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Training Course in ISO/IEC 17025:2005

Final Report

Prepared for UNIDO Project B.E.S.T.F. - EE/MOZ/08/001

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1. Training Programme

Training programme was developed to:

- Enable participants to understand the specific criteria and requirements for testing laboratories and calibration laboratories, in order to ultimately enable laboratories to seek accreditation to ISO 17025:2005 for various testing and calibration fields of activity.
- Enable participants to contact with different aspects and methods associated with the implementation of a management system designed for accreditation, according to ISO IEC 17025 standard.

In order to achieve this, the training course was planned and delivered in modules that allow participants to:

- Understand the requirements for a competent and compliant test/ calibration laboratory;
- Have access examples of documentation required for demonstrating compliance systems and gain knowledge to start compiling such documents;
- Gain the understanding of documentation required for implementing a sound laboratory system for quality, calibration and testing perspectives

2. Training objectives

By the end of the training, participants will have:

- Explored the entire accreditation process to ISO 17025:2005, appreciating the significance of introducing Quality Standards in a testing and calibration laboratory setting and how the key elements of these add value to the integral purpose of the laboratories' business;
- Debated and agreed actions on the management implications of sustainable, accredited laboratories;
- Considered and discussed key technical issues and methodologies required for accreditation;
- Conducted a simulated audit of one fictitious laboratory for required technical and managerial requirements;
- Developed action plans towards obtaining the appropriate documentation, management and compliance procedures and methodologies for accreditation to ISO 17025:2005

3. Program and Timetable

According to TOR and as requested by beneficiary the programme was structured into a five-day face to face training course for 20 participants, with an overall duration of 35 hours.

This same program was again repeated for a second set of 20 trainees.

The program was divided in 5 modules as follows:

1. Module 1 (1,5 days)

Introduction to the Accreditation Process, main subsystems.

Initial evaluation of ISO 17025:2005 knowledge by participants;

Detailed explanation of managerial items of Laboratories accreditation standard ISO 17025;

Procedures and registers required for managerial area of ISO 17025:2005

2. **Module 2 (1,5 days)**
Technical requirements for Accreditation of testing a and Calibration Labs;
Technical Procedures and registers required to get accreditation;
3. **Module 3 (1 day)**
Practical case:. Perform a simulated audit to a fictitious Laboratory;
Discussion of case studies and conclusions
4. **Module 4 (0,5 days)**
Implementation of an Accredited system – Discussion of critical points:
 - Competence and personnel qualification;
 - Test and calibration methods;
 - Equipment requirements;
 - Calibration requirements;
 - Uncertainty;
5. **Module 5 (0,5 days)**
 - Evaluation of trainees and amount of knowledge gained.
 - Evaluation of training action by participants.
 - Certificates award ceremony.

4. Dates and Place of issue

The training was carried out in Mozambique Capital, the city of Maputo. It took place at the Hotel Turismo, as per arrangements of local Cluster for Quality of UNIDO and was developed from Monday to Friday, from 08h00 to 16h00 during ten working days:.

- First training sessions (Group 1): between 24th to 28th May
- Second training sessions (Group 2): between days 31st May to 4th June.

5. Trainers

Training sessions were supervised by trainers from Interface, as previously approved by Unido.

- José Constantino Silva and
- Timóteo Caetano Ferreira

6. Participation

Daily training sessions were divided into morning and afternoon periods.

Each day attendance was monitored through a checklist that has been delivered in paper form to UNIDO.

A daily summary sheet was also provided to each trainee to identify the content of training session.

In chapter 9 of this report a summary of attendance is included, detailed by groups, trainees and days.

Each of the trainees was informed on the attendance criteria of award of certificate, i.e. minimum of 60% of attendance required.

7. Development of training

Due to the compactness of training content and taking into account that diverse participants backgrounds a initial quiz was given to all participants at the beginning in order to assess the trainees level of understanding and their main weaknesses. A paper sample of this quiz has been delivered to UNIDO in Mozambique.

