Phenomenological Research and Analysis

Prepared by:

Wanda L. W. Luke and Edwin C. May, Ph.D.

30 April 1993

Science Applications International Corporation

An Employee-Owned Company

Presented to:

U. S. Government

Contract MDA908-93-C0004
(Client Private)

Submitted by:

Science Applications International Corporation
Cognitive Sciences Laboratory

TABLE OF CONTENTS

I. OBJECTIVE

The object of this document is to provide an interim technical report on tasks 6.1 "Basic Research," 6.2 "Applied Research," and 6.3 "Research Methodology," as listed in the 1993 Statement of Work. This report covers the time period from 31 December 1992 to 30 April 1993, and includes all subtasks.*

* This report constitutes deliverable data item number A002 under contract number MDA908-93-C-0004.

II. INTRODUCTION

Under Statement of Work items 6.1, 6.2, and 6.3, in contract MDA908–93–C0004, the Cognitive Sciences Laboratory of Science Applications International Corporation is tasked to conduct phenomenological research and analysis. This document details the activity accomplished under these items and constitutes the interim report covering the period from 31 December 1992 to 30 April 1993.

III. PROGRESS TO DATE

This section describes the progress to date for each of the sub-tasks listed under item 6.1, 6.2, and 6.3 (Basic Research, Applied Research, and Research Methodology, respectively). Statement of Work (SOW) numbers are indicated for each section below. All existing human use and technical protocols, as well as the Institutional Review Board Meeting Minutes may be found in their respective volumes accompanying this paper.

1. Basic Research (SOW 6.1)

1.1 Biophysical Measurements (SOW 6.1.1)

The following sections describe the activity to date for sub-tasks listed under Biophysical Measurements.

1.1.1 EEG Experiment (SOW 6.1.1.1 – 6.1.1.6)

The objective of this experiment is to test the hypothesis that central nervous system (CNS) responses to AC stimuli resemble those occurring in response to identical visual stimuli presented directly.

The human use protocol has been written for this experiment and has been approved by the Institutional Review Board (IRB). Details of the technical protocol are currently being developed.

1.1.2 Remote Observation Experiment (SOW 6.1.1.7)

The remote observation experiment is designed to test the hypothesis that individuals are able to detect being observed by other individuals in cases where all conventional sensory mediation has been precluded. This study will serve as an independent replication and extension of previous research reported by Braud, Shafer, and Andrews (1990, 1992).[1, 2]

Both the human use and technical protocols have been written and approved for this experiment by the IRB and SOC, respectively. Preliminary trials are currently scheduled to start within the third week in April.

1.2 Data Patterns and Parameter Correlations (SOW 6.1.2)

The following sections describe the activity to date for sub-tasks listed under Data Patterns and Parameter Correlations.

1.2.1 Virtual Reality Literature Search (SOW 6.1.2.1)

Action on this sub-task has not yet been initiated.

1.2.2 Lucid Dream (6.1.2.2)

It may be possible to improve both the quantity and quality of information gained via anomalous cognition (AC) while using the REM lucid dream state to access such information. The lucid dream state may act to filter out external noise, therefore lowering the threshold of perceived information. Last year, a pilot study was performed to explore the potential for using the REM lucid dream state for anomalous cognition. While the results of that effort were encouraging, the difficulties encountered in unmonitored sleep made it difficult to collect a sufficient number of trials for conclusive results. The objective of this study is to replicate in the laboratory the earlier finding that anomalous cognition may occur in the lucid dream state.

Both the human use and technical protocols have been written and approved for this experiment by the IRB and SOC, respectively. One preliminary trial was conducted on March 13, 1993.

1.2.3 Sender/no Sender Experiment (SOW 6.1.2.3)

This sub-task has not been initiated due to the contract not yet having been let.

1.2.4 Q-Sort (SOW 6.1.2.4)

Historically, a wide range of psychological tests have been used in an attempt to detect correlations between personality variables and AC performance. These tests have included standard clinical batteries as well as the Personality Assessment System (PAS). Few of these have yielded statistical correlations; however, trends indicate that well-adjusted, extroverted believers might perform better in AC tasks. The objective of this study is to explore potential personality variables as they relate to AC ability through the use of the Q-Sort method.

The Q-Sort differs from other methods of personality assessment in that it is not a psychological test, but merely a system devised to permit individual personalities to be comprehensively described and quantitatively compared. First conceived by William Stephensen, the Q-Sort method has become a useful tool for comparing personality variables between a wide variety of different populations.[3]

This systematic and quantitative technique for obtaining comprehensive psychodynamic descriptions of individual personalities will be used to attempt to answer the following questions:

- What personality variables are common to those individuals that perform well on AC tasks? Is there a typological uniformity?
- What would an ideal AC-profile look like?
- How do the personality descriptions of individuals who do not do well on AC tasks differ from those who do?

Both the human use and technical protocols have been written for this experiment. Approval of the human use protocol by the IRB is currently pending modifications of the human use protocol, while the technical protocol has already been approved.

1.3 Theoretical (SOW 6.1.3)

The following sections describe the activity to date for sub-tasks listed under Theoretical Activities.

1.3.1 Anomalous Perturbation Experiment (SOW 6.1.3.1 – 6.1.3.3)

A generic anomalous perturbation (AP) human use protocol has been written and approved by the IRB. This human use protocol may be found in appendix A in this paper. Initiation of experiments awaits laboratory assignment from the sponsor.

1.3.2 Theoretical Models (SOW 6.1.3.4)

This sub-task has not yet been initiated.

1.3.3 Identify New Experiments (SOW 6.1.3.5)

This sub-task has not yet been initiated.

1.3.4 Entropy Experiment (SOW 6.1.3.6)

The objective of this study is to determine if the quality of AC is related to the total change of Shannon Entropy of the target.

Both the human use and technical protocols have been written and approved for this experiment by the IRB and SOC respectively.

The target pool for this experiment has been compiled and is currently in the process of being digitized. Initial trials are projected to start on April 21, 1993.

