

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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I INTRODUCTION (U)

A. (U) Overview

In accordance with the requirements set forth under the program, "Enhanced Human Performance Investigations" this document provides a progress update for work performed by SRI International and its subcontractors during Fiscal Year 1987. The aim of the five-year program (FY 1986-1990) is to provide research and development in the area of psychoenergetics as a means to enhancing human performance.

B. (U) Definitions

(U) Psychoenergetic phenomena are defined here as direct interactions between human consciousness and the environment, which, although the mechanism is unexplained, can be observed and recorded. 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

This program is designed to provide the necessary foundation to assess various aspects of psychoenergetics.

The program is highly diverse and interdisciplinary; it spans many fields and involves academic and research facilities, subcontractors, and consultants. Furthermore, it initiates an in-depth investigation into the life sciences aspects of psychoenergetic phenomena.

D. (U) Program Objectives

(U) There are three basic program objectives: (1) to document that psychoenergetic phenomena are real and reproducible; (2) to determine the mechanism(s) underlying these phenomena; and (3) 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.

The categories of research interest under consideration form a hierarchy ranging from basic research on fundamental mechanisms to methodologies for applications including:

- Identifying explanatory mechanisms (e.g., electromagnetic effects, neurophysiological mechanisms).
- Specifying phenomenological properties (e.g., the effects of distance and shielding).
- Determining physical, physiological, and psychological correlates (e.g., geophysical environment, EEG and GSR measures, and personality profiling).
- Developing optimal strategies for use in applications (e.g., statistical averaging).

E. (U) Program Resources

(U) To meet the above objectives, the SRI program is using 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 specialty centers such as our neurosciences and our microbial genetics laboratories.

(U) Some of the work is being subcontracted to institutions, groups, 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 will ensure that peer group review and scientific interactions are maximized. Subcontractors and consultants currently include personnel from Princeton University, Syracuse University, John F. Kennedy University, the Palo Alto Medical Clinic, MARS Measurements Associates, Psychophysical Research Laboratories, the Parapsychology Sources of Information Center, Mind Science Foundation, and the

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II PROGRESS TO DATE (U)

(U) During this reporting period (1 October 1987 to 30 September 1988), our primary progress was made in the areas of RV screening, neurophysiological correlates, and binary RV.

A. (U) Status of Subcontracts

(U) During FY 1987, we let one purchase order subcontract to Psychophysical Physical Research Laboratories. This contract concluded 31 July 1988.

B. (U) Status of Consultants

(U) Table 1 shows the contractual status of the consultants for FY 1988.

Table 1

(U) STATUS OF CONSULTANTS FOR FY 1988

Name	Number of Days
Emerson	6
Farrelly	5
Kiernan	3
Langford	50
Ley	6
McMoneagle	100
Morris	6
Press	8
Saunders	5
Sidwell	6
Skyrms	6
Spottiswoode	3
Swann	72
Terzian	4
Vallee	2
Wartell	9
Yaru	6
Zachariasen	6
Zarafonetis	6
Zimbardo	6

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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 magnetoencephalography 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 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.

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).

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.

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 task (Objective B, Task 1) to examine the role of robust feedback on RV performance.

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 [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."

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.

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

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.

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 see if V002 could predict in advance his hitting rate. V002 was unable to accomplish the latter task, 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 ($r = 0.09$).

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.

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.

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

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

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 be a fundamental limit to information encoding of an RV experiment. The limit arises in that it 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.

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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.

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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

Phase I		QUARTER			
		1	2	3	4
Objective A--Protocols: Design	Task 1		•		
	Task 2				◁
	Task 3				◁
Objective B--Screening	Task 1	▶			◁
Objective C--Replications	Task 1	▶			◁
Objective D--Physiology	Task 1	▶			◁
Objective E--RV Parameters	Task 1	▶			◁
	Task 2	▶			◁
	Task 3	▶			◁
	Task 4	▶			◁
Objective F--RV Analysis	Task 1	▶			◁
Objective G--Support	Task 1	▶			◁
	Task 2	▶			◁
	Task 3	▶			◁
	Task 4	▶			◁
	Task 5	▶			◁

