Polygraph evolution in Russian Federation

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Medvedev Andrey

www.elsys.ru 2012
Polygraph evolution in Russian Federation

PRIVATE

Jurisprudence

Asset 64 Labour Code (workers’ qualities)
Assets 85–90 (privacy)
History of polygraph detector in Russia

1923-27 A.R.Luria’s experiments on phygmmograph, direct method

Firstly applied motor function method for suspected person

1975 KGB lab in USSR

Varlamov V.A
Polygraph developer
Krasnodar polygraph trend founder

Soshnikov A.P.
Polygraph developer
One of Moscow polygraph trend founders

Komissarova J.V.
Author of viewing polygraph method/. First court expertise with polygraph
# Evolution of hardware

**12.08.1995 Law “about operative-research activity” #144 FL**

### Departments which use polygraph detector

<table>
<thead>
<tr>
<th>“KRS”</th>
<th>“EPOS”</th>
<th>“Diana”</th>
<th>“Concordia”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp</td>
<td>Comp</td>
<td>Comp</td>
<td>Comp</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other</th>
<th>MVD</th>
<th>FSB</th>
<th>Narco police</th>
<th>Custom house</th>
<th>UFIN</th>
<th>Office of Public Prosecutor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500</td>
<td>1000</td>
<td>100</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

People are instructed

Really in work

- Have own syllabuses for polygraphist + “Antaeus”
- There are about 30 polygraphists in Russia
Differences of polygraphs produced in Russia

<table>
<thead>
<tr>
<th>model</th>
<th>AD</th>
<th>Extra</th>
<th>Tremor</th>
<th>Better works</th>
<th>assemblage</th>
<th>upgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diana</td>
<td>build in</td>
<td>Video+text</td>
<td>+pad</td>
<td>Direct</td>
<td>sure</td>
<td>+</td>
</tr>
<tr>
<td>Epos</td>
<td>outside</td>
<td>-</td>
<td></td>
<td>Direct</td>
<td>unsure</td>
<td>+</td>
</tr>
<tr>
<td>Concordia</td>
<td>out</td>
<td>Video+text +voice</td>
<td>+pad</td>
<td>Direct</td>
<td>unsure</td>
<td>+</td>
</tr>
<tr>
<td>Kris</td>
<td>-</td>
<td>-</td>
<td>+pad</td>
<td>Indirect</td>
<td>unsure</td>
<td>+</td>
</tr>
</tbody>
</table>
Polygraph assisted Investigations

Investigation in operative units:
- clearance of crime
- administrative review.

Investigation on different enterprises

- Criminal investigation
- Civil investigation
- Administrative investigation
Using of instrumental lie-detection as an acceptable proof for court
**Operation of Vibraimage + polygraph**

Current task for this equipment

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Increase of validity for every single test</td>
</tr>
<tr>
<td>2.</td>
<td>Increase of validity with different tests results</td>
</tr>
<tr>
<td>3.</td>
<td>Elimination of PDD examiner’s errors</td>
</tr>
<tr>
<td>4.</td>
<td>Elimination of examinee’s resistance</td>
</tr>
</tbody>
</table>
# Pretest interview

## Basic steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tuning with verbal and non-verbal signs</td>
</tr>
<tr>
<td>2</td>
<td>Asking of examinee to state his own version of happen. Ask some question for better Vibraimage’s operation.</td>
</tr>
<tr>
<td>3</td>
<td>Voice questionnaire (dialogue) so that examinee mostly expressed his emotions.</td>
</tr>
<tr>
<td>4</td>
<td>Adjust questionnaire if necessary</td>
</tr>
</tbody>
</table>

## Interferences

<table>
<thead>
<tr>
<th>Interference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wrong shooting</td>
</tr>
<tr>
<td>2. Noises (glasses, cream on face, slurred diction, botox)</td>
</tr>
<tr>
<td>3. Sound noises (phone, pager, other sound equipment)</td>
</tr>
<tr>
<td>4. Indisposition (lack of sleep, different problems which subject is thinking of)</td>
</tr>
</tbody>
</table>
### Complicated cases

Person is not emotional

<table>
<thead>
<tr>
<th>N</th>
<th>Feature</th>
<th>The tested version</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monotonic answers</td>
<td></td>
<td>1. Prof. Filonov’s stimulating questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Questions with use of Mian-xian physiognomy</td>
</tr>
<tr>
<td>2</td>
<td>Eyes are immobile</td>
<td>Testing of character accentuation on psychopathy</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Answers are short</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mimicry is poor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Maximum benefits of pretest interview

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of sensors on the test, preventing the normal dialogue and gestures.</td>
</tr>
<tr>
<td>2</td>
<td>Highest emotional stress, the absence of fatigue from the tests.</td>
</tr>
<tr>
<td>3</td>
<td>Opportunity to express their ideas in a familiar form without test distortion</td>
</tr>
<tr>
<td>4</td>
<td>Ability to understand which of the polygraph issues caused misunderstanding the question and should be adjusted.</td>
</tr>
</tbody>
</table>