2. Applied Research (SOW 6.2)

2.1 Tacking Database (SOW 6.2.1)

An existing database has been modified to record the outcome of AC experiments.

2.2 Quantitative Application Assessment (SOW 6.2.2)

Programs are under development for fractal decomposition of natural scenes.

2.3 Applications Test-Bed (SOW 6.2.3)

A generic anomalous cognition (AC) human use protocol has been written and approved by the IRB. This human use protocol may be found in appendix A in this paper. Initiation of this sub-task awaits action from the sponsor.

3. Methodology and Support (SOW 6.3)

3.1 IRB/POC/SOC (SOW 6.3.1)

The Institutional Review Board (IRB) met in SAIC's Cognitive Sciences Laboratory in Menlo Park, California on January 22, 1993.

The Policy Oversight Committee (POC) met in SAIC's Cognitive Sciences Laboratory in Menlo Park, California on March 17, 1993.

The Scientific Oversight Committee (SOC) met in SAIC's Cognitive Sciences Laboratory in Menlo Park, California on March 26, 1993. The minutes for this meeting may be found in appendix A of this paper.

3.2 Administration (SOW 6.3.2)

Project administration is an ongoing effort.

3.3 Attended Conferences (SOW 6.3.3)

This sub-task has not yet been initiated.

3.4 Sponsor International Conference (SOW 6.3.3)

Mr. Yuri Dolin of the Former Soviet Union (FSU) visited SAIC's Cognitive Sciences Laboratory in Menlo Park, California from March 5, 1993 to March 16, 1993. During this visit, he presented a paper to the Cognitive Sciences Laboratory and there was one trial conducted in which an attempt was made to replicate Dolin's experiment. This trial was unsuccessful. A translated copy of his paper can be found in appendix B at the end of this paper.

SG1B

IV. GLOSSARY

Not all the terms defined below are germane to all studies found within this report, however they are included here for completeness. In a typical anomalous mental phenomena (AMP) task, we define:

- Anomalous Cognition—A form of information transfer in which all known sensorial stimuli are absent. That is, some individuals are able to gain access, by as yet an unknown process, to information that is not available to the known sensorial channels.
- Receiver—An individual who attempts to perceive and report information about a target.
- Agent—An individual who attempts to influence a target system.
- Target—An item that is the focus of an AMP task (e.g., person, place, thing, event).
- Target Designation—A method by which a specific target, against the backdrop of all other possible targets, is identified to the receiver (e.g., geographical coordinates).
- Sender/Beacon—An individual who, while receiving direct sensorial stimuli from an intended target, acts as a putative transmitter to the receiver.
- Monitor—An individual who monitors an AC session to facilitate data collection.
- Session—A time period during which AC data is collected.
- Protocol—A template for conducting a structured data collection session.
- Response—Material that is produced during an AC session in response to the intended target.
- Feedback—After a response has been secured, information about the intended target is displayed to the receiver.
- Analyst—An individual who provides a quantitative measure of AC.
- Speciality—A given receiver's ability to be particularly successful with a given class of targets (e.g., people as opposed to buildings).

V. REFERENCES

1. Braud, W., Shafer, D., and Andrews, S., *Electrodermal correlates of remote attention: Autonomic Reactions to an Unseen Gaze.* Paper presented to the 33rd Annual Convention of the Parapsychological Association, Chevy Chase, Maryland (1990).
2. Braud, W., Shafer, D., and Andrews, S., *Further Studies of Autonomic Detection of Remote Staring: Replications, New Control Procedures, and Personality Correlates.* Paper presented to the 35th Annual Convention of the Parapsychological Association, Los Vegas, Nevada (1992).
3. Block, J., *The Q–Sort Method In Personality Assessment and Psychiatric Research.* Consulting Psychologists Press, Inc., Palo Alto, CA, (1978).

APPENDIX A

This appendix contains a copy of the minutes of the SOC meeting of March 26, 1993.

SUMMARY MINUTES

SCIENTIFIC OVERSIGHT COMMITTEE

March, 1993

Following an introduction by Ed May, the research team made presentations regarding the various projects that have been proposed for 1993. The first presentation was made by Marilyn Schlitz, who provided an overview of the remote observation study. The discussion included suggestions for ways of developing a stronger randomization procedure and a method of analysis making use of multiple measurements of autonomic nervous system activity and multiple analysis of varience statistics to increase the effect size. In addition, some minor modifications in the consent form were suggested.

The second presentation was made by Ed May, who discussed the entropy experiment in which the free response target pictures are coded according to change in Shannon entropy. A discussion of experimental complexity insued, with suggestions for possible revisions in the method of evaluating free response materials.

The third presentation was made by Stephen LaBerge, who discussed the lucid dream experiment. While the discussion offered some criticisms of the initial pilot research carried out last year, specifically related to the lack of control over the free response target picture, the SOC were satisfied that the revised protocol would address the previous limitations. In particular, the confirmation study is designed to increase experimental security, both by separating the target and the subject and by moving the experiment into a laboratory setting, and to increase the yield by asking people to wake themselves up in order to report their experience. Again there was a discussion about the evaluation procedure for free response studies.

The fourth presentation was made by Deborah Arthur, who discussed the EEG experiment. Based on previous experiments, in which the results were equivocal, the proposed project is meant to provide a more complete test of the anomolous cogntion hypothesis. The main problem involved selection of target material that had never been used before. In the current sutyd, the experimenters will make use of higher entropy targets which are drawn from an already calibrated target pool. Again it was suggested that multiple measures be taken and multiple analysis of varience be employed. In addition, the committee suggested that the researchers collect straight physiology for five minutes (while pseudostimulus and target stimulus are being remotely presented randomly). At the end of 5 minutes, the subject would be presented with a set of 5 National Geographic targets and would be asked to pick a target. This would increase the amount of data that could be collected on a given day

The fifth presentation was made by Wanda Luke, who discussed the Q-Sort procedure. The SOC felt that more data needed to be collected in order to increase the meaningfulness of the measurements. In addition, additional forms of psychological assessments were suggested.