Key

- ▶ Begin
- ◁ End With Deliverable
- Deliverable
- End w/o Deliverable

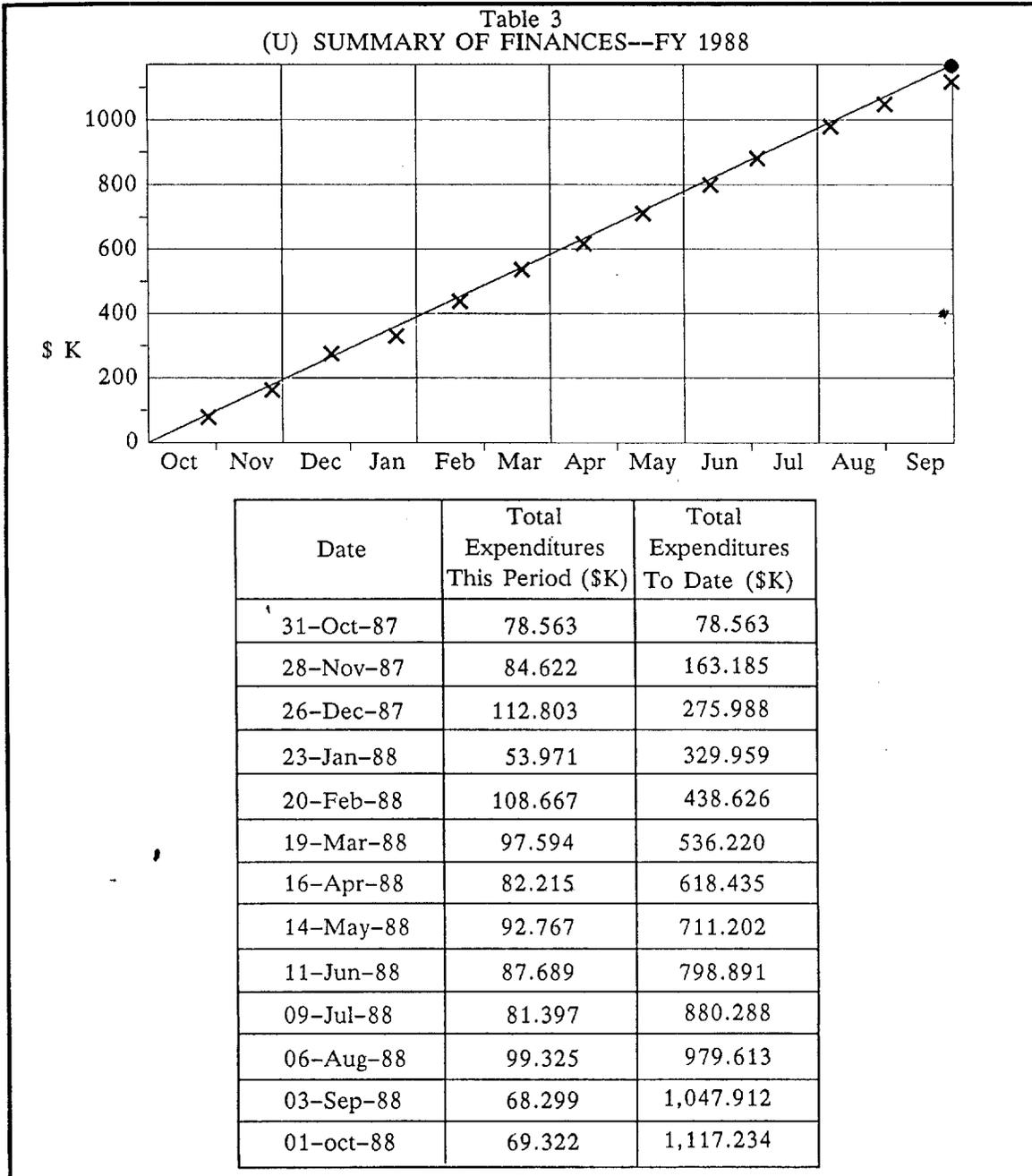
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V COST SUMMARY (U)

(U) Table 3 shows the project financial status as of 1 October 1988. There were no substantial financial difficulties during this reporting period.



