

Nicholas Boutakoff and Australia's North West Shelf*

Peter Purcell¹, Mike Butcher¹, and Yolande M. J. Collins¹

Search and Discovery Article #70152 (2015)

Posted February 23, 2015

*Adapted from extended abstract prepared in conjunction with oral presentation at AAPG International Conference and Exhibition, Cartagena, Colombia, September 8-11, 2013, Datapages © 2015

¹P&R Geological Consultants, Perth Area, Australia (peterpurcell@tpgi.com.au)

Abstract

The North West Shelf (NWS) of Australia is one of the world's premier hydrocarbon provinces. The man who first recognized that potential and guided Woodside there was born Nicholai Alexandrovich Butakov in New York in 1903. His father was executed in Russia in 1917 and the family fled to France, where he completed his schooling. Boutakoff, as he became known, attended the University of Louvain in Belgium, earning a DSc in 1929. Thereafter he spent six years mapping in the mountains of Kivu in East Africa and preparing several large volumes for publication.

He joined Kern Trinidad Oilfields in Trinidad in 1937, rising to Chief Geologist in 1944. In 1948, he joined the Victorian Geological Survey in Australia, rising to Deputy Director before his resignation in 1962. In 1953, while visiting the Rough Range oil discovery in WA, Boutakoff sensed intuitively the potential of the NWS, located between the complex structures and oil seeps of Timor and the stable Australian continent, certain it would have prospective structures. Detailed contouring of Admiralty charts confirmed the presence of large seafloor structures and Boutakoff tried to obtain an exploration permit over the region, his efforts thwarted by a lack of applicable legislation.

In the late 1950s, he began consulting to a small new Australian company called Woodside, joining them as Exploration Manager in 1962. He took with him his hand-contoured maps of the NWS and used them to outline the area of application by Woodside, who were granted the permit in May 1963, and immediately farmed it out to Shell and Burmah.

Thereafter, the relationship between Boutakoff and Woodside turned bitter, in a clash over ownership of the ideas. Boutakoff maintained he had a gentleman's agreement for a bonus of one million shares if Woodside got the permit he recommended. Woodside's management insisted they had directed Boutakoff to evaluate the NWS and he worked on it as their employee. Boutakoff resigned in protest but continued doggedly to pursue compensation from Woodside, especially after their major discoveries in the early 1970s. Boutakoff died in Melbourne in 1979. His role in the discovery of the North West Shelf has been too much forgotten for many years but is now being more widely told, as here.

Introduction

The man who guided Woodside to Australia's North West Shelf was born Nikolas Alexandrovich Butakov in Washington DC in November 1903, the son of Captain Alexander Gregorievich Butakov, the Russian Naval Attaché to the United States. The Butakovs were Russian aristocracy, with ancestors of royal and high military rank stretching back centuries (Michels, 1991). His Godmother was Olga Constantinova, the Queen of Greece.

His vision of a giant petroleum province on Australia's North West Shelf began half a century later at Cape Range on the Western Australian coast. Oil had been discovered nearby at Rough Range (Johnstone, 1979) a few months earlier and Boutakoff (to use his preferred English spelling) had been sent on an inspection visit by the Victorian State Government. He was an experienced petroleum explorer by then, with an extensive knowledge of the French, Russian and English geological literature, and a keen interest in global tectonics.

His guide, a young (and later famous) Australian geologist called Murray Johnstone, took him to the top of the Cape Range anticline, a peninsula protruding 80 km into the Indian Ocean, and explained that Barrow Island, 150 km away, was the surface expression of another major anticline. Boutakoff saw instantly the possibility that similar structures, potentially oil-bearing, extended beneath the ocean all the way to Timor. He imagined then and there the vast hydrocarbon province the North West Shelf would prove to be, a dreaming that would bring him great success and bitter disappointment.

This short biography provides a summary glimpse of Boutakoff's ([Figure 1](#)) long life-road from Russia to the North West Shelf and beyond. The senior author began researching Boutakoff's life many years ago, after realizing how little information was available, excepting the Wilkinson (1983, 1989) and Murray (1991) summaries of his Woodside years. Co-author Yolande Collins has a more personal link: she was his goddaughter, and saw him often as she grew up in Australia. Our biographical research, combining efforts and files across many years, has gathered information from many sources, including Nicholas's Russian émigré friends in Melbourne, his former geological colleagues and associates, his family in Russia and his first wife's family. The principal source is the collection of Boutakoff's papers at the State Library of Victoria (SLV), including extensive correspondence and photographs, his doctoral thesis, numerous drafts of books, and extensive records of his business ventures. Without these files (PAC 343 Nicholas Boutakoff: Manuscript Section, State Library of Victoria. (SLV Boutakoff papers)), this biography would not have been possible, and the assistance of the staff of the Manuscripts Section of the SLV is gratefully acknowledged.

The Early Years

Little is known of Boutakoff's early life. The family, including an older brother and sister, moved to Switzerland in 1914 but his father remained in Russia, where his loyalty to the Tsar saw him summarily executed by the Bolsheviks in March 1917 (Getzler, 2002). Madame Boutakoff then took the family to Cannes, long a winter retreat for the Russian aristocracy but then a gathering place for those in exile. No doubt 'the tears of exile and melancholy longing' (Phillips, 2011) were plentiful and bitter in the Cannes Russian community during Boutakoff's formative years, and he grew up immersed in their shared sense of stolen entitlement.

He graduated with Honours in Geology from the University of Louvain in Belgium, earning a DSc in 1929 for work on the tectonics and stratigraphy of the Cheiron region of the French Maritime Alps ([Figure 2](#)) (Boutakoff, 1931). During these years, he met and fell in love with fellow student Irene Sergueieff, also a refugee from the Bolsheviks, living with her mother in Brussels and studying chemistry (Kohler, 2012). His Russian citizenship had been revoked in 1922 and he spent several years as a stateless person, before obtaining a Nansen passport from the League of Nations.

Boutakoff's DSc thesis reveals his skill at geological mapping and his flair for visualizing and illustrating complex geological structures, abilities that served him well through his career. Curiously, it also shows him to be firmly on the side of the 'fixists' in the raging controversy over Alfred Wegener's (1922) concept of continental drift.

The global tectonic orthodoxy of 'fixed' continents, with vertical movements driven by contractional forces in a cooling earth, was then under challenge by Wegener's concept of a 'mobile' Earth, with continents 'floating' on a mantle layer, and rifting and drifting apart. The lack of a convincing explanatory mechanism underpinned much of the opposition to this concept, including that of the French alpine geologists. By contrast, the Swiss alpine geologists, while also unsure of the driving mechanism, accepted that the massive nappes they saw in the Central and Western Alps, with crustal fore-shortening of 150 km or more, were better explained by horizontal forces (Brunnschweiler, 1983). Boutakoff was firmly in the French camp and held fast to the geosynclinal concept – and continued to do so throughout his life.

The Kivu Years

With his doctorate completed, Boutakoff joined a geological expedition organized by the Belgian National Committee for Kivu, to investigate 'the mining possibilities of a hitherto unexplored area west of lakes Tanganyika, Kivu and Edward' (Boutakoff, 1937). The expedition was led by the Jesuit Dr. Achille Salée, one of Boutakoff's Louvain professors. His letters home to his mother in 1929-31 provide vivid descriptions of his adventures and emotions, and his dreams of geological fame for his discoveries.

His first reaction to Africa was typical in its European romanticism. 'This is not a voyage but a fairytale', he wrote to his family. Lake Tanganyika was like the Riviera, except that Europeans were absent. His base camp setting was 'heaven on earth'. People were hard-working and good-naturedly patient (Boutakoff, 1929-30).

It was an amazing adventure. Barely 26 years old, he was often alone in the mountains for weeks at a time, with a convoy of about 100 porters and camp staff, mapping the topography and geology ([Figure 3](#)). His party cut their way through the jungle and built rope bridges across the ravines. Leopards and gorillas were a danger and the rivers abounded with giant crocodiles. He quickly mastered Kiswahili, the lingua franca, and several tribal languages. Boutakoff's letters betray no fear: he had his Browning revolver and his rifles but, more significantly, he was armed with the prevailing European certainty of superiority and the right to rule. He was a benevolent leader but understood when might was needed: 'in all critical situations, use a strong hand' was his motto. The few times he was confronted by rebellious porters or obstructive villagers, he threatened to shoot them or had them beaten by the local chief. His medical supplies and his ministrations in villages along the way earned him a reputation as a great sorcerer – which he enjoyed immensely (Boutakoff, 1929-30).