Following the formal presentations, the group began a general discussion. Ed May offered some comments about research now underway by researchers in the former Soviet Union and China. Differences in orientation and methods of evaluation were discussed. Professor Turzian expressed his concern that results from AC experiments are ambiguous and that we may not make much progress over the next three years. After overviewing the major problems that had been discussed during the day, including theory, methods, and evaluation, Professor Zimbardo offered some suggestions on research possiblities. In particular, he felt that it would be useful to work with an already established effect, such as conditioning, and then to systematically separate the subject from the stimuli. He raised a number of testable questions, including whether the monitor is necessary in remote viewing and what specific role they play.

APPENDIX B

This appendix contains a translated copy of the paper presented by Mr. Yuri Dolin of the Former Soviet Union (FSU) during his visit to SAIC's Cognitive Sciences Laboratory in Menlo Park, California, on March 11, 1993.

EEG-Objectivization of Human Distant Influence on Human Subjects

Yuri S. Dolin, Victor I. Dymov, Nicolai N. Khatchenkov

Summary

In the experiments, a subject was located in a dark, sound-proof, electrically-shielded chamber, and his electroencephalogram (EEG) was recorded. Two standard electrodes were placed in positions C_3, C_4. The reference electrode was placed on the mastoid projection. The upper limit of the EEG frequency range was 50 Hz, with a time constant of 0.1 sec. The EEG signal was fed into a computer for on-line processing.

Between 4 and 6 trials per day were conducted, some of them being control trials and some "distant influence" trials. For each given trial, casting lots determined whether it was a test or control. The direction of influence (activation or inhibition of the subject's alpha rhythm) was determined by the "sender" (the person attempting the "distant influence"). The subject was blind as to whether the given trial was a test or control. EEG of the subject was recorded for 5 seconds which was followed by a 10 second interval to allow for the computation of the Fourier transformations of the signal. The results were shown graphically on the display screen. During each trial, between 20 and 40 of these time periods were recorded, the length of the trial being specified in advance.

There were experiments conducted both at short distances (when the "sender" was from 5 to 100 meters from the subject) and at longer distances, from 1 to 10 kilometers. The tests were conducted from July 1, 1992 to November 25, 1992. The tests at short distances were carried out from July 30, 1992 to September 7, 1992. About 150 short-distance tests were conducted, with 6 subjects and 10 "senders." Two subjects with a stable alpha rhythm were selected. The data obtained from the "senders," who worked only for one or two days (performing 6 to 8 trials each), were excluded from the analysis, since it required a longer time (usually from 2 to 6 days) for each "sender" to develop his "strategy" of "distant influence." With 4 senders and two subjects ("receivers") 109 trials were conducted: 53 control trials and 56 test trials. From these, 21 test trials had the sender attempting "activation" of the subject (thereby intending to decrease the subject's alpha power) and in test 21 trials attempting "inhibition" (thereby intending to increase the subject's alpha power); in the rest of the test trials, senders did not specify the direction of influence. Thus, the main analysis was conducted with the trials in which the direction of influence was specified, in the range of alpha (8-13 Hz). The data for beta and theta were also recorded; they later turned out to be non-significant.

For each test (5 min. duration), the following dimensionsless parameters were calculated:

Approved For Release 2000/08/10 : CIA-RDP96-00787R000300210001-7

$$A_{ti} = I_{ti}/I_{pi}; \quad A_{ci} = I_{ci}/I_{pi}$$

where I_{ti} is the mean value of the EEG power spectrum during the epoch of the sender's influence; I_{pi} is the mean value of the EEG power during the pre-stimulus epoch (baseline); A_{ti} characterizes the magnitute of sender's influence, and A_{ci} characterizes changes in the EEG power spectra during control periods (everything is set-up the same way as the test period but no sender attempts "distant influence"). This approach to the analysis made it possible to compare the results obtained during different days and to minimize the error, making the error in the control no greater than 3%. A_{ai} and A_{ii} were calculated signifying mean values for activation and inhibition trials, respectively.

The data are presented below:

Short-distance tests, changes in alpha

	control	inhibition	activation	influence
Number of tests	53	21	21	56
Mean	0.869774	1.09624	0.734714	0.874214
Variance	0.0650086	0.0798939	0.0621056	0.102312
Mean square diviation	0.254968	0.282655	0.24921	0.319862
MSQ of the mean	0.0350225	0.0616804	0.0543821	0.0427433
Lower quartile	0.686	0.954	0.544	0.623
Upper quartile	0.979	1.331	0.913	1.1045
Interquartile range	0.293	0.377	0.369	0.4815

The level of significance for changes of alpha:

	The left hemisphere	The right hemisphere
Activation	$p < 0.019$	$p < 0.004$
Inhibition	$p < 0.067$	$p < 0.012$

The results are also presented in Figs. 6-10.

About 140 long-distance trial were performed from September 10, 1992 to November 25, 1992 with the same two subjects. The duration of the trial was 2.5 minutes. The senders, working for only one or two days, were excluded from the analysis; only the trials with two longer-working senders were included. There were 105 trials subjected to analysis: 53 were control trials and 52 test trials. However, the senders did not specify which trials were activation and which were inhibition; thus, the analysis could

not be performed the same way as above. However, the changes in variance and interquartile ranges indicated the non-uniformity of the samples (see Fig. 13).

There is a more detailed discussion of the analysis of the results in the text, which will be included in a complete translation of the paper.

