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Final Report *December 1984*

TRACK I TRAINING R&D (U)

By: HAROLD E. PUTHOFF MARTHA J. THOMSON

Prepared for:

DEFENSE INTELLIGENCE AGENCY
WASHINGTON, D.C. 20301

Attention: [redacted] SG1J

CONTRACT DAMD17-83-C-3106

SPECIAL ACCESS PROGRAM FOR GRILL FLAME.
RESTRICT DISSEMINATION TO ONLY INDIVIDUALS WITH VERIFIED ACCESS.

NOT RELEASABLE TO
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Final Report
Covering the Period October 1983 to October 1984

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SRI Project 7408-7

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Approved by:

ROBERT S. LEONARD, *Director*
Radio Physics Laboratory

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Research and Analysis Division

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I OBJECTIVE (U)

(U) SRI International is tasked with developing remote viewing (RV)* techniques that can be transmitted to others in a structured fashion (i.e., "training" techniques). The objective of the Track I Training R&D Task is to examine a particular procedure for RV technology transfer, utilizing suitable protocols to document the level of success of such transfer.

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*(U) RV is the acquisition and description, by mental means, of information blocked from ordinary perception by distance or shielding.

II INTRODUCTION (U)

A. (U) General

(U) As part of an overall training R&D Task, SRI International has investigated a number of potential training procedures. One of these, which is the focus of this particular study, involves multistage, coordinate remote viewing. In this procedure,* coordinates (latitude and longitude in degrees, minutes, and seconds) are utilized as the targeting method, which is structured to proceed through a series of well-defined stages in a particular order—hypothesized to correspond to stages of increased contact with the target site.

(S/NF) In this study, the basic hypotheses of the procedure were investigated under strict double-blind testing conditions in order to document whether, and to what degree, the hypothesized training approach provided a viable vehicle for RV technology transfer. The DIA COTR in residence selected three individuals from the staff of the SRI Radio Physics Laboratory. He tested them for baseline RV performance levels over an initial series of five sessions each, and then turned them over to the SRI Psychoenergetics Program staff to be exposed to the theory and application of the procedure in question.

B. (U) Description of Procedure

(U) We begin with the basic premise of the training procedure under study: the major problem with naive attempts to remote view is that the attempt to visualize a remote site tends to stimulate memory and imagination—usually in visual-image forms. As the RVer becomes aware of the first few data bits, there appears to be a largely spontaneous and undisciplined rational effort to extrapolate and "fill in the blanks." This is presumably driven by a need to resolve the ambiguity associated with the fragmentary nature of the

* (U) Modeled after a procedure developed in an earlier program in conjunction with SRI Consultant Ingo Swann.

(U)

emerging perception. The result is a premature internal analysis and interpretation on the part of the RVer, e.g., an impression of an island is immediately interpreted as Hawaii. This we call analytical overlay (AOL).

(U) Our investigation of these overlay patterns suggests a model of RV functioning, which we have shown schematically in Figure 1. With the application of a "stimulus" (e.g., the reading of a coordinate), there appears to be a momentary burst of "signal" that enters into awareness (for a few seconds at most), and then fades away. The overlays appear to be triggered at this point to fill in the void. Success in handling this complex process requires that the RVer learn to "grab" incoming data bits while simultaneously attempting to identify the overlays as such.

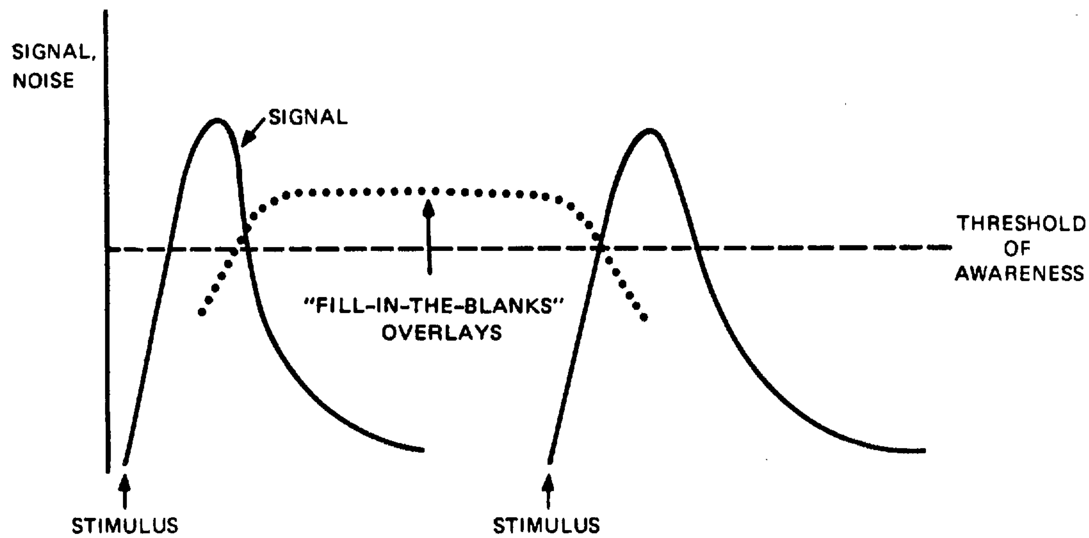

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FIGURE 1 (U) SCHEMATIC REPRESENTATION OF REMOTE VIEWER RESPONSE TO RV SITUATION

(U) Observation of this process in the earlier development work suggests that the above behavior can be learned. Specifically, it appears that a RVer being trained in accordance with procedures developed in that program can be expected to exhibit a performance curve of the type shown in Figure 2. In brief, after being exposed to the basic concepts of the training procedure, the RVer typically exhibits a short period of spontaneous "first-time" effect of very-high-quality response (usually three or four sessions). This response cannot, however, be maintained; it is followed by a decline to a low level of performance--at which

(U)

point substantive learning can begin. If learning is to take place, it will go forward from that point until saturation at some skill plateau is reached.

