



South Africa Chapter

**Association of Certified Fraud
Examiners**

Layered Voice Analysis (LVA)

ACFE SA Forensic Standards

Introduction: The Forensic Standard Forum

The aim of the Forensic Standard Forum under the auspices of the ACFE SA is to standardise scientific methodologies employed in the course of forensic investigations, which are carried out in conjunction with criminal or civil legislation. Such investigations include almost all disciplines and practices involved.

It is instrumental to lead the way in terms of setting standards in all the disciplines of forensics applied during any given investigation and although there are well known and international standards in most of the disciplines, some changes may be required in order to address the situation in South Africa and Africa in the context of our own environments and applicable legislation and/or legal systems and frameworks.

Forensic scientists and criminal investigators need to be guided with acceptable standards and procedures for carrying out such examinations. Although the ACFE refers to “certified fraud examiners” it recognises the fact that a strong association exists with forensic examiners and practitioners. All forensic disciplines will accordingly be included in the Forensic Standard Forum.

The ACFE SA Chapter: Background:

The need to raise the standard of fraud examination in South Africa and for a professional body which was not limited to a specific profession such as accounting or law resulted in the establishment of a local chapter with the mission to provide a community environment in which local forensic examination practitioners can associate. Local membership provides a number of benefits including a network of experienced professionals; a training framework for practitioners with "how to" guidance technical updates and ethical standards; regular discussion forums on issues relevant to the local environment; annual workshops on fraud examinations; and a video library with case studies. This chapter is a collection of individuals in South Africa from all industries and professionals, who all have a single goal mind; the reduction of white-collar crime in South Africa.

ACFE Professional Standards– www.acfesa.co.za

1. The preamble of the ACFE SA

The Association of Certified Fraud Examiners is an association of professionals committed to performing at the highest level of ethical conduct. Members of the Association pledge themselves to act with integrity and to perform their work in a professional manner.

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Members have a professional responsibility to their clients, to the public interest and each other; a responsibility that requires subordinating self-interest to the interests of those served.

These standards express basic principles of ethical behaviour to guide members in the fulfilling of their duties and obligations. By following these standards, all Certified Fraud Examiners shall be expected, and all Associate members shall strive to demonstrate their commitment to excellence in service and professional conduct.

II. Applicability of Code

The CFE Code of Professional Standards shall apply to all members and all Associate members of the Association of Certified Fraud Examiners. The use of the word “member” or “members” in this Code shall refer to Associate members as well as regular members of the Association of Certified Fraud Examiners.

III. Standards of Professional Conduct

A. Integrity and Objectivity

1. Members shall conduct themselves with integrity, knowing that public trust is founded on integrity. Members shall not sacrifice integrity to serve the client, their employer or the public interest.
2. Prior to accepting the fraud examination, members shall investigate for potential conflicts of interest. Members shall disclose any potential conflicts of interest to prospective clients who retain them or their employer.
3. Members shall maintain objectivity in discharging their professional responsibilities within the scope of the engagement.
4. Members shall not commit discreditable acts and shall always conduct themselves in the best interests of the reputation of the profession.
5. Members shall not knowingly make a false statement when testifying in a court of law or other dispute resolution forum. Members shall comply with lawful orders of the courts or other dispute resolution bodies. Members shall not commit criminal acts or knowingly induce others to do so.

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B. Professional Competence

1. Members shall be competent and shall not accept assignments where this competence is lacking. In some circumstances, it may be possible to meet the requirement for professional competence by use of consultation or referral.
2. Members shall maintain the minimum program of continuing professional education required by the Association of Certified Fraud Examiners. A commitment to professionalism combining education and experience shall continue throughout the member's professional career. Members shall continually strive to increase the competence and effectiveness of their professional services.

C. Due Professional Care

1. Members shall exercise due professional care in the performance of their services. Due professional care requires diligence, critical analysis and professional scepticism in discharging professional responsibilities.
2. Conclusions shall be supported with evidence that is relevant, competent and sufficient.
3. Members' professional services shall be adequately planned. Planning controls the performance of a fraud examination from inception through completion and involves developing strategies and objectives for performing the services.
4. Work performed by assistants on a fraud examination shall be adequately supervised. The extent of supervision required varies depending on the complexities of the work and the qualifications of the assistants.

