Science Applications International Corporation
Cognitive Sciences Laboratory
Memorandum

Date: 16 February 1994
To : [redacted] SG1J
From : Dr. Edwin May
Subject: Preliminary Research Results

(U) This year we conducted three experiments:

(1) A confirmation experiment to determine if the quality of anomalous cognition (AC) results correlates with the gradient of the Shannon entropy within the target.

(2) A search for an event-related desynchronization in the brain in response to an AC stimulus.

(3) A confirmation experiment to determine if an isolated person's skin conductance can be influenced by a remote individual.

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(S/NF) We have observed significant effects in all three experiments. I will briefly outline the result for each experiment and describe how it may impact operational anomalous cognition.

(1) **Entropy Experiment.** Three of our four receivers produced independently significant evidence for AC. The best of these had a hitting rate of 50% (chance being 20%). The effect size for the four subjects was 0.778, 0.742, 0.601, and −0.035, respectively. For comparison, the largest effect size ever seen in Ganzfeld testing is 0.354. The major result, however, is a correlation of 0.502 with 31 degrees of freedom for the gradient of the Shannon entropy with AC quality. A correlation of this magnitude is rare in psychological or behavioral studies. We are currently working through a list of potential artifacts that might have contributed to this correlation, but so far the correlation stands.

This is the first time in the history of the field that a physical variable has correlated with any AC activity. It's major contribution will be to guide future researchers in choosing targets that will optimize the AC output. It is only a modest extension to move this laboratory result into the operational domain. To the degree Shannon entropy is roughly equivalent to classical thermodynamic entropy, AC-operations can be improved by choosing intelligence target sites that are likely to possess dynamic changes of entropy (e.g., nuclear blasts, radioactive decay, radar, accelerators, etc.).

(2) **Alpha Desynchronization.** A brain in "idle mode" oscillates at approximately 10 Hz. It is well known that a brain cannot remain idle and do *anything* else. For example, responding to a sensory stimulus (e.g., light flash, click sound, smell, touch, taste), thinking about something (e.g., counting backward from 100 or imagining your grandmother's kitchen), or moving a body part all interrupt alpha production. Therefore, it would be odd, indeed, if AC failed to interrupt alpha. Our current experiment improved upon the previous protocols from Los Alamos by including behavioral evidence of AC as measured in brain waves. We have observed significant evidence for AC, and the preliminary EEG analysis indicates that we may see an AC event-related desynchronization (ERD). We currently have a probability against chance of only 0.2, but we have not yet sorted the EEG data with regard to AC performance. The effect *must* be there. If we fail to see it after analysis, we will be able to quote a lower limit for the percent desynchronization.

If we see an ERD, it will be the first time such an effect has been seen in AC research. The implications for R&D and operations are unbounded. An immediate potential is an AC polygraph-type

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instrument. More likely, however, is the potential use of biofeedback techniques to improve AC functioning for operations and R&D.

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② Part of brain for signal
— Biofeedback training — advantage in training
— Remote viewing of photograph
What should one focus on and on what not to

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