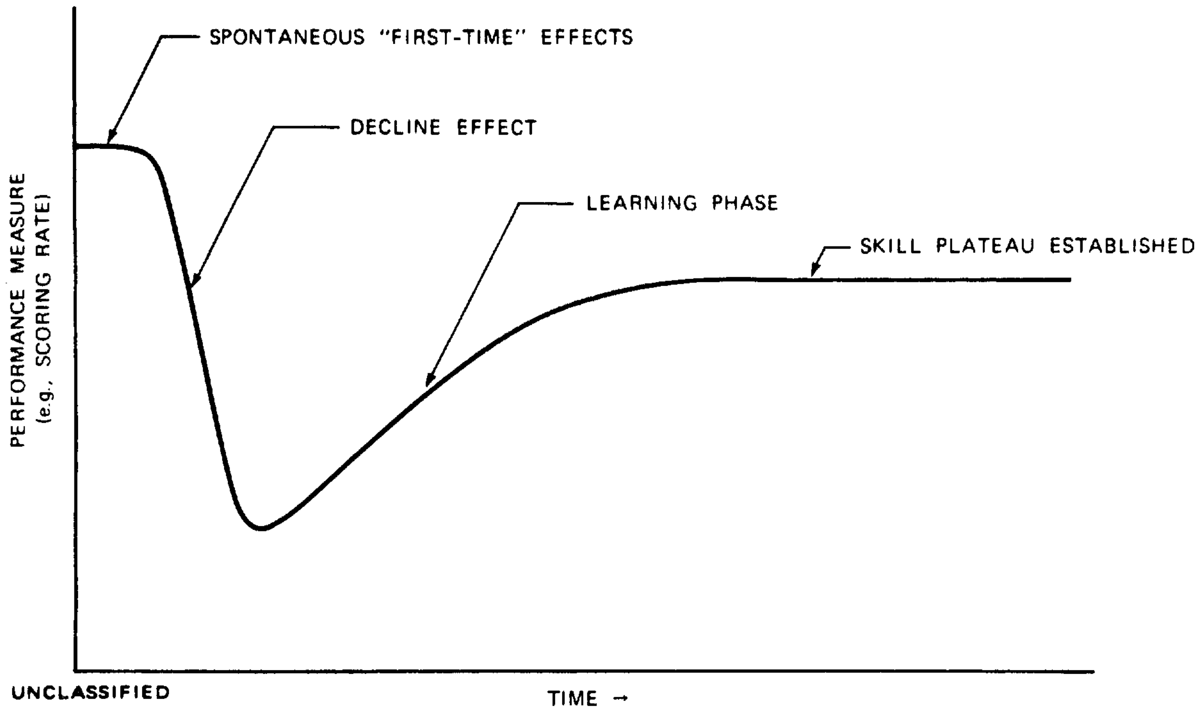

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FIGURE 2 (U) IDEALIZED PERFORMANCE-OVER-TIME CURVE

(U) The RV training is structured to proceed through a series of stages that are hypothesized to correspond to stages of increased contact with the target site. These stages (described in more detail below) are tutored in a set order. Presentation of theory is followed by a series of practice sessions, taking a few weeks per stage; thus, the RVer moves up through the stages, concentrating on the elements to be mastered in each stage before proceeding to the next. In the early development work, it was also noted that an experienced remote viewer applying the techniques that are learned in this procedure tends to recapitulate the stages in this set order. The contents of the early stages (as evolved in the development work) are as shown in Table 1, and the techniques employed in the stages are described in the following paragraphs.

Table 1

(U) STAGES IN REMOTE VIEWING

Stage	Example
I Major gestalt	Land surrounded by water, an island
II Sensory contact	Cold sensation, wind-swept feeling
III Dimension, motion, mobility	Rising up, panoramic view, island outline
IV General qualitative analytical aspects	Scientific research, live organisms
. . .	. . .

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1. (U) Stage I (Major Gestalt)

(U) In Stage I, the RVer is trained to provide a quick-reaction response to the reading of site coordinates by a monitor. The response takes the form of an immediate, primitive "squiggle" on the paper (called an ideogram), which captures an overall motion/feeling of the gestalt of the site (e.g., wavy/fluid for water). Note that this response is essentially kinesthetic, rather than visual.

2. (U) Stage II (Sensory Contact)

(U) In Stage II, the RVers are trained to become sensitive to physical sensations associated with the site, i.e., sensations they might experience if they were physically there (heat, cold, wind, sounds, smells, tactile sensations, and the like). Again, this response is essentially nonvisual in nature (although color sensations may arise as a legitimate Stage II response). Of course, in both Stage I and Stage II, visual images may emerge spontaneously. In that case they are not suppressed, but simply noted and labeled as AOLs.

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3. (U) Stage III (Dimension, Motion, and Mobility)

(U) Whereas in Stage I and Stage II viewing, data appear to emerge (typically) as fragmented data bits, in Stage III, we observe the emergence of a broader concept of the site. With Stage I and II data forming a foundation, contact with the site appears sufficiently strengthened that the viewer begins to have an overall appreciation of the site as a whole (which we label "aesthetic impact"). Dimensional aspects such as size, distance, and motion begin to come into play, and emphasis is placed on generating configurational outlines and sketches (e.g., the outline of an island).

4. (U) Stage IV (General Qualitative Analytical Aspects)

(U) Stages I through III are directed toward recognition of the overall gestalt and physical configuration of a target site; Stage IV is designed to provide information as to function, i.e., the purpose of the activities being carried out at the site.

(S/NF) Because of the apparent increased contact with the site that occurs in Stage III (a "widening of the aperture," as it were), data of an analytical nature begin to emerge. As observed in the earlier development work, contained in Stage IV data are elements that go beyond the strictly observational, such as ambience (military, religious, technical); cultural factors (nationality); and function or purpose (agriculture, research, weapons development). Thus, Stage IV viewing transcends simple physical description of what is visible to the eye, to take into account human intention. Because, from an operational point of view, it is the latter that is typically a matter of intelligence concern, Stage IV is considered to be the threshold for crossover into operational utility.

(U) In Stages I through III, information is collected in the form of ideograms, their motion and feeling (S–I), sensations at the site (S–II), and sketches that result from expanded contact with the site (S–III). These various "carrier" signals are individual in nature, and special techniques have been developed to handle each in turn—more or less in serial fashion. In Stage IV (as designed in the earlier development work), the RVer is trained to accumulate data bits in no less than eight separate categories, in parallel, in addition to processing additional ideograms and sketches. These range from broad categories of sensations and dimensional references, through specific qualities (physical/technological detail, cultural ambience, and functional significance), and includes tracking of the analytical

(U)

overlay line. To keep these separate signal lines on track requires exceptional control of session structure--an ability acquired in the lengthy S-I through S-III training period. With these elements under control, the Stage IV data-bit-acquisition procedures can then be used to build up an interpretation as to the site's activities and functions.