Training techniques used were mainly based on:

- √ Trainers exposition of requirements;
- √ Group discussions
- √ Real-life examples of documentation and materials
- √ Case studies

For both groups training covered mainly contents outlined below per module:

Module 1 - Indicative content

- **Quality systems structure**
- Terms and definitions
- Quality System and an introduction to the Quality manual
- Model of an ISO 17025: 2005 quality management system for a testing and/or calibration laboratory
- The significance of providing reliable and valid Client-oriented services. Difference between conformity and competence.
- The impact of Quality Standards on the business of the laboratory
- Organisation of accreditation
- What does client service mean?
- Management systems in laboratories
- Personnel management and Training needs
- Developing appropriate job descriptions
- Qualifications and fitness for purpose
- Laboratory accommodation and environmental conditions
- Monitoring systems –Management review, internal audits, continuous improvement;
- Documentation systems – record control
- Purchasing systems – services and supplies
- Introduction to preventive action
- Public Relations – managing complaints and improving marketing

Module 2 - Indicative content

- Test and calibration methods
- Method variation (selection, non-standard methods, validation of methods, reliability of method)
- Dealing with uncertainty
- Control and recording of data
- Requisite equipment and quality
- Maintenance of equipment – and associated documentation
- Measurement traceability
- Reference standards and Reference Materials
- Sampling
- Handling of test and calibration items
- Assuring the quality of test and calibration results – reliability
- Reporting results –report formats, Certificates, Electronic reporting, test reports, calibration Certificates
- Opinions and Interpretations
- Working with subcontractors and guidelines for accepting their results
- Guidelines for Establishing Applications for Specific Fields
- Relation to current laboratory situations
- Identification of procedures and registers required

Module 3 - Indicative content

- Preparation of a case study to a fictitious laboratory;
- Discussion in groups of trainees of case study.
- Reporting by each group of findings and conclusions;
- Discussion between all groups of findings and conclusions;
-

Module 4 - Indicative content

- Test reports and calibration certificates examples;
- Examples of documentation, procedures, quality manual, forms....
- Final discussion of remaining doubts;
- Trainers consolidation of conclusions. Focus of conclusions on ISO 17025 requirements. Guidelines for future developments.

- *Conduct an evaluation of ISO 17025 familiarisation by participants*

Module 5 - Indicative content

- Final examination of knowledge and competences gained by trainees;
- Evaluation by trainees of training action, based on three main subjects:
 - Training program, adequacy and relevance;
 - Training action, methods and logistics;
 - Trainers performance
 -

Final evaluation test results are included in tables under chapter 9 of this report.
Data of questionnaires for training action evaluation is included in chapter 10 of this report.

8. Study materials supplied

I. By request an individual CD was given to all participants of both groups during training action.

The content of this compact disk was:

- Training action agenda;
- Initial Quiz evaluation;
- Presentations of ISO IEC 17025:2005 management and technical requirements;
- Simulated audit case study;
- Training version of a quality manual for a testing laboratory;
- Interpretation guide of ISO 17025, OGC001 from Portuguese Accreditation Institute (public document, available for download in IPAC internet page).

II. An individual printed manual, with the contents of all slides presented by trainers.

III. An email with solved evaluation test was sent at the end to all participants.

As previously indicated in this report, the criteria adopted by the trainers for the success completion in this training action are based on 2 factors

- Minimum attendance of 60% of training sessions; and
- At least 50% mark in the final evaluation test.

9. Attendance and Results

Results for attendance and tests are indicated in tables below.

GROUP 1

TRAINING ISO / IEC 17025:2005 - Project EE / MOZ / 08 / 001

Name	Manual	Mark Scale 0 - 20	Day 24		Day 25		Day 26		Day 27		Day 28		% Participation
			M	T	M	T	M	T	M	T	M	T	
Silvestre Nhanchengo	S	16,5	S	S	S	S	S	S	S		S	S	90,0%
Josefina Fernando	S	14,1	S	S	S	S	S	S	S	S	S	S	100,0%
Gracinda Macuacua	S	11,8	S	S	S	S	S	S	S	S	S	S	100,0%
Elsa Santos	S	15,3	S	S	S	S	S	S	S	S	S	S	100,0%
MariaCeleste Mourana	S	14,1	S	S	S	S	S	S	S	S	S	S	100,0%
Baltazar Nhanzilo	S	11,8	S	S	S	S	S	S	S	S	S	S	100,0%
Odete Martins Alves	S	14,1	S	S	S	S	S	S	S	S	S	S	100,0%
Luziate Guambe	S	16,5	S	S	S	S		S	S		S	S	80,0%
Iolanda Anahory	S	12,9	S	S	S	S	S	S	S	S	S	S	100,0%
Frederico Madabula	S	14,1			S	S	S	S	S	S	S	S	80,0%
Ibraimo Chabite	S	14,1	S	S	S	S	S	S	S	S	S	S	100,0%
Rossana Abdula	S	15,3	S	S	S	S	S	S	S	S	S	S	100,0%
Isac Presse	S	11,8	S	S	S	S	S	S	S	S	S	S	100,0%
Eligio Mauro	N				S		S						20,0%
Tomas Jamissene	N						S						10,0%
Paulo Vitorino	S	12,9					S	S	S	S	S	S	60,0%
Guilhermina Nhampulo	S	14,1	S		S		S		S	S	S	S	70,0%
Ana Paula Mandlaze	S	16,5	S	S	S	S	S	S	S	S	S	S	100,0%
Janete Novela	S	*			S		S		S	S	S*	S*	60,0%
Domingos Negro	S	15,3			S		S	S	S	S	S	S	70,0%
Paulina Tembane	S	14,1			S		S		S	S	S	S	60,0%
Gonçalves Amadeu	S	14,1					S	S	S	S	S	S	60,0%