Working on widely spaced traverses, Boutakoff mapped the geology of about 30,000 km² on the western side of the Kivu Rift, a segment of the Western Rift Valley of East Africa. He discovered vast new exposures of Karoo glacials, including fossiliferous beds containing *Glossopteris*, *Gangamopteris* and other fossils, which established the local Karoo stratigraphy and its correlation with the South African Dwyka and Eccu sequences (Boutakoff, 1933, 1937; 19/40). He also found a fossilized insect, the first known from the Karoo, later recognized as a new genus and named *Butokovia aléei*. He wrote home excitedly that he expected ‘early and well deserved worldwide fame’ for the discoveries, which will ‘create a sensation in geological societies’ (Boutakoff, 1929-30). These self-congratulations seem only half in jest: certainly, there is youthful exuberance at play, but there is also a sense of rightful deservedness.

In 1932, Salée - a mentor, if not a father-figure - was killed in Kivu in a car accident. Boutakoff returned to Europe soon after and married his sweetheart Irene in Cannes in September that year. They lived for several years in Louvain where he taught paleontology and began to compile the expedition maps and findings. That work did not proceed quickly or smoothly, and correspondence with Professor Asselberghs was protracted and often tense, as the work dragged on for years. A key element in the conflict was Boutakoff’s insistence that his mapping was superior to that of his Kivu colleague Jean de la Vallee Poussin, whom he despised. (Boutakoff, 1932) There appears also to have been disagreement over Boutakoff’s entitlement to authorship of parts of the Kivu map, given prior work by Salée and perhaps other geologists. However, much, if not most, of the delays seems to have been his procrastination about finishing the work – quite inexplicable, given the acclaim he sought and expected from publication of his work. The main memoir on the 1929-32 work not completed until 1939 (Salee, et al, 1939) and Boutakoff’s own reports on the Karoo sediments and the volcanics were not published until decades later (Boutakoff, 1948a; 1956a).

Nicolas and Irene returned to Kivu in 1935 and worked there for two years, initially on assignment for the Belgian Congo Museum and later for the Congo Colonial Government. Boutakoff made detailed studies of the Karoo glacials he had discovered, especially the fossil beds, while Irene made archeological studies of Paleolithic sites along the Ruzizi River south of Lake Kivu (Boutakoff, 1937). It seems to have been an idyllic time for them, young and in love, exploring Africa together ([Figure 4](#)).

Boutakoff’s global tectonic ideas began to develop in Kivu. He had arrived uninterested in the ‘mobilitist’ view and he saw nothing in Africa to change his mind. He was aware of Du Toit’s work on the South African glacials (Du Toit, 1937) and their interpretation in terms of a Paleozoic Gondwana supercontinent, but was unmoved by it. He saw the rift as the product of tensional forces followed by compression, akin to Bucher’s (1933) concepts, and understanding the cause of those alternating regimes was fundamental to his thinking. So too, was his conviction that the recurring tectonic activity, from at least the Carboniferous to the present, showed that the African rift was an ancient fracture, caused by fundamental Earth forces. The Kivu work, he later wrote, ‘led him to the conclusion that the explanation for the Rift Valley pattern should be sought in a general law, governing the long radius warping of the Earth’s crust’ (Boutakoff, 1948). He would eventually be certain, if he were not already, that he had discovered a profound truth about the Earth’s tectonic patterns.

Kern Trinidad Oilfields

In 1937, having tried unsuccessfully to find backing for further work in Kivu, Boutakoff took a job with Kern Trinidad Oilfields Ltd (KTOL), based in San Fernando. Trinidad was a British colony in those days and the oil production was an important asset for the Empire. Boutakoff

was responsible for detailed mapping of the surface geology of key basin areas on the island, which he described as ‘structurally and stratigraphically speaking, one of the most complicated sectors of the globe’ (Boutakoff, 1947). During the first three years, he worked mainly on the Central Ranges, especially the northern portion, and later worked on the Southern Naparima Basin area and finally the surface and underground geology of the KTOL oilfields. His KTOL reports reveal an acute sensitivity, no doubt bred of his Kivu experience, about proper recognition of the originality and importance of his work, and the lack of any involvement or help from other parties (for example, Boutakoff, 1941).

Boutakoff became Chief Geologist at KTOL in 1944. His 12 years in Trinidad made him a very experienced and capable petroleum geologist, with a good understanding of the petroleum system. He not only refined his field mapping skills but also supervised drilling operations and worked closely with the pioneering seismic surveying teams working for KTOL. His diagrams show a skillful integration of the geophysical data, by correlating key surface geological units and unconformities with subsurface seismic dip segments.

In 1943, to Boutakoff’s great regret, Irene fell in love with another man, Leonard Charles van Dongen, a Dutch engineer working in Trinidad. It was a scandal in the small community and they were divorced in 1944. (Irene immigrated to the USA in 1944 and worked at several universities before securing the foundation chair in Earth Sciences at California College, Pennsylvania. She died in 1973. The assistance of her daughter, Ingrid Koehler, resident in the USA is gratefully acknowledged.)

Around this time, perhaps in his loneliness, he resumed his work on the global tectonic fracture pattern, looking first at the Caribbean region and then, using the latest bathymetric maps, at the entire globe. He had known since Kivu days of the conjugate trends – NW/SE, NE/SW, N/S and E/W – in Africa and the surrounding oceans, but the new bathymetric maps showed the pattern was worldwide. His ‘eureka’ moment came in 1947 when he realized that these trends, when viewed on a Mercator projection, were curved in a way suggestive of great circle arcs. If this was so, it pointed to a driving mechanism inherent to the Earth itself. Working by hand, he painstakingly transferred all the trends onto a gnomonic projection of the world and confirmed his suspicion: the lineaments were now straight lines: they were a great circular pattern ([Figure 5](#)).

By 1948, he was ready to announce his concept to the world, which he did at the XIII International Geological Congress in London, with a presentation called ‘The Great Circle Stress Pattern of the Earth, its expression in the suboceanic and continental relief and the relationship between epeirogeny and orogeny’ (Boutakoff, 1948b). At the same time, he was writing a major volume documenting all his structural observations and, based on his extensive knowledge of the English, French, German and Russian literature, the historical context of his proposed global tectonic model.

The great circle pattern and the recurring tectonics on the lineaments had convinced him of their ancient nature and their origin within the Earth itself: they were ‘a condition of the core, expressed in the crust’. The reactivation by tensional and compressional events was caused by periodic pulsations of the Earth, alternatively contracting and expanding, caused by, or linked to, changes in the Earth’s rotational speed: ‘a single cause ... at the root of both orogeny and epeirogeny’ (Boutakoff, 1948b).

A fundamental corollary to the concept was the rejection of continental drift: lineaments extending unbroken across continent and ocean, with repeated reactivation, were not possible if the continents were moving. Similarities of shape of facing coastlines were simply the geometry of the great circular pattern and Boutakoff was derisive of those who interpreted them as evidence of 'drift' ([Figure 6](#)).

While this work proceeded, disenchantment with post-war politics in Trinidad and new policies at KTOL had added to his frustration at being unable to publish his Trinidad work, and his weariness of life in the tropics. He became a British citizen in 1948 and began looking for a Government position, possibly to allow him to publish more. After running into nationality restrictions in Canada, he turned to Australia and successfully applied to the Victorian Geological Survey (VGS), which was looking for a geologist with petroleum exploration experience.

Geological Survey of Victoria

Boutakoff commenced work at the VGS in May 1948 but, for reasons not understood, was almost immediately discontent there. He had tried to obtain an industry position before leaving London and was no sooner in Melbourne than he was looking elsewhere. His letters refer to the low salary and he might have found post-war Australia a rather insular society. In a 1949 letter seeking work with Gulf Oil, he wrote that Australia was 'an ideal country to live in' but not a place to work unless you were 'an unskilled labourer and belong to some union' (Boutakoff, 1949). His conservative politics would have been alarmed at the pro-communist forces within the unions. The Australian Bureau of Mineral Resources (BMR) were keen to hire him but precluded from doing so by government protocols unless he first resigned from the VGS – which he was unwilling to do without a written offer, despite the strongest verbal assurances from BMR Director Sir Harold Raggatt.

