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Statement of candidature

I am Thomas Sibiya from the physics, radiation protection and nuclear engineering academic background, this is reflected in my curriculum vitae (CV) on page 2 of 6. I have been for more than eleven years employed as senior scientist in the field of radiation protection (that is, radiation protection specialist) at the South African Nuclear Energy Corporation (famously known as NECSA).

At NECSA I am responsible for providing administrative and technical advises/support to the Radiation Protection Officers (RPOs) and Nuclear Facility Managers (NFM) on matters relating to radiation protection. I have developed several documents to enhance improvement of the radiation protection system for NeCSA. The examples of my contribution are: development of radiation protection policies (organisational known as SHEQ-INS-requirement documents), radiation protection training programme, investigation of nuclear events/occurrences, serve as technical adviser in matters relating to radiation protection during emergency exercises; including enforcement of NECSA nuclear and/or radiological facilities to comply with the regulatory requirements in order to ensure protection of the workforce, members of the general public and the environment against harmful effects of ionizing radiation. This is somewhat expounded in my attached CV on page 2 – 5 of 6.

I am an active Executive Member of the Southern African Radiation Protection Association (SARPA), and as such the association endorsed my nomination to serve as Executive Council Member for 2021 – 2024. I accepted the nomination with both hands—and as such I am looking forward to the election in January 2021.

Thomas Sibiya

The South African Nuclear Energy Corporation SOC Limited (Necsa), Licensing and Safety Analysis Department

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Personal details

Age	: 41 years	Nationality	: South African
Date of Birth	: 1979-10-02	Home Language	: Zulu
ID Number	: 791002 5671 085	Marital Status	: Customary married
Gender	: Male	Health	: Good
		Driver's Licence	: Code 8 (B)

Education

Jan 2019 – present : Enrolling for an MSc in Nuclear Engineering
North-West University (Potchefstroom Campus)
(Course work completed, Jan to Dec 2013—dissertation is outstanding)

Sept 2016 – June 2017 : Certificate on Management Advancement Programme (MAP)
University of the Witwatersrand (Wits), Wits Business School

2011 – 2012 : Postgraduate Diploma in Nuclear Science and Technology
North-West University (Potchefstroom Campus)

2006 – 2010 : MSc in Physics (highest qualification)
University of the Witwatersrand (Wits), School of Physics

Title of the Project—*Radiation shielding design, verification and dose distribution calculations for industrial and insects irradiation facilities; using radiation transport computer codes, MCNPX and QAD-CGGP.*

Advisors: Mr Johann van Rooyen and Prof Tom Nam

Feb – Nov 2006 : Postgraduate Diploma in Radiation Protection modules
University of the Witwatersrand, School of Physics

1999 – 2001 : BSc in Mathematics and Physics
University of Zululand

Feb – Nov 2002 : BSc (Hons) in Physics
University of Zululand

Work experience

2009 – Present : *Senior Scientist—Radiation Protection Specialist (RPS)* at the South African Nuclear Energy Corporation (NECSA), Licensing and Safety Analysis (L&SA) department.

Responsible for providing administrative and technical advises to Radiation Protection Officers (RPOs) and Nuclear Facility Managers (NFM) on matters relating to radiation protection. This includes continuously development of radiation protection policies; investigation of nuclear occurrences; radiation protection training program; enforcement of compliance in order to ensure protection of the workforce, members of the public and the environment against ionising radiation—specifically:

- ✓ establish radiation protection (RP) policy;
- ✓ ensure NECSA's RP programme is developed, maintained and adequately implemented;
- ✓ provide technical operational RP and SHEQ advise to Radiation Protection Officers (RPO) and Nuclear Facility Managers (NFM);
- ✓ develop RP training programmes for RP personnel in collaboration with Necsa Learning Academy (NLA) department; and
- ✓ Conduct or assist in special investigations relating to RP matters and

investigation of nuclear occurrences.