III METHOD OF APPROACH (U)

A. (U) General Design

(U) The purpose of this study was to collect data on the RV procedure described in the previous section, in order to determine its viability as a training methodology. In the overall design of the study, emphasis is placed on adherence to strict double–blind protocols in the collection of the data, and on the use of objective analytical techniques in the evaluation of the data, so that documentation and authentication are as objective as possible.

B. (U) Target Site Preparation

(U) Because the RV training procedure involves targeting on sites around the world (given only the geographical coordinates of those sites), an important preparation step is the generation of target materials. An SRI analyst charged with this responsibility prepares the target materials, which consist of an index card with site coordinates (latitude and longitude in degrees, minutes, and seconds), and a folder with site information. (The latter provides feedback at session end; for the purpose of training and evaluation, sites are chosen for which feedback information in some form is available.) Site/feedback materials consist of more than 5000 map sites (U.S.G.S. Series E maps, G.N.I.S.; Army Map Agency maps; World Aeronautical Charts; atlases), and over 1500 National Geographic Magazine sites. These materials are continually updated.

C. (U) Session Protocol

(U) At the begining of the session, the monitor and RVer enter the RV session chamber. The monitor has in his possession targeting information (coordinates) written on an index card, but is kept blind to the target site, thus eliminating the possibility of cueing—overt or subliminal. The experiment is therefore of the double–blind type. The monitor's role in the session is limited to: (1) seeing that the appropriate materials are available (pen, paper, audio tapes if the session is to be taped, and so forth); (2) reading the

(U)

coordinates as a prompter for the RVer; and (3) making notes for later discussion. Following the session, the monitor obtains the target folder and provides feedback to the RVer, going over details of the session to provide further instruction if needed.

D. (U) Baseline Data

(S/NF) For the first step of the study, the DIA COTR-in-residence selected three individuals from the staff of the SRI Radio Physics Laboratory and designated them as trainees for this effort. As described in the Introduction section, he then tested them for baseline RV performance levels over a series of five sessions each. They were then turned over to the project staff for training.

E. (U) Training

(U) The training phase consists of a series of lectures by a training instructor/monitor, interspersed with double-blind RV sessions. In the lectures, the principles of a particular stage under consideration are thoroughly discussed. In addition, a number of practical exercises are carried out, such as drills in sketching, exercises in listing possible sensations one could experience at a site, and so forth.

F. (U) Data Collection

(U) Based on previous experience in the development phase of this particular training track, it was decided that it would be useful to collect at least 30 sessions with each of the trainees. In the study, two of the viewers did contribute 30 trials (#309 and #694), while a third (#558) contributed 43. The trials were collected over a four-month period at a rate that never exceeded five per day per RVer, and typically no more than two per day per RVer. For all RVers, the training level reached was the beginning to middle of Stage III.

G. (U) Data Evaluation

(U) A key element in determining the efficacy of the training procedure under investigation lies in the evaluation protocols. Given the nature of the RV product, which consists of a narrative description plus drawings and sketches, it has been necessary to

(U)

expend considerable effort over the last decade (in our laboratory and elsewhere) to develop objective, quantitative measures of RV performance.

(U) In brief, early evaluation procedures consisted of some form of subjective (although blind) analysis procedure in which, for a given series of RV trials, a judge was asked to rank order the RV response packets against each of the sites used in the series. For example, in a ten-trial series, a judge would blind-rank-order all ten transcripts as to how they matched Target No. 1, then Target No. 2, and so forth. In a good series, the transcript generated in response to a particular target would fall near the top of the rank-order list for that target. An exact statistical calculation could then be made as to the probability of obtaining the resulting distribution of rank orderings by chance.*

(U) The next step in sophistication came with the development (at SRI) of concept analysis, in which specific concepts in each transcript were matched against specific attributes of each target site. We could then determine not just generally whether RV functioning had taken place and to what degree, but could evaluate on a concept-by-concept basis the degree of match between transcripts and sites.†

(U) The idea of concept analysis was taken to its logical conclusion in the efforts of R. Jahn, et al., Engineering Anomalies Research Laboratory at Princeton University. A generalized 30-element descriptor list was developed in which, for each target site and for each transcript, a particular element on the list (e.g., significant presence of water) could be checked off as present or absent. Thus, the output of any given transcript was a 30-bit code, which could then be compared against 30-bit codes associated with various targets. The result is a complex, but meaningful, analysis system where transcripts can be compared against targets on a completely computer-automated basis--including direct matches (transcripts against associated sites) and cross matches (for controls). Furthermore, given that the abundance or rarity of a given element in a target pool is known, the details of the analysis system can take into account that the correct description of a rare element is to be

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*(U) See, for example, H. Puthoff, R. Targ, and E. May, "Experimental Psi Research: Implications for Physics," in "The Role of Conciousness in the Physical World," ed. R. Jahn, AAAS Selected Symposium 57, Westview Press, Inc., Boulder, CO (1981).

†(U) E. May "A Remote Viewing Evaluation Protocol (U)," Final Report, SRI/GF-0247, SRI International, Menlo Park, CA (December 1982; Revised July 1983), SECRET/NOFORN.

(U)

given more weight than that of a common element.* A descriptor-list net is somewhat coarse in its ability to represent a target, and therefore constitutes a very conservative measure of target content; the advantages of the attendant analysis techniques are felt to constitute a useful trade-off.

(U) The procedure described in the above paragraph has now been modified and extended by the SRI research team to provide not only measures of transcript/target correlation, but also additional quantitative measures of overall performance, such as accuracy, reliability, and overall figure of merit.† This modified procedure is the one employed in the evaluation of the results of the training programs under study, including the Track I effort that is the focus of this particular study.

(U) In our study, a list of 20 descriptors was developed to characterize both target sites and transcripts. As opposed to the list developed by Jahn to represent local urban target sites, this list is especially tailored to be descriptive of a wide variety of climes, locales and conditions, as might be encountered in remote viewing of sites all around the globe. The descriptor list check sheet is given in Appendix A.