* Evaluation with 2nd group.

☐ Not present during period

TRAINING ISO / IEC 17025:2005 - Project EE / MOZ / 08 / 001

GROUP 2

Name	Manual	Mark Scale 0 - 20	Day 31		Day 01		Day 02		Day 03		Day 04		% Participation
			M	T	M	T	M	T	M	T	M	T	
Moisés Sigauque	S	10,6	S	S	S	S	S	S	S	S	S	S	100,0%
Arsénio Alfredo Dimande	S	11,8	S	S	S	S	S	S	S	S	S	S	100,0%
Marcos Feliciano Branco	S	14,1	S	S	S	S	S	S	S	S	S	S	100,0%
António M. M. C. Nobre	S	20,0	S	S	S	S	S	S	S	S	S	S	100,0%
Fátima Sengo Matsimbe	S	14,1	S	S		S	S	S	S	S	S	S	90,0%
Carlos Alberto Morais	S	15,3	S	S	S	S	S	S	S	S	S	S	100,0%
Maria Isabel Chemane	S	17,6	S	S	S	S	S	S	S	S	S	S	100,0%
Sheila Karina Somá	S	17,6	S	S	S	S	S	S	S	S	S	S	100,0%
Maria Isabel Manga	S	20,0	S	S	S	S	S	S	S	S	S	S	100,0%
Carla da Conceição Menezes	S	14,1	S	S	S	S	S	S	S		S	S	90,0%
Manuel Monteiro Nunes	S	20,0	S	S	S	S	S	S	S	S	S	S	100,0%
Faustino Mário Rodrigues	S	18,8	S	S	S		S	S	S	S	S	S	90,0%
Diana Faife Gamboa	S	16,5	S	S	S	S	S	S	S	S	S	S	100,0%
Elégio de Raús Maúre	S	12,9	S	S	S	S	S	S	S	S	S	S	100,0%
Tomás Rafael Jamissene	S	14,1	S	S	S	S	S		S	S	S	S	90,0%
Castigo Jeremias Numaio	S	9,4	S								S	S	30,0%
Mário Júlio Chauque	S	18,8	S	S		S	S	S	S	S	S	S	90,0%
Luis Alberto Muhlanga	S	14,1	S	S	S	S	S	S	S	S	S	S	90,0%
Janete Argentina Novela	S	16,5	Assisted with 1st group. Evaluation test with 2 nd group										

☐ Not present during period

AVALIAÇÃO DA FORMAÇÃO
10. Results of Evaluation exercise by the trainees of the training action (Scale: 0 to 4)

At the end of each training week an individual form was given to the trainees for evaluation of training. Results are summarized in tables below.