D. Understanding with Client or Employer

1. At the beginning of a fraud examination, members shall reach an understanding with those retaining them (client or employer) about the scope and limitations of the fraud examination and the responsibilities of all parties involved.
2. Whenever the scope or limitations of a fraud examination or the responsibilities of the parties change significantly, a new understanding shall be reached with the client or employer.

E. Communication with Client or Employer

1. Members shall communicate to those who retained them (client or employer) significant findings made during the normal course of the fraud examination.

F. Confidentiality

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1. Members shall not disclose confidential or privileged information obtained during the course of the fraud examination without the express permission of proper authority or order of a court. This requirement does not preclude professional practice or investigative body reviews as long as the reviewing organization agrees to abide by the confidentiality restrictions.

IV. Standards of Examination

A. Fraud Examinations

1. Fraud examinations shall be conducted in a legal, professional and thorough manner. The fraud examiner's objective shall be to obtain evidence and information that is complete, reliable and relevant.
2. Members shall establish predication and scope priorities at the outset of a fraud examination and continuously re-evaluate them as the examination proceeds. Members shall strive for efficiency in their examination.
3. Members shall be alert to the possibility of conjecture, unsubstantiated opinion and bias of witnesses and others. Members shall consider both exculpatory and inculpatory evidence.

B. Evidence

1. Members shall endeavour to establish effective control and management procedures for documents. Members shall be cognizant of the chain of custody including origin, possession and disposition of relevant evidence and material. Members shall strive to preserve the integrity of relevant evidence and material.
2. Members' work product may vary with the circumstances of each fraud examination. The extent of documentation shall be subject to the needs and objectives of the client or employer.

v. Standards of Reporting

A. General

1. Members' reports may be oral or written, including fact witness and/or expert witness testimony, and may take many different forms. There is no single structure or format that is prescribed for a member's report; however, the report should not be misleading.

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B. Report Content

1. Members' reports shall contain only information based on data that are sufficient and relevant to support the facts, conclusions, opinions and/or recommendations related to the fraud examination. The report shall be confined to subject matter, principles and methodologies within the member's area of knowledge, skill, experience, training or education.
2. No opinion shall be expressed regarding the legal guilt or innocence of any person or party.

ACFE CODE OF ETHICS

All Certified Fraud Examiners must meet the rigorous criteria for admission to the Association of Certified Fraud Examiners. Thereafter, they must exemplify the highest moral and ethical standards and must agree to abide by the bylaws of the ACFE and the Certified Fraud Examiner Code of Professional Ethics.

- An ACFE Member shall, at all times, demonstrate a commitment to professionalism and diligence in the performance of his or her duties.
- An ACFE Member shall not engage in any illegal or unethical conduct or any activity which would constitute a conflict of interest.
- An ACFE Member shall, always, exhibit the highest level of integrity in the performance of all professional assignments and will accept only assignments for which there is a reasonable expectation that the assignment will be completed with professional competence.
- An ACFE Member will comply with lawful orders of the courts and will testify to matters truthfully and without bias or prejudice.
- An ACFE Member, in conducting examinations, will obtain evidence or other documentation to establish a reasonable basis for any opinion rendered. No opinion shall be expressed regarding the guilt or innocence of any person or party.
- An ACFE Member shall not reveal any confidential information obtained during a professional engagement without proper authorization.

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- An ACFE Member will reveal all material matters discovered during an examination which, if omitted, could cause a distortion of the facts.
- An ACFE Member shall continually strive to increase the competence and effectiveness of professional services performed under his or her direction.

FORENSIC FORUM

A. Introduction

- i. **Forensic Discipline** - Voice truth verification specialist
- ii. **The ACFE SA was assisted by Leon Towsen and Hannes van Rooyen to compile these standards**
- iii. **Description of the Forensic Discipline** - Layered Voice Analysis (LVA) - Nemesysco Ltd.

Purpose:

The purpose of this Forensic Discipline is to serve as an Investigative Focus Tool.

Objective:

The main objective of this Investigative Focus Tool is to optimize the process of determining the true facts pertaining to the issues under investigation by performing the analysis with integrity and objectivity, whilst utilising professional competence and due professional care to convey accurate results which can be used during investigations or business decisions. The analyst performing these analyses should handle the results with the necessary confidentiality.