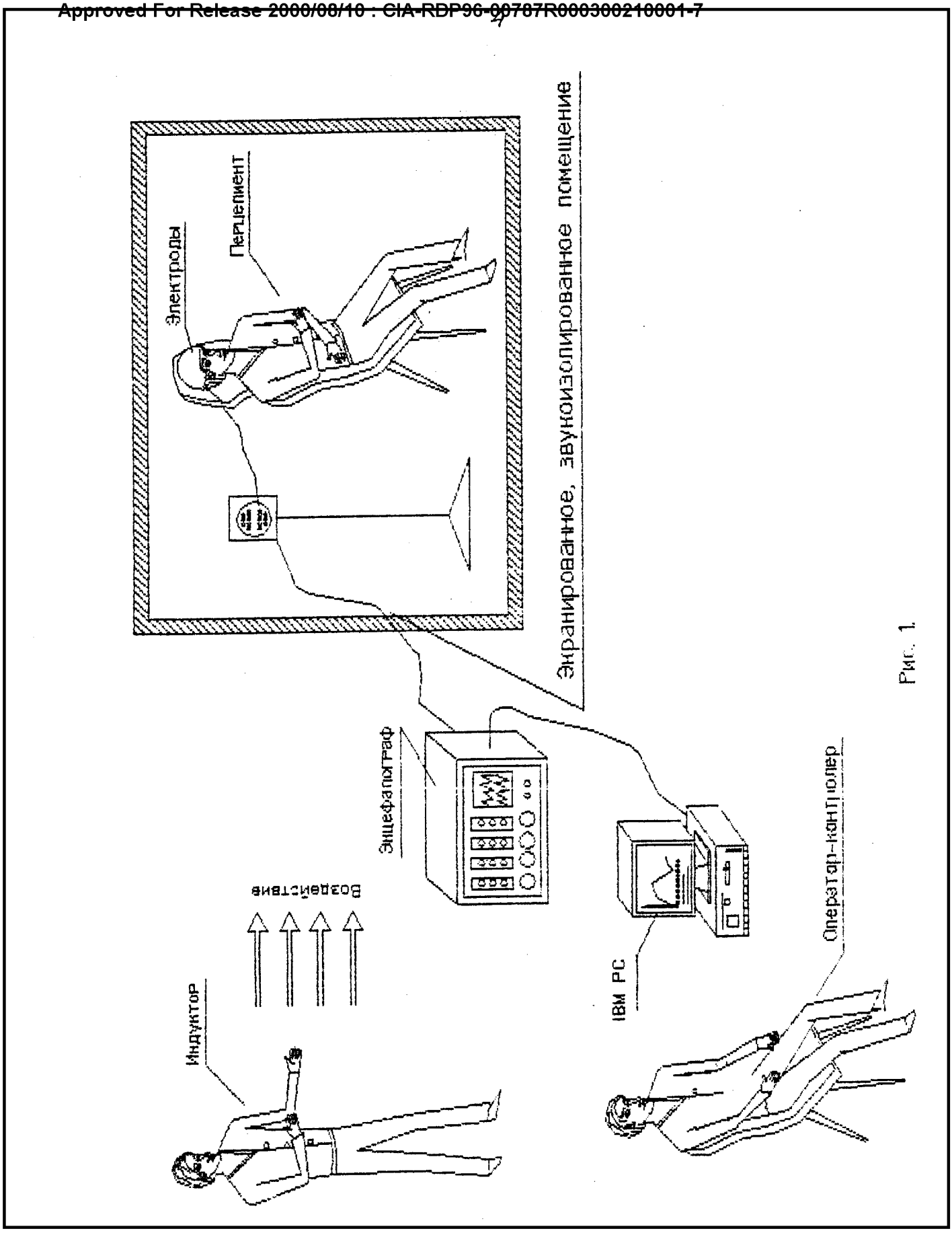

Рис. 1.

