

## AWARDS, HONOURS AND ACHIEVEMENTS

- Honorary Fellow of the Royal Aeronautical Society (2008)
- Three honorary degrees: a DSc (Eng) from the University of the Witwatersrand (2016), a DEng from the University of Pretoria (UP) (2012) and a DIng from the University of Johannesburg (UJ) (2011)
- A-rating from the National Research Foundation that he has held for five consecutive evaluations since 1996

## DEFINING MOMENT

Marrying his wife, Joan. She passed away in 2012, after a marriage of 54 years.

## WHAT PEOPLE MIGHT NOT KNOW

He is skilled at carpentry, wood carving and marquetry, the art of applying small pieces of veneer to form decorative pictures.

## LIFE IS A BLAST

*"The South African academic community has been honoured to embrace within its ranks one of the most illustrious and prolific scientists of his time in the field of aeronautical engineering. An Honorary Fellow of the Royal Aeronautical Society, Beric Skews has achieved what is described as 'the world's highest distinction for aerospace achievement, awarded only for the most outstanding contributions to the aerospace profession'... We acknowledge Skews, one of our own, for the immense contribution that he has made to the academy through teaching and research, but also through sharing and giving of his incredible self – his knowledge and his proficiency – for the benefit of our generation and of those to come."*

The above extract came from the citation when Skews received an honorary doctorate from the University of the Witwatersrand (Wits) in 2016. It acknowledges Skews' exceptional academic contribution, but also his longstanding working relationship of around six decades with Wits. It began in 1954, when he enrolled to study towards a BSc in mechanical engineering.

"I'm a do-it-yourself type of guy," Skews easily describes himself. Born on 25 April 1936 in eMkhondo (previously known as Piet Retief), he practically grew

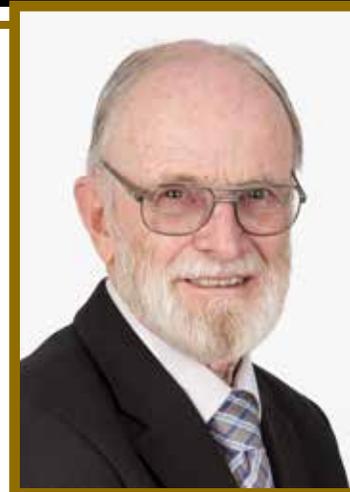
up in his accountant father's home workshop. Together they spent their free time doing woodwork and taking things apart.

Wits was a natural choice after Skews matriculated from Piet Retief High in 1953 and the institution has since become an extension of himself. He received a BSc (Eng) in 1958, an MSc (Eng) in 1961 and a PhD in 1967. He started at Wits as a junior lecturer in 1959. In the following decade, Skews helped to set up Africa's first aeronautical engineering degree programme, researching and writing the curriculum. Still the only one of its kind in South Africa, the programme feeds graduates to the local aeronautics and defence sectors. Wits has been his professional home for all but a few years when he left to work as an associate professor at McMaster University in Canada in the late 1960s, and as an Eskom Research Manager between 1979 and 1986. He was also a Visiting Professor at Tohoku University in Japan, and a Visiting Fellow at the University of New South Wales.

When he was only 36 years old, Skews was lured back from Canada in 1971 to become Wits' first Professor in aeronautical engineering. Later he would also lead its School for Mechanical Engineering, a position he held twice. In 1990, he also became Director of the University's Flow Research Programme. A special post as Director of the Flow Research Unit in the School of Mechanical, Industrial and Aeronautical Engineering set up in 2002 has allowed Skews to pursue his research well after retirement age. He remains in this position until 2020.

His working life has been a mixture of blast and shock waves, explosions, gas dynamics, supersonic flight and flow mechanics – and the understanding and visualisation of the physics behind such phenomena. To fully understand and visualise such events, he has over the years fine-tuned many high-speed photography techniques in Wits' gas dynamics laboratory. His findings have had relevance for researchers working in the field of supersonic aerodynamics, blast wave protection and attenuation, and to those investigating how metals deform when struck by underwater shock waves.

Skews' stature as a world leader in shock wave dynamics and flow research has been recognised since 1987 with an A-rating from the National Research Foundation. It is an honour that he has retained for five consecutive evaluation periods – the last being granted in 2017 for another five years.



## TRAGEDY SPARKS RESEARCH INTEREST

His interest in his subject matter started with the President Steyn gold mine tragedy of 1959. "An underground explosives store accidentally blew up, and hundreds of mine workers died," Skews remembers. Prof Stefan Smoleniec, then head of the Department of Mechanical Engineering at Wits, was asked by the mining authorities to investigate the matter, and Skews was roped in too. His findings would later serve as a basis for his PhD thesis.

He worked out that shock waves can focus and reinforce in a tunnel complex. It explained the deaths of some miners who had been standing some distance away around a corner of a shaft when the blast occurred. Today it's old hat to those in the know, but at the time his findings about curved shock waves were quite revolutionary. He would subsequently also experimentally prove the existence of a four-wave reflection pattern, initially suggested by Guderley in the 1940s and subsequently ignored. In so doing he clarified what was known as the von Neumann paradox for weak shock wave reflection.

Skews is still the only South African to have been named an Honorary Fellow of the Royal Aeronautical Society – an honour bestowed on him in 2008. Internationally it is the highest distinction that anyone working in the aerospace profession can receive. "There are currently 44 living Honorary Fellows out of a total membership of over 22 000," notes Skews. He is also an Honorary Fellow of the Shock Wave Research Society of India, the South African Association for Theoretical and Applied Mechanics, and of the South African Institute of Me-

chanical Engineers, a Member of Academy of Science of South Africa (ASSAf), the Royal Society of South Africa and the International Shock Wave Institute.

Other awards and three honorary degrees have also come his way. He has twice been the recipient of the John Weston Gold Medal, one from the Aeronautical Society of South Africa in 2018 and one from the Southern Africa Division of the Royal Aeronautical Society in 2002. In 2012, he received a Gold Medal from the Japan High-Speed Imaging Society and the Rem Soloukhin Gold Hands Silver Medal at an International Symposium on Flow Visualisation.

This founding President of the South African Institute of Aerospace Engineering is also a fellow of the Aeronautical Society of South Africa, a Division of the Royal Aeronautical Society. It recognises the many leadership positions that he has held in the country's professional aeronautics bodies, and his efforts to ensure that South Africa retained its professional links internationally during the country's tumultuous political past.

Beric Skews has sat on numerous national industry and research-related advisory and steering committees. He also served on the International Advisory Committee for High Speed Photography and Photonics and the International Advisory Committee on Flow Visualisation, and has been a member of the International Advisory Committee for Shock Waves uninterruptedly since 1991.

In his 82<sup>nd</sup> year he decided that it was time to take things slightly more slowly – and to only work half-days!



**Academy of Science of South Africa (ASSAf)**

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A. Academy of Science of South Africa (ASSAf) Publications

C. ASSAf Policymakers' Booklets

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# Legends of South African Science II

**Academy of Science of South Africa (ASSAf)**

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