(U) The list of sites used as targets in the Track I Training Task is given in Appendix B. Included in the list is a folder I.D. number, the name of the site, its coordinates, and a seven-digit octal number representing the information content of that site. To obtain the latter, an SRI analyst filled out the descriptor list check sheet, entering yes or no as to the presence or absence of each of the 20 elements on the list; the 20-bit binary number thus generated was then converted into its octal equivalent for ease of computer entry.

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*(U) R. Jahn, et al., "Analytical Judging Procedure for Remote Viewing Experiments," *Jour. Parapsychology,* Vol. 44, No. e, pp. 207–231 (September 1980).

†(U) E. May, et al., "An Automated RV Evaluation Procedure (U)," Final Report (in press), SRI International, Menlo Park, CA (December 1984), SECRET/NOFORN.

IV RESULTS (U)

A. (U) RV Session Records

(U) The chronological record of sessions for each of the RVers is included as Appendix C. Each of the sessions, designated by a X000-series number (Column 1), has associated with it a code (Column 2), which is the octal equivalent of the 20-bit binary number that represents the RVer response (transcript) content. That number was generated for each transcript as was done for the sites, with the SRI analyst kept blind as to the associated site so as to maintain objectivity.

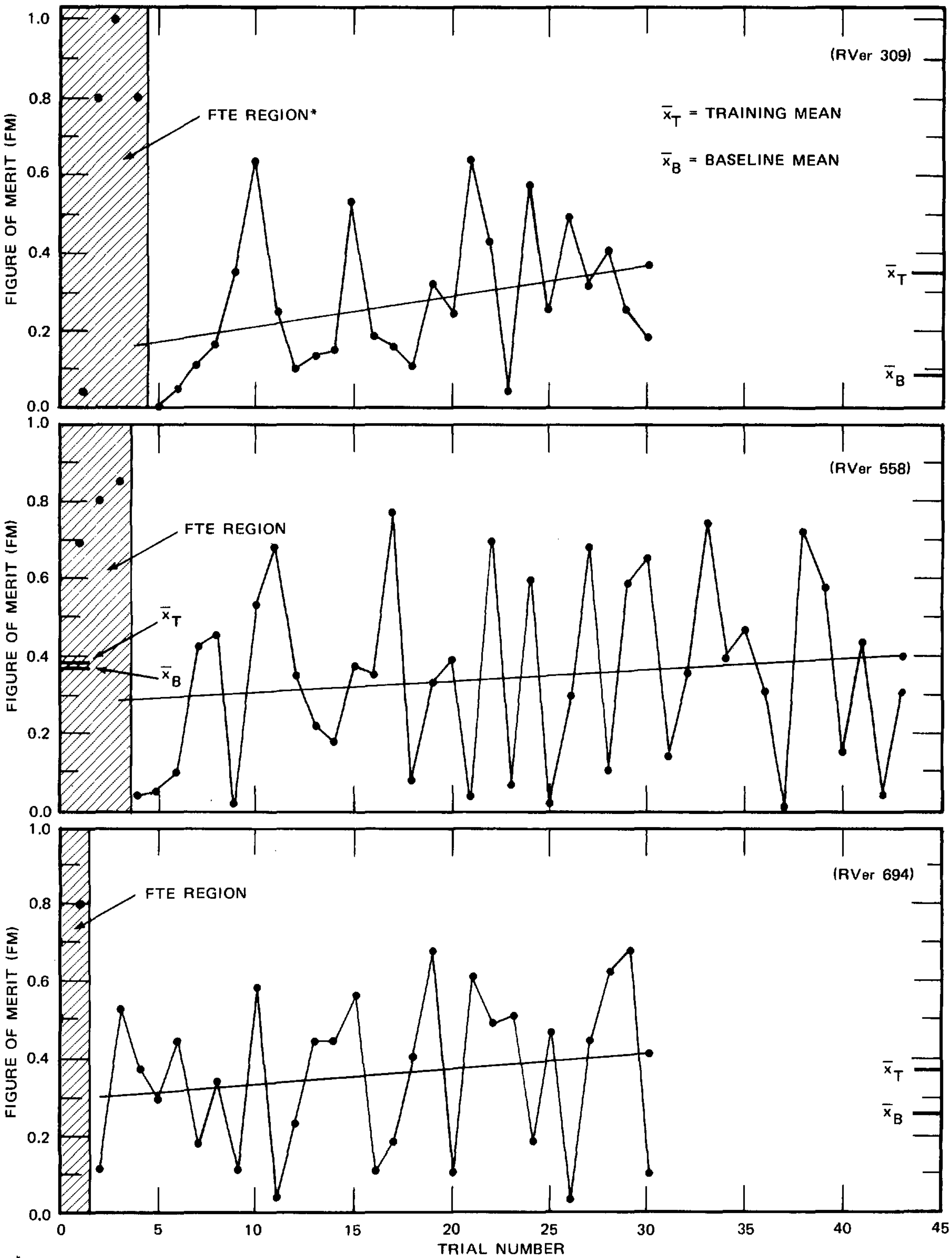
(U) In Column 3 the folder I.D. number (target site number) is listed, followed in Column 4 by the code (octal number) representing the target-site content. Columns 5 through 7 contain the results of primary interest: accuracy, reliability and figure of merit. The "Accuracy" column gives the percentage of bits representing the target that the RVer correctly identifies, and thus represents an assessment of the accuracy of the target description. The "Reliability" column addresses a slightly different measure, the percentage of response bits that are correct, which indicates how reliable the RVer's remarks are. As to the difference between accuracy and reliability, RVers might render encyclopedic descriptions that cover all possible cases, in which case their accuracy would be high, but their reliability low. Conversely, they might say but one thing (correctly), which would give a high reliability factor for what was said, but would not constitute a fully complete and accurate description of the site. What is desired, of course, is that both measures be high, and this is what is tested for by the "Figure of Merit,"—the product of the accuracy and reliability measures. A more detailed discussion of these issues can be found in the "RV Automated Evaluation Procedure" report referenced earlier.