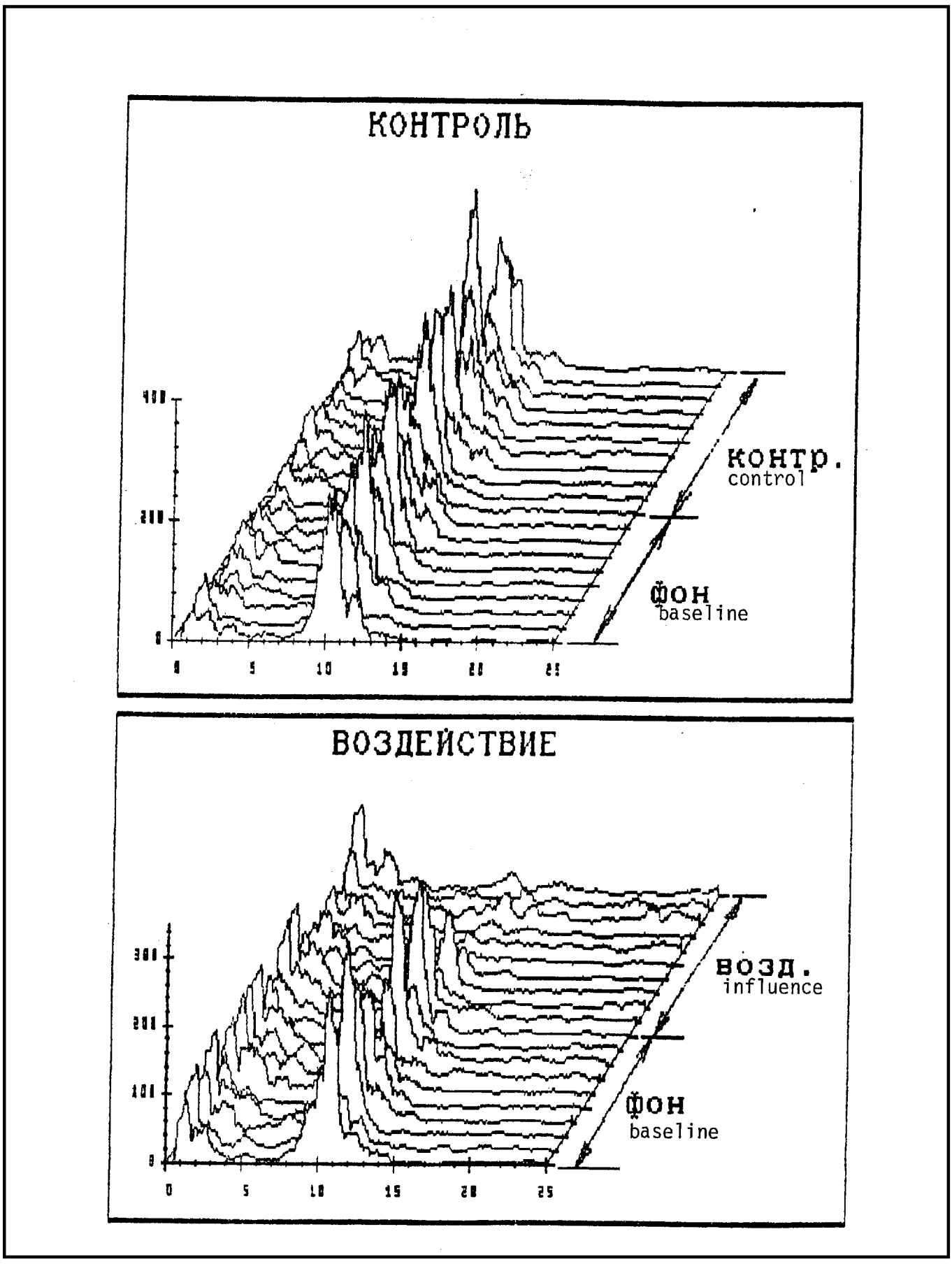

Рис. 3.

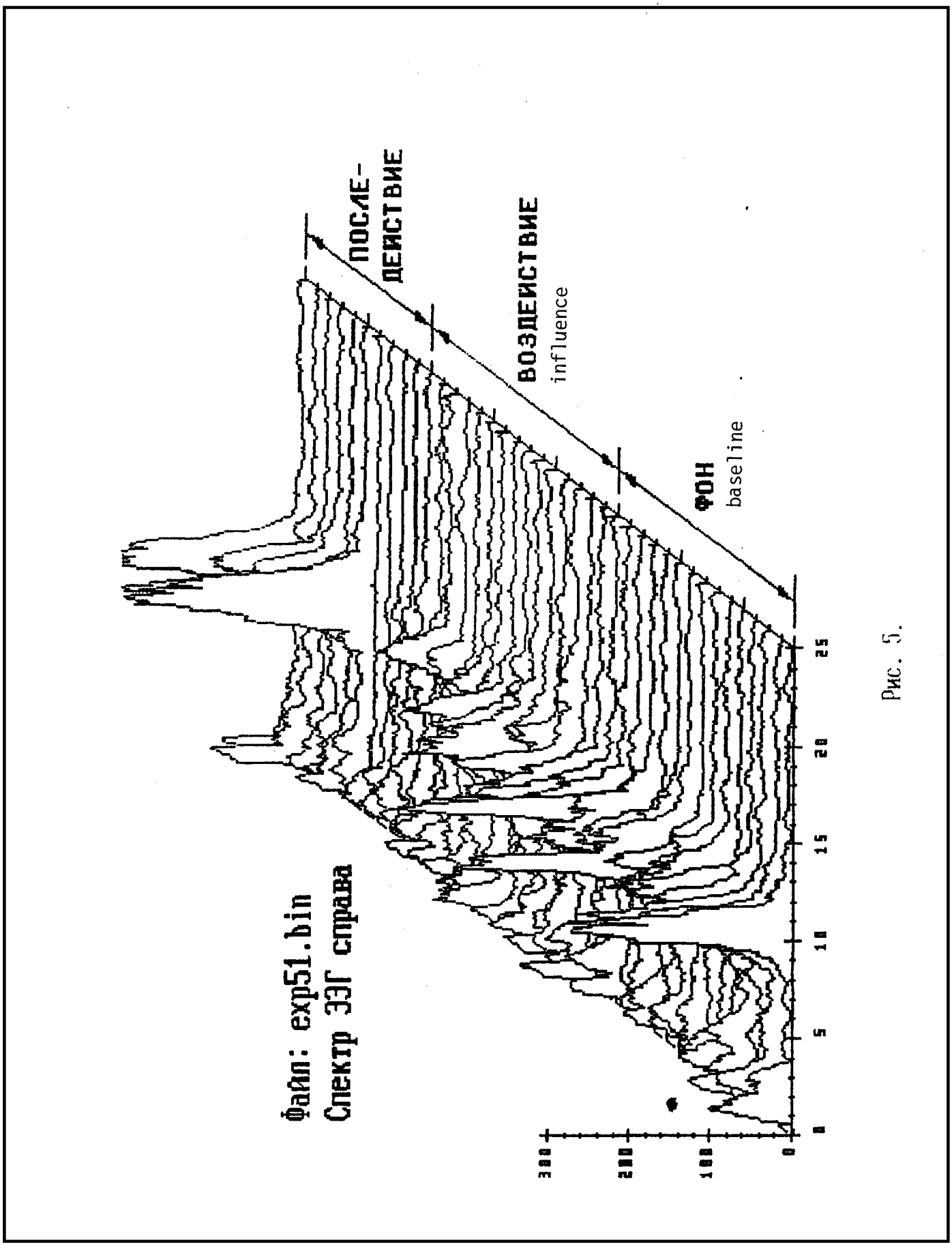

Рис. 5.

