# IMPLEMENTING THE REQUIREMENTS FOR THE BIOSAFETY LEVEL III FACILITY AT THE ARC-ONDERSTEPOORT VETERINARY INSTITUTE

by

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# Background

- In 2003 – Avian influenza virus outbreak emerged in Asia & became a global crisis for animal and human health.
- WHO, FAO & OIE appealed for global collaboration & funding to control the outbreak.
- Preparedness plans - poultry surveillance, awareness creation & early detection was part of the agenda.
- Surveillance required high level contained facilities – BSL3
- FAO recommended to place a BSL3 facility at ARC-OVI because:
  - Major asset to the Southern African region as a reference and service laboratory for testing poultry samples.
  - Other labs had challenges with regard to diagnostic capacity and trained personnel.

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# Background cont.

Highly pathogenic agents needs to be handled in a high containment facility such as BSL3.

The institute's BSL3 facility was not yet commissioned to operate at the required level due to:

-Lack of the assigned personnel

-Unavailability of SOPs and manual

-Non-functional engineering controls and proper building and system integrity

-OVI has another BSL3 located inside a quarantined area and movement is restricted and mainly used for large animals

# Objectives of the project

- To prepare the OVI-BSL3 building design requirements to be functional at a level that will address the hazards anticipated from the pathogens. The BSL3 was refurbished from an old building at ARC-OVI in 2006 and required major changes to comply to specifications.

- To compile all relevant documentation required.

- To ensure workers and environmental safety when working in the BSL3 facility following an extensive training programme.

# Literature (WHO guidelines)

BSL3 facility should be assessed and certified for use before operation and thereafter on an annual basis as per regulatory requirements.

- Scope of certification based on: the **Engineering** & **Administrative** controls & **Practices** carried out in the facility.
- The model approach used for this project was the PDCA cycle:
  - Implementing the change
  - Measuring the results
  - Taking appropriate action

# Areas of concern for a BSL3

**The 3 main areas of concern are:**

**Engineering** – design, renovations, modifications, safety equipment maintenance & the effluent treatment system (ETS).

**Administrative** - Training, incident management, Biosafety & Biosecurity programmes.

**Practices** – GLP, microbiological practices, risk assessment, SOPs, staff training, competence & personal protective equipment

# Methodology Cont.

**Step 1:** Getting approval
**Step 2:** Appointment of the implementation committee — PLAN

**Step 3:** Conduct initial status survey
**Step 4:** Training and awareness
**Step 5:** BSL3 documentation - Manual — DO

**Step 6:** Internal audit — CHECK

**6.1** Action planned/taken based on the audit outcome — ACT

**Step 7:** **Certification & Registration**

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# Engineering – Building Design
# Front entrance

# Engineering – Building Design

## Back door with sample port

# Engineering – ETS tank

# Engineering – ETS

# Engineering – PPE

# Results and discussion

**Approval:**

- Obtained from the ARC- CEO
- Funding by Department of Agriculture, Forestry and Fishery (DAFF) & ARC