B. (U) RVer Performance

1. (U) Figure-of-Merit (FM) Plots

(U) As a measure of RV training performance over time, the figures of merit (FM) for each of the RVers are plotted, session by session, in Figure 3. The first observation to be noted is that in each case, the empirical distribution of data points provides evidence in support of the predicted performance curve of Figure 2; that is, it consists of an initial short region containing high-quality "first-time effect (FTE)," followed by a region of slowly-rising growth in RVer performance as intermixed practice and instruction proceeds. Specifically, in these data sets, the FTE region is characterized by an initial region containing "outlier" point(s)--points that lie outside the main distribution--which include the highest-valued point in the entire data set, followed by a drop that is the largest in the data set. This is then followed by a curve which, on the average, climbs steadily as the bulk of the training proceeds.

(U) As a first step, we examine whether these observations meet the requirements for statistical significance. Given previous observations that the FTE region typically contains fewer than five data points, a significant statistic is generated even by the conservative calculation as to the probability that, in these three cases, the highest-valued point in each data set should occur within, say, the first ten points ($p = 0.026$). Furthermore, in all three cases, the separations of the points in the FTE regions from the least-squares-fit lines that define the slow-growth curves, independently reach statistical significance for six of the eight points in question--a result which is itself statistically significant ($p = 4.0$ exp 10 [-7]). In addition, examination of the distribution of the magnitudes of the differential drops over each of the data sets, shows that the magnitudes of the differential drops taken to separate the FTE and slow-growth regions independently reach statistical significance in two of the three cases (just missing it in the third--again being statistically significant ($p = 7.2$ exp 10 [-3]). Thus, the data (taken separately and together) provide support for the predicted performance curve, and indicate that the separation of the data into the FTE and the slow-growth regions is both justified and appropriate.



*"FIRST-TIME" EFFECT

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FIGURE 3 (U) RV TRAINING PERFORMANCE

2. (U) Results

(U) With regard to the slow-growth region, the slopes of all three RVers are positive, in line with prediction; however, only one reaches statistical significance at the p = 0.05 level, that of RVer #309. As a second measure, the difference in the FM means of the baseline- and training-data sets (indicated by the shaded areas on the left side of the plots in Figure 3) is in favor of the learning hypothesis for all three RVers, but again reaches statistical significance only in the case of RVer #309 (p = 1.3 exp 10 [-3]). Thus, support for the efficacy of the Track I Training effort lies primarily with RVer #309. These results are summarized in Table 2 below.

Table 2

(U) TRAINING RESULTS

Slope	Training (Baseline/Training)	Mean FM
#309	0.008	0.096/0.352
p = 0.05*	p = 1.3 exp 10 [-3]*	
#558	0.003	0.372/0.378
p = 0.2 †	p = 0.48 †	
#694	0.004	0.252/0.372
p = 0.2 †	p = 0.15*	

*Statistically significant

†Nonsignificant

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V SUMMARY AND CONCLUSIONS

A. (U) Summary of Purpose and Approach

(U) The purpose of this SRI study was to investigate a particular approach to RV training, with special emphasis on evaluation and authentication under strict double-blind conditions. The procedure involves targeting on the target site using geographical coordinates; it is structured to proceed through a number of well-defined stages that have been hypothesized to correspond to stages of increased contact with the site.

(S/NF) As the first step in the study, the DIA COTR-in-residence selected three individuals from the staff of the SRI Radio Physics Laboratory to act as trainees. A five-trial RV series was carried out with each RVer (before training instruction) to serve as a measure of baseline performance, and psychological profile tests were administered to provide data for a separate selection/screening task.

(U) At that point training instruction began, includilng RV practice sessions. The sessions were performed under strict double-blind protocols, that is, neither trainee nor experimenter/monitor were knowledgeable as to the identity of the target site; feedback was provided to the trainee only after the entire session was completed. The training continued over a four-month period, with interleaved instruction and practice, progressing up to the beginning-to-mid Stage III in the nomenclature of the procedure under study. A minimum of thirty trials each was collected from each RVer.

(U) For the purposes of data evaluation, an objective procedure involving computer-automated target/transcript matching was developed. The procedure, a modification of one developed at Princeton University's Engineering Anomalies Research Laboratory, is based on the reduction of site and transcript descriptions to a 20-bit code each. A 20-question descriptor-list sheet was used to obtain the codes describing the presence or absence of particular elements (e.g., water). The descriptor-list sheets are filled out in the blind (without knowledge as to the corresponding site or transcript) in order to maintain objectivity. Analysis then continues on the basis of computer tabulation of matches

(U)

and the application of standard statistical procedures. By its nature, the descriptor–list approach is quite conservative, given that much information is lost in the reduction to the coded representation, but the gain in objectivity and data manipulation capability is considered to be a reasonable trade–off.

B. (U) Observations and Conclusions

(U) Analysis of the data results in plots of a quantity called Figure of Merit (FM), which is a combined measure of the reliability of RVer statements, and the accuracy and completeness of target description. Based on the earlier development work on the training procedure under study, a particular performance curve was anticipated:

- A baseline region of relatively poor performance.
- An unstable region of anomalously–high "first–time effect" immediately following initial instruction.
- A region of slowly–increasing stable growth to levels above baseline performance.

For all three RVers, the evolution of the distribution of data points over time, aligns with the predicted performance curve, and several measures of the correlation reach statistical significance; thus, the data–point distribution appears not to be random, but patterned as anticipated. With regard to overall performance, one of the three RVers generated independently statistically significant results, with regard to (1) the (positive) slope of the learning curve, and (2) the increase in mean performance level achieved in training (as compared with baseline).

(U) It thus appears that the data generated in this study, collected under rigorous double–blind conditions and analyzed by objective computer–automated procedures, provide support for the Track I Training model developed in earlier efforts. All remote viewers showed an increase in performance over baseline level, exhibiting growth in conformation with a predicted performance curve––one significantly so.

C. (U) **Recommendations for Follow-on Efforts**

(U) Given the success of this study, several follow-on explorations suggest themselves, which could not be pursued in the present level-of-effort study because of limited time and funds:

- A matched companion study of three RVers--30 trials each (minimum)--should be pursued, in which no training information is provided to the trainees. This would provide a comparison between the progress observed in the Track I Training process, and the progress that could be generated by practice alone (a control study).
- Working with the present RVers, continue development of their RV skills by progressing through the stages of the Track I Training procedures as presently structured.
- Again working with the present RVers, additional targeting methods should be introduced on an intermixed basis to determine whether the Track I Training procedure continues to be effective under alternative targeting protocols.