Boutakoff's personal life was far happier. The Russian émigré community had welcomed him to Melbourne eagerly, especially the ladies, who were captivated by this tall imposing man, aristocratic in appearance and manner, and fluent in English, French and Russian. Much matchmaking ensued, and he was soon enchanted by another new arrival, Irena Feodorovna Tilts; they were married in January 1950 ([Figure 7](#)). Irena had a dentistry degree from her native Latvia but had to retrain in Australia before she could practice. This second marriage brought Boutakoff great joy: he enjoyed his wife's strength and intelligence, as well as her warm-heartedness and patience (Michels, 1990).

The new love seems to have stabilized and stimulated him. During 1950-2, Boutakoff rewrote his Trinidad manuscript, now called *The Pattern of Earth Failure* and, using equipment and facilities loaned by new professional friends at the University of Melbourne and the Victorian Country Roads Board, conducted a series of experiments to observe the fracture patterns on deformed model spheres. Professor E.S. Hills, the renowned geologist at the University of Melbourne, became something of a mentor, critically reviewing the Trinidad manuscript and encouraging the experiments (Boutakoff, 1952).

The experiments were conducted initially on solid homogeneous spheres of various materials, and then on model spheres with shells of different material and thickness, and cores of different plastics. Shortening the polar axis and lengthening the equatorial axis of the spheres caused meridional and semi-equatorial great circular failure and oblique great circle conjugate trends, in fracture patterns similar to those on Earth ([Figure 8](#)). These fractures extended into the core of the spheres, regardless of its being solid or plastic, and contrasted with small arcs of fracturing which affected only the crust of the spheres. These fractures occurred sequentially from meridional to oblique to equatorial, as

appeared to be observable on Earth. Older fracture patterns on Earth resembled failure patterns on spheres with plastic cores, while younger patterns resembled fracturing on spheres with more rigid cores – analogous of changing fracture patterns on a cooling Earth.

Boutakoff was convinced he had discovered the general law of Earth tectonics. ‘The great circle pattern is the surface expression of deep-seated gravity surfaces of planetary weakness... The failure pattern, born at least in the Precambrian, is mechanically so sound and still so clearly conforms to the experimental failure pattern...’ (Boutakoff, 1952a). It had to be correct! The manuscript, submitted to the Geological Society of America in 1953, paid great tribute to the famous Russian geologist Alexander Karpinsky, citing his 1894 prediction that ‘a uniting scheme for the Earth’s tectonic lineaments’ would soon be discovered. There is little doubt that Boutakoff felt he had made that discovery.

Boutakoff also noted that similar lineament patterns occurred on Mars and Mercury and proffered that ‘this similarity seems to be indicative of comparable deep-seated astrophysical forces’. His general law promised the key to understanding not only the structure of Earth but also of the planets.

It must have come as a gut-wrenching shock when one GSA reviewer pointed out that both the great circle nature of the global lineaments and their periodic reactivation had been proposed decades earlier. What follows is unclear. Colleagues remember him as angry at the proposed changes (Kenley, 1991, 2013) but he subsequently wrote rather naively to GSA that they could make whatever changes they liked Boutakoff, 1953). He did rewrite (and improve) the paper in the light of the reviewer’s comments but it is unclear whether he ever finished or resubmitted it. In the revision he rationalized that those who had seen the great circle nature of the lineaments had not observed their reactivation, and vice versa, so that the honour was his for first recognizing both aspects (Boutakoff, c1954a). Nothing more was done until the 1960s when he tried unsuccessfully to interest the Colorado School of Mines in publication (Boutakoff, 1962).

Boutakoff’s first main task with the VGS was the mapping of the Portland district, a sedimentary basin area west of Melbourne and thought to be potentially oil-bearing. The Portland mapping was mostly completed between 1950 and 1953, with additional work until 1958, but was not printed until 1964, two years after Boutakoff had left the Service. This delay was largely the backlog caused by the war years and colleagues saw the volume as a benchmark in terms of quality and presentation (Boutakoff, 1963a).

Boutakoff’s other task at the VSL was reviewing the petroleum potential of Victoria, specifically the Gippsland and Otway coast, and he set about putting the exploration on a more professional level. He published several papers on oil in Victoria between 1951 and 1956 (Boutakoff, 1951, 1952b, 1954b, 1956b) and collaborated with Reg Sprigg on a review of the Gambier region (Boutakoff and Sprigg, 1953). His obsession with appropriate acknowledgement and credit for his work remained as consuming as ever.

The discovery of oil at Rough Range in Western Australia in 1953 changed Boutakoff’s life. The Minister for Mines in Victoria sent him there to see what lessons might be applied to the fledgling oil exploration effort in Victoria ([Figure 9](#)). For Boutakoff, the official lesson was simple: WAPET, a joint venture of Chevron, Texaco, Shell and Ampolex, was methodical, informed and experienced, and their success was the logical result; Victorian explorers had to follow that example (Boutakoff, 1954c). The personal lesson was even clearer: the offshore North West Shelf was likely to prove a vast oil province and he resolved to gain a share of it for himself. Most of his time and energy for the next few years were directed to that end.

The Northern Holdings Venture

Boutakoff's vision of the North West Shelf had begun on top of Cape Range as he listened to WAPET geologist Murray Johnstone describe the Barrow Island anticline to the northeast. Boutakoff was an ardent follower of the geological literature and he would have been familiar with Fairbridge's (1952) view that the regional seafloor topography on the North West Shelf reflected regional structure: broad swells were interpreted as shallow basement areas; broad depressions, as deep basins. He was also familiar with Teichert's (1939) concept of a Westralian Geosyncline extending from Timor down the Australian coast, and Van Bemmelen's (1949) description of the Cape Range structure as part of a geanticlinal uplift welded to the Australian continent. Boutakoff's brilliance was to intuitively accept that the correlation of structure and bathymetry would apply on a local scale: deep subsurface structures capable of containing oil and gas would be marked by local swells and domes on the ocean floor and should be mappable with bathymetric data.

Back in Melbourne, he purchased copies of Admiralty Chart No. 475, *North West Coast of Australia with off-lying Islands and reefs (1922-50)* and began contouring the bathymetric values to make a map of the seafloor. He also spent time in the State Library of Victoria 'searching up the legal marine boundaries of Western Australia' (Boutakoff, 1972).

What emerged on his contour map ([Figure 10](#)) was a series of mostly submerged ridges and troughs, trending NE/SW along the edge of the Australian continental margin. The main ridge system could be traced from Cape Range to Barrow Island, thence to Rowley Shoals and Scott and Seringapatam reefs, and on to Ashmore Reef, Cartier Island and finally Sahul Bank. The Rowley-Scott Ranges, as Boutakoff called them, extending over 1000 km from Cape Range to Seringapatam Reef, were locally emergent and elsewhere were flat-topped ridges at about 160-180 m depth, occasionally as deep as 800 m. The largest structure was Scott Range, extending some 320 km from Scott Reef to Ashmore Reef, and varying to about 60 km wide, mainly as a plateau at about 200 m depth but with extensive surface expression at the Scott and Seringapatam reefs. (Boutakoff, 1963).

Boutakoff interpreted those ridges as large geanticlinal folds and proposed that their location between the complex alpine-like structures of Timor, where oil seeps were known, and the gently warped sediments onshore Australia, where oil was now proven, made them ideally 'suitable for considerable accumulation of petroleum' (Boutakoff, 1963).

Further seaward was another ridge which Boutakoff (1963) called the D'Artagnan Swell, and which appeared to him to be an en-echelon extension of the islands of Roti and Timor. A third ridge, named the Corona Tectogene, was mapped about 120 miles further out, seemingly on trend with the islands of Sumba or Sawu.

On 1 March 1955, in partnership with Thomas Ward, a successful New York oilman and a close friend from Trinidad days, Ward's colleague C. P. Tomlinson, and Percival McKenzie (then Chairman of Woodside), Boutakoff formed a company called Northern Holdings Pty Ltd to acquire exploration leases covering the North West Shelf. (It was supposed to be called North West Holdings but a mix-up occurred during registration.) To hide Boutakoff's involvement, because he was still employed at the VGS, the company was set up using a Melbourne firm of accountants as directors. Ward's task was to sell the project to Gulf Oil, as he had done with leases in Kuwait, as soon as possible (Boutakoff, 1972).

The fate of the applications to the Western Australia and Northern Territory Mines departments is not clear. Correspondence between Boutakoff and the Perth solicitors acting for Northern Holdings shows the applications were lodged in May 1955. In August, the WA Secretary for Mines advised that the application needed to be amended to conform to new ordinances in the Petroleum Prospecting and Production Regulations. It is not known if efforts were made to lodge the amended application, as there is no record of such in the WA Mines Department archives. Northern Holdings was also asked to clarify the 'internal set-up, capital and particularly the American side' of the company (Boutakoff, 1955a, b). It was a catch-22; the application was unacceptable without this information but Boutakoff could not provide it because it would reveal his involvement and their lack of financing, since Gulf had declined to buy into the project (Pyre, 1974). Faced with this impasse, the application was apparently abandoned and Northern Holdings was wound up in 1958.