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Forensic discipline/title	Layered Voice Analysis (LVA)
ACFE SA (the authors of the standard)	<p>Leon Towsen – Xtnd</p> <p>Hannes van Rooyen</p> <p>De Wet Ferreira - Chair of the ACFE SA Forensic Standard Forum</p> <p>Jaco de Jager - ACFE SA, CEO</p>
Describe the forensic discipline Application (Nationally and Internationally)	<p>LVA analyses can be performed in real-time (using a microphone or during a telephone conversation) as well as off-line on previously recorded material. The subject can be situated in a quiet space at work or home, which improve the chances of an accurate outcome. The technology enables the CFE to interview a subject by either using a well prepared standard scripted questionnaire or by allowing both parties to express themselves freely whilst testing for confidentiality and secrecy, theft from place of employment, credibility and criminal tendencies, bribery and kickbacks, fraud and deceit, drug and alcohol usage. LVA technology identifies a subject’s state-of-mind by analysing key vocal properties in the subject’s speech, various types of stress (“fight or flight” paradigm), cognitive processes and emotional reactions. It ignores what a subject is saying (i.e., the specific content) and focuses only on changes in the brain activity that are reflected in the voice. Post-testing, the outcome could be verified by the CFE by reviewing all the analysis layers presented by the test, thus eliminating many of the possible inconsistencies during a verbal face-to-face interview. Once deceptions have been identified in context to the potential fraud, it allows the CFE to focus the investigation on specific areas of interest in preparation for a final face-to-face interview.</p>

Skills:

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The analysts performing these analyses are required to have adequate communication skills to interview the persons subject to an analysis and convey their findings in a written report as well as a sound knowledge of computer skills to record and analyse the verbal responses delivered by the subject to the questions posed using the relevant technologies.

Application:

The successful application of this Investigative Focus Tool will enable the analyst and investigator to determine malicious intent, provide risk assessments, evaluate emotional and cognitive emotions as well as improve efficiency and decision-making processes.

Application of the Forensic Discipline

- i. National and International

Purpose of the Forensic Discipline

- ii. Investigative Focus Tool;
- iii. Fraud and corruption assessment and verification;
- iv. General employee veracity assessments;
- v. Pre-employment screening;
- vi. Proactive prevention strategies;
- vii. Any criminal or malicious behaviour;
- viii. General integrity screening.

Criminalistics

- i. This section describes the legislation or common law applicable to the specific Forensic Discipline.

Within the Republic of South Africa there are no regulatory laws forbidding the application of truth verification technology (TVT) however it has been stated in case law that the results of such technologies are merely one evidentiary fact and cannot prove guilt. The results of TVT could be considered with other supporting evidence at the Commission for Conciliation, Mediation and Arbitration (CCMA).

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- ii. Therefore, the legislation and regulations applicable to this Forensic Discipline can be found in *inter alia*:
- iii. The Constitution of South Africa, Act 108 of 1996 with specific reference to:
 - a. Chapter 2 Section 10 – Human Dignity;
 - b. Chapter 2 Section 12 – Freedom and security of the person;
 - c. Chapter 2 Section 14 – Privacy;
 - d. Chapter 2 Section 30 – Language and culture;
 - e. Chapter 2 Section 32 – Access to information;
 - f. Chapter 2 Section 35 – Arrested, detained and accused persons
 - g. Chapter 2 Section 36 – Limitation of rights.
- ii. The Criminal Procedures Act, Act 51 of 1977:
 - a. All relevant aspects and section relating to the regulation of the administration of the Criminal Justice System in the Republic of South Africa.
- iii. The Labour Relations Act, Act 66 of 1995.
- iv. Prevention and Combatting of Corrupt Activities Act, Act 12 of 2004.
- v. Prevention of Organised Crime Act, Act 121 of 1998.
- vi. Human Right Commission Act, Act 54 of 1996.
- vii. Regulation of Interception of Communication and Provision of Communication-related Information Act, Act 70 of 2002.
- viii. The King Code of Governance Principles and the King Report on Governance (King IV).
- ix. Protection of Personal Information Act, No 4 of 2013.
- x. Promotion of Access to Information Act, No 2 of 2000

Ethics in Administration

- i. This section will indicate existing national and international ethics for the Forensic Discipline if not aligned with the ACFE Code of Ethics and Professional Standards above.