**BSL3 Biosafety committee consisted of:**

Research Team Manager

Quality Assurance Manager

BSL3 Facility Manager

Occupational Health and Safety Officer

BSL3 Technician

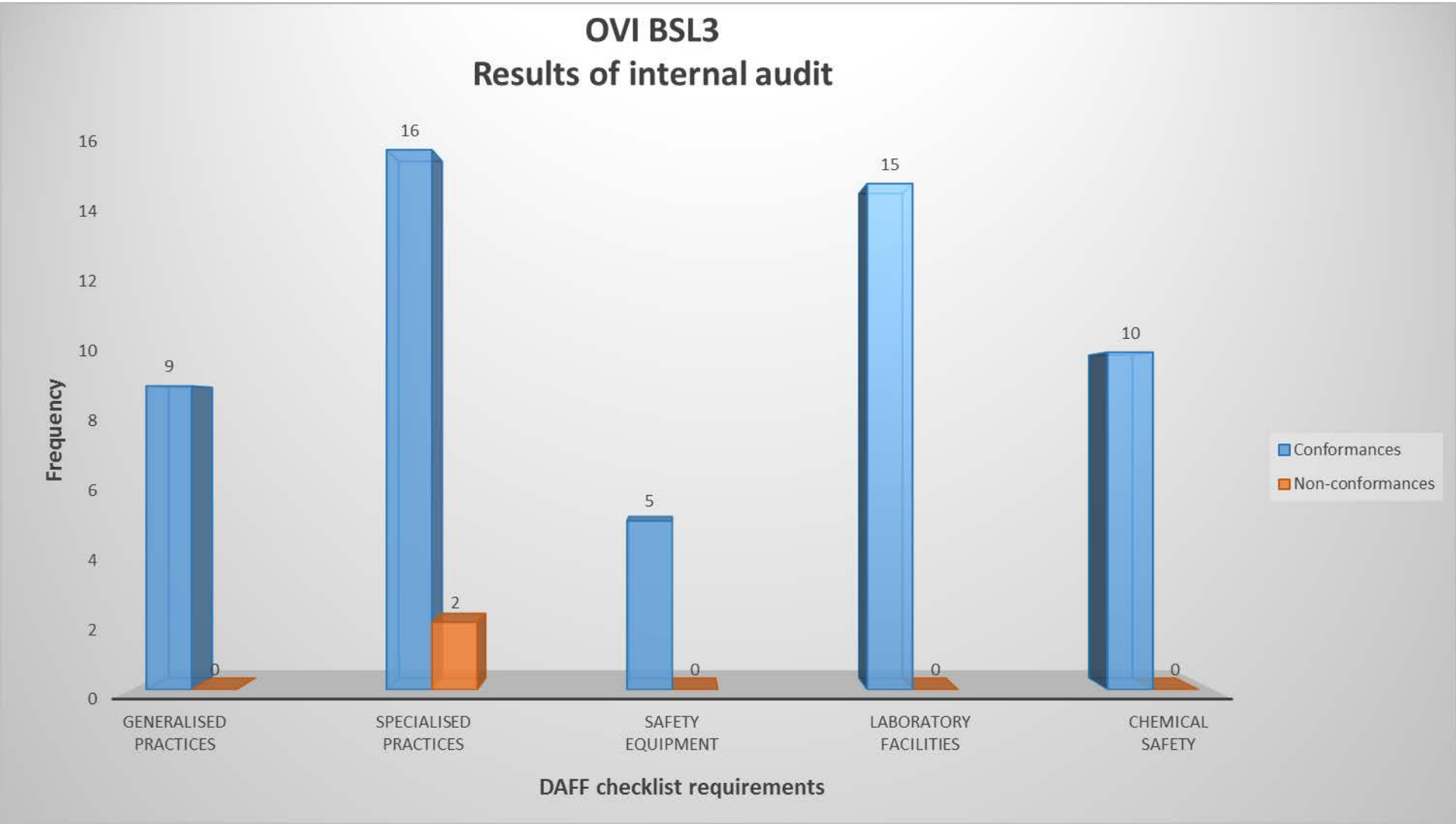
# Results and discussion

## Table 1: Summary of the gap analysis

| DAFF checklist Requirement | Total assessed in area | Number of conformances | Number of non-conformances |
|---|---|---|---|
| Generalised Practices | 9 | 6 | 3 |
| Specialised Practices | 18 | 10 | 8 |
| Safety Equipment | 5 | 4 | 1 |
| Laboratory Facilities | 15 | 11 | 5 |
| Chemical Safety | 10 | 2 | 8 |
| **Total in checklist** | **N=57 Non-conformances = 25** | | |

# Results and discussion

**Figure 1: Results of the internal audit**



# Conclusion

**Achievements:**

- The building design requirements were met within the time frame as per project plan.
- Required documentation compiled and approved – Manual/SOPs.
- Workers and environmental safety ensured – Training and competency to work in the BSL3.

Based on stated findings, it was concluded that the BSL3 is satisfactorily prepared for the Department of Agriculture (DAFF) inspection.

- Approval Received November 2015

# Challenges

- One shower only – shower in/out & emergency.
- Shower design – needs improvement.
- One trained technician.
- Not enough bench space to perform multiple tasks simultaneously.
- No internal engineer – relying on external contractors.

# THANK YOU

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