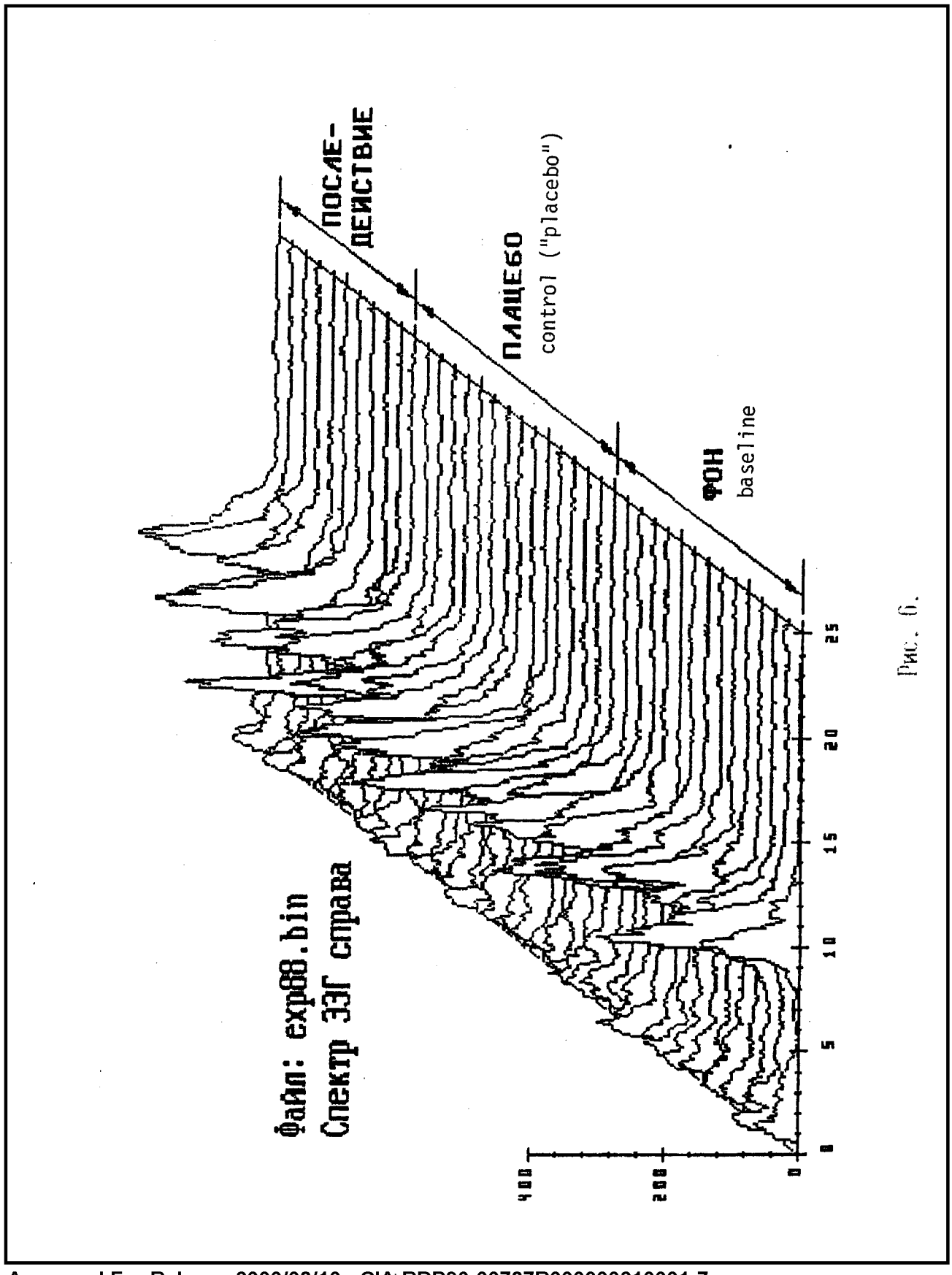

Рис. 6.

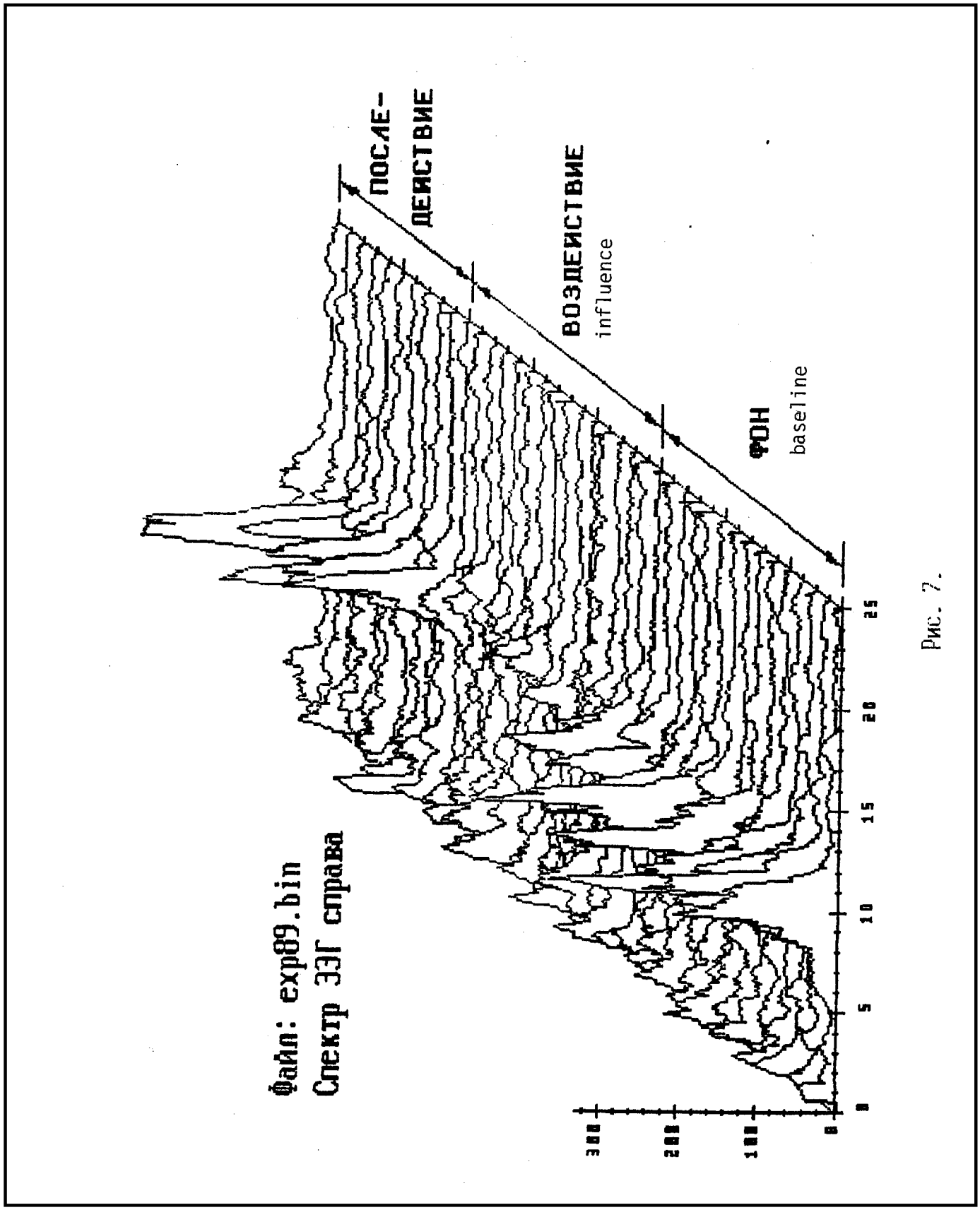

Рис. 7.