Appendix A

DESCRIPTOR LIST (U)

Appendix A

DESCRIPTOR LIST (U)

Evaluator ______________________________

Remote Viewer ______________________________

Site/Descriptor (circle one)

		yes	no
1.	Is a hill, mountain or volcano, or series of such a significant feature of the site/description?	___	___
2.	Is a building (or buildings) or other manmade structures a significant part of the site/description?	___	___
3.	Is a city a significant part of the site/description?	___	___
4.	Is a small town, village or settlement a significant part of the site/description?	___	___
5.	Is a special manmade structure (e.g., tower, fortress, mine, ruins) a significant part of the site/description?	___	___
6.	Is a relatively flat aspect a significant part of the site/description terrain (including water)?	___	___
7.	Is water a significant element of the site/description?	___	___
8.	Is a large expanse of water (ocean, sea, gulf, lake or bay) a significant aspect of the site/description?	___	___
9.	Is a land/water interface a significant part of the site/description?	___	___
10.	Is a beach, port or harbor a significant part of the site/description?	___	___
11.	Is a river, canal or channel a significant part of the site/description?	___	___
12.	Is an island (or islands), or major peninsula, a significant part of the site/description?	___	___
13.	Are three or more major elements (e.g., city, water mountain) all significant parts of the site/description?	___	___
14.	Does a single major feature, natural or manmade, dominate the site/description?	___	___
15.	Is the central focus or predominant ambience of the site/description primarily natural rather than manmade?	___	___
16.	Is the implication of isolation or wilderness a significant aspect of the site/description?	___	___

		yes	no
17.	Is heavy foliage or a verdant theme a significant part of the site/description?	___	___
18.	Is the site/description especially humid or tropical?	___	___
19.	Is the site/description especially dry to the point of being arid?	___	___
20.	Is snow or ice a significant part of the site/description?	___	___

Appendix B

LIST OF TARGET SITES (U)

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Appendix B

LIST OF TARGET SITES (U)

RVer #309

session	date	lat*	long*	name
1001.wm	19-mar-1984	+404539	+1115325	Salt Lake City
1002.wm	19-mar-1984	+334200	+1173400	Santiago Peak
1003.wm	26-mar-1984	+560300	-1481800	Sea of Okhotsk
1004.wm	27-mar-1984	+195000	+1552500	Mauna Kea Volcano
1005.wm	28-mar-1984	+400000	+0751000	Philadelphia
1006.wm	28-mar-1984	+283400	-0835000	Annapurna Mt.
1007.wm	29-mar-1984	+505000	-0042100	Brussels
1008.wm	29-mar-1984	-165000	+1513000	Raiatea Island
1009.wm	30-mar-1984	+334651	+0910413	Arkansas River
1010.wm	2-apr-1984	+370424	+1111820	Padre Bay
1011.wm	3-apr-1984	+385500	+0770000	Washington D.C.
1012.wm	3-apr-1984	+480000	+0870000	Lake Superior
1013.wm	6-apr-1984	-114500	+0770800	Ancon
1014.wm	6-apr-1984	+472150	+1164515	Chatcolet Lake
1015.wm	9-apr-1984	-163000	+1514500	Bora Bora
1016.wm	10-apr-1984	+503000	+1043800	Regina
1017.wm	10-apr-1984	+360900	+0052100	Gibraltar
1018.wm	13-apr-1984	+442959	+1141729	Klug Gulch
1019.wm	19-apr-1984	+290000	+0133800	Lanzarote Island
1020.wm	20-apr-1984	+140000	-1210000	Lake Taal Volcano
1021.wm	23-apr-1984	+430300	+0704700	Portsmouth
1022.wm	14-may-1984	+233700	-0583800	Muscat
1023.wm	15-may-1984	+422940	+1032818	Pine Ridge
1024.wm	15-may-1984	+424000	-0180700	Dubrovnik
1025.wm	16-may-1984	+470800	-0093200	Vaduz
1026.wm	21-may-1984	+211700	+1575200	Waikiki
1027.wm	22-may-1984	+543900	+0083800	Carrick
1028.wm	25-may-1984	+243739	+0825223	Fort Jefferson
1029.wm	9-jul-1984	+243319	+0814658	Key West
1030.wm	10-jul-1984	+611000	+1500000	Anchorage

*Latitude and longitude in degrees, minutes, and seconds.
+ signifies N for latitude and W for longitude.
- signifies S for latitude and E for longitude.

RVer #558

session	date	lat	long	name
1001.br	19-mar-1984	+271000	+0580200	Atlantic Ocean
1002.br	21-mar-1984	+474900	+1234200	Mt. Olympus
1003.br	22-mar-1984	+423000	-0153000	Adriatic Sea
1004.br	22-mar-1984	+150100	+1082800	Pacific Ocean
1005.br	22-mar-1984	+390417	+1065659	Pyramid Peak
1006.br	22-mar-1984	+400000	+0751000	Philadelphia
1007.br	22-mar-1984	+702600	+0800000	Pittsburgh
1008.br	23-mar-1984	+394000	-0442300	Mt. Ararat
1009.br	26-mar-1984	+304000	+0880500	Mobile
1010.br	26-mar-1984	-062300	-1553300	Bougainville Island
1011.br	27-mar-1984	-344000	+0583000	Buenos Aires
1012.br	28-mar-1984	+274400	-0881100	Kanchenjunga Mt.
1013.br	29-mar-1984	+263700	+0765700	Hope Town
1014.br	30-mar-1984	+413600	-0014800	Montserrat Mt.
1015.br	2-apr-1984	+230700	+0822500	Havana
1016.br	3-apr-1984	+692100	-0120800	Arctic Ocean
1017.br	4-apr-1984	+422700	-0184600	Kotor
1018.br	5-apr-1984	-251500	+0574000	Asuncion
1019.br	5-apr-1984	+372630	-0252400	Mikonos Island
1020.br	6-apr-1984	+252111	+0810702	Shark River
1021.br	9-apr-1984	+431800	-0494000	Caspian Sea
1022.br	10-apr-1984	+581900	+1551500	Ten Thousand Smokes
1023.br	12-apr-1984	+450000	+0931000	St. Paul
1024.br	12-apr-1984	+280119	+0814354	Winterhaven
1025.br	13-apr-1984	+452400	+1214100	Mt. Hood
1026.br	19-apr-1984	+340600	-0710500	Khyber Pass
1027.br	19-apr-1984	+140500	+0871400	Tegueigalpa
1028.br	20-apr-1984	+403439	+1121054	Copper Mine
1029.br	23-apr-1984	-290400	-1675700	Kingston
1030.br	24-apr-1984	+435500	+1104000	Jackson Lake
1031.br	25-apr-1984	+414437	+0695723	Pleasant Bay
1032.br	26-apr-1984	+521200	+1741200	Atka
1033.br	10-may-1984	+045600	-1145800	Bandar Seri Begawan
1034.br	14-may-1984	+602300	-0052000	Bergen
1035.br	15-may-1984	+243319	+0814658	Key West
1036.br	16-may-1984	+220400	-1213200	Orchid Island
1037.br	17-may-1984	+382656	+1091426	La Sal Mts.
1038.br	18-may-1984	+321800	+0644800	Hamilton
1039.br	21-may-1984	+413900	+0824915	South Bass Island
1040.br	22-may-1984	+455200	-0061000	Lake Annecy
1041.br	29-may-1984	+403853	+0740014	Sunset Park
1042.br	9-jul-1984	+195000	+1552500	Mauna Kea Volcano
1043.br	10-jul-1984	+051900	+0040100	Abidjan