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- ii. It is mandatory that every analyst abide by the ACFE's Code of Ethics and in addition apply the following principles:
- iii. All persons subjected to an analysis are to be treated in a humane and dignified manner because every person subjected to assessment has experienced a traumatic event and/or is under stress.
- iv. All persons subject to an analysis must be properly briefed and enlightened regarding the processes and the limitations of the technology utilized during the assessment, prior to the commencement of the assessment.
- v. Every person subjected to an analysis has the right to refuse to undergo assessment and may not be deprived of this right.
- vi. Every analyst must ensure that the results obtained from the analysis are accurate and precise.
- vii. All analysts/examiners, where possible, seek assistance from equally qualified colleagues to verify their findings and ensure accurate and precise results.
- viii. It is imperative that all analysts remain impartial and perform the analysis of the assessment with integrity and objectivity to ensure precise and accurate.
- ix. Every analyst/examiner must convey these accurate findings in writing to the client or other authorised persons and be available to discuss these findings with the client or authorised persons.
- x. Every analyst/examiner must ensure that the assessment is finalised within a reasonable time frame whilst still ensuring that the findings are accurate and precise and render service with professional competency after taking into consideration the personal limitations of the analyst/examiner.
- xi. The Forensic Discipline must be used to provide quality work with precise and accurate results instead of rushed and possible erroneous results to ensure a high quantity of assessments finalised.
- xii. Every analyst/examiner must ensure the confidentiality of all findings and only disclose their findings to individuals with the appropriate authorisation.
- xiii. Every analyst/examiner must have policies, procedures and processes in place to ensure that confidential information is safeguarded and prevent confidential

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- information contained in reports, recordings and other working documents from becoming known to persons without the appropriate authorisation.
- xiv. Analysts/examiners are obligated to inform the client of any relevant information that came to the attention of the analyst during the assessment which information may have a negative effect on the business of the client.
 - xv. All analyst/examiner should perform the assessments and analysis in accordance with the relevant legislation as set out above to promote and uphold the public confidence in the application of this Forensic Discipline.
 - xvi. Every analyst/examiner must be prepared to testify regarding their findings in any disciplinary, criminal or civil judicial proceedings.
 - xvii. The application of this Forensic Discipline is not to be used as an “intimidation technique” and thus the analyst/examiner and employer must refrain from using the discipline as such.
 - xviii. Timeous submission of written reports.
 - xix. Adherence and Compliance with discipline Licence Agreements.
 - xx. The utilisation of advanced/upgraded Computer Software.
 - xxi. Compliance with Business ethics and all appropriate legislation.
 - xxii. Ensure that analysts are adequately trained and be in possession of a competency certificate. Certification by the licensee and or his/her appointed RSA representative with a proven track record of honesty and professionalism.

Examiner Education and Training

The minimum qualification, experience, compliance requirements and operational requirements for the Forensic Discipline at entry level:

- i. Grade 12.
- ii. Minimum of 6 months on-the-job supervised training in a field related to the Forensic Discipline;
- iii. Certified and trained by Nemesysco Service Centre Africa at level 1. (All other technology must please add to this part.

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LVA 6.50 training

The LVA 6.50 training comprises of:

- i. An intensive, 5-day basic course during which the basis for LVA operatorship is presented;
- ii. During the training, the analyst will be systematically trained in the underlying principles of veracity assessment, in the related skills thereof and will obtain the necessary proficiency in the Layered Voice Analysis technology specifically;
- iii. During this course, the analyst/examiner is educated with regards to Psychophysiology, the history of veracity assessment and an overview of the technologies and techniques available, investigative tools, interviewing and interrogation techniques, the concepts of Proof of Evidence, witnessing in the Court of Law and the ethical code of conduct to follow when using any LVA system;
- iv. Substantial time is spent on practical exercises with the LVA system in On-line and Off-line modes;
- v. During the course, three qualifying tests are completed consisting of a theoretic exam, a technical exam regarding all the technical element of the technology and a final practical exam where the analyst/examiner's proficiency is examined. Proven record of reliability, integrity, objectivity and professionalism.

The minimum experience, compliance requirements and operational requirements for selection to qualify in the Forensic Discipline at an advanced level:

- i. Grade 12;
- ii. Basic computer literacy;
- iii. Ability to compile reports;
- iv. Well-developed and strong analytical skills;
- v. Must have successfully completed 250 LVA tests and analysis after passing certification at level 2;

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- vi. Must have a working knowledge of other Psychophysiology based deception detention technology;
- vii. Certified by Nemesysco Service Centre Africa expert evaluation panel;
- viii. Sound knowledge of and experience with Civil and Criminal Procedure Legislation;
- ix. Adequate experience in the procedures of presenting evidence and findings in judicial proceedings;
- x. Sound knowledge of different interviewing techniques, crime investigation techniques and the psycho physiological stress indicators of the human body;
- xi. Successful completion of the CFE Examination.