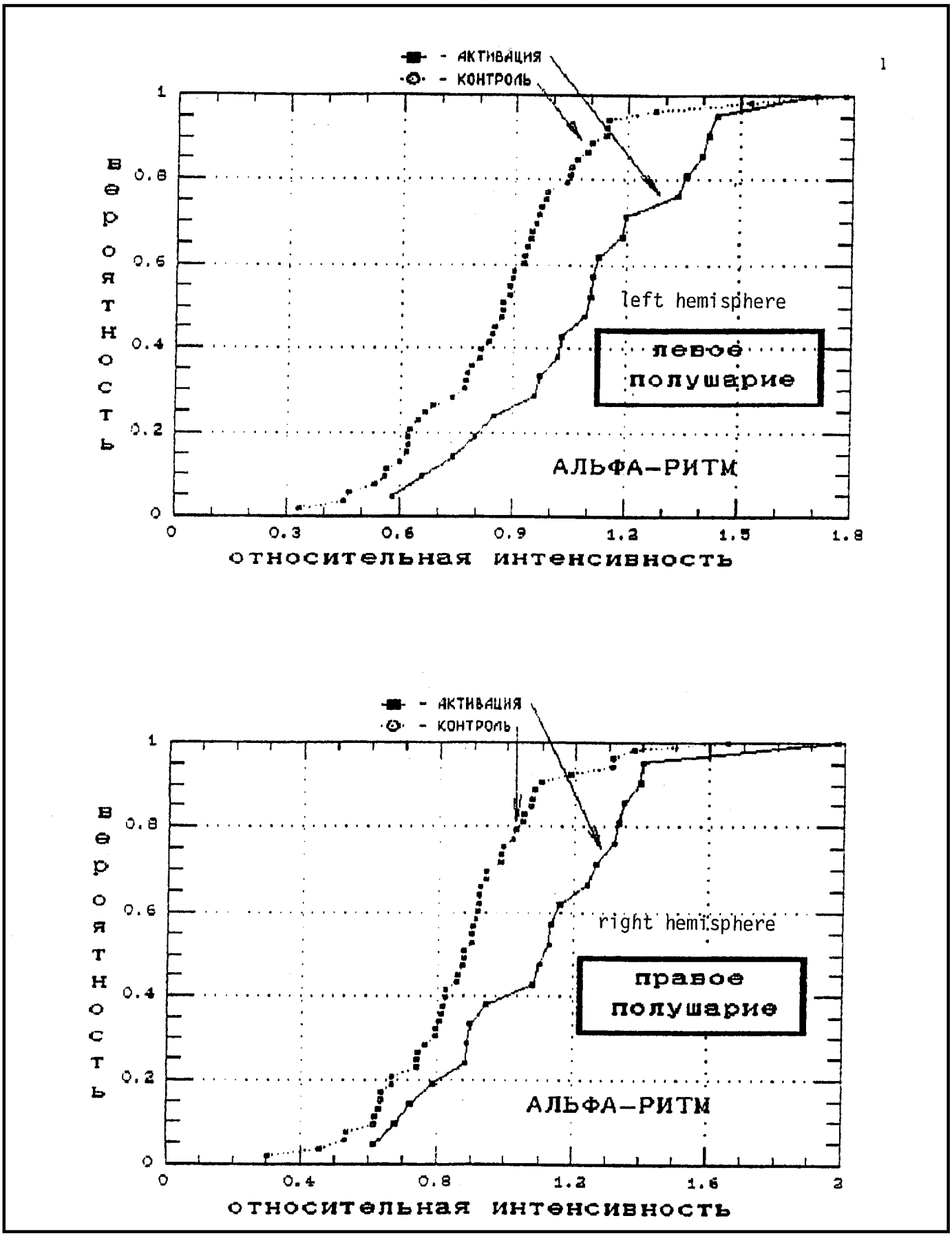

Рис. 8.

