 31, 1988

NAME: Brian Skyrms

Comments:

1. This is not really an experiment but rather a search for subjects for experiments. Two were found. (It had been hoped that a larger population could be screened.) They should now be used as subjects in tightly controlled experiments, to see if the effect persists and if it can be enhanced.

Recommendation: Yes

November 3, 1988

NAME: Yervant Terzian

Comments:

1. Page 1 - See underlines in first paragraph.
2. Page 1, paragraph 2 - Tested in controlled experiments? Hard to talk about "natural" given first sentence!
3. Page 4, first paragraph - "Of the 28 combined..." More.
4. Page 5, first paragraph - Pool of people should not matter if phenomena is "human" related.
5. Page 5, last paragraph - Re. "...some distance from the screening auditorium,..." How far?
6. Page 7, Table 2 - Ok. More quantitative needed?? Maybe not.
7. Page 8, 4. - Did individuals in second stage do as well (better? worse?) as during stage one?

8. Page 9, paragraph 1 – Re. "...16 showed qualitative evidence..." At what Table 2 level? 1%.

9. Page 9, last paragraph, last full line – Define "...first place matches..."

10. Page 11, paragraph 2 – Define "complete misses"

11. Page 11 – Use systematic "group" of people, easily accessible – such as the "prisons," or the "military," or "schools" and "colleges." Has any "age" discrimination taken place? What about "children"? If RV is independent of human prior experience, then children should show this ability equally – or better if "experience clutters RV, and vice-versa.

Recommendation: Yes

November 7, 1988

NAME: **Michael Wartell**

Comments:

1. The research design, stat protocols, analyses of data, and conclusions are all appropriate. The relatively loose first level screening seems adequate since it is, in fact, a screening device. Then second level screening is accomplished with proven protocols. Much more screening needs to be done in order to accomplish the goals of this work.

Recommendation: Yes

November 3, 1988

NAME: **Chris Zarafonetis**

Comments:

1. The study overview, objectives, approach, etc., were appropriate for this mass screening – which required a needle in the haystack effort. 5 groups, ranging 6 to 139 in size were tested. 16 gave qualitative evidence of ability to report target related material, and 9 of 16 participated in Stage II screening. 2 tested to $p = 0.05$, and other 2 with strong tendency for scoring in right direction.

2. It will be of interest as more persons are found with this "talent' to note the age and gender of the subjects.

Recommendation: Yes

November 4, 1988

NAME: **Phil Zimbardo**

Comments:

1. See text comments pages 1, 2, 3, 4, 6, 7, 8, 9, 11. Major method problems.

   Page 1 comment: The sentence read, "Some of these persons have had spontaneous experiences that lead them to be more or less aware of an extrasensory potential while others do not." Dr. Zimbardo's comment is, "With

the ability are unaware of it? *or* Others have not had spontaneous experiences? Unclear as written."

Page 2 comment: The sentence read, "No attempt was made to maintain target orthogonality across categories, but considerable effort was expended to maintain within-category orthogonality." Dr. Zimbardo's comment is, "add sentence to clarify use of orgongonality in this case."

Page 3 comment: The sentences read, "Dynamic targets have been shown in some studies to have a higher hit rate than static targets. Our aim was to have some relatively difficult targets to help in our qualitative assessment." Dr. Zimbardo's comments are, "But is the effect robust enough to add this as a variable? [Add] reference [relative to *some studies*]. Are static areas thus more difficult?"

Page 4 comment: Regarding the words "...viewer #009 produced responses..." Dr. Zimbardo comments "clarify this ambiguous phrase."

Page 6 comments: Regarding "As the sender repeatedly viewed the target..." Dr. Zimbardo suggests changing the word repeatedly to continually or another appropriate word. Regarding the sentence "This was particularly useful for finding viewers who occasionally produced an extremely accurate response, but operated close to chance on the remainder of the trials." Dr. Zimbardo comments, "Important point - to elaborate more."

Page 7 comments: Regarding Table 2, Qualitative Rating Scale, "good scale." Regarding "Two independent judges made the qualitative assessments of the responses..." Dr. Zimbardo comments: "Need inter-judge reliability measure."

Page 8 comments: Under Section 2., Targets "...each against randomly selected targets..." Dr. Zimbardo comments, "Not clearly worded assessed in comparison to viewings of randomly." Under Section 3., Protocol, Dr. Zimbardo comments, "Need to remove the monitor from direct contact with subject - RV, a possible source of contamination. Monitor can observe subject via TV."