Thereafter Boutakoff renewed his efforts to find other employment. He had been cleared by the Victorian Government in 1957 to consult part-time to oil exploration companies, and this increased his appetite for the private sector. His feelings remained very positive about Australia: 'a country of endless possibilities and a great many mineral deposits still remain untapped' (Boutakoff, c1957). His consulting and VGS work had kept him informed of the legal and geological issues pertaining to oil exploration in the various Australian states, and he was keen to get more involved. One of the smaller companies he assisted at that time was Woodside (Lakes Entrance) Pty Ltd. He also applied for a position at the University of Melbourne.

The relationship between Boutakoff and his boss, Survey Director Dr David Evan Thomas, had deteriorated through the 1950s. Colleagues recall the open expressions of hostility in what became a poisonous atmosphere (Kenley, 1991; 2013). The reasons are less well known. Much of it was a clash of personalities but Boutakoff's casual disregard for Thomas' authority and his use of Survey time for his own activities would not have helped. Indeed, his use of Departmental time to pursue his private interests became something of a scandal in the Survey over the years. In 1959, Thomas provocatively promoted Boutakoff's junior colleague John Knight over him to Assistant Chief Geologist (later renamed Deputy Director). Boutakoff successfully appealed to the Public Service Board and was appointed to the position.

It is not clear why Boutakoff did not find a wider audience for his intellect and concepts among the geological fraternity in Melbourne. He became a member of the Royal Society of Victoria and the Geological Association of Australia but does not appear to have attended many meetings. It has been suggested that he was shunned by the Melbourne University academics (Kenley, 1991; 2013) but he was initially friendly with Professor Hills, who shared his interest in lineaments and his strong stand against continental drift (Hills, 1986). The reasons he later fell out with Hills are not known.

He was admired and respected by most colleagues at VGS. The speed with which he was able to analyze the general geology of an area was widely known, but so was his lack of attention to detail. However, they were not his friends, at work or at home, and several have admitted surprise at hearing he had friends at all. Colleagues at VGS and in industry describe him as 'haughty' and 'aloof'; 'aristocratic' is the most common term. He did not treat junior colleagues as servants, one recalled, but they certainly were not equals (Kenley, 1991; 2013). Yet, to his friends, most of whom were Eastern European migrants, he was the soul of warmth and consideration, generous of spirit, and a witty and funny conversationalist. Some of this can be explained as his different work persona; some, as reflections of the same man in different cultural mirrors. Anglo-Celtic Australia in the 1950s did not accept European migrants and manners easily and was, as now, especially derisive of

anyone seeming to 'put on airs and graces'. To the émigré community, that same aristocratic manner, in a man of Boutakoff's background and learning, was his entitlement.

In the late 1950s, he became interested in the potential for an elaborate mining and industrial development centered on the brown coal deposits at Gelliondale in Gippsland. The coal was to be used to power a cement factory, using local limestone, and an alumina refinery, using imported bauxite, both making use of the nearby Welshpool deep-water port. The coal-derived gas would also drive a ceramic industry, using local clay, and a chemical plant. His partners in the Corner Combustible and Cement Syndicate - Alan Ruthven-Murray (his boss from Trinidad), until he died in 1961, and, thereafter, Tommy Ward - had the task of selling the project to large energy and industrial companies. Boutakoff was the driving force but he stayed very much in the background because of the conflict of interest with his position as a government officer. All leases were held through a Melbourne solicitor. Several large companies, including Reynolds and Alcoa, looked at the project but it all came to nothing and was abandoned.

The Woodside Venture

In July 1962, Boutakoff ([Figure 11](#)) resigned from the VGS and became the Chief Geologist at Woodside (Lakes Entrance) Oil Company. Woodside was keen to extend their exploration leases and Boutakoff's job was to study possible areas for offshore exploration, including the Coral Sea, Gulf of Carpentaria, and North West Shelf. A month or so later, he told General Manager Rees Withers of his extensive private work on the North West Shelf and, to his mind, made a gentleman's agreement that Woodside would give him a major shareholding (elsewhere, given as one million shares) in exchange for his ideas and maps, provided Woodside was granted the lease and farmed-out to a major international company. Two months later, Woodside filed an application for a lease over vast offshore areas now known as the Northern Carnarvon and Browse basins ([Figure 12](#)). It was the same area Boutakoff had applied for in 1955 and the original Northern Holdings map was used in the application (Boutakoff, 1974).

Woodside lacked both the funds and expertise to explore such an enormous offshore area (367,000 km²) and their plan was always to entice a large international company, or several, to buy into the project and assume operatorship (Withers, undated). Boutakoff played a large part in the success of that plan. His presentation of his exploration concepts to the 1963 conference of the Australian Petroleum Exploration Association (Boutakoff, 1963b) put the North West Shelf on the oilman's map. In the audience were representatives of Burmah Oil and Shell, both of whom expressed interest. Boutakoff and Withers then travelled to Europe to present Woodside's exploration ideas and business proposal to Burmah Oil and Royal Dutch Shell management. By October 1963, both companies had signed up and Burmah became the new operator as Woodside-Burmah NL. Subsequent steps in the discovery and development of the vast North West Shelf gas and oil fields are given by Murray (1991).

For Boutakoff, the euphoria was short-lived. His request for the promised share bonus was flatly rejected. Geoff Donaldson, Woodside's Chairman, insisted that Boutakoff had been instructed by them to evaluate the NWS that he did so as an employee, and was not entitled to anything. That was to remain the official Woodside position. Privately, Donaldson later said the Board saw it as a 'shake-down' for a royalty payment to which Boutakoff was not entitled (Donaldson, 1991).

Boutakoff severed his connection with Woodside and worked for Timor Oil and their associate International Oil Exploration NL between 1966 and 1972). Timor was the ‘mobile hinge’ of the Westralian Geosyncline, in contrast to the stable North West Shelf, and with the known oil shows and the discovery on nearby Ceram Island, it had ‘excellent potential for commercial oil discovery’ (Boutakoff, 1968).

During those years, Boutakoff seems to have been bitter about Woodside but happy enough otherwise. It was in 1972, after Woodside’s major gas discoveries and the high share price that would have made him a very rich man, that Boutakoff’s sense of betrayal by Woodside, particularly Withers, became all consuming. He prepared a very detailed dossier outlining his claim, including all relevant correspondence, and submitted it to the Burmah and Shell head offices (Boutakoff, 1974). He subsequently proposed an ex gratia payment of \$200,000 but, while it appears to have been discussed extensively, it was rejected by Woodside’s board (Donaldson, 1973). The legal implications of such a payment may have influenced this decision. Withers said later that he had feared a legal challenge from the Boutakoff family (Webb, 2013). Boutakoff certainly considered it but felt he could not afford the costs (Boutakoff, 1974b; c).

There is no doubt that Boutakoff’s private research, conducted years before he joined Woodside was given willingly to them and used in making their application. Nor is there reason to doubt Boutakoff’s conviction that he had a verbal agreement with Woodside, or at least Withers. However, we know nothing of the wording or context of that agreement, whatever it was, and Withers always denied it. In the end, Boutakoff had nothing in writing. His appeals to those involved to provide proof could only prove his involvement, not his entitlement to reward. Woodside management always maintained he was simply an employee doing his duty for the company and acting on their direction.

Unfortunately, the pursuit of his stolen entitlement became quite obsessive. Everyone he knew that had been connected with the project was drawn into his quest. There was nothing to be done, of course, a point former Shell Manager Jacques Dozy made to him: ‘A written statement acknowledging Mr. Withers’ promise, or an agreement stating the conditions under which you agreed to work for Woodside, is lacking. No amount of tears from well-wishing people like me can remedy that omission’ (Dozy, 1974). He became increasingly troubled; long-standing obsessions about UFOs and British Israelites deepened; fears of Russian agents intensified (Campbell, 2013).

He remained a life-long devout member of the Russian Orthodox Church and devoted much of his final years to a study of the Shroud of Turin. Driven by ‘a sacred fire that enlightened him’ he wrote a book about it to inform people in the Soviet Union. A forty page précis, called *The Holy Shroud*, was published but the details are not known.