GROUP 1

Designação da Formação: Training Course in ISO/IEC 17025:2005					
Data da Acção de Formação: 2010-05-24 a 2010-05-28					
Tratamento de dados					
PROGRAMA DO CURSO:	Notas Atribuídas				Média
	Insuf. (1)	Suf. (2)	Bom (3)	Mt. Bom (4)	
1.1 Objectivos do curso			8	11	3,6
1.2 Conteúdo do curso		1	6	12	3,6
1.2 Utilidade dos temas tratados			5	14	3,7
FUNCIONAMENTO DO CURSO:					
1.1. Motivação e participação dos		1	10	8	3,4
1.2. Trabalhos, exercícios e actividades		1	9	9	3,4
1.3. Relacionamento entre os participantes		1	11	7	3,3
1.4. Instalações	2	5	9	3	2,7
1.5. Meios Audiovisuais		3	8	8	3,3
1.6. Documentação		4	7	7	3,2
1.7. Apoio Técnico Administrativo	1	7	9	2	2,6
1.8. Duração do curso	1	1	13	2	2,9
INTERVENÇÃO DOS FORMADORES (JCS)					
1.9. Domínio dos temas			1	18	3,9
1.10. Métodos utilizados			8	11	3,6
1.11. Linguagem utilizada			3	16	3,8
1.12. Empenhamento		1	3	15	3,7
1.13. Relacionamento com os participantes			4	15	3,8
1.14. Utilização de áudio visuais			4	14	3,7
INTERVENÇÃO DOS FORMADORES (TCF)					
1.15. Domínio dos temas		1	10	8	3,4
1.16. Métodos utilizados			10	9	3,5
1.17. Linguagem utilizada			9	10	3,5
1.18. Empenhamento			11	8	3,4
1.19. Relacionamento com os participantes			8	11	3,6
1.20. Utilização de áudio visuais			9	9	3,5
SUGESTÕES E CRÍTICAS :					
Melhoria da Logística para os próximos cursos;					
Realização de uma acção sobre auditorias e formação de auditores, apoiada pela UNIDO;					
Acção de estágio prático em Laboratório Acreditado, sobre a EN ISO IEC 17025;					
Distribuição antecipada dos Handouts e manuais com mais material explicativo e menos slides;					
Melhorar documentação e logística e entregar materiais no final de cada aula					

LEGENDA: 1- Insuficiente

2- Suficiente

3- Bom

4- Muito Bom

AVALIAÇÃO DA FORMAÇÃO
GROUP 2

Designação da Formação: Training Course in ISO/IEC 17025:2005						
Data da Acção de Formação: 2010-05-24 a 2010-05-28						
Tratamento de dados						
PROGRAMA DO CURSO:	Notas Atribuídas					Média
	Insuf. (1)	Suf. (2)	Bom (3)	Mt. Bom (4)		
1.1 Objectivos do curso		1	6	12		3,6
1.2 Conteúdo do curso			9	10		3,5
1.2 Utilidade dos temas tratados		1	2	15		3,8
FUNCIONAMENTO DO CURSO:						
1.1. Motivação e participação dos formandos			12	7		3,4
1.2. Trabalhos, exercícios e actividades		4	9	6		3,1
1.3. Relacionamento entre os participantes		1	14	4		3,2
1.4. Instalações	2	4	13	0		2,6
1.5. Meios Audiovisuais	1	4	11	2		2,8
1.6. Documentação		4	8	6		3,1
1.7. Apoio Técnico Administrativo	1	7	9	1		2,6
1.8. Duração do curso	7	7	5	0		1,9
INTERVENÇÃO DOS FORMADORES (JCS)						
1.9. Domínio dos temas				19		4,0
1.10. Métodos utilizados			7	12		3,6
1.11. Linguagem utilizada			2	17		3,9
1.12. Empenhamento			2	17		3,9
1.13. Relacionamento com os participantes			2	17		3,9
1.14. Utilização de áudio visuais	1		11	6		3,2
INTERVENÇÃO DOS FORMADORES (TCF)						
1.15. Domínio dos temas		1	6	12		3,6
1.16. Métodos utilizados		1	8	10		3,5
1.17. Linguagem utilizada			5	14		3,7
1.18. Empenhamento		1	7	11		3,5
1.19. Relacionamento com os participantes			6	13		3,7
1.20. Utilização de áudio visuais			12	5		3,2
SUGESTÕES E CRÍTICAS :						
Fazer mais formação do mesmo tipo;						
Melhoria dos serviços logísticos;						
Fornecer a norma objecto de formação aos formandos;						
Proporcionar uma auditoria real a um Laboratório;						
Aumentar a duração da formação e incluir uma maior componente de prática (8 sugestões)						

LEGENDA: 1- Insuficiente 2- Suficiente 3- Bom 4- Muito Bom

The individual forms of trainee's evaluation have been delivered to UNIDO offices in Mozambique.

G1 – Photo



G2 Photo