Page 9 comments: Hyphenate rank-order. Under B.1., paragraph 2, last sentence, change and to but.

Page 11 comment: "But all this effort has produced only 2 reasonable RV's? Is that considered good? Need to state that - seems costly 2/195?"

2. Must have multiple judges evaluating target hit/misses - and present data for inter-judge reliability.

3. Must remove "involved" monitor from contact with subject. Replace with "supportive" uninformed R. A.

4. Page 12 - Effect size of "Aspirin Study" is 0.29 not 0.25 as indicated.

5. Page 12 - Will there be a follow-up of the implications of the final sentence regarding ways to enhance the efficiency of subject selection? There should be.

6. Good strategy. Is yield of only 2 good RV's considered "good"?

Recommendation: Yes

November 4, 1988

Response to P. Zimbardo's Comments:

NAME: Nevin Lantz, SRI Response

Comments:

1. The final version of the screening report was changed to reflect the questions reflected in the reviewers' comments. Two methodological problems raised by Zimbardo will be discussed in detail.

   The first deals with his suggestion of using multiple judges in analyzing an RV response. Since the intent of the screening investigation was to locate excellent remote viewers, the kinds of controls that would be necessary in a proof-of-principle experiment are not necessary. We agree with Zimbardo that multiple judges would be a significant improvement to our research protocols and we intend to add that feature in the future.

   The second problem--having an informed, involved, monitor present--highlights a "political" difficulty more than a scientific one. The analysis (rank order judging *assumes* that the viewer and the monitor know the target pool in detail (i.e., a one-in-*n* forced choice). In fact, the analysis holds even if the viewer had the set of 5 targets in the pool in front of him/her during the session. Since our viewers participate in multiple sessions (e.g., 40 in our tachistoscope experiment), and since we provide trial-by-trial feedback, it is impossible to prevent the viewer from knowing something about the target pool. (It was this consideration that inspired the on-in-*n* analysis procedure in the first place.)

   We recognize the need of providing exceptional proof for exceptional claims, and will continue to improve the protocols.

SOC Reviewers' Comments, Objective D, Task 1

(Neurophysiological Correlates To Remote Viewing)

(verbatim transcription--not edited)

NAME: Herb Ley

Comments:

1. This is a fascinating new technology for the study of neuronal activity. The two pronged research design is well presented and appropriate for the MEG technology. The statistical analysis is complicated by the lack of independence of data and the lack of stationarity. The Monte Carlo approach proposed looks like a good start for analysis. Perhaps other approaches may turn up given more experience with the study.

2. I am familiar with some of Dr. Robert Ornstein's work and publications, and hold him in high regard. For some time I have been interested in the use of auditory stimuli, in addition to visual stimuli, for modification of CNS rhythms. You might want to discuss with Ornstein and consider the use of auditory stimuli in this protocol. In particular, I am interested in low frequency (ca. 4 Hz) stimuli as used in a number of cultures in native "fold medicine" - e.g., Malaysian drumming, native American drumming, and Tibetan Buddhist chants. This sort of auditory stimulus is far removed from RV, so it may be outside your research boundaries. Nevertheless it is just as much a "stimulus" as light, and appears to have significant effects on mental functioning in certain cultures.

Recommendation: Yes

November 1, 1988

NAME: Robert Morris

Comments:

1. The general research area is a good one and should be explored further. I am not sure I agree with the two assumptions about the similarities in neurophysiology. This is an hypothesis for the timebeing, which gives a reasonable starting place. The Vassy protocol appears to have problems in its analysis, as has been acknowledged. The use protocol seems more promising and should be pursued, perhaps with both 0.002 and 0.009, to see if they continue to show their response differences in opposite directions. I think it should also be possible to do a comparison of rate of change differences with a real stimulus versus the pseudo stimulus, and that in future designs such a comparison should be emphasized much more directly in the experimental design, with experimental and control trials interspersed, perhaps in a series of couplets with E first half the time and C first the other half.

Recommendation: Yes

November 4, 1988

NAME: James Press

Comments:

1. I do not understand the physics and description of the experimental apparatus. It is outside of my field of expertise.

2. Part C, Analysis, line 5 – It is stated that MANOVA removes the requirement of independent data. This statement could be true depending upon what is really meant. By itself, it strains credibility. The reason is that MANOVA is a statistical procedure designed to analyze experiments with multiple, correlated, response variables. In this sense, the data are dependent, i.e., the response data are dependent. But the vectors of replications must still be independent, as in ANOVA.