Irena Boutakoff died in 1976, aged 54. The loss was devastating for Nicholas, who died a year later. He was buried with the full rites of the Russian Orthodox Church in Templestowe Cemetery, Melbourne, beside his wife. He had died intestate and there was suspicion and conflict between his GSV colleagues and his émigré friends about the handling of his extensive library and papers, with both suspicious of the Soviet Embassy’s involvement. Ultimately, his estate was inherited by his niece Aleksandra Butokova in St Petersburg. Rumors that his personal papers had been seized by the Russians were incorrect; his niece sold them, along with his library, to antiquarian bookseller Kenneth Hince, who presented them to the State Library of Victoria.

Boutakoff's role in the discovery of the North West Shelf has not been as widely remembered and applauded as should have been the case. The authors hope that this work will contribute to a wider appreciation of Boutakoff's life and his pioneering role on Australia's North West Shelf, now one of the world's main hydrocarbon producing regions.

References Cited

Boutakoff, N., 1929/30, Letters to his mother, translated from the Russian by Vladimir Michels (Mihailov) for the senior author.

Boutakoff, N., 1931, Etude stratigraphique et Tectonique sur la Région Frontale de la Nappe Provençale du Cheiron, *Memoir de l'Institut Géologique de l'Université de Louvain*, 6.

Boutakoff, N., 1932-48, Correspondence with Professor Asselberghs, Louvain University, SLV Boutakoff Papers. Translated from French by Daniel Mege, Polish Academy of Science.

Boutakoff, N., 1933, Sur la découverte au Kivu d'un complexe fossilifère, lacustre et fluvio-glaciaire, *Société Belge de Géologie, Paleontologie et Hydrogéologie*, 43, 1, 21, p. 42-49

Boutakoff, I., 1937, Premières explorations méthodiques des gisements de l'âge de la pierre au Ruanda-Urundi. Abris sous roche, ateliers et stations en plein air, *Bulletin Institut Royale Colonial Belge*, p. 179-201.

Boutakoff, N., 1940, The Dwyka Glaciation and the Epiglacial Beds of the Congo Basin: 17th International Geological Congress, 1937, Moscow, v. 6, p. 223-245.

Boutakoff, N., 1941, The Geology of the Central Range: Unpublished KTOC report, N. February 1941. SLV Boutakoff papers.

Boutakoff, N., 1947, Letter to C. Teichert, 10 July 1947. SLV Boutakoff papers.

Boutakoff, N., 1948a, Les formations glaciaires et postglaciaires fossilifères, d'agepermo-carbonifères (Karoo inferieur de la région de Walikale (Kivu, Congo Belge): in Salée, A., N. Boutakoff and J. de la Vallée Poussin, 1939, Resultats Scientifiques de la Mission Geologique du Comité National du Kivu, *Memoires Institut Géologique Université Louvain*, 9, Fascicule II.

Boutakoff, N., 1948b, The Great Circle Stress Pattern of the Earth, its expression in the suboceanic and continental relief and the relationship between epeirogeny and orogeny: Unpublished paper based on presentation to XVIII Geological Congress, London, 1948. SLV Boutakoff Papers.

Boutakoff, N., 1949, Letter to Dr H. D Hedberg, 7 June 1949. SLV Boutakoff papers.

Boutakoff, N., 1951, Oil in Victoria: Mining and Geological Journal, v. 4, p. 4.

Boutakoff, N., 1952a, The Pattern of Earth Failure: unpublished manuscript, SLV Boutakoff papers.

Boutakoff, N., 1952, The Structural Patterns of South-West Victoria: Mining and Geological Journal, v. 4, p. 6.

Boutakoff, N., 1953, Letter to Secretary, Geological Society of America, 31 August 1953, SLV Boutakoff papers.

Boutakoff, N., 1954a, The Pattern of Earth Failure: Unpublished manuscript, SLV Boutakoff papers.

Boutakoff, N., 1954b, A New Approach to Petroleum Geology and Oil Possibilities in Gippsland: Mining and Geological Journal, v. 5, p. 4-5.

Boutakoff, N., 1954c, A Visit to Learmonth Oilfield and Petroleum Possibilities of South Gippsland: Unpublished report to the Victorian Minister of Mines, 1954.

Boutakoff, N., 1955a, Diary of the Northern Holdings application: unpublished manuscript, SLV Boutakoff Papers.

Boutakoff, N., 1955b, Letters to Northern Holdings shareholders, 28 August 1955 and 9 September 1955, SLV Boutakoff Papers.

Boutakoff, N., 1956a, Les massifs volcaniques du Kahusi et de Biega (Kivu, Congo Belge: in Salée, A., N. Boutakoff and J. de la Vallée Poussin, 1939, Resultats Scientifiques de la Mission Geologique du Comité National du Kivu, *Memoires Institut Géologique Université Louvain*, 9, Fascicule VI.

Boutakoff, N., 1956b, Oil Search in Victoria, Australia, Symposium Sobre Yacimientos de Petroleo y Gas, Mexico.

Boutakoff, N., 1957, Letter to A. Murray, SLV Boutakoff papers.

Boutakoff, N., 1962, Letter to Colorado School of Mines, 1962, SLV Boutakoff papers.

Boutakoff, N., 1963a, The Geology and Geomorphology of the Portland Area: Geological Survey of Victoria Memoir 22.

Boutakoff, N., 1963b, Geology of the off-shore areas of North-Western Australia: APEA Journal, v. 3, p.10-18.

Boutakoff, N., 1968, Oil Prospects of Timor and the Outer Banda Arc, S.E. Asia: Australian Oil and Gas Review, April 1968.

Boutakoff, N., 1972, The Eighteenth Anniversary of Permit to Explore 213H: Unpublished manuscript, SLV Boutakoff papers.

Boutakoff, N., 1974a, Dossier on Northern Holdings and Woodside, unpublished manuscript, Senior author's collection.

Boutakoff, N., 1974b, Letter to Dr. J. J. Dozy, 12 August 1974 (SLV Boutakoff Papers).

Boutakoff, N., 1974c, Letter to Dr G. R. J. Terpstra, 30 September 1974. Collection of Yolande Collins (née Terpstra).

Boutakoff, N., and R. Sprigg, 1953, Summary Report on the Petroleum Possibilities of the Mount Gambier Sunklands: Mining and Geological Journal, v. 5, p. 2.

Brunnschweiler, R.O., 1983, Evolution of Geotectonic Concepts in the Past Century: in Carey, S.W, (Ed), Expanding Earth Symposium, 1981, Sydney, p. 9-15.

Bucher, W. H., 1933, The Deformation of the Earth's Crust, Princeton University Press, Princeton, New Jersey.

Campbell, I., 2013, Interview with senior author, June 2013.

Donaldson, J.G., 1973, Letter to Boutakoff, 7 May 1973. SLV Boutakoff Papers.

Donaldson, J.G., 1991 interview with Peter Purcell, 1991.

Dozy, J. J., 1974, Letter to N. Boutakoff, 6 September 1974, SLV Boutakoff papers.

Du Toit, A.L., 1937, Our Wandering Continents: Oliver and Boyd, Ltd., Edinburgh, UK.

Fairbridge, R. W., 1952, The Sahul Shelf, Northern Australia; Its Structure and Geological Relationships: Journal Royal Society Western Australia, v. 37, p. 1-33.

Getzler, I., 2002, Kronstadt 1917-1921, The Fate of a Soviet Democracy: Cambridge University Press.

Hills, D., 1986, Biographical Memoir, Edwin Sherbon Hills, Australian Academy of Science,
<http://science.org.au/fellows/memoirs/hills.html#victoria>

Johnstone, M., 1974, A Case History of Rough Range: APEA Journal, v. 19/1, p. 1-6.

Kenley, P., 1991, Interview by senior author.

Kenley, P., 2013, interviews by authors, January and June 2013.

Michels, V., 1990, Unpublished autobiography (extract), given to Peter Purcell in 1991.

Michels, V., 1991, English translation of Butakov Genealogy prepared by N. Boutakoff (date unknown) unpublished document.

Murray, R., 1991, From the Edge of a Timeless Land: Allen and Unwin, Sydney.

Phillips, A., 2011, With the White Russians in Paris, <http://orthodoxengland.org.uk/whiterp.htm>

Pyre, G., 1972, Letter to Boutakoff, 4 September 1972, in Boutakoff, N., 1974, Dossier on Northern Holdings and Woodside, unpublished manuscript, Senior author's collection.