The degree of individual zones tension gives a hint of readiness for testing.
Pretest interview
Operation with visual Vibraimage marks
Marks for attention at first

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The appearance of green in the aura divided with yellow and red</td>
</tr>
<tr>
<td>2</td>
<td>Asymmetry of the aura of the left and right sides.</td>
</tr>
<tr>
<td>3</td>
<td>Asymmetry of muscle tension in the face and chest.</td>
</tr>
<tr>
<td>4</td>
<td>The appearance of the tension triangle (area lip, nose, eye area)</td>
</tr>
<tr>
<td>5</td>
<td>Changing dynamics in the form (seal or extension) of the aura and its color after the question of polygraphist.</td>
</tr>
</tbody>
</table>
### Scoring procedure of questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Backster test, st. Utah</strong></td>
</tr>
<tr>
<td></td>
<td>N- (Outside issue)<em>-(Sacrifice)</em>-(C-C-C...)*-(R-R-R)</td>
</tr>
<tr>
<td>2</td>
<td><strong>D. Likken test</strong></td>
</tr>
<tr>
<td></td>
<td>Score only Preparatory</td>
</tr>
<tr>
<td>3</td>
<td><strong>Test of control and neutral questions</strong></td>
</tr>
<tr>
<td></td>
<td>(N-N-N) <em>(C)</em>-(R-R-R)</td>
</tr>
</tbody>
</table>

*Outside issue – may be not pronounced

**PDD examiner deals with questionnaire and recording “live video” with post-test analysis.**
Documents for forensic examination with polygraph

Diploma of University

Certificate of Compliance
Vibraimage - video polygraph

Steps Before PDD examination by vibraimage:
1. Select a correct position of person

Low quality – up is cut

Low quality – side is cut

Low quality – face is small

The person image must be high quality, the maximal facial size on screen is preferable and face position must be in the center of the screen. For the frame with horizontal resolution 640 pixels the person face should be not less than 200 pixels.
Vibraimage - video polygraph

Before PDD examination start by vibraimage:
  2. Stand a correct system settings

Start from LD default settings and control Video IN rate, Base processing rate, Stream errors and processor power
Vibraimage - video polygraph

Before PDD examination start by vibraimage:
3. Stand correct system audio settings

After standing Audio Threshold you need to test audio quality on the down graph of LD default menu. With the question start you need to see green vertical line and red line after some seconds of the reply.
No difference between Stat period and Base period for indicated parameter S2
**Vibraimage - video polygraph**

Vibraimage parameters rates and PDD calculations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Calc</th>
<th>Rate1</th>
<th>Rate2</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Yes</td>
<td>1.00</td>
<td>2.00</td>
<td>0.00</td>
</tr>
<tr>
<td>S2</td>
<td>Yes</td>
<td>1.00</td>
<td>2.00</td>
<td>20.00</td>
</tr>
<tr>
<td>S3</td>
<td>Yes</td>
<td>1.00</td>
<td>2.00</td>
<td>20.00</td>
</tr>
<tr>
<td>S4</td>
<td>Yes</td>
<td>1.00</td>
<td>2.00</td>
<td>20.00</td>
</tr>
<tr>
<td>S5</td>
<td>Yes</td>
<td>1.00</td>
<td>2.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Significant changes of the one level of parameter between Stat period and Base period for indicated parameter S2
Significant changes of the two levels of parameter between Stat period and Base period for indicated parameter S2
Vibraimage - video polygraph

Vibraimage PDD equation

\[ L = \frac{\sum_{1}^{n} P_c \ast K}{\sum_{1}^{m} P_i \ast K} \]

- \( P_i \) – parameter with significant changes between Base period and Stat period;
- \( P_c \) – parameter measured for lie detection;
- \( K \) – rate coefficient for measured parameter \( P_i \);
- \( n \) – number of measured parameters for lie detection;
- \( m \) – number of changed parameters during lie detection

P5 and P20 difference

P5 - equal rates (1,2) for every parameter – interview testing

P20 – individual rate for every parameter – Comparative testing (Backster, MCT)
Vibraimage - video polygraph