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4. (U) Objective A, Task 4--Gross Physiological Correlates to RV

One of the persistent problems in deploying RV is the lack of an *a priori* method for assessing the quality of a particular RV session. The present exploratory investigation was an attempt to discover whether external physiological cues could be used to discriminate accurate from inaccurate sessions.

(U) In an exploratory attempt to learn more about this aspect of the RV process, 20 RV sessions, comprising the output of one subject from a separate experiment, were videotaped and analyzed by a behavioral psychologist to discover if accurate sessions could be blindly separated from inaccurate sessions by gross external physiological changes which occurred during the RV session. Behaviors defined and coded included latency to first response, head movements, hand gestures, and interactive and descriptive verbalizations. Frequency counts of each behavior were made and correlated with a measure of the quality of the RV.

(U) Unfortunately for this analysis, the measure of RV quality showed no significant RV function. Thus, correlation between RV quality and the behaviors rated could not be expected to show a significant relationship. Results matched this expectation; there were no significant correlations between the measure of RV quality and the behaviors noted. There was a non-significant trend in the positive direction for latency to first response which is similar to the measurement of latency from stimulus to response time measured in another pilot experiment (see Task F-3). It should also be noted that two behaviors of particular interest, namely eye movement and facial expression, were not analyzed in this study because facial expression was considered too subjective without multiple observers while the quality of the video recordings did not permit accurate observation of eye movement.

(U) In conclusion, this study does not rule out the possibility that external physiological cues may give important clues to the quality of RV. It would be necessary to conduct a similar study with a sample of known high-quality remote viewing.

5. (U) Objective B, Task 1--Resource Library

(U) The Parapsychology Sources of Information Center (PSIC, Rhea A. White, Director) has completed two years of a multi-year effort intended to provide and maintain an extensive data base facility for parapsychological literature, described in a separate report. The overall goal is to have the data base, called PsiLine, include bibliographic information and abstracts of the entire literature of parapsychology and related disciplines. During the first year of a multi-year effort, PSIC purchased the necessary hardware and software, and then

13. (U) Objective F, Task 1--Fundamental Parameters of RV

Two different precognition experiments were conducted during FY 1987. The first of these involved a well-calibrated viewer (Viewer 372) and used natural Bay Area sites as targets. Ten real-time and ten precognitive trials (counterbalanced) yielded no statistical evidence for remote viewing. In the second experiment, 4 viewers contributed approximately 30 trials each in a similar counterbalanced real-time versus precognition protocol. In this experiment, however, the target material was photographs from a national magazine. No statistical evidence for remote viewing was observed in this experiment. In a third experiment designed to explore the role of feedback upon remote viewing quality, two of four viewers produced independently highly significant evidence for remote viewing. There was no correlation between the quality of RV and the intensity of the feedback for either of the significant viewers. These data do not generally support the precognition model. To confirm this, we must examine the validity of the assumption that the actual feedback is related to the consciously perceived feedback. In other words, we question what constituted "enough" feedback to saturate the RV signal.

14. (U) Objective F, Task 2--Video Disk Training Technology

(U) The FY 1987 effort was aimed at developing a technology for enhancing the acquisition of remote viewing skills. One important factor in the development of a new skill is the ability to practice the skill under conditions similar to a test situation. Until now, practice was a time-consuming effort that required the services of a monitor and an assistant in order to ensure a double-blind protocol. With the advent of video disk technology coupled with the random number capability of a personal computer, it has become possible to develop the capacity to do multiple RV sessions at a single sitting as well as work on specific target features with the ease and timeliness of a forced choice task.

(U) Assembling the components of the system involved the purchase of a video camera, a video disk recorder, and a MacIntosh computer. The heart of the system is the video disk recorder, a specialized machine making possible the recording of both static and dynamic targets from a variety of video inputs. Access to any target is on the order of one-half second. Each 10-inch disk can store 24,000 still targets or up to 15 minutes of a motion target.