Salée, A., N. Boutakoff, and J. de la Vallée Poussin, 1939, Resultats Scientifiques de la Mission Geologique du Comité National du Kivu, Fascicule I, Memoires Institut Géologique Université Louvain, 9.

Talent, J., 1991, Interview by senior author.

Teichert, C., 1939, The Mesozoic Transgression in Western Australia: Australian Journal of Science, v. 2/3, p. 84-6.

Van Bemmelen, R. W., 1949, The Geology of Indonesia: The Hague.

Webb, E., 2013, Interview with M. Butcher, 16 February 2013.

Wegener, A., 1922, The origin of the Oceans and Continents: Translated from the 3rd Edition by J.G.A. Skerl, Methuen and Company, London.

Wilkinson, R., 1991, A Thirst for Burning: The Story of Australia's Oil Industry: David Eli Press, Sydney, 1983; Where God Never Trod, Christopher Beck Books, Windsor.

Withers, R., undated, The Woodside Story, Unpublished memoir, Rees Family collection.

Acknowledgements

Photos and maps marked SLV are reproduced from the Boutakoff Papers, PAC 343. Manuscripts Section, State Library of Victoria, Melbourne Australia.

Thanks also to Ingrid Koehler for photos of her mother Irene Sergueieff, to Woodside Energy Ltd for photos of the rig at Scott Reef and the LNG tanker, and to the many friends and associates of Nicholas Boutakoff who have helped us, especially the late Vladimir Michels and Peter Kenley.



Figure 1. Nicholas Boutakoff, c1940.

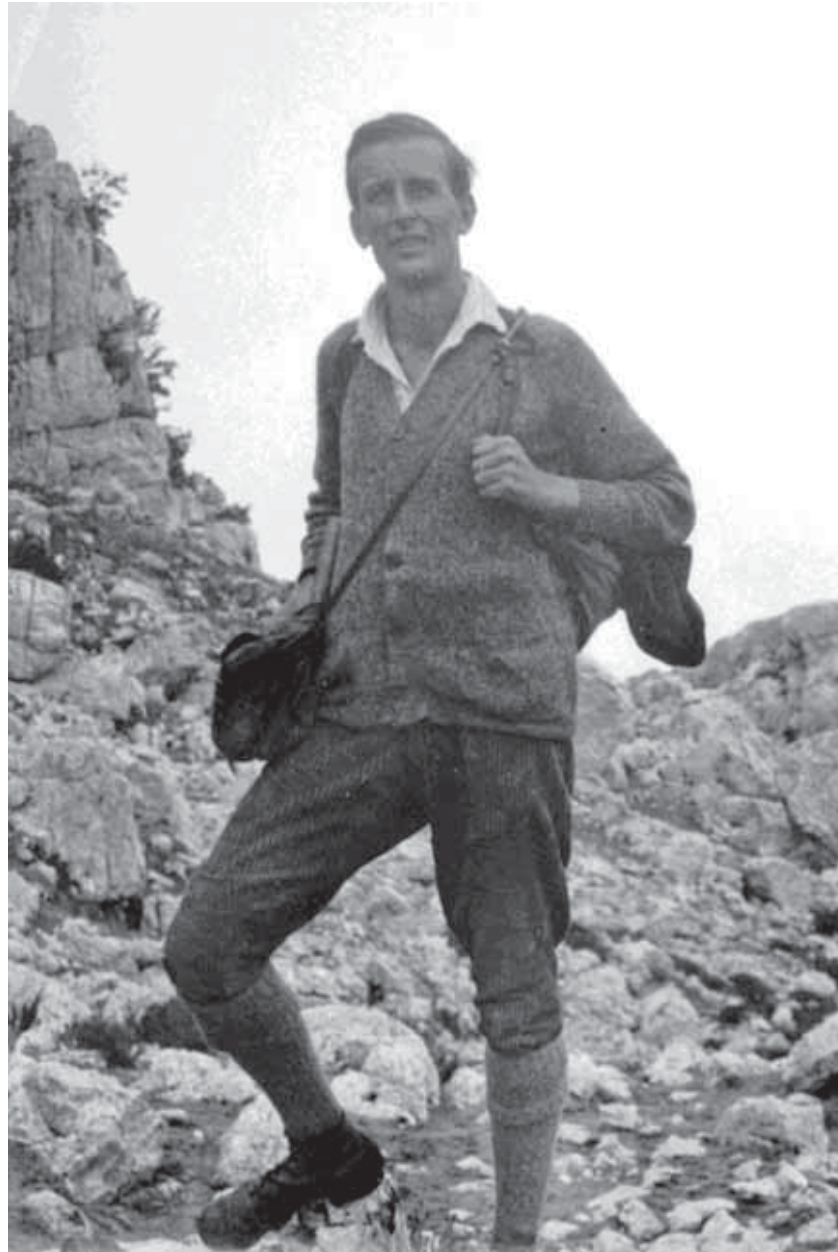


Figure 2. Boutakoff mapping in the French Alps, 1929 (from SLV Boutakoff papers).



Figure 3. Remote camp in the Kivu Mountains, c1930.



Figure 4. Irene Boutakoff examining Karoo glacial sediments, Kivu, 1935.

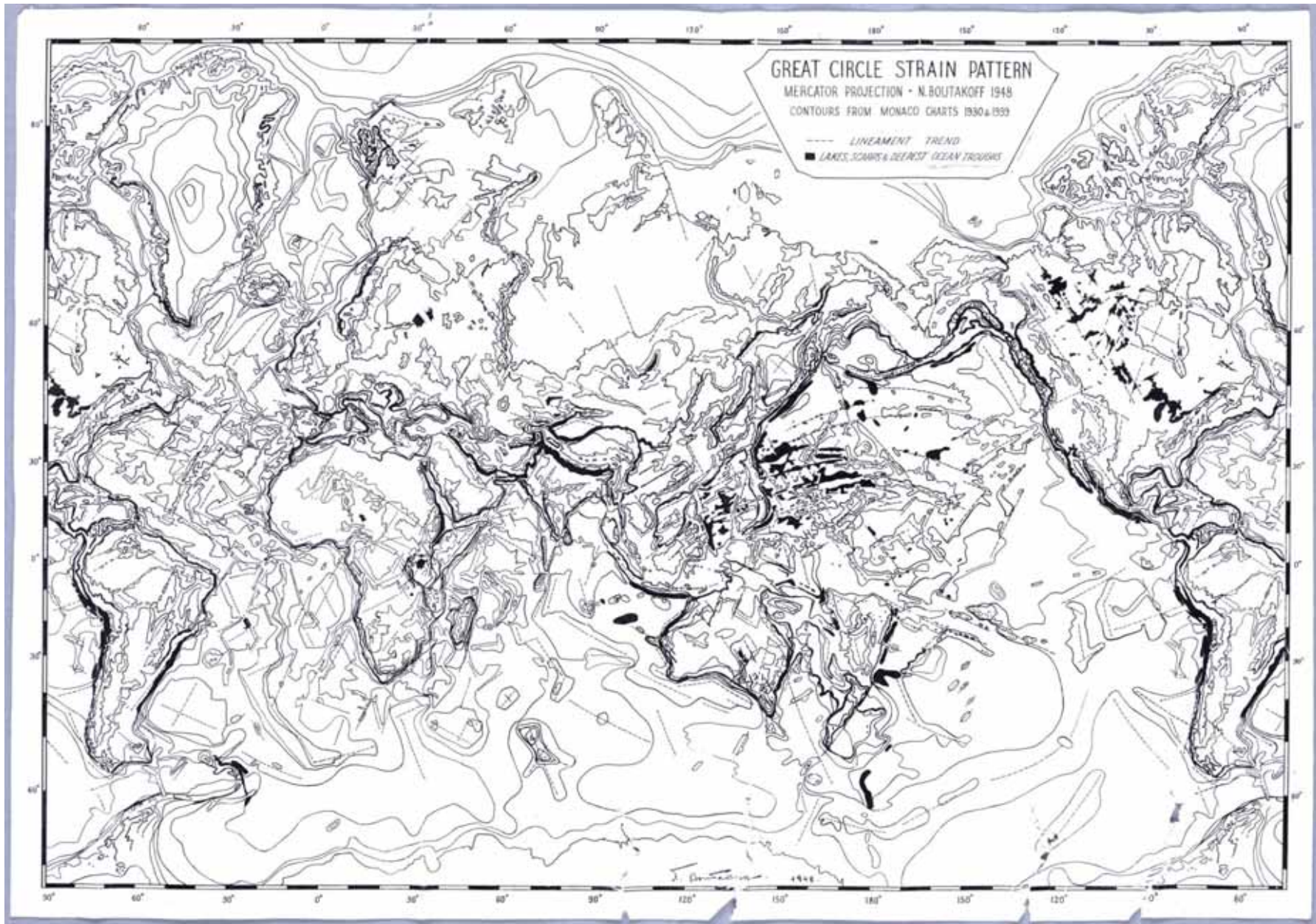


Figure 5. Boutakoff's 1948 world map (Mercator Projection) showing his interpreted "Great Circle Strain Pattern."

