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STATEMENT OF WORK

FOR

BIOPHYSICAL RESEARCH AND ANALYSIS

1.0 (S/NF) PURPOSE: The purpose of this effort is to perform biophysical research and analysis on neuromagnetic phenomena.

2.0 (S/NF) BACKGROUND: The FY 1991 Defense Authorization Act identified DIA as executive agent of a new program for examining anomalous phenomena. One of the areas of specific interest was based on results from an earlier DOD sponsored research effort involving brain neuromagnetic responses to various visual or visual-related stimuli. This pilot work was performed by the Biophysical Group at the Los Alamos National Laboratory (LANL), Los Alamos, NM, as part of an Army research effort under the Surgeon General's Research and Development (SGRD) office.

3.0 (S/NF) OBJECTIVE: This statement of work is based on findings from the previous LANL research on this topic. Primary objective of this effort is to identify correlations of brain neuromagnetic responses to a variety of independent conditions or parameters.

4.0 (S/NF) SCOPE: This activity will replicate previous results, will recalibrate the experimental environment, will search for possible artifacts and will initiate new systematic research. This new research will include a variety of population groups and will examine a variety of possible physical variables. All the measurements will be based on passive magnetoencephalograph (MEG) recording instrumentation.

5.0 (U) TECHNICAL/OTHER CONSIDERATIONS:

5.1 (S/NF) This effort is part of a larger external investigation effort in this general phenomenological area that includes a DIA contractor, the Science Applications International Corporation (SAIC). The SAIC program manager for this effort, Dr. Ed May, had been directly involved in the previous LANL activities in this area. Consequently, LANL will be required to work with both the DIA COTR and the SAIC program manager for most of the activities identified in this statement of work (SOW).

5.2 (S/NF) It is anticipated that both government and contractor supplied individuals will be involved in the MEG-measurement activity. All activity involving non-DIA

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personnel (e.g., contractor supplied) will be coordinated in advance with the DIA COTR. Specific subject/population types to be investigated will be reviewed and approved by the COTR well in advance of their involvement.

5.3 (U) All research protocols, analysis methodologies, specific scheduling, and other procedures will be reviewed/approved by the DIA COTR. A contractor Scientific Oversight Committee (SOC) will review and comment on all experimental protocols, procedures and analysis methods. The SOC will also review and comment on the final report prepared for this effort.

5.4 (U) This effort will be subject to review by the LANL Human Use Review Panel to assure that all experiments with human subjects conform to standard human use guidelines set forth by Health and Human Service and DOD regulations. (Additional human use guidance is provided on attachment 1. to this SOW).

5.5 (U) The contractor will be required to submit brief progress reports and cost data to the DIA COTR on a monthly basis. A final technical report containing all protocols, methodology, analysis techniques, results, and conclusions will be provided to the COTR by 1 July 1992. An advanced draft of this final report will also be required 2 weeks prior to submission of the final report.

5.6 (U) Should unforeseen schedule or other issues arise concerning any of the specific tasks identified in section 6.0, the COTR will be given immediate notice. If necessary, adjustments to priorities and schedules can be approved by the COTR if there is no cost or other impact on the overall project.

#### 6.0 (U) SPECIFIC TASKS:

6.1 (U) Examine the hardware and software used in the earlier remote stimuli study to determine possible instrumental artifacts; calibrate existing electromagnetic/magnetoencephalograph (MEG) environment. This should include, but is not limited to, (a) open sensors; (b) brain equivalent targets; and (c) non-central nervous system targets.

6.2 (S/NF) Perform new remote stimuli experiments with a variety of subject population types and variations to the remote aspect (e.g., vary light stimuli parameters, vary location from MEG room, presence/absence of "senders").

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6.3 (U) For same subject pool as used in item 6.2, perform direct visual stimuli measurements under a variety of MEG sensor locations. Identify correlations to various population groups, where possible.

6.4 (S/NF) Examine results from item 6.3 to determine inter-group discrimination potential of MEG results.

7.0 (U) QUICK REACTION CAPABILITY (QRC): The contractor will maintain quick response capability to problems or unexpected demands (e.g., briefings, unique subject availability.) as may be encountered during this project.

8.0 (U) ALLOCATION OF EFFORT: Level of effort to be applied to each task is shown below:

| <u>TASK NO.</u> | ALLOCATION OF EFFORT (%) |
|-----------------|--------------------------|
| 6.1             | 15                       |
| 6.2             | 60                       |
| 6.3             | 20                       |
| 6.4             | 5                        |

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