The following are, but some of the work, I previous performed and continue to execute in order to improve the NECSA's RP system:

- ✓ Present serves as RP expert reviewer of Koeberg Nuclear Power Station (KNPS) Periodic Safety Review (PSR) for long-term operation.
- ✓ Served as a radiation protection subject expert at the committee developing a national occupational qualification for the radiation protection officers—this committee was chaired by EWSETA¹ and QCTO².
- ✓ manages the centralised register for radioactive sources within the jurisdiction of Necsa.
- ✓ continually acted as manager for the RPS group in L&SA department.
- ✓ presented an awareness training on overview of SHEQ-INS-system, in particular the radiation protection system, to the Necsa Nuclear Fuel Cycle (NFC) department.
- ✓ manage the competency certification process for the RPOs.
- ✓ developed a requirement document (RP policy) to include categorisation and security of radioactive sources.
- ✓ developed a quality control for the gamma spectroscopy, commonly referred as the whole body and lung counter.
- ✓ routinely perform dose calculation and analysis for the radiation workers;
- ✓ continuous train the RPOs on requirement documents, and evaluate their competence in operational RP.
- ✓ facilitated and presented training to the Radiation Protection Officers and participants for the FIFA-2010 Soccer World Cup Nuclear Security Project. The course was mainly on fundamentals of nuclear physics (health physics) and as well as the systematic strategic programs for radiological threat reduction.
- ✓ facilitated and presented training to the Radiation Protection Officers and participants for the COP 17 Climate Change Conference 2011 Nuclear Security Project.

2007 – 2008 : *Scientist at Necsa, Radiation and Reactor Theory Department.*

Responsible for dose rates evaluation within predefined positions for a new insect sterilisation facility (Citrusdal) in order to determine required adequately shield thickness of the specific material (concrete); this was performed using MCNPX and QAD-CGGP codes. The facility employed a very successful nuclear based technique (SIT—Sterile Insect Technique) by using an intense ⁶⁰Co as the source of ionising radiation for insect sterilization. In addition, radiological safety assessment using MCNPX and QAD-CGGP to verify the suitability of the shields thickness for the already existing industrial and insect irradiation facilities, HEPRO and Infruitec—Stellenbosch, also using ⁶⁰Co source of a high activity than the one used previously for irradiation. Confirmation of calculations with dose rates measurements.

2004 – 2007 : Served as a tutor and a demonstrator at the University of the Witwatersrand, School of Physics.

The aforementioned includes, tutoring first to second year engineering students and demonstration of physics experiments, assessment of their experimental work which were submitted in the form of a report. The demonstration of physics experiments was also performed for the BSc (Hons) in physics students.

Supervisors: Dr Elias Sideras-Haddad and Prof Giovanni Hearne.

2000 – 2003 : Served as a laboratory assistant and a demonstrator at University of Zululand, School of Physics. This included supervision of students while performing physics experiments; assessment of their work.

Supervisors: Prof Muzi Ndwandwe and Prof Allan Davidson.

¹ EWSETA—the Energy and Water Sector Education and Training Authority.

² QCTO—Quality Council for Trades and Occupations.

Membership of Professional Institutions

Period from	Period to	Institution
22 August 2018	Present	Serve as Executive Member for the Southern African Radiation Protection Association (SARPA)
24 May 2017	Present	Registered Professional Natural Scientist by the South African Council for Natural Scientific Professions (SACNASP)
September 2012	Present	Serve in the South African Department of Mineral Resources and Energy (SA - DMRE) nuclear sub-working group
2016	2018	Served as Radiation Protection Subject Expert in Developing the National Curriculum for Occupational RPO qualification

Technical skills

Advises on radiological protection by bringing the principles of radiation protection thinking and methods—this is carried-out through provision of radiation protection services to Necsa nuclear facilities

General skills in computing, specific expertise in:

- ✓ Radiation transport codes—Monte Carlo, MCNPX; and the point kernel integration, QAD-CGGP, for modelling the streaming of radiation, bringing the philosophy of radiation protection thinking and the methods into mainstream data analysis. The industry standard technical calculation tool, MathCAD, for quick mathematical calculations.
- ✓ Computing platforms: windows XP professional; moderate experience with scientific Linux.
- ✓ Statistical software: good experience with origin and sigma plot.
- ✓ Text formatting and office computing: EXP (scientific word processor) and Microsoft office (word, excel, power point).