Auto processing of Vibraimage PDD results file recording

max result
RQ(m) -13,00 3
RQ(m) stat: -6,00 -3,00 -4,00
CQ(m) 1,00 3
CQ(m) stat: 1,00 0,00 0,00
LD(M) NDI

average result
RQ(a) 32,14 3
RQ(a) stat: 39,29 30,36 26,79
CQ(a) 33,33 3
CQ(a) stat: 39,29 26,79 33,93
LD(a) INC

integrated result
RQ(i) 187,12 3
RQ(i) stat: 189,84 171,70 199,84
CQ(i) 243,53 3
CQ(i) stat: 337,87 156,91 235,81
LD(i) NDI

global result
LD result NDI
# Vibraimage - video polygraph

## Question response recording

<table>
<thead>
<tr>
<th>Name</th>
<th>cMin</th>
<th>bMin</th>
<th>cMax</th>
<th>bMax</th>
<th>vRates</th>
<th>cRates</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1X</td>
<td>0.000321925</td>
<td>0.00028099</td>
<td>0.138081</td>
<td>0.0615276</td>
<td>1</td>
<td>-2</td>
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<tr>
<td>A1</td>
<td>0.0140144</td>
<td>0.0146971</td>
<td>0.56111</td>
<td>0.271115</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>A4X</td>
<td>0.00229991</td>
<td>0.0016103</td>
<td>0.0797878</td>
<td>0.0195772</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>A4</td>
<td>0.0695558</td>
<td>0.0648941</td>
<td>0.236523</td>
<td>0.10109</td>
<td>1</td>
<td>1</td>
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<tr>
<td>F1X</td>
<td>5.37147e-005</td>
<td>2.68573e-005</td>
<td>0.0131511</td>
<td>0.00906286</td>
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<tr>
<td>F1</td>
<td>0.00204782</td>
<td>0.00193537</td>
<td>0.03866</td>
<td>0.0303415</td>
<td>1</td>
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<tr>
<td>F2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F5X</td>
<td>0.243025</td>
<td>0.348067</td>
<td>0.450588</td>
<td>0.424852</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F5</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>F6</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>F7</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>F8</td>
<td>0.0460208</td>
<td>0.0525183</td>
<td>0.361447</td>
<td>0.302455</td>
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<td>2</td>
</tr>
<tr>
<td>F9</td>
<td>0.0338512</td>
<td>0.0431701</td>
<td>0.11822</td>
<td>0.18395</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>S1</td>
<td>-114.445</td>
<td>-60.7949</td>
<td>112.78</td>
<td>52.7444</td>
<td>2</td>
<td>1</td>
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<tr>
<td>S2</td>
<td>-5.25213</td>
<td>-6.19922</td>
<td>10.5145</td>
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<tr>
<td>S3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>-1</td>
<td>-0.293413</td>
<td>0.547922</td>
<td>0.456464</td>
<td>2</td>
<td>-2</td>
</tr>
<tr>
<td>S5</td>
<td>-0.0521262</td>
<td>-0.0909889</td>
<td>0.316215</td>
<td>0.159266</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>S6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S7</td>
<td>-60.2543</td>
<td>-46.0583</td>
<td>-36.5063</td>
<td>-32.9983</td>
<td>1</td>
<td>0</td>
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<tr>
<td>P1</td>
<td>43.6609</td>
<td>46.3716</td>
<td>48.2687</td>
<td>48.4124</td>
<td>1</td>
<td>-1</td>
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<tr>
<td>P2</td>
<td>0.333964</td>
<td>0.387631</td>
<td>1.11551</td>
<td>0.692358</td>
<td>1</td>
<td>1</td>
</tr>
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<td>P3</td>
<td></td>
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</tr>
<tr>
<td>P4</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>P5 lie</td>
<td>33.929</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>LD</td>
<td>-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

## Technical info

- **Lie detected**
- **Start time**: 31.01.2011 16:10:33
- **Video timer (start)**: 02:35
- **Stop time**: 31.01.2011 16:10:41
- **Video timer (stop)**: 02:43
- **LD time**: 31.01.2011 16:10:40
- **LD video timer**: 02:42

- **R(m)**: -3
- **R(a)**: 30.3571
- **tR(i)**: 171.696
Vibraimage - video polygraph

Audio mode testing

Audio level starts and finishes the stat period processing
Vibraimage - video polygraph

Manual mode testing

Manual regulation of starts and finishes for stat period processing
Vibraimage - video polygraph

Manual mode testing

Auto processing of comparative test or interview
Vibrimage - video polygraph

Manual comparative testing

Manual selection of base period for testing and processing
Vibraimage - video polygraph

Contact polygraph vs Vibraimage polygraph. Correlation and problems

Psychophysiological parameters
What is more informative
Vestibulo-emotional reflex + vestibular system
Or
AD. SGR, HR, BW

Normal correlation must be (90-95)%

Problems in correlation
Testing conditions for vibraimaging
Constant and universal light
Experience of personal
More statistics requested

Vibraimage advantages
• Contactless
• Interview
• Less time requests
• High accuracy and statistics

Polygraph advantages
• Long time of experience
• Stable results
VibraImage store

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Pr. Toreza, 68
Phone/fax: +7 (812) 552 67 19
minkin@elsys.ru

Using of lie-detection technology

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Ul. Kommunny, 99
Phone/fax: +7 (3533) 950133
Phone: +7 903 366 63 07
medvedev241@yandex.ru
medvedev241@mail.ru

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Thank You!

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www.psymaker.com
www.vibrabrain.com