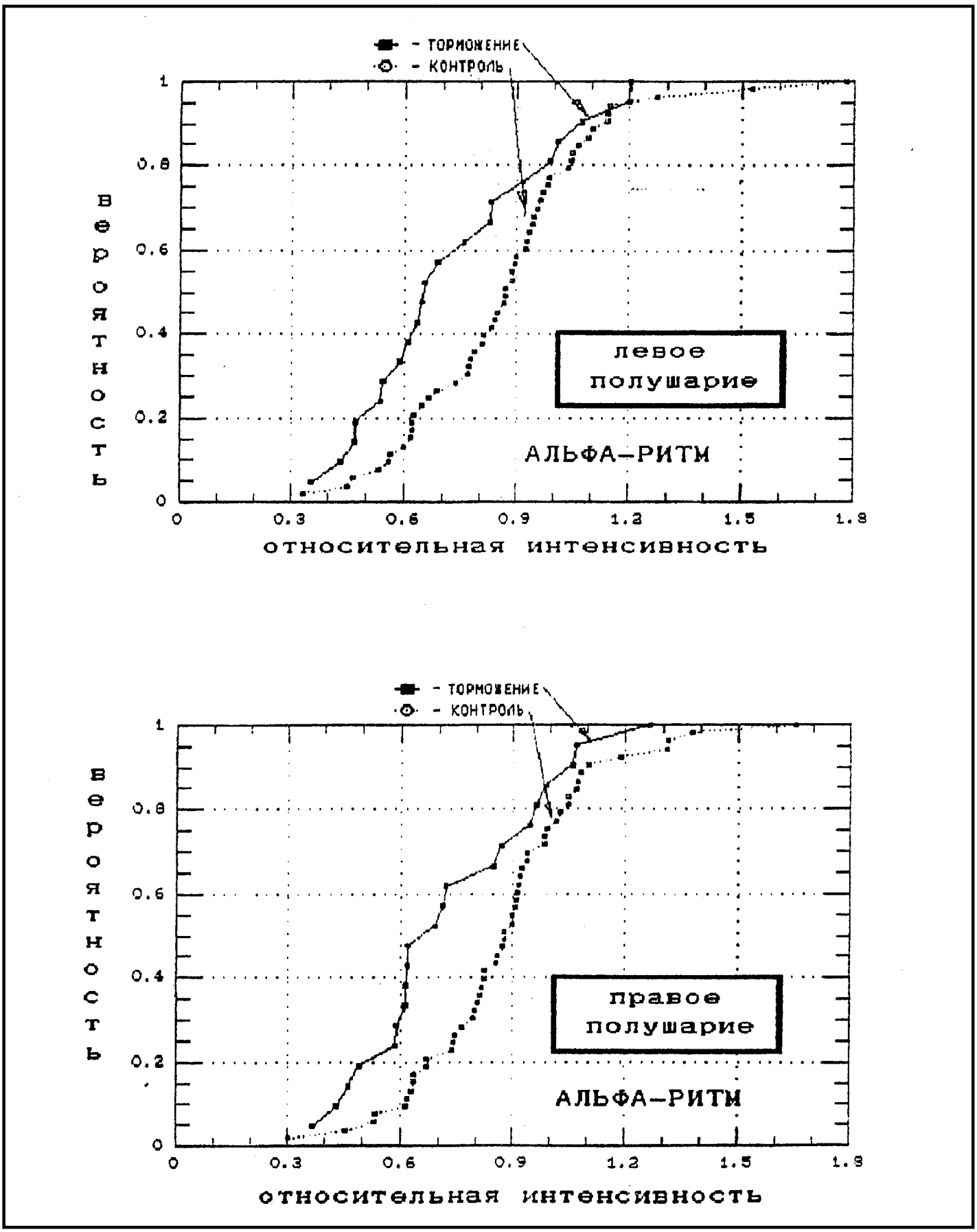

Рис. 3.

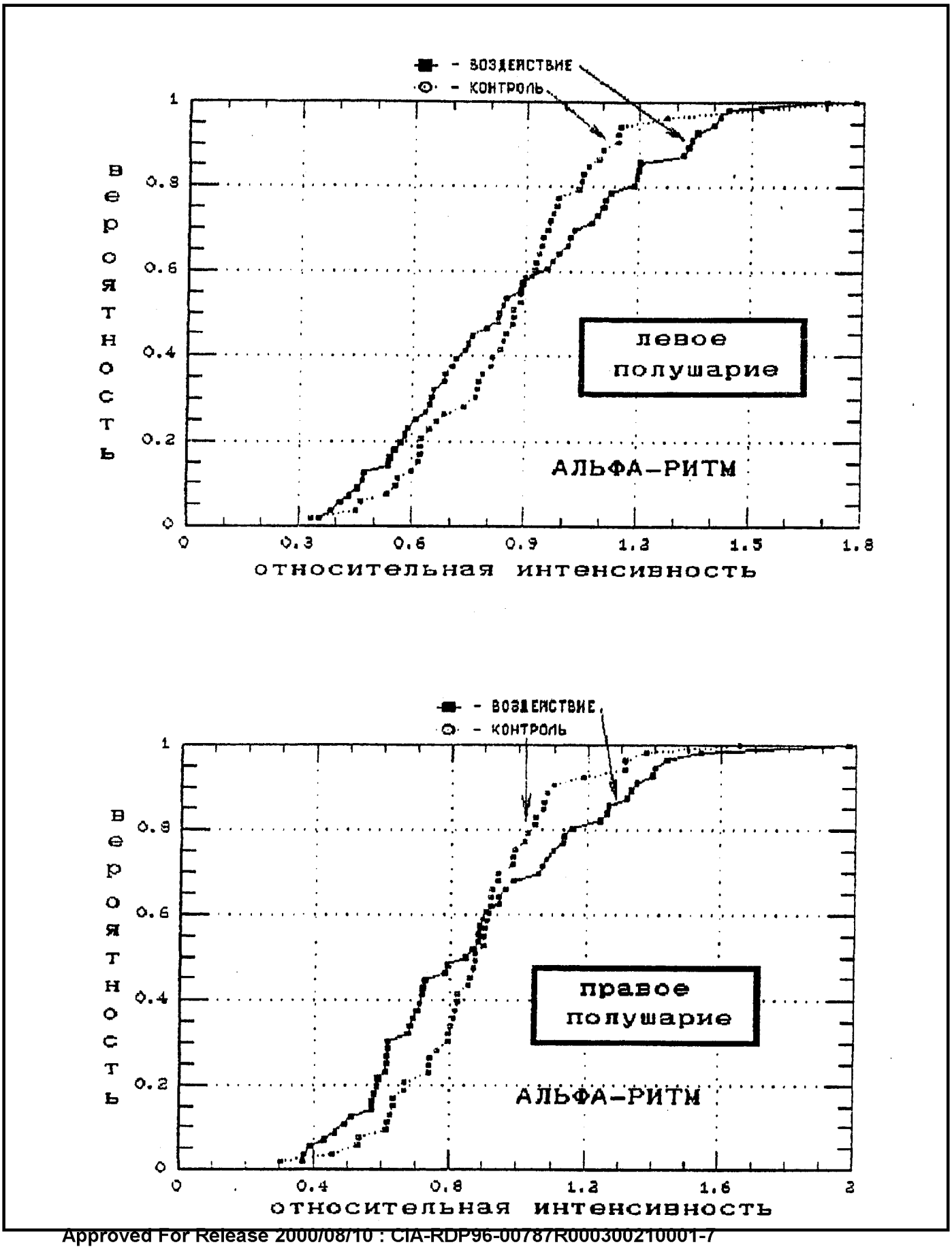

Рис. 10.