Award

2001 : Best performing student certificate in physics module.

Presentations

- Oral : Competence measure for the Radiation Protection Officers at the South African Nuclear Energy Corporation, presented at the Southern African Radiation Protection Association (SARPA) annual conference, South Africa, Pretoria, Centurion-Irene, Saint George Hotel, 31 July – 02 August 2019.
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- Radiation shielding for a hypothetical fissile processing facility, presented at the Southern African Radiation Protection Association (SARPA) annual conference, South Africa, Pretoria, Centurion-Irene, Saint George Hotel, 31 July – 02 August 2019.
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- Internal colloquium presentation at Necsa (South African Nuclear Energy Corporation, Radiation and Reactor Theory Department) on radiation shielding analysis for the Citrusdal insect irradiation facility, June 2007.
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- Dose Distribution Calculations for the Stellenbosch Gamma Irradiation Facility using the Point-kernel and Monte Carlo codes, presented at the International Youth Nuclear Congress-2010 conference, South Africa, Cape Town CTICC, 12 — 18 July 2010.
- Poster : Methodology and utility code to calculate dose distributions in products undergoing irradiation in a ⁶⁰Co industrial irradiation, presented at the SAIP (South African Institute of Physics) conference, University of KwaZulu-Natal,

Radiation shielding, verification for the Citrusdal insect irradiator facility, using the QAD-CGGP shielding code, presented at the SAIP conference, University of the Witwatersrand, July 2007.

Conference proceedings : Dose Distribution Calculations for the Stellenbosch Gamma Irradiation Facility using the Point-kernel and Monte Carlo codes, a paper presented at the International Youth Nuclear Congress-2010 conference, South Africa, Cape Town CTICC, 12 — 18 July 2010.

Departmental publications

1. Title: *Guidelines for the development of a facility radiation protection programme and the compilation of a radiation protection surveillance report.*
Document number: LSA-RP2018-GLN-0002 rev 1.0.
2. Title: *Control over radioactive sources.*
Document number: SHEQ-INS-8100 rev. 12.
3. Title: *Control over radioactive sources.*
Document number: SHEQ-INS-8100 rev. 11.
4. Title: *Radiation safety training.*
Document number: SHEQ-INS-8130 rev. 05 (pending approval).
5. Title: *Control over radioactive sources.*
Document number: SHEQ-INS-8100 rev. 10.
6. Title: *Nuclear security training plan.*
Plan number: SHEQ-RP-PLN-0001.
7. Title: *Estimation of committed effective dose.*
Document number: SHEQ-2011-REP-0142.
8. Title: *Event investigation—comprehensive report for non-compliance identified during NNR inspection on 13 June 2012.*
Document number: RC-LIC1600-REP-12001.
9. Title: *Radiological survey for the University of Cape Town.*
Document number: SHEQ-RP-REP-0005.
10. Title: *Closeout report—nuclear occurrence 52.*
Document number: SHEQ-RP-REP-0006.
11. Title: *Radiation protection officer level 1 baseline test to assess mathematic competency in preparation for RPO 1 entrance exam.*
Document number: NSD-RP-EXM-0001.
12. Title: *Memo—Radiation protection officer levels 1 baseline tests to assess mathematic competency in preparation for RPO 1 entrance exam.*
Document number: NSD-RP-MEM-0001.
13. Title: *Routine operation for whole body and lung counter.*
Document number: MS-WKI-0012.
14. Title: *Checklist for routine performance checks of the whole body and lung counter.*
Document number: MS-CKL-0001.
15. Title: *Authorisation form for operating the whole body and lung counter.*
Document number: SHEQ-FRM-0002.
16. Title: *Investigation report-nuclear occurrence 52.*
Document number: SHEQ-2011-REP-0120.
17. Title: *Radiation protection officer (RPO1) training course manual module 1.*
Document number: NSD-RP-TRM-0002.

Non- work special interests

Listen to various kind of music, for example, traditional and African jazz.

References

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