RVer #694

session	date	lat	long	name
1001.gr	21-mar-1984	+401517	+1053655	Long's Peak
1002.gr	22-mar-1984	-333000	+0704000	Santiago
1003.gr	22-mar-1984	+455500	+0685700	Mt. Katahdin
1004.gr	23-mar-1984	+620000	-0194500	Gulf of Bothnia
1005.gr	23-mar-1984	-391800	-1740500	Mt. Egmont
1006.gr	26-mar-1984	+394000	-0442300	Mt. Ararat
1007.gr	27-mar-1984	+521500	-0210000	Warsaw
1008.gr	27-mar-1984	+305000	+0812600	Cumberland Island
1009.gr	3-apr-1984	+564000	+0050400	Glencoe
1010.gr	5-apr-1984	-211600	+1574800	Diamond Head
1011.gr	5-apr-1984	+363923	+0755604	National Wildlife Reserve
1012.gr	10-apr-1984	+220400	-1213200	Orchid Island
1013.gr	10-apr-1984	+680800	+1514500	Anaktuvuk Pass
1014.gr	10-apr-1984	-025000	-0351300	Olduvai Gorge
1015.gr	12-apr-1984	+411533	+0724548	Rogers Island
1016.gr	13-apr-1984	+374942	+0755932	Tangier Island
1017.gr	19-apr-1984	+265833	+0820527	Port Charlotte
1018.gr	20-apr-1984	+375618	+0752143	Chincoteague Island
1019.gr	23-apr-1984	+485200	+1140949	Glacier National Park
1020.gr	24-apr-1984	+252100	-1101100	Guilin
1021.gr	25-apr-1984	-531600	+0703500	Straits of Magellan
1022.gr	25-apr-1984	+611000	+1500000	Anchorage
1023.gr	1-may-1984	+440300	+0685000	Vinalhaven Island
1024.gr	3-may-1984	+051900	+0040100	Abidjan
1025.gr	14-may-1984	+165100	+0995600	Acapulco
1026.gr	15-may-1984	+385104	+1065101	Mesa Verde National Park
1027.gr	18-may-1984	+571500	+0042500	Loch Ness
1028.gr	21-may-1984	+481000	+1203200	Lake Chelan
1029.gr	29-may-1984	+440624	+0735608	Lake Tear
1030.gr	10-jul-1984	+382656	+1091426	La Sal Mts.

Appendix C

CHRONOLOGICAL RECORD OF RVer SESSIONS (U)

Appendix C

CHRONOLOGICAL RECORD OF RVer SESSIONS (U)

TRAINING RESULTS (U)

Viewer 309

Session	Code	Folder	Code	Accuracy	Reliability	Merit
1001.wm	70160	79.00	3425201	0.1250	0.1667	0.0208
1002.wm	2000160	81.00	2000161	0.8000	1.0000	0.8000
1003.wm	70160	82.00	70160	1.0000	1.0000	1.0000
1004.wm	2000160	56.00	2000161	0.8000	1.0000	0.8000
1005.wm	2000160	68.00	1467000	0.0000	0.0000	0.0000
1006.2m	3404200	7.00	2000161	0.2000	0.2000	0.0400
1007.wm	70160	20.00	1465000	0.3333	0.3333	0.1111
1008.wm	2000160	75.00	3276674	0.2143	0.7500	0.1607
1009.wm	76151	11.00	2065160	0.6250	0.5556	0.3472
1010.wm	2074050	67.00	2074460	0.7500	0.8571	0.6429
1011.wm	2064041	99.00	1465000	0.5000	0.5000	0.2500
1012.wm	3464200	88.00	70160	0.3333	0.2857	0.0952
1013.wm	70160	6.00	3476206	0.2727	0.5000	0.1364
1014.wm	3064202	24.00	75170	0.3333	0.4286	0.1429
1015.wm	2074440	18.00	2277474	0.5385	1.0000	0.5385
1016.wm	74061	76.00	1467000	0.4286	0.4286	0.1837
1017.wm	1344000	35.00	3476700	0.2727	0.6000	0.1636
1018.wm	2075050	50.00	2000162	0.4000	0.2500	0.1000
1019.wm	1465000	52.00	3676642	0.3846	0.8333	0.3205
1020.wm	3276210	90.00	2074564	0.5000	0.5000	0.2500
1021.wm	3474200	73.00	1476000	0.8571	0.7500	0.6429
1022.wm	3340200	62.00	3576200	0.5000	0.8333	0.4167
1023.wm	3276201	69.00	40060	0.3333	0.1000	0.0333
1024.wm	1475000	30.00	1576100	0.6667	0.8571	0.5714
1025.wm	3374010	93.00	3425351	0.4545	0.5556	0.2525
1026.wm	2076540	96.00	3476604	0.6364	0.7778	0.4949
1027.wm	3275241	22.00	1567050	0.6000	0.5455	0.3273
1028.wm	3174240	34.00	1176520	0.6000	0.6667	0.4000
1029.wm	3264250	47.00	1576620	0.4545	0.5556	0.2525
1030.wm	2040061	5.00	3476201	0.3000	0.6000	0.1800

