Brief Report to the 12th
Consultative Committee for Acoustics, Ultrasound and Vibration
Meeting on NMISA
Acoustics, Ultrasound and Vibration Section

1. STAFF COMPLIMENT

The Acoustics, Ultrasound and Vibration (AUV) Section of NMISA current staff compliment is as follows:

- Section head:
  - Dr Aletta Karsten
- Acoustics laboratory
  - Sound in air
    - Two metrologists, full time
      - Mr Riaan Nel
      - Mr Henk Potgieter
- Ultrasound laboratory
  - Ultrasound power and sound in water
    - One metrologists, full time
      - Mr Vumile Tyalimpi
- Vibration laboratory
  - Recti-linear acceleration and Shock
    - Two metrologists, full time
      - Mr Ian Veldman
      - Moses Temba
- Research activities:
  - Kibble balance
    - Two students, temporary

2. ACCREDITATION

AUV were re-assessed by the South African National Accreditation System (SANAS) in 2018. This was a re-assessment of the Section's capabilities with an international technical assessor assessing the relevant technical capabilities and aspects of the Section.

During the assessment, the Section made improvements to its scope of accreditation and relevant staff was assessed for their competencies.

3. ACOUSTICS LABORATORY

New capabilities were accredited in accordance with ISO/IEC 17025, namely IEC 61672-3: 2013, IEC 61260-3: 2016, IEC 60942: 2017, IEC 60318 (parts 1 & 3). Mr Potgieter successfully applied for technical signatory status.

The Laboratory is in the process of developing calibration capabilities to provide traceability for artificial mastoids, low frequency microphones and monitoring devices.

The Laboratory is participating in CCAUV.A-K6 and AFRIMETS.AUV.A-S2. NMISA is the pilot laboratory for AFRIMETS.AUV.A-S2.

4. VIBRATION

New capabilities were established through the acquisition of instrumentation and further development of calibration systems. These included, but are not limited to:

- Secondary shock capabilities (50 m/s^2 to 10 km/s^2).
- Improved primary low frequency (< 0,4 Hz) capabilities with the implementation of a 450 mm peak to peak air bearing vibration exciter.
- Improved primary high frequency (> 10 kHz) capabilities with the implementation a novel signal processing technique.

Current development work in vibration includes:

- Extending primary shock capabilities above 2 500 m/s^2.
- Re-designing existing primary method heterodyne software using under sampling techniques.

Other planned medium-term activities:

- Submitting revised CMCs for improved as well as new capabilities.
- AFRIMETS.AUV.V-K5, linked to CCAUV.V-K5.

4. CMCs

NMISA is currently in the process of submitting revised CMCs to reflect its new and improved capabilities reflecting the last few years investment and scientific work.