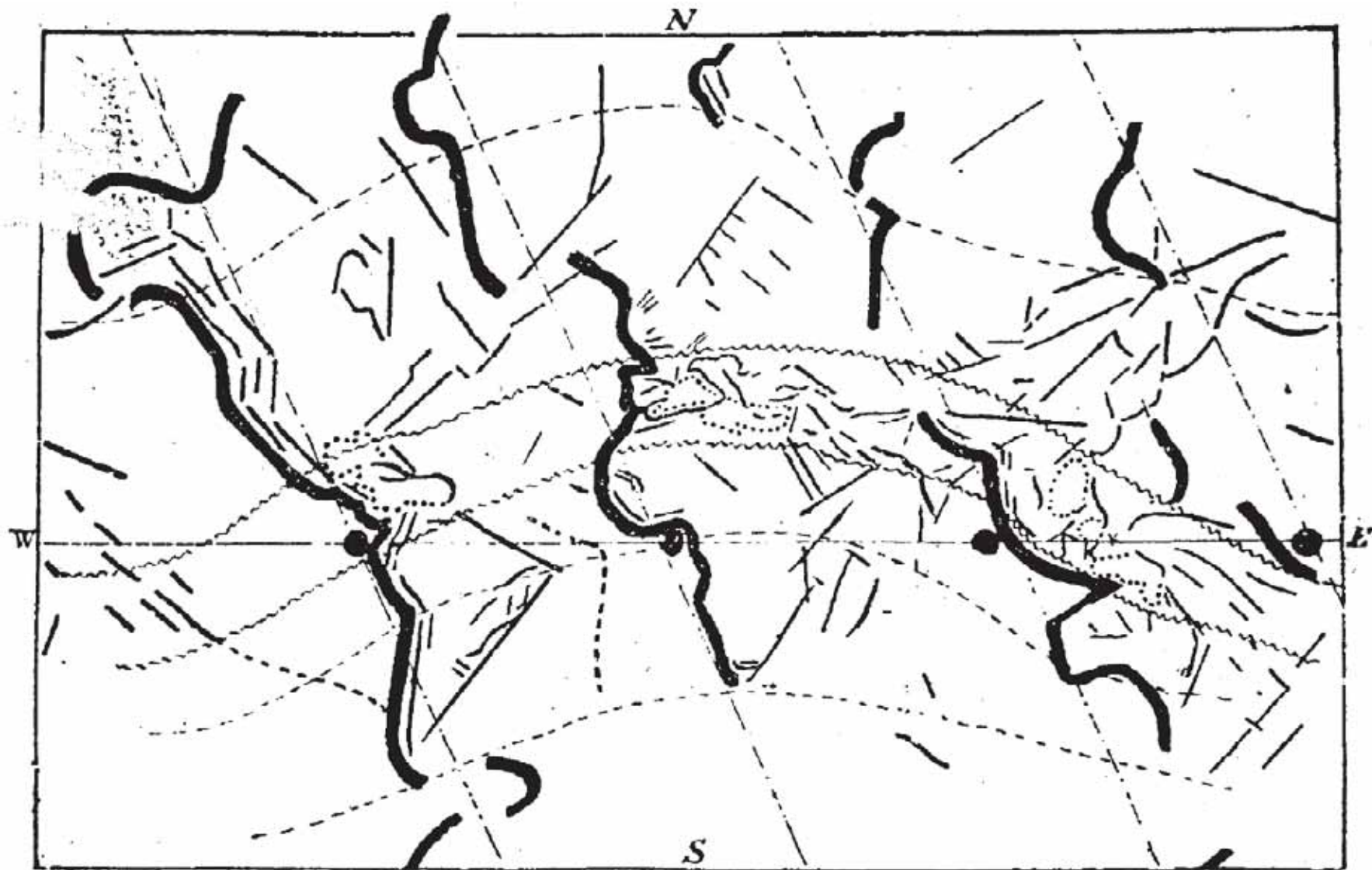


Figure 6. Boutakoff's sketch showing similar-shaped coastlines which he related to the "Great Circle Fracture Pattern" (from SLV Boutakoff papers).



Figure 7. Nicholas Boutakoff and Irena Tilts on their wedding day, Melbourne, Victoria, 1950.

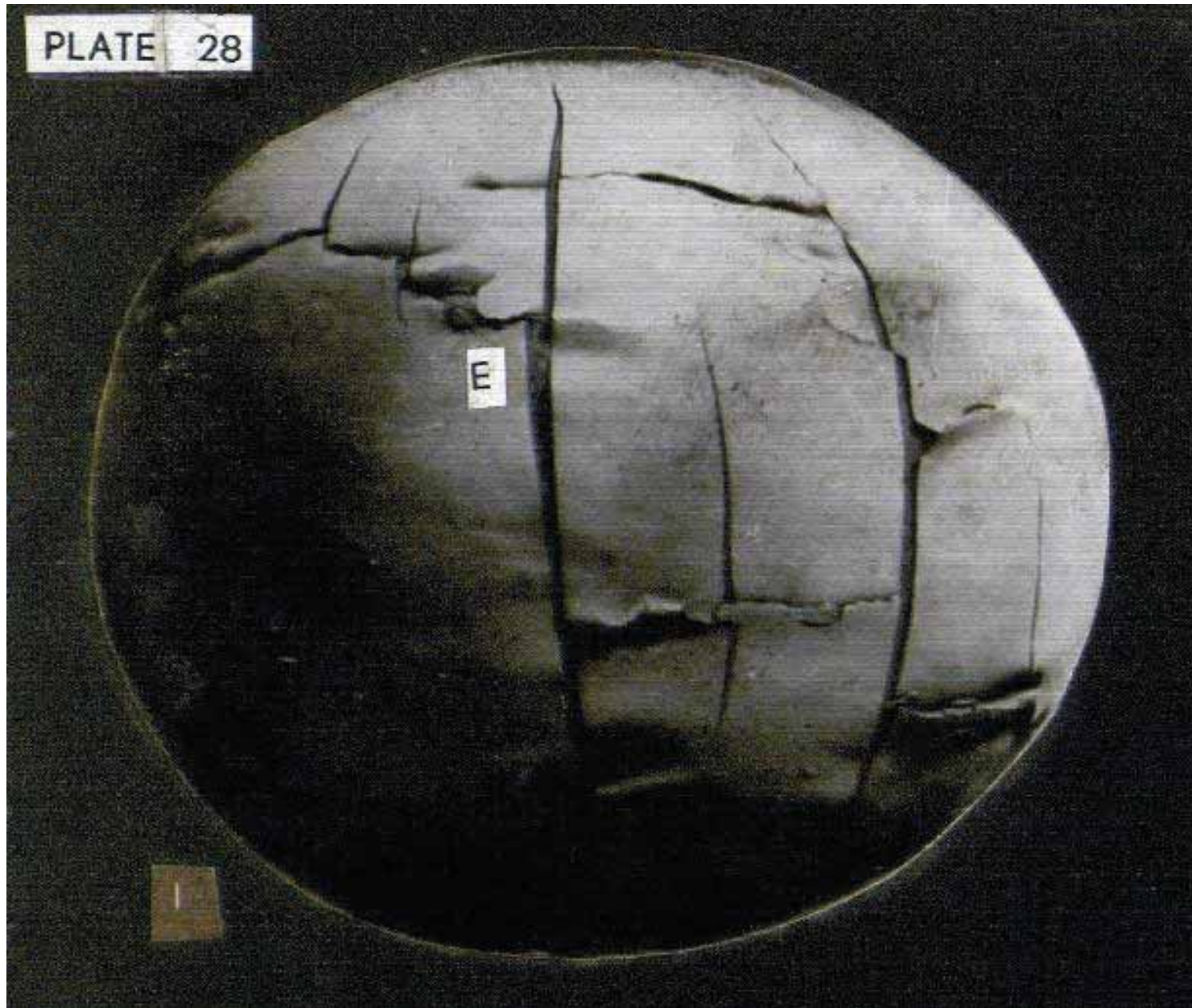


Figure 8. Deformed sphere showing the patterns Boutakoff considered equivalent to oceanic rift zones on Earth.



