In memory of Dr. Javad Ashjaee (1949–2020)

Alfred Leick^{1,2} · Lev Rapoport^{3,4,5} · Dmitry Tatarnikov^{3,6} · Mark Zhodzishsky^{3,6}

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It was with great sorrow that we learned about Dr. Javad Ashjaee's passing in Moscow, Russia, on May 30, 2020, due to COVID-19 complications. Javad, the founder of Javad GNSS, has been a professional inspiration to all of us since the very early days of GPS and GLONASS. He has impacted our careers and life in many ways. We mourn a friendly colleague, a truly outstanding engineer, an effective and inspirational leader, a terrific organizer and manager, whose enthusiasm about his calling was contagious, and, last but not least, someone who dared to dream big.

Ever since I (*Alfred Leick*) met Javad in the early 1980s, probably at one of the US Institute of Navigation conferences, I felt to have found a colleague with whom I could work with and enjoy the exciting time of the rapidly developing GPS technology we all impatiently anticipated. We both had many things in common. We graduated at our respective home universities in 1972, came to the United States to get a doctorate, and returned to our home countries to apply the knowledge we had gained in the US. However, soon after that, we moved back to the US, being attracted by the beauty, diversity, freedom, and opportunity we had experienced before. Throughout the years, our professional relationship continued to flourish, giving me multiple opportunities to develop software and to consult for his company. He, in turn, provided the latest receivers to the Surveying Engineering Program at the University of Maine. Clearly, we had in common a love for accurate positioning. Although he had a strong business and entrepreneurial orientation, Javad appreciated the need for education in general, and for exploring the potential of GPS to its fullest, in particular. In the early years of GPS, his professional presentations were always informative and contained much theory, as opposed to an unattractive discussion of results. Whenever issues arose, he clearly articulated his position, which made cooperation easy and transparent for all. I visited his booth at every meeting and enjoyed a lengthy professional chatter. Javad will be missed.

My life (*Lev Rapoport*) as a researcher at an academic institute in Moscow in the early 1990s was difficult, though interesting. Many colleagues left for other countries, continuing their careers in Western universities and industrial companies. This was also an option for me when a friend drew my attention to the TV show “America with Mikhail Taratuta” at the end of which an energetic gentleman said that his American company “Ashtech” located in Moscow needed mathematicians, computer programmers, and electronic engineers. This person radiated energy even through the glass of the TV screen. So, I saw Dr. Javad for the first time. A day later, the day that has changed the rest of my life, I was interviewed by Stas Sila-Novitsky, a colleague and

✉ Alfred Leick
leick@maine.edu

¹ GPS Solutions, Orono, USA

² University of Maine, Orono, USA

³ R&D Department, Topcon Positioning Systems, Livermore, USA

⁴ Institute of Control Sciences, Russian Academy of Sciences, Moscow, Russia

⁵ Moscow Institute of Physics and Technology, Moscow, Russia

⁶ Moscow Aviation Institute, Moscow, Russia

friend of Javad, and joined the company of twenty engineers doing absolutely new and fascinating work—creating a high-precision satellite navigation GPS + GONASS commercial receiver. Almost 30 years have passed since then, during which we observed the development of the satellite navigation industry through the eyes of employees of different high-tech companies and contributed to this development while remaining Moscow residents. Today we recall Javad with sadness and gratitude.

By the early-90s, I (*Dmitry Tatarnikov*) was about a 30 years old Ph.D. working on microstrip array antennas in the group of Prof. Filippov at the Moscow Aviation Institute. With rapid changes in Russia ongoing, the future of the high-tech area had become uncertain, and like many others, I was thinking of emigrating. Prof. Filippov, who was a university classmate with Stas Sila-Novitsky, all of a sudden got an invitation to visit the foreign high-tech company in Moscow. At that time there was no Internet in Moscow, an international telephone call was kind of a big problem, and such an invitation seemed like not much of a reality. We knew very little about GPS and GLONASS. That way, I met Javad for the first time, along with 20 engineers. I was amazed by Javad's courage to start a new company under such a high degree of uncertainty and by his drive for the new. One day we talked about combined GPS, GLONASS, and communication technologies. Although a solution did not exist at that time, nevertheless, during the gentle discussion, he took a telephone, called the factory in California and asked to stop the machines and, instead, drill a hole for non-existing antennas. That was his style. Javad had pushed me to make my first presentation in English at a Congress outside Russia. He changed the life for many of us.

With deep regret, I (*Mark Zhodzishsky*) learned about Javad's death. This news was completely shocking and

unexpected for me. Javad was an outstanding engineer and organizer of scientific projects, who played a decisive role in the professional predestination of many of us. Thanks to Javad, three branches of American companies specializing in the subject of GNSS are now operating in Moscow. In the difficult 90s, Javad had no fear to open a branch of the American company Ashtech in Moscow, and then establish a new company operating in the same field. I have always admired his enthusiasm and dedication to technical innovations, his ability to find talented engineers, and create a well-knit team to solve complex technical issues in the face of strong global competition. I had the pleasure of developing several technical solutions for GNSS receivers together with Javad, which were published in our joint US patents and scientific papers and successfully presented at different international scientific conferences. I have always been very grateful to Javad for his faith in us, the Russian engineers, for giving us a chance to work in the fascinating field of GNSS technology!

Our sincere condolences to Javad's family, relatives, and colleagues. We understand what a grievous loss Javad's death means for all the employees of the research center Javad GNSS, Inc. We successfully and beneficially have worked with many of them for many years. We are with you in our hearts We will always remember Javad!

Glenburn, Maine, USA, and Moscow, Russia, June 9, 2020

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