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- (3) Cost effectiveness, i.e., individual subject session times should be kept manageably brief to facilitate rapid turnover; this approach would also tend to sustain the subject's interest in the task, thereby maximizing the potential for success in the screening process.

(U) A preliminary survey of the extant technology for attaining these objectives indicates that the most feasible option would include a video camera, a video disk recorder, a video monitor, and a MacIntosh computer. The video camera would be used to photograph a variety of target materials for frame-by-frame inclusion on the video disk. Random access to the target photographs would be computer-controlled and therefore very rapid--i.e., on the order of 0.5-second display time. The disk, monitor, and computer would comprise the equipment actually deployed to the screening site. Overall, this equipment is relatively inexpensive, portable, and durable.

c. (U) Target Selection

A wide variety of target materials should be incorporated onto the disk to exercise the full potential range of the subject's abilities. Candidate target materials would include photographs drawn from the following categories: (1) natural scenes, (2) alphanumerics, (3) technical sites, (4) Zener cards, and (5) the Maimonides target set. A selection of dynamic (i.e., moving video) targets has also been suggested.* A small subset of approximately five targets would be selected from each category for inclusion on the disk: this would tend to minimize the potential for deviation from prescribed screening procedures; it would also enable greater standardization for RV performance across the screened population.

d. (U) Subject Populations

(U) Judicious selection of candidate subject populations is recommended over the less-efficient and more labor-intensive "shotgun" approach. One possible guideline, which has been derived primarily from the observations of RV monitors, is that a certain richness of the subject's vocabulary may be important for a comprehensive debrief of the RV signal. This would

* (U) This is not intended to be a comprehensive list of target categories: some may be deleted or others may be added as the mass screening protocol is developed, deployed, and refined. The same caveat applies to other research items mentioned in this discussion.

(U)

tend to imply that subjects should be sought out from groups that have members with superior verbal abilities.

(U) Other candidate populations might include groups whose members exhibit superior skills in drawing, draftsmanship, or other visual abilities. This approach is suggested because pictorial representation is another rich modality for debriefing the RV signal.

A third approach might center on drawing from populations whose members excel at pattern recognition or in the ability to discern a tenuous signal line in a noisy background.

Also subsumed under this category are groups whose members show an aptitude for institutional decision-making--i.e., what might be referred to in the vernacular as "playing hunches." Such groups might include, for example, police detectives, businessmen who make consistently correct decisions in risky or problematical ventures, or individuals with a special proclivity for locating oil.

(U) These are but a representative few of the kinds of populations that might be targeted for screening initially. It is anticipated that other promising populations will emerge empirically as the screening system is deployed on a pilot basis.

e. (U) Methodology and Deployment

(U) Research issues pertaining to screening methodology and deployment fall into two principal categories: (1) manipulation of *intra*-session variables for arriving at the most meaningful and efficient screening procedure, and (2) standardization of *inter*-session guidelines for deploying that procedure in a variety of settings. The first area focuses primarily on the most profitable use of the hardware, while the second area emphasizes standardization across screening sessions.

(U) Primary research issues concerning the design of the optimal screening package include (1) determination of feedback conditions (e.g., whether there should be a "no feedback" target in each screening session), (2) identification of the optimal number of targets per session and their randomization (e.g., whether targets should be presented on a gradient of complexity, or whether they should be randomly selected), and (3) determination of the analysis techniques to be employed (e.g., forced-choice guess by the subject versus detailed verbal and

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visual assessment by an independent analyst). Recent developments in the uses of fuzzy set theory and cluster analysis show promise for affording "on-line" analysis of RV on *National Geographic Magazine* targets.