3. It strikes me there was no control in the experiment – same subject, simulated conditions, but no transmitter.

Recommendation: Yes November 1, 1988

NAME: Brian Skyrms

Comments:

1. Fascinating technology and suggestive results from preliminary experiments. Some follow-up should be done, but I don't think this should be the absolutely highest priority.

Recommendation: Yes November 3, 1988

NAME: Phil Sidwell

Comments:

1. I believe this project has great merit and should be aggressively pursued. It will be important for you to be able to demonstrate to your clients that currently available signal to noise analytical techniques tease out real RV signals that do exist within a person's pattern and gain concurrence of such signals/responses existence and presence by recognized authorities in the field of signal analysis.

Recommendation: Yes November 4, 1988

NAME: Yervant Terzian

Comments:

1. Page 1, paragraph 2 – not flashing or continuous flashing?

2. Page 8, paragraph 2, 9th line – "on dots" – what dots?

3. Page 8 – Stimuli and responses – aren't all these expected? Although we do not understand the details.

4. Page 9, B. 2. – "a viewer responds to a remote stimulus" – what changes for the viewer during stimulus?

5. Page 11 – Results? Relevance clarity.

6. Isolate sender's and viewer's apparatus completely – just synchronize messages.

7. Probably not important to use many different "senders" and "viewers," since they make no obvious decisions.

8. Very interesting work which should continue.

9. Consider changing the "image" to a very "stimulating" "surprising" target to enhance the response – maybe.

10. Can you run or test the data the experiment in reverse order? That is the "sender" sends message after viewer's slower response. Any such effect will be "looking into the future!" Ha! Ha!

Recommendation: Yes November 7, 1988

NAME: **Mike Wartell**

Comments:

1. I am troubled by #1 of the two underlying assumptions and need to hear further argument for its adoption. Of course, assumption #2 rests on assumption #1 for its validity. These, in fact, are not really "assumptions," but are starting points.

2. In the psi protocol, it is not entirely clear how the experiment is conducted especially re "pseudostimuli." Description needs clarification.

3. If this work is to be continued (and I support continuation), it seems that it would be productive to intensify the "cranial mapping" effort so that effect intensity could be maximized. Failing that, even in conjunction with it, a more convincing analysis of the the data needs to be developed.

4. This approach seems to hold great promise. Exploration in this area should continue.

Recommendation: Yes November 4, 1988

NAME: **Chris Zarafonetis**

Comments:

1. Interesting discussion of Magnetoencephalography (MEG) and its potential application to RV studies.

2. Method of approach is good, and outlook for meaningful results appears excellent.

3. Use of MEG will be supplemented with electroencephalograms which together will require protocol review by the SRI-IRB prior to implementation; also IRB approval of the "informed consent" statement.

Recommendation: Yes November 4, 1988

NAME: **Phil Zimbardo**

Comments:

1. In general, this is a solid approach, good, well focused exps., "cutting edge" methodology with MEG.

2. Page 5 - Vassy procedure extended should not be described as conditioning. There is no associative pairing of CS + VC that leads to CS ⟶ evoked occipital response. (See my alternate paradigm for utilizing direct versus remote conditioning with MEG recordings.)

3. Page 16 - The ERF-CS does not show sufficient promise to reveal an RV effect when the timeline is drawn against the data. Most subjects show a very weak peak rise or some relative to ERF-US. Need to do only a within-subject analysis of ERF CS/US due to wide individual differences among subjects in ERF versus patterning.

4. Page 17 - With short timing - fast US-ERF onset.

5. Page 38 - Conclusions are reasonable. Good distinction between total power generated by brain of localized power shift.

6. For V372, in future have sessions be shorted to avoid fatigue.

Recommendation: Yes November 4, 1988

Response to P. Zimbardo's Comments:

NAME: **Edwin May, SRI Response**

Comments:

1. The final report reflects the changes suggested by the reviewers. Item 3 of Zimbardo's comments require some discussion. There usually are large individual differences in physiological measurements. What is compelling about the ERF-CS is that the largest spread across all subjects is less than 40 ms--*not* a large variation according to the LANL neuroscientists.

   Even with such a small across-subject variation, however, the report downplays the importance of the candidate response to the remote stimulus.