Figure 9. Boutakoff (tall man, centre left) at Learmonth Airport, Western Australia, 1954. Murray Johnstone is the short man beside him. (From SLV Boutakoff papers.)

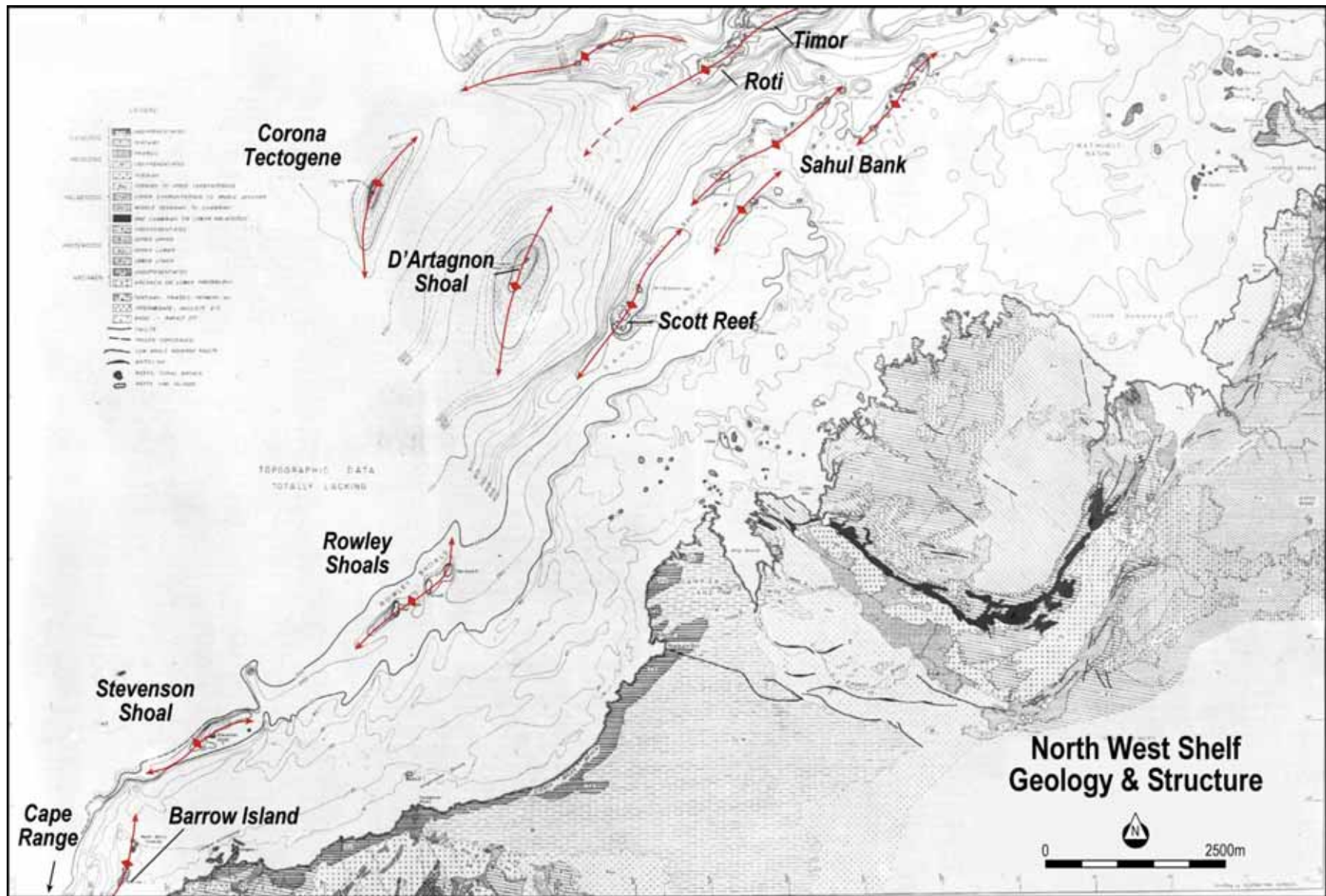


Figure 10. Structural, topographic and geological map of the North West Shelf, by Nicholas Boutakoff (1954-64), with annotations by the authors (Boutakoff, 1963b). (This copy from the SLV Boutakoff Papers.)



Figure 11. Boutakoff c1960, around the time he was moving to Woodside.

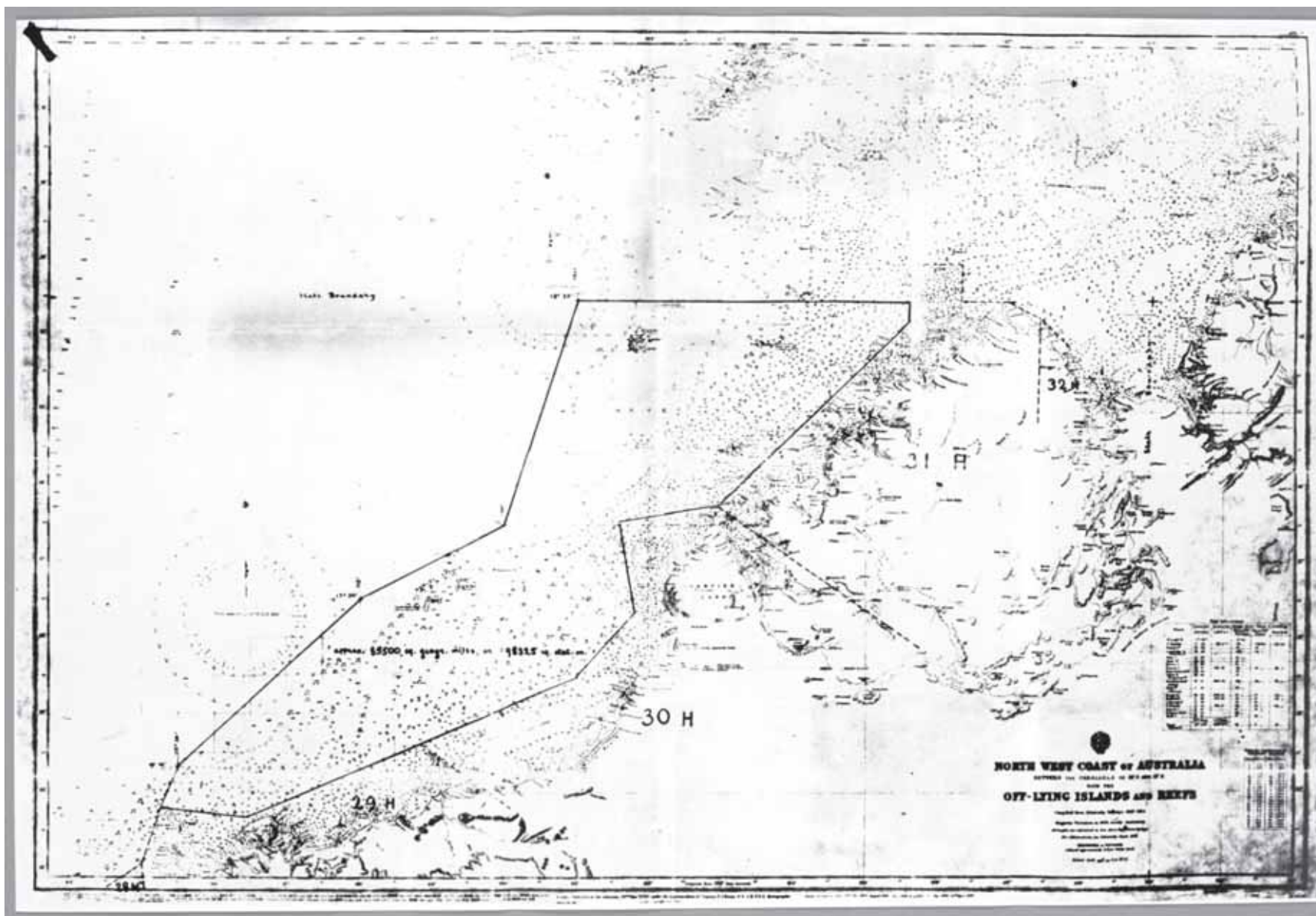


Figure 12. Copy of Admiralty Chart, North West Coast of Australia, showing Boutakoff's hand-drawn outline of the lease application area, as lodged by his company Northern Holdings in 1955 and by Woodside in 1963. (From SLV Boutakoff Papers.)