(U) In the second major area of investigation, several preliminary guidelines have emerged with respect to optimizing *inter*-session standardization. First, screening settings must be chosen with the aim of mitigating a subject's performance anxiety: a one-on-one private or semi-private session with a trained monitor is indicated. Second, a series of general instructions must be devised that serve to inform the naive subject as to what the RV task entails. These instructions must be specific enough to elicit RV performance without biasing the subject towards any particular RV technology. Third, monitors must be thoroughly conversant with a standard set of screening procedures, in order to minimize idiosyncratic variability in such areas as feedback to the subject. Monitors may be required, for example, to memorize *scripts* that dictate the nature of subject/monitor interactions for each target. Scripts might also serve the function of providing the framework for the systematic elicitation of RV data along a number of predetermined dimensions--e.g., visual, conceptual, functional, depending on the nature of the target material. Fourth, a standardized questionnaire must be devised to address psychological parameters. It would include a section for standard biographical data and a section for questions drawn from the MBTI and the Psychophysical Research Laboratory's PIF. The purpose of the form would be to investigate, across a large population, whether psychological self-report correlates with RV ability. If such correlations were obtained, then the questionnaire might profitably be used as an initial pre-screening device.

(U) All of the research issues presented in this discussion will be most profitably determined and refined from actually using the system. If possible, the optimal approach would entail successive pilot deployments of the screening device in a variety of settings.

20. (U) Objective F, Task 8--Host Physiology Conference

On 28 July 1987, SRI International hosted a physiology conference. In attendance were D. Arthur, Ph.D., and E. Flynn, Ph.D from Los Alamos National Laboratory; S. Kornguth, Ph.D. from the Neurology Department of the University of Wisconsin; R. Murray, M.D., Chairman, the Department of Medicine, Michigan State University; R. Dickhaut, Spectra Research Institute; M. Hecker, Ph.D., SRI International,

T. Piantanida, Ph.D., SRI International, E. May, Ph.D., SRI International;

[] The goal of the conference was to determine the proper direction for investigating possible correlates to psychoenergetic functioning, and to recommend specific experiments to search for correlates. The primary emphasis was on neurophysiology. Attendee comments are available upon request.

[] After an overview of the Enhanced Human Performance Investigation project by May, the discussions centered upon metabolic measurements (PET) and possible physiological indicators of psychoenergetic functioning with visual evoked response.

[] Other topics that were discussed were other possible physiological areas of investigation, including technical voice analysis. It was generally decided, however, that except for PET, and certain button-pressing experiments, physiological correlates to the subtle forms of psychoenergetic functioning would be difficult to find.

[] As a direct result of the conference, the Los Alamos group will use visual evoked response techniques with the MEG to replicate earlier successful experiments demonstrating physiological responses to a remote stimulus.

(U) A number of the participants responded to the conference in letter form. These letters are contained in Appendix B.

21. (U) Objective F, Task 9--Neuropsychological Assessment

(U) During FY 1986 exploratory work was begun to attempt the discovery of neuropsychological correlates of psychoenergetic function. As part of that effort, Dr. Ralph Kiernan of the Stanford Medical School developed a battery of tests designed to test the function of the frontal lobes which he hypothesized to be involved in psychoenergetic function. As a follow-on to his theoretical formulation and hypothesis generation, Dr. Kiernan tested 37 subjects who had participated in previous RV and Search/Dowsing studies. His test battery was composed mainly of scales from Guilford's measure of intelligence, and scales were combined to give a score for productive ideation, a component directly related to positive frontal function.

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placed it on a small empty table, and then rang a bell into the telephone, signaling to the viewer to perceive the target. The viewer then declared "yes," "no," or "?" and gave his response; he then received immediate feedback from the experimenter. For every trial, the experimenter made a written record of the possible targets, actual target, declared condition, and viewer response, as well as date and time of the trial.

(U) The hypothesis being tested was whether Viewer 002 is able to recognize "contact" with the target. If this hypothesis is true, we would expect above-chance, below-chance, and chance results in the "yes," "no," and "?" conditions, respectively. The reason that we would expect below-chance results in the "no" condition is that psychoenergetic functioning is required by the viewer if he "knows" that he is not in contact with the target. In other words, the viewer is willing to declare that he is likely to be wrong.