TRAINING RESULTS (U)

Viewer 558

Session	Code	Folder	Code	Accuracy	Reliability	Merit
1001.br	74060	14.00	70160	0.8333	0.8333	0.6944
1002.br	2000160	64.00	2000161	0.8000	1.0000	0.8000
1003.br	2070160	3.00	70160	1.0000	0.8571	0.8571
1004.br	1400100	66.00	70164	0.1429	0.3333	0.0476
1005.br	1440100	74.00	2000161	0.2000	0.2500	0.0500
1006.br	70160	68.00	1467000	0.2857	0.3333	0.0952
1007.br	1440000	70.00	1467000	0.4286	1.0000	0.4286
1008.br	2070160	9.00	2000161	0.8000	0.5714	0.4571
1009.br	2000160	59.00	1477600	0.0000	0.0000	0.0000
1010.br	2076440	19.00	3376674	0.5333	1.0000	0.5333
1011.br	3576200	21.00	1476000	1.0000	0.7000	0.7000
1012.br	2075061	45.00	2000161	0.8000	0.4444	0.3556
1013.br	1540000	43.00	1476450	0.3000	0.7500	0.2250
1014.br	2074041	60.00	3100161	0.4286	0.4286	0.1837
1015.br	1440000	41.00	1476004	0.3750	1.0000	0.3750
1016.br	3474241	10.00	70161	0.7143	0.5000	0.3571
1017.br	1476000	51.00	3476200	0.7778	1.0000	0.7778
1018.br	3140160	12.00	1467400	0.2500	0.2857	0.0714
1019.br	1575100	58.00	3676640	0.5000	0.6667	0.3333
1020.br	1475010	83.00	65170	0.6250	0.6250	0.3906
1021.br	3440000	23.00	70160	0.1667	0.2500	0.0417
1022.br	2040161	94.00	2040063	0.8333	0.8333	0.6944
1023.br	70160	78.00	1467000	0.2857	0.3333	0.0952
1024.br	3274000	100.00	1474000	0.8333	0.7143	0.5952
1025.br	3474200	42.00	2000161	0.2000	0.1250	0.0250
1026.br	70160	48.00	2040062	0.6000	0.5000	0.3000
1027.br	3565000	92.00	3467004	0.7778	0.8750	0.6806
1028.br	2074040	27.00	2100161	0.3333	0.3333	0.1111
1029.br	2076460	49.00	2376650	0.6667	0.8889	0.5926
1030.br	3077241	44.00	3476671	0.7143	0.9091	0.6494
1031.br	1100100	71.00	1077140	0.2222	0.6667	0.1481
1032.br	1376300	13.00	3274460	0.6000	0.6000	0.3600
1033.br	3376674	16.00	3577634	0.8667	0.8667	0.7511
1034.br	1376061	17.00	3477201	0.6364	0.6364	0.4050
1035.br	1074060	47.00	1576620	0.5455	0.8571	0.4675
1036.br	3164120	65.00	3276674	0.4286	0.7500	0.3214
1037.br	1376450	53.00	2000161	0.2000	0.0909	0.0182
1038.br	3476610	40.00	1476400	1.0000	0.7273	0.7273
1039.br	3276150	84.00	1376440	0.8000	0.7273	0.5818
1040.br	1565000	8.00	2074150	0.3750	0.4286	0.1607
1041.br	3276000	87.00	1467000	0.7143	0.6250	0.4464
1042.br	3065000	56.00	2000161	0.2000	0.1667	0.0333
1043.br	3074602	1.00	1477004	0.5556	0.5556	0.3086

TRAINING RESULTS (U)

Viewer 694

Session	Code	Folder	Code	Accuracy	Reliability	Merit
1001.gr	2000160	55.00	2000161	0.8000	1.0000	0.8000
1002.gr	70161	80.00	3440001	0.4000	0.2857	0.1143
1003.gr	2040162	46.00	2000161	0.8000	0.6667	0.5333
1004.gr	2040060	39.00	70160	0.5000	0.7500	0.3750
1005.gr	70160	32.00	2000161	0.6000	0.5000	0.3000
1006.gr	2040060	9.00	2000161	0.6000	0.7500	0.4500
1007.gr	2074440	98.00	1467000	0.4286	0.4286	0.1837
1008.gr	2074040	28.00	1277470	0.4167	0.8333	0.3472
1009.gr	2074440	37.00	2000170	0.4000	0.2857	0.1143
1010.gr	3174310	29.00	3476754	0.6429	0.9000	0.5786
1011.gr	3040000	15.00	75460	0.1250	0.3333	0.0417
1012.gr	2040062	65.00	3276674	0.2857	0.8000	0.2286
1013.gr	2040174	4.00	3240161	0.6250	0.7143	0.4464
1014.gr	70160	63.00	40166	0.6667	0.6667	0.4444
1015.gr	3274200	77.00	1276400	0.7500	0.7500	0.5625
1016.gr	3440000	91.00	1276440	0.2222	0.5000	0.1111
1017.gr	2074450	72.00	1465000	0.5000	0.3750	0.1875
1018.gr	3274210	26.00	1277440	0.6000	0.6667	0.4000
1019.gr	2074160	36.00	2074071	0.7778	0.8750	0.6806
1020.gr	3265210	38.00	3400100	0.5000	0.2222	0.1111
1021.gr	2074470	86.00	75560	0.7778	0.7778	0.6049
1022.gr	3375200	5.00	3476201	0.7000	0.7000	0.4900
1023.gr	3274010	95.00	1277470	0.5833	0.8750	0.5104
1024.gr	2074071	1.00	1477004	0.4444	0.4444	0.1975
1025.gr	3274200	2.00	3477614	0.5385	0.8750	0.4712
1026.gr	3475200	57.00	2000062	0.2500	0.1111	0.0278
1027.gr	3275040	54.00	2074170	0.6667	0.6667	0.4444
1028.gr	74470	25.00	2074171	0.7000	0.8750	0.6125
1029.gr	2074460	89.00	2074170	0.7778	0.8750	0.6806
1030.gr	2075050	53.00	2000161	0.4000	0.2500	0.1000