Advanced training criteria

It remains the discretion of Nemesysco Ltd and that of its service centres, to identify certain candidates after an initial consultation with the employer, for any further tuition and extra qualification.

- i. Nemesysco Ltd does offer on request a summarised training session for qualified operators at no additional cost. After completion of Level 1 an analyst/examiner has the basis to solve already solved problems. In practice, one often finds scenarios that are not black and white – hence it is required that people work for at least 100 hours on the system and gather experience and learn to ask the right questions. We then discuss the LVA, taking all the questions into consideration and discuss how to work around possible complications. This should give them the tools to deal with the most problematic scenarios they may encounter.
- ii. Level 2 “interrogation mode” / the D4 version of LVA650 – is where they will receive an advanced operator certificate on completion.
- iii. Students are required to read two books from a list provided and then must write a synopsis on the books, where after the findings are discussed with the student.
 - a. The students are also required to research and study the following topics which will also be discussed during their evaluation:
 - b. Definitional elements of a crime
 - c. Basic knowledge of Criminal Procedure

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- d. Sensations - emotions and perceptions
- e. The major culture in the student's region about inter-culture wrong-doings and adequate knowledge of the constitution of his/her country of operation
- f. Finally, the candidate's ability to give a professional presentation of the psychophysiology and the workings, including the shortfalls of veracity assessment in general, will also be observed and evaluated.

Quality Control

- a) Interaction with trained specialists capable of verifying analysis findings and results.
- b) Various questionnaire protocols are available to the analyst enabling him/her to conduct a variety of assessment interviews and compare results.
- c) Periodic audits on assessments done by the approved licence holder of the technology to ensure that a high standard of accurate and precise results is obtained and that the correct procedure is followed.

Glossary of Terminology applicable

- a) Control Question: A carefully posed question which induces a measurable reaction which can be used as a baseline stress level.
- b) DI: Deception Indicated. Term describing test results, which indicate to the analyst/examiner that the subject is being untruthful.
- c) Homeostasis: This is the normal, conscious state of mind and body in which no direct jeopardy is present, and in which there is not complete relaxation and not excessive excitation.
- d) IC: Irrelevant Control question designed to be irrelevant to the issues for which the test is being conducted.
- e) Questionnaire Protocols: Description of questionnaire document and sequences in which questions are to be put, where applicable.
- f) Subject or Examinee: Individual undergoing veracity assessment.
- g) LVA: Layered Voice Analysis. Uses pitch and tone of voice.

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- h) The Online Mode: The Online Mode is used when an analysis is required during a real-time conversation. This real-time analysis enables the interviewer to focus on certain suspected aspects and ask additional questions. The Online Mode will be best used during face-to-face or telephonic interviews because the analysis can be performed while the conversation is being held.
- i) The Offline Mode: The Offline Mode enables the analyst to conduct an in-depth analysis of pre-recorded audio. The Offline Mode will be best used when a conversation with a suspect is recorded on a voice recorder and later analysed when the Offline Mode can exclude any noise and irrelevant sections and only analyse the relevant sections.
- j) Calibration: The calibration process involves that the interviewed subject answers five emotionally acceptable questions to establish an emotional baseline where the interviewed subject is assumed to be present. The calibration process also considers the background noise level, so it can be ignored when the system is working in the analysis phase. The calibration process is used in both the Online and Offline Mode. The samples that are the best suitable for calibration is the subject's name, date of birth, address or cell phone number.
- k) Truth: When the system indicated a textual message stating "Truth" it means that there was no deception indicated on the segment that was just analysed. The system was therefore unable to detect any special emotional findings pertaining to that specific voice segment.
- l) HIGH SOS: This textual message indicated that the system identified a "Say or Stop" situation. In these situations, the subject is knowingly not revealing all the information relevant to the question that was asked or regrets providing the information he or she just divulged.
- m) Inaccuracy: Lie indication at medium levels were detected. This is not deception stemmed from deceptive intention, but the details are not accurate, so you can interrogate deeper or continue as you wish.
- n) False Statement: The system detected an extreme mixture of emotions and suspects the veracity of the last statement.
- o) Probable False: High probability for deception in the last segment analysed.

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- p) Suspected: Segments for which the analysis was “Medium” or “Medium-High Risk”.

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