The trials took place at approximately the same time every day between January 5 and February 20, 1987, with a varying number of trials per day. Of 147 trials in the "yes" condition, 88 were hits, where 74 would be expected by chance. Of 59 trials in the "no" condition, 23 were hits, where 30 would be expected by chance. Of the 121 trials in the "?" condition, 66 were hits, where 61 would be expected by chance. The p-values for these three conditions are 0.01, 0.05, and 0.23, respectively. From p-values alone, it appears that the hypothesis is supported. The trend in the psychological sciences is to use some measure of "effect size" in conjunction with p-values. The reason is that p-values are sample-size dependent and, therefore, may mask important results. The "effect size" for the three conditions is 0.20, 0.21, and 0.09, respectively. This result indicates that the equivalent amount of psychoenergetic functioning was used by Viewer 002 to determine his degree of contact with the target. We are encouraged by this result because it represents a modest success toward the goal of recognizing the source of "noise" in forced-choice experiments.

(U) During the second half of FY 1987, we conducted another series of trials of the forced-choice format, using the same protocol as described above but with slightly different conditions and testing a slightly different hypothesis. These trials took place from 23 February through 21 September 1987, a total of 82 sessions (one session per day at approximately the same time every day), with a varying number of trials per session. Before each session the viewer declared how he felt, and he assessed how successfully he would contact the targets in the coming

In FY 1987, an experiment was conducted which successfully replicated this finding. Of eight participants (six experienced and two novices), one scored significantly in the space condition, and none in the time condition. However, the two subjects who scored the best in the space condition had previously been successful in that condition, and the subject who scored best in the time condition had previously been successful in that condition. This suggests that participants are likely to consistently do well in one condition or the other, but not both.

Since this is the third successful laboratory replication of this experiment, it suggests that this technique for finding a hidden target may be robust enough to use in applications for which such information is needed, such as locating a kidnap victim. The best subject in the FY 1987 experiment showed a reduction in the area that would need to be searched in 72% of the trials in the space condition, with an average reduction in area of 33%. Previous experiments showed even greater reductions. In real-world applications, this could represent a substantial savings in resources.

(U) A second search experiment was conducted in FY 1987 to see if self-proclaimed dowers could find a lost ship by searching a grid overlaid on a map. The object of the search was a sunken Spanish galleon called The Atocha, which was actually found in 1985. The experiment was preceded by a real-world search in which one of the participants successfully located another sunken ship by choosing the correct locations on an unmarked grid. Accompanied by SRI personnel, the participant was in a vessel anchored over the site of the wreck at the time of the experiment. The Atocha experiment was carried out with two sets of 25 trials for each of five participants, but failed to produce a single significant result.

25. (U) Objective H, Task 1--RA Effects on Single Alpha Particles

(U) Due to unforeseen circumstances, the alpha particle experiment never reached a point where it was stable enough to collect data from human participants. After careful consideration of the cost to continue and the results of the other RA experiments for FY 1987, it was decided to stop work on this task. What follows is an engineering summary of the state of the system at close-out.

(U) During FY 1987, SRI developed a novel, position-sensitive system to detect alpha particles. In order to reduce the cost and complexity of the system, we elected to employ

32. (U) FY 1986 Objective E, Task 1--PMT Final

We conducted a replication of work published in FY 1984 in which we experimentally examined the possibility that light is emitted in the vicinity of correctly identified remote viewing target material. 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* 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 or 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 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, and (2) suggest that the significant correlation observed in our 1984 study is either a statistical anomaly or the result of Intuitive Data Sorting on the part of the experimenters.

33. (U) Objective J, Task 1--Administrative Support

(U) There are no deliverables required for this Task.

34. (U) Objective J, Task 2--Publications

(U) There are no deliverables required for this Task.

35. (U) Objective J, Task 3--Computer Hardware/Software Maintenance

(U) SRI has negotiated a contract with Sun Microsystems that offers software maintenance and support coverage at a greatly reduced rate to all Sun users at SRI. The overall

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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.

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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

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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 it would be hard to analyze the results because of statistically confounding factors.

Recommendation: Yes

November 1, 1988

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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 Zarafonitis

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

UNCLASSIFIED

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